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THE WORLD

VOL. IV

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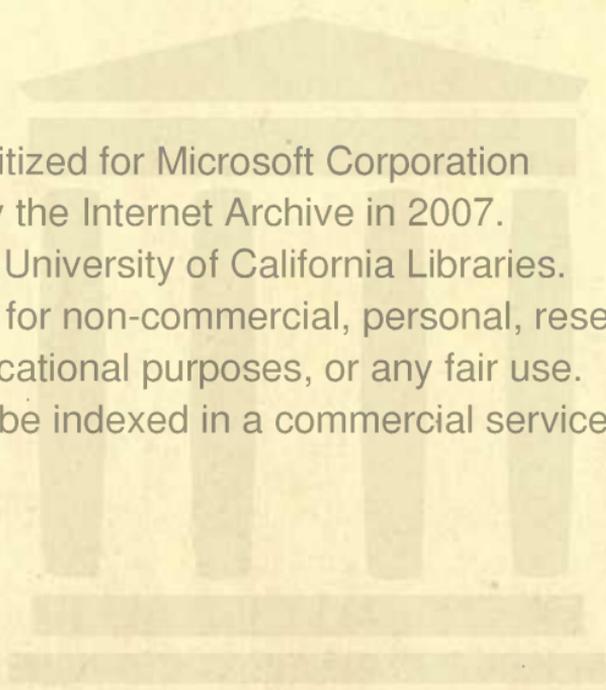
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ROUND THE WORLD SERIES
VOLUME IV

ROUND THE WORLD

*A Series of Interesting Illustrated Articles
on a Great Variety of Subjects*

VOLUME IV

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The Esquimaux. Canada's El Dorado. Curious Farming. The
Schoolship. Orchids. Artificial Ice. Fox-Hunting in
America. Wonders of America's Proudest
Waterway, The Porcelain of Saxony.
Sixty Days of Wonders. The
California Bungalow.

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The Esquimaux

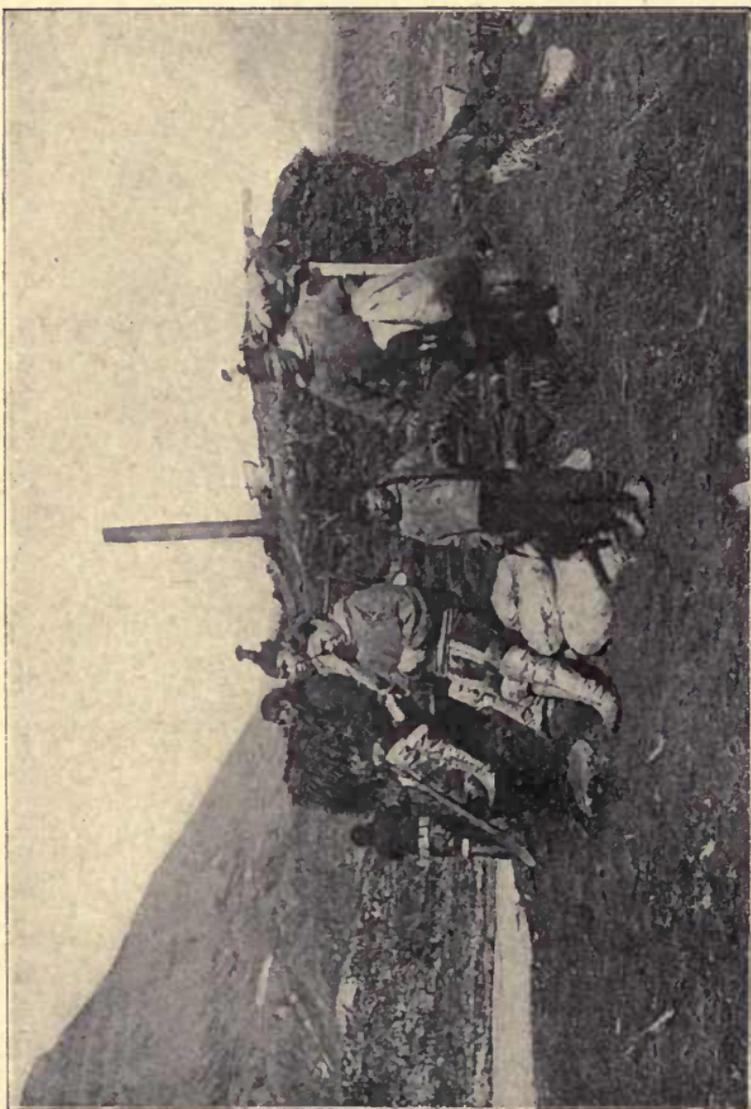
ENVELOPED as they are now in perpetual ice and snow, there are many proofs that the Arctic regions once enjoyed a milder climate. This fact has been established by the fossil wood, acorns, and petrified fir-cones that have been found within their limits. In North Greenland, a large burned forest has been discovered surrounded by glaciers, 1,080 feet above the level of the sea. Not only the trunks and branches of the trees, but even the leaves, fruit-cones, and seeds have been preserved in the soil, thus enabling the botanist to determine to what species the trees belong. Trees and plants belonging to a climate as mild as that of Lausanne or Geneva once flourished here; but the origin of the great change in temperature can only be theorized upon, and there have been many theories broached and upheld by scientists on this interesting subject. The field of speculation as to the causes which induced this stupendous change, is too wide to be entered upon in the narrow limits of this article, which must confine itself to a description of some

of the people who inhabit these high latitudes, which have, despite their disadvantages, many beauties of their own.

However, it is doubtful if the many scattered tribes of Esquimaux who range about these Arctic regions shrink from the monotonous gloom of their long and terrible winter any more than they enjoy the magnificence of an Arctic sunset, or the magical beauty of the Aurora, that wondrous phenomenon of arching light with its wonderfully transparent colors. They are a stolid and unemotional race, who are principally distinguished by their ability to live in a climate in which no other people have been known to survive.

Of all the uncivilized nations of the globe, none range over a wider space than the Esquimaux, their various tribes extending from Greenland and Labrador to the extreme northeastern point of Asia. They call themselves "Inuit," meaning simply "men." It is from the outsiders who trade with them that they have received the name of Esquimaux, derived, evidently, from their own cries of "Seymo," or "Teymo," with which they greet the arrival of the ships.

As it would be impossible for these people to



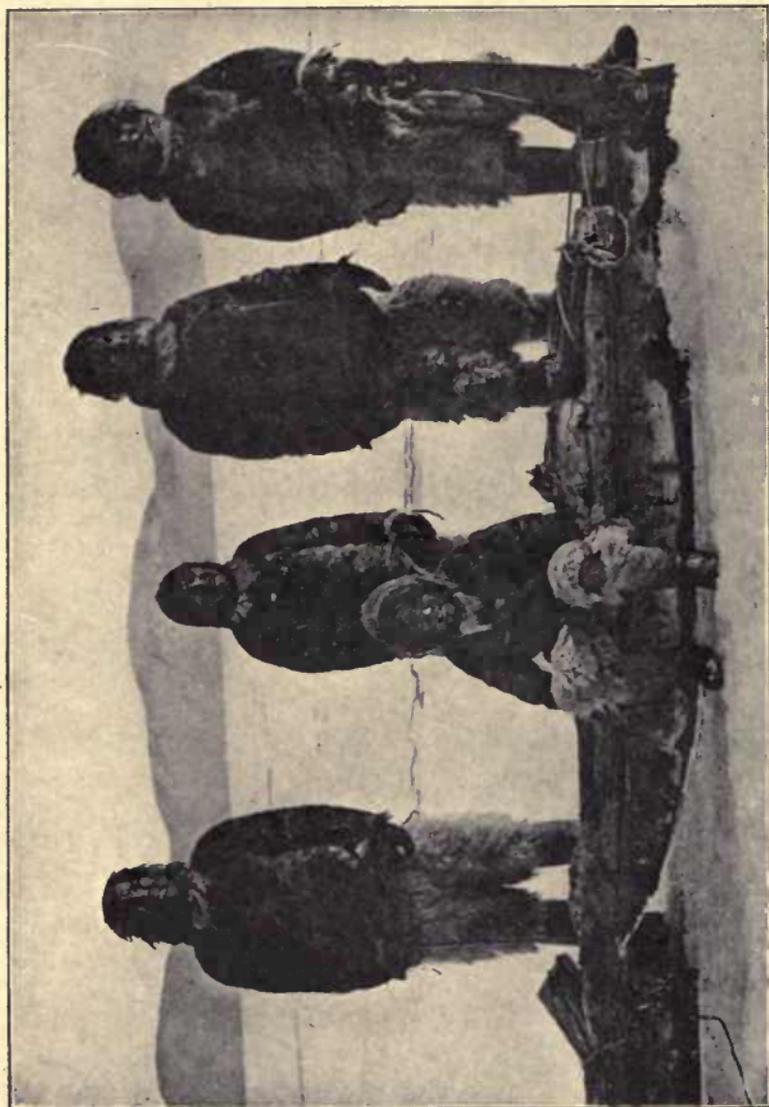
A Group of Natives and their Summer Hut.

subsist on the meager products of the barren soil they inhabit, they are always found as near the sea as it is possible for them to exist. They live principally on fish, which provides amply for their simple wants.

The eastern branches of the Esquimaux have been for centuries subject to the influence of the English and Danes, while in the west they are under the domination of the Russians. In Labrador and Greenland their religion is that of the Moravians; some of them are Greek-Catholics, while the largest proportion are heathens. However, notwithstanding these diversities of time, place, and religion, they are a people who have, strangely, preserved their original characteristics.

Their faces are broad and flat, widest just below the eyes, while their foreheads are generally narrow and tapering upwards. They do not resemble the Red Indian either in facial contour or color, as they are the whitest in complexion of all the Indian tribes. This may be due to the climate, and the absence of sunshine.

They are broad-shouldered and muscular, the men being powerful wrestlers. They are, as a



Esquimaux Family in Winter Dress, with Sledges.

rule, very cheerful and amiable, with beautiful white teeth. They are very much averse to water on any part of their bodies; if they could be induced to take more frequent ablutions their skin would be as white as many brunettes of our own or European countries. Much greater deference is paid to the women by their men than is usual among savages; they all tattoo their chin, forehead and cheeks. In the région of Bering Straits, and farther northward, the men pierce the lower lip near each angle of the mouth, filling the apertures thus made with bits of blue or green quartz, or ivory buttons. They also pierce the nose, inserting an ivory needle or shell. Like all Indians they are fond of beads, but their most prized ornaments are the teeth of the musk-ox, strung in many strands and depending from the jacket or belt.

Their dress is suited to the climate. Men and women wear breeches of reindeer or sealskin, generally two pairs; also two jackets of the same material, the upper one provided with a hood which almost entirely covers the face when in use. They have long, water-tight boots of sealskin, lined with the downy feathers of birds, and enormous gloves, with which



Group of Arctic Highlanders.

they defy the severest weather. The hoods of the women are often made large enough to carry their children.

The hut of the Esquimau is one of the most curiously constructed dwellings in the world. It is made of hard snow, which is cut in slabs. A circle is first drawn on the ground, the slabs laid around it, and so piled one on another till a dome-shaped dwelling is completed. The walls being rather thin, light is enabled to enter the hut; one has the impression of being in a house made of frosted glass. If more light is required, a piece of transparent ice is inserted in a space previously cut out of the wall. Seats, tables, and sleeping bunks are also made of snow, and are very comfortable. These huts are generally built in rows, close together, thus insuring greater warmth. The furniture is covered with loose skins. They never make fires in these dwellings, but they do not seem to need them. With their warm clothing, a train-oil lamp for drying wet clothing, and the crowded condition of their huts, they are always warm enough. They prefer raw fish, blubber, and oil to cooked food; therefore they do not use fire for any purpose. These dwellings are

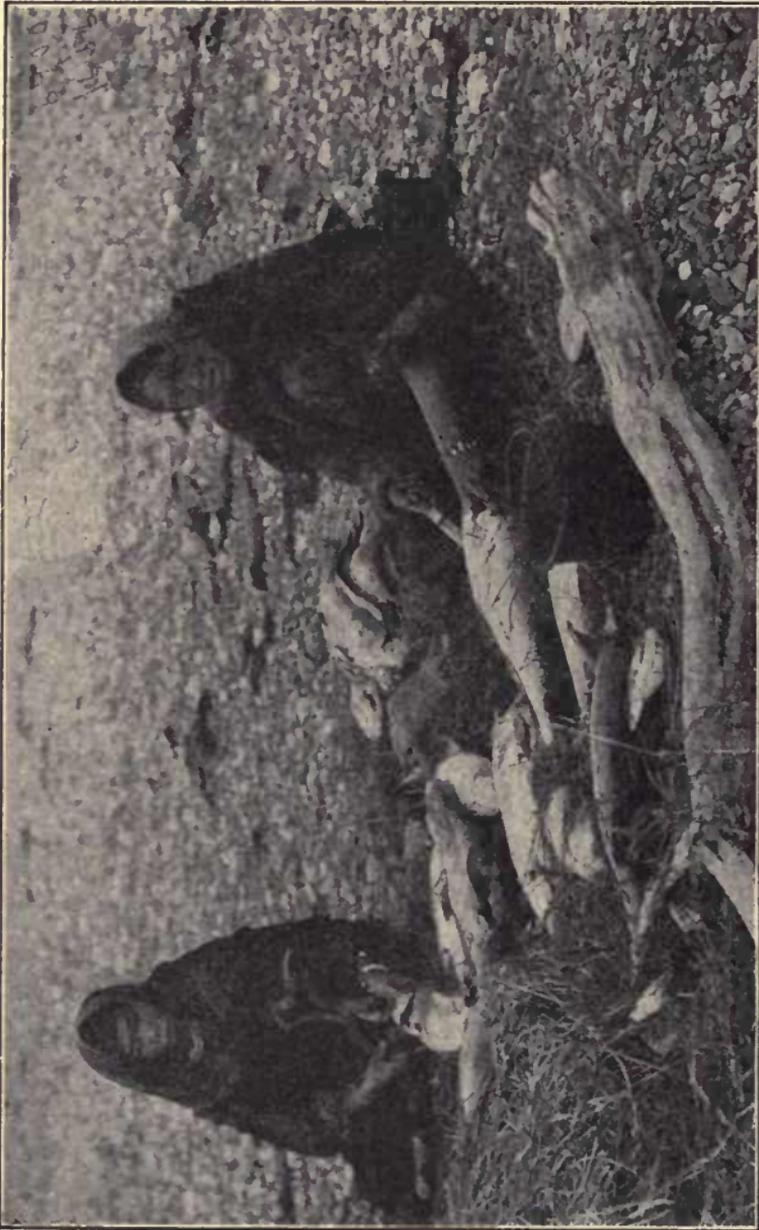


Esquimaux in Summer Dress in front of Government Storehouse.

sometimes hollowed out of huge masses of hard snow, resembling caves, into which they are obliged to enter on all fours.

From the nature of their occupations as well as the situation of their abiding-places, a boat is necessary to the subsistence of every Esquimau. This is called a "kayak," or "baidar," and is made of a long frame of wood or walrus-bone, covered water-tight with sealskin. A circular hole is made in the middle; in this the Esquimau sits with outstretched legs, binding a sack made of the intestines of a whale (and which fits in the opening) so tightly around his waist that not a drop of water can penetrate into the boat. In this he flies like lightning through the water, and should a wave upset him, he instantly rights himself with his paddle. The oars and hunting implements are tastefully inlaid with walrus-teeth. They are expert hunters, driving a six-foot arrow with unerring certainty to a distant mark.

As soon as the spring opens the Esquimaux are on the alert in their hunting pursuits, which constitute their principal occupation. They spear the salmon in the streams, and hunt the reindeer, sometimes in the scanty forests,



Esquimaux Women preparing Fish.

sometimes in the open country, where they dig deep pits in the snowy ravines, which they cover loosely with snow, so that the deer may fall into them. Swans, ducks, and geese also supply them with food. In August the time is devoted to the pursuit of whales, on the coasts which these animals are accustomed to frequent. They are experts in the hunting of seals—as is also the polar bear. When this animal goes in pursuit of the seal, the Esquimau follows him, and generally succeeds in capturing both.

Some of the Esquimaux hunt the bear with the assistance of their carefully trained dogs. These dogs bear some resemblance to wolves, and, being of a light color, might often be mistaken for them. Their hair is three or four inches long in the winter, and besides this they have, at this season, a thick undercoating of soft wool, which is absent in summer, wearing off as the warmer season approaches. Their bark, or howl, is also like that of a wolf.

The best dog is always selected as the leader, who, by means of a long trace, is allowed to precede the rest by a few steps. The driver

usually addresses himself to this dog, who obeys him.



Esquimaux Man and Wife.

The Esquimaux dogs have a fine scent; they are excellent in finding seal-holes and in locating deer-tracks by the smell. They pursue the bear

or musk-ox with equal alacrity, but have an instinctive fear of the wolf. Although these dogs are invaluable to their masters they are treated by them with the greatest severity. The animals do not resent it, however, being most affectionate toward their owners, who never caress them. Sledges, drawn by these dogs, are their only means of locomotion; without them they would never be able to travel over the vast expanse of snowy country:

The Esquimaux have some curious customs, among others that of putting everything that belonged to the dead person on his grave. An Esquimau cemetery presents a very curious appearance. They have neither magistrates nor laws, yet they conduct themselves admirably in every relation of life. Great prowess is their only criterion of superiority. When a man begins to get old, he retires to the companionship of the women, even to taking his seat in their boats, or "Oomiaks." In their behavior to the aged and infirm they have the indifference and insensibility which are common to all savages. They often abandon them on journeys, allowing them to perish in the cold.

They are very kind to their children, an-



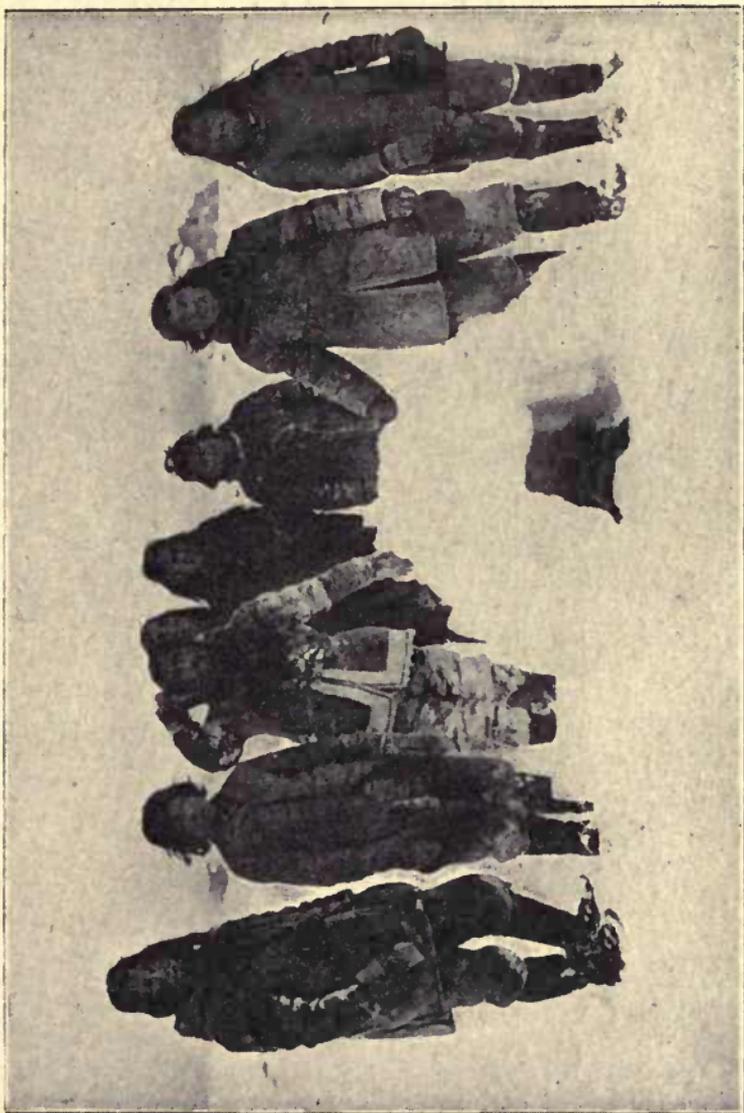
Esquimaux Children.

other trait of all Indians. The little ones, it must be admitted, are very gentle and docile,

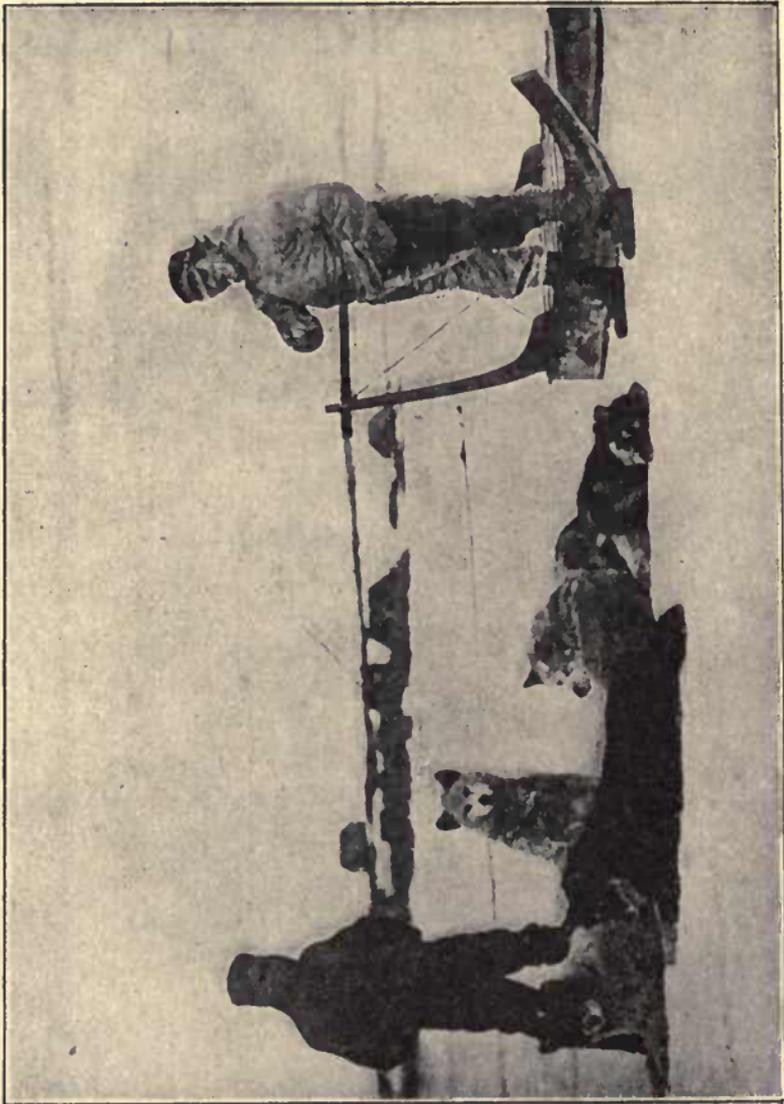
being miniature copies of their elders. "But they are just as fond of play," says Peary, the explorer, "as any other young people, and of the same kind, only that where an English (or American) child draws a cart of wood, an Esquimau of the same age has a sledge of whalebone, and, for the superb baby-house of the former, the latter builds a miniature hut of snow, and begs a lighted wick from his mother's lamp to illuminate the little dwelling."

The Esquimaux are a most industrious people; their means of communication with the world beyond their Arctic snows being so limited, they are obliged to manufacture almost every article they use. They make knives, spear-points and fish-hooks of the horns and bones of the deer. They roof their huts with the ribs of the whale, and make strong cord from strips of sealskin. In the dark winter months, when confined to their huts, they make very good implements and ornaments of fossil ivory.

Although of a dull and stolid exterior, the Esquimaux have been proven to be far superior to the neighboring Indians. They are intelligent, and very susceptible of civilization; having, for example, such a good idea of the lines of the sea-



Snow Dugout in which the Esquimaux sleep when on a Hunt.



Sleights and the Invaluable Dogs which draw Them.

coast as to draw very accurate charts of them.

They sometimes become warmly attached to strangers; make admirable servants, and individually, at least, display warm gratitude, although they have not been credited by their historians with that admirable virtue. In spite of the bleakness of their native region, they have a strong love of country and home, and do not seem able to thrive, either physically or mentally, in an alien land. When brought to this country or taken to Europe, they begin to fail in body and grow homesick, longing to return to the region of perpetual cold, from which the casual observer might think every one who had the opportunity would be rejoiced to escape.

But home is home wherever it may be, and to the Esquimaux the dark wintry sea, in whose bosom is outlined the distant snowy mountain—the white desert plain, silent and solemn, and the gloom of an almost eternal winter present charms which the more beneficent aspects of nature can not surpass or replace.

Canada's El Dorado

(From stereographs copyright by B. L. Singley.)

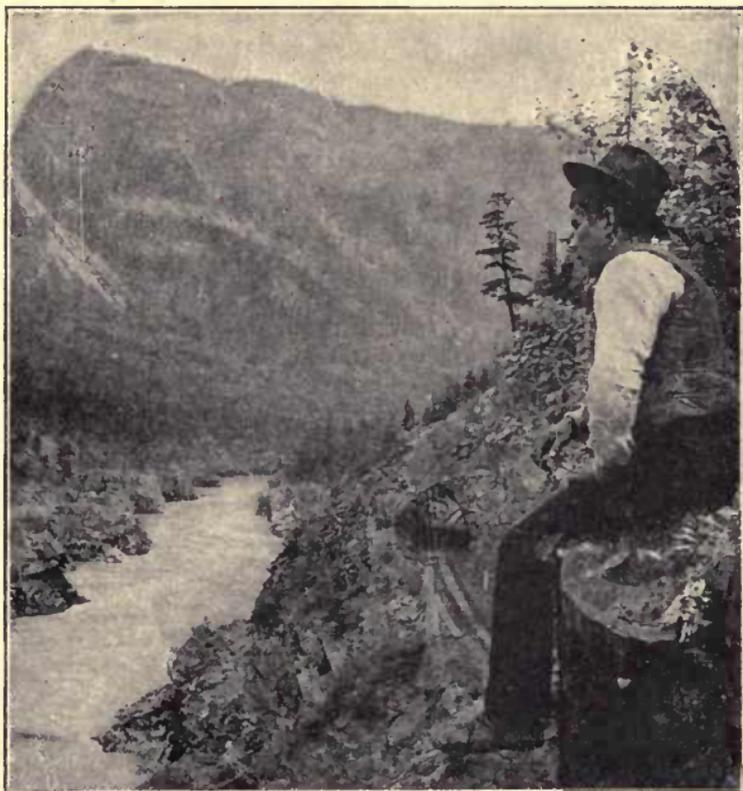
NORTH of the far western portion of the United States lies a country which Nature seems to have intended for an empire, so generously has she endowed it. To most Americans, British Columbia means, principally, the Yukon and other goldfields of the far north. They know it is large in size, but its real resources and extent are little understood outside its own borders. As a matter of fact it is as large as the New England States, the Middle States, the Virginias, the Carolinas, Maryland and Georgia. Its mountain scenery is Alpine in character and grandeur. Its streams teem with fish, its plains and forests abound with game. Its climate varies greatly in different sections. Included in its 260,000,000 acres is some of the best farming and grazing land of the American continent.

Ever since the day that famous old trading and exploring Scotchman, Sir Alexander Fraser, discovered the boiling, roaring river that bears his name, men have been pushing into British

Columbia. Long before that the representatives of the Hudson Bay Company were located at the most suitable points for the fur trader to live. Until the last decade the slender tide of immigration or travel consisted mainly of prospectors and trappers, but this has been changed by that irresistible combination, the railroads and the Government. Where the solitary prospector, or the Hudson Bay Company's voyageur, the latter always a gay bird of passage, were the sole visitors, the tourist is now a welcome guest. While each year sees an increasing number of travelers in the more notable portions of this Canadian El Dorado, its wonders are still unknown to the great majority.

British Columbia is a quadrangle, seven hundred miles long by about four hundred miles wide, lying west of the great core of the Rocky Mountains and extending along the Pacific coast as far as that boundary line the Joint High Commission fixed several years ago. The Rocky Mountains constitute the eastern boundary. Of the Pacific islands included within the province, the chief is called Vancouver and Quadra, after its discoverer, old Captain Vancouver, and the Spanish governor under whom he sailed.

Vancouver, as it is best known, is beautiful most of the year with verdant meadows, clusters of oak and maple, arbutus or dogwood, and bril-



Fraser River Canyon.

liantly colored wild flowers. Its chief city, Vancouver, is a garden spot. Across the straits of Juan de Fuca, called after the Greek explorer who disappeared after announcing his discovery, lies Victoria, where roses and violets are gathered

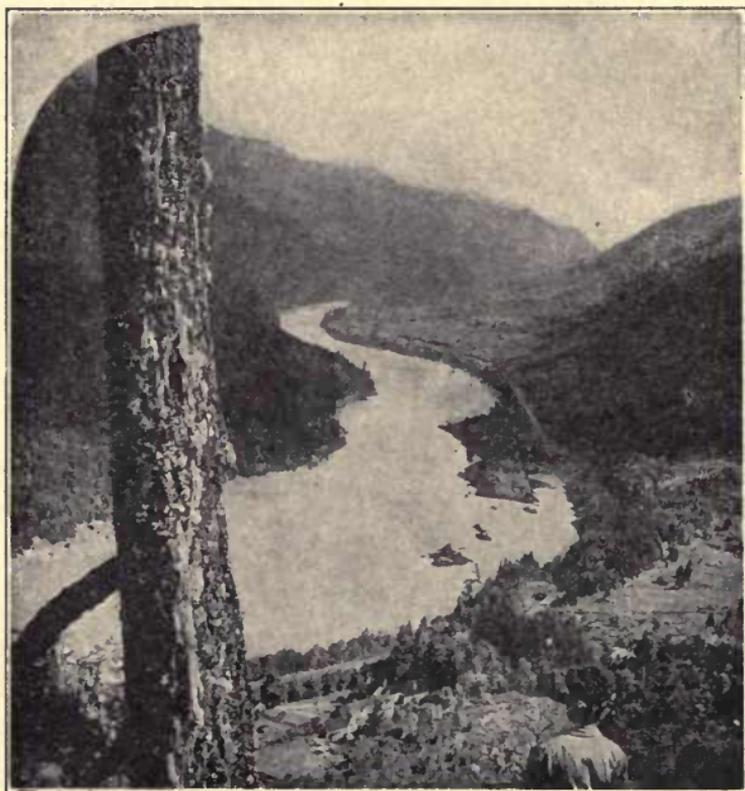
in the front yards of residents to decorate the Christmas tables.

It is not here, however, that one sees the marvels that give the province its fame. The coast, with its fiords and passages, rivaling those of Norway and Greenland, some winding inland forty or sixty miles, between mountain ranges, is marvelous. Hundreds of islands, beautiful in appearance and surrounded by waters teeming with fish, are attractive to persons of all minds. Attractive as are these features of the province, they are almost insignificant from a scenic standpoint when compared to the vast mountain ranges and forests of the interior.

The districts of Cassiar, Ominica, and Atlin are practically unexplored, their millions of acres having been scarcely more than visited in places by the prospector. Best known of these is Atlin, bordering on Alaska, whose gold mines have gained it a measure of fame. Aside from its mineral wealth, which few districts are without, Atlin is possessed of marked natural advantages, already attracting the eyes of those who seek that freedom only found away from the haunts of civilization.

It is in the country bordering on the Fraser

river that the scenes are located which bid fair to give that section of the Dominion a world-wide reputation. The Fraser is a stream of turbulent



The Mighty Fraser released from the Canyon, near Yale, B. C.

temper. It stretches through canyons for many miles. Its sands are, in places, rich with gold. Yale, the head of navigation on the Fraser, is a monument of the days of gold excitement in its tiny part of the world. A shadow of its former

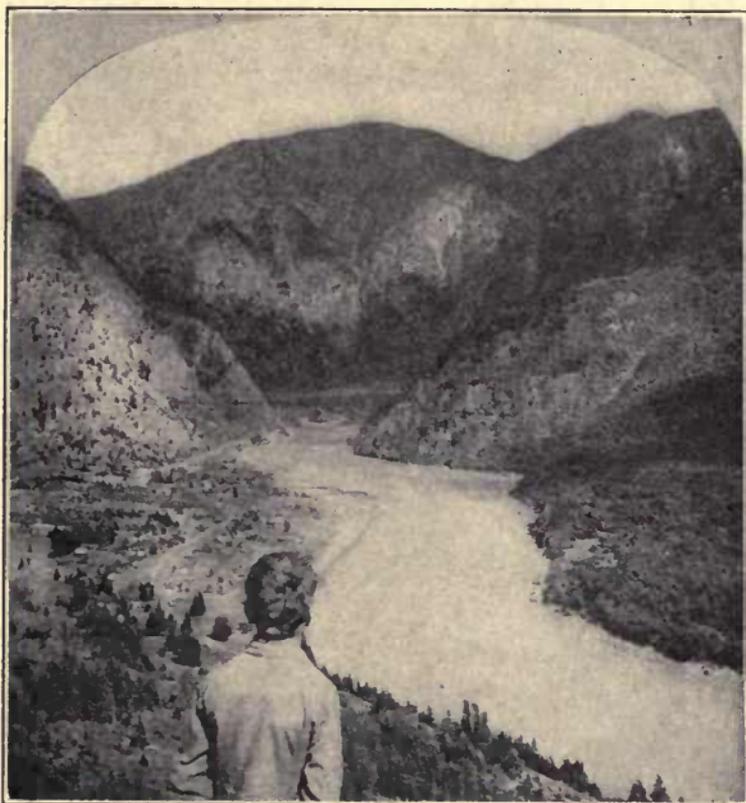
self, it would possess no interest, save for its flavor of other days, were it not at the entrance of the Fraser canyon.

This canyon has never been carefully explored. Through it the river winds a tortuous way. In many respects it presents greater dangers to the would-be navigator than the river which seethes through the Grand Canyon of the Colorado.

Glimpses of the Fraser, caught from the beetling sides of the canyon, reveal rapids at frequent intervals, while jagged rocks, around which a strong current weaves, speak of the perils that would attend a canoe voyage among them. Even at its entrance the canyon is of forbidding beauty. The little scow-built, stern-wheeled steamers that puff up and down in their occasional journeys to and from the lower country form the only element lightening a scene, the grandeur of which is sometimes oppressive.

Excluding the territory which lies to the north of the Arctic circle, all the principal glaciers of North America lie within the great ranges of the Rocky Mountain system. These ranges, stretching along the Pacific coast, are peculiarly well situated for the formation of glaciers not inferior

to the better known ice streams of Switzerland. It is not until British Columbia is reached, however, that the scenery becomes truly Alpine, and



*Yale, Siwash Indian Reservation and Western Gateway to
Fraser River Canyon.*

glaciers are found of great size and striking characteristics. As the ranges stretch northward they converge, and are fully four hundred miles broad at the narrowest point. Beginning

at the west, the most important of these ranges are the Cascade, the Gold, the Selkirk, and the Rocky, the last two being the highest, the most Alpine and broken and the most covered with glaciers.

Owing to its accessibility, the Illecellewaet glacier is visited more than any other. At its widest point this glacier measures 1,720 feet, and actual experiment has shown that the ice flow—that is, the daily movement of the vast body of glacial ice—is from three to five inches. It is perhaps the most notable feature of the glacial Park of the Selkirks.

In the neighboring province of Alberta, the Victoria glacier, at the head of Lake Louise, is one of the most interesting of the Rocky Mountain glaciers. A row across the beautiful lake, followed by a walk of about two miles over a fairly good trail, brings one to the Victoria's tongue. A feature of this glacier is that it is largely fed by masses of ice, which, in the form of avalanches, frequently thunder down the almost perpendicular cliffs of Mounts Lefroy and Victoria.

Apart from those features of British Columbia and its sister provinces that appeal to the mind

and eye, are things which stir the blood and bring to us the call of the wild. This particular province of the Dominion is claimed as the ideal home



Among the Wonderful Ice Peaks of the Illecillewaet Glacier.

of the hunter of big game. In the valleys among the mountains are scattered caribou, deer, bear, wapiti, mountain goats and bighorn sheep in large numbers, while reindeer, moose, and wood buffalo await those who journey toward the far

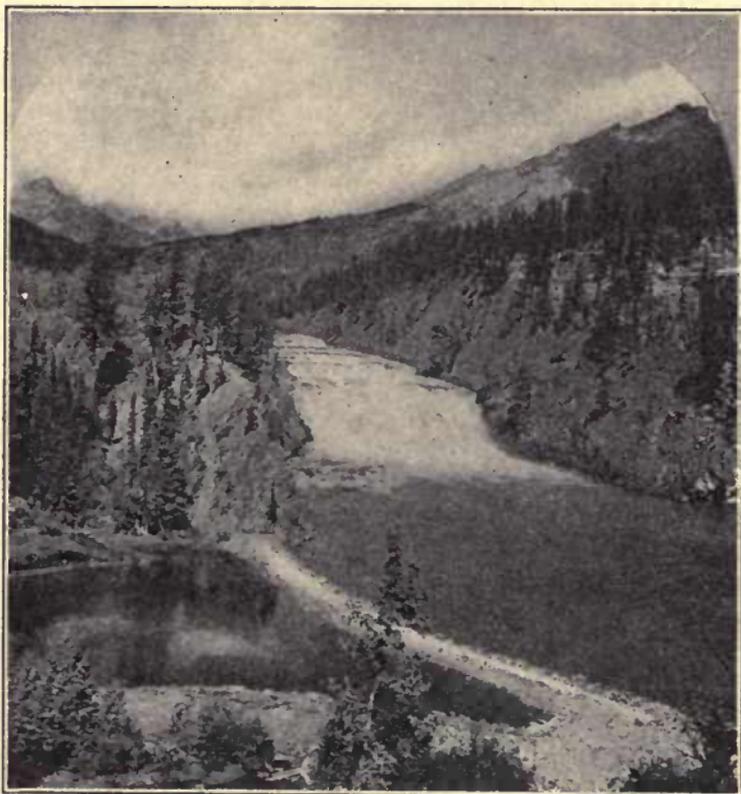
north. If there is doubt as to the existence of this game, the records of the Hudson Bay Company afford ample proof.

In the autumn the lakes of the interior, the rivers and streams and the estuaries of the coast are alive with mallard, pintail, teal, canvasback and other varieties of duck and brant and wild goose. In almost all sections there are grouse and prairie chickens.

The salmon of British Columbia are famous, but there is a question as to the pleasure of taking them at times because of their vast numbers. The story is told, and vouched for as true, that for many days a member of a camping party supplied the camp with fish by walking to the edge of the near-by river and jerking out what fish he wanted with an ordinary poker. While this sounds imaginative, those who have seen salmon in the Columbia and Fraser rivers lying in the water as thick as logs in a drive, can understand the possibility of the statement being true.

One feature of British Columbia and its neighbors that wholly lacks all elements of the picturesque, is the native inhabitant, or Indian. It is said of him that he is originally descended from the Mongolian tribes of Western Asia, who in

some fashion made their way, centuries ago, to what is now British Columbia. If that be true, one who has seen them will heartily agree with



Bow River Falls, Banff, Alberta, Canada.

the traveler's remark: "If they are of the Mongolian type, the sooner the Mongolians change their style of type the better." Nearly the entire Indian population is resident in the coast country, because it is so much easier to gain a

living there than at interior points. Disease and vice have decimated the interior tribes. But for the Roman Catholic missionaries hardly a vestige would remain. The missions are improving the surviving Indians, and there now seems a possibility of regenerating them.

A few years ago British Columbia was looked upon as a country of great mining prospects, but lacking agricultural promise. It is now found that the finest grain and the choicest fruits can be produced there. Fruit-growing is annually gaining in importance. Large shipments of apples, pears, plums, and cherries are made to Manitoba and the Northwest territories. Hops have proven a good and paying crop. Dairying thrives, largely aided by the creameries the Government has established. Stock-raising is conducted with marked success, range opportunities being almost limitless.

It is believed the white population of British Columbia will not exceed 150,000, where there is room for many millions. Half this population is now in the coast towns, but steady streams of immigrants from the United States and across the Atlantic bid fair to change this situation,

and in another decade make of the El Dorado of promise an El Dorado of fact.

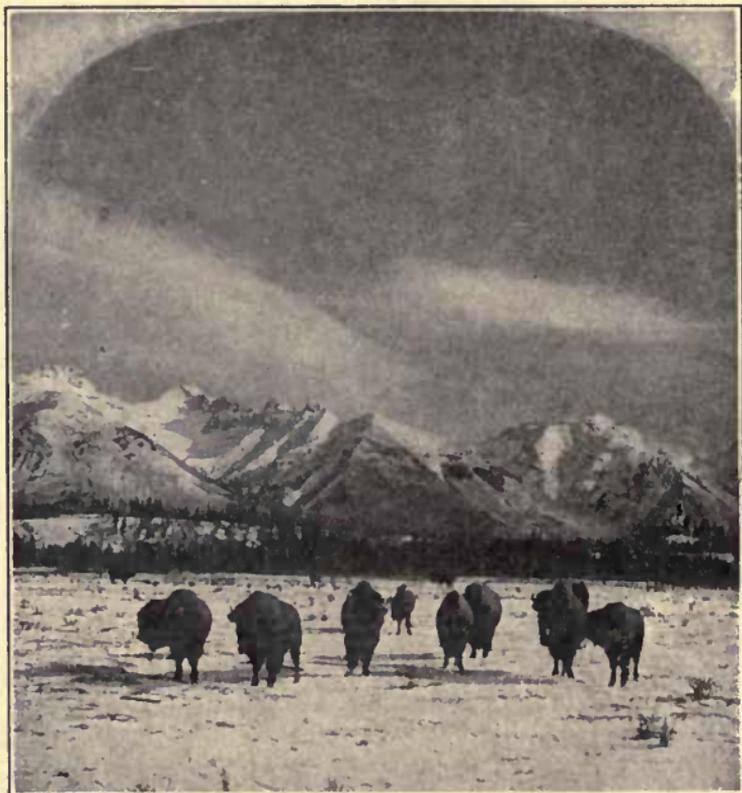
British Columbia's provincial neighbors are



*Lake Louise and Valley of the Bow, as seen from
Beehive Crest.*

marching forward with the same step. Alberta is attracting the tourist travel, in these days so often the forerunner of immigration. The Bow River Falls at Banff, marvelous in their beauty and grandeur, have brought into prominence a section

that is proving a Mecca to the American farmer. As the far-famed Saguenay gave its own section of the Dominion a fame that has never dimmed,



The Buffalo in His Snow-bound Home.

so the vigorous exploitation by residents and others of the beauties of British Columbia and her sisters has proved like bread cast upon the waters—it is returned after many days in the form of a procession of tourists and emigrants

from all sections of the world that produce persons who seek to increase their store of knowledge or better their condition.

Curious Farming

FARMING is no longer a commonplace industry. Rather has it become a calling, with features so interesting and unusual as to give it special place among the great occupations of the United States. In common acceptance a farm means a place where articles that figure in the food supplies are grown. It sounds queer enough, therefore, to hear of a reindeer farm, a fox farm, a turtle farm, an alligator farm, an insect farm, and a host of other varieties which show modern farming to be thoroughly diversified.

Of all the many odd departures from the usual in the class of farming referred to, none is of greater importance than the reindeer farms of Alaska. Twelve years ago, Dr. Sheldon Jackson brought his first herd of reindeer across Bering Strait from Siberia, and started his reindeer colony at Unalaska, which lies off the bleak coast of Alaska. Many persons smiled at the experiment, and declared that his plan for stocking the great barrens of northwestern Alaska

with thousands of the animals which for centuries had been indispensable to the natives of Lapland and Siberia was impractical and wasteful of time and good money. Despite the forebodings of the critics, the experiment prospered from the very first. Other reindeer—the original herd consisted of sixteen—numbering one thousand in all, were, during the succeeding years, brought over from Siberia. To-day there are nearly 6,000 head in the various herds distributed along the Alaskan coast, from Point Barrow to Bethel. The existence of the 30,000 natives of northwestern Alaska, as well as the ample meat supply and general success of the ever-increasing interior mining population of Alaska, is dependent upon these domestic reindeer. The animal furnishes their clothing, food, transportation, and many of the utensils used in the daily routine of life.

Reindeer farming is no longer an experiment, though to a certain extent it is yet in its infancy. There are 400,000 square miles of barren tundra or woodless plains in Alaska, where no horse, cow, sheep, or goat can find pasture. But everywhere on this vast expanse of frozen land, the reindeer can find the long, fibrous white moss which is his food. There is plenty of room for



Pigeon "Farm" at Los Angeles, Cal.

10,000,000 of the hardy animals. There seems little question that the time is coming when the reindeer farms of Alaska will equal in extent the great cattle ranches of the southwestern United States, and they promise to be even more profitable.

The Alaskan reindeer can hardly equal the

speed of a Lapland deer, which makes from one hundred and fifty to two hundred miles a day, and sometimes from twenty to twenty-five miles downhill in a single hour. A pair of them can pull a load of from five hundred to seven hundred pounds at the rate of thirty-five miles a day and keep it up for weeks at a time.

When one considers that raising reindeer in Alaska is simple and the profits enormous, it is plain that reindeer farming is certain to increase. A fawn during the first four years of its existence costs its owner less than four dollars a year. At the end of four years it will bring from \$50 to \$100, or, if trained to the sled or for the pack, is easily worth \$100 to \$150. The fawns are very healthy, and but few die. Does are prolific, and after they are two years of age add a fawn to the herd each year for ten years. In one instance, out of fifty does two years and more of age in a single herd, forty-eight had fawns. Of these only five died, three being lost through accident or the carelessness of the herders.

The reindeer are so gregarious and timid that one herder can easily guard a thousand head. The herder knows that if a few of these stray he need not look for them, as they will soon become



Angora Goats on their way back to their "Farm."

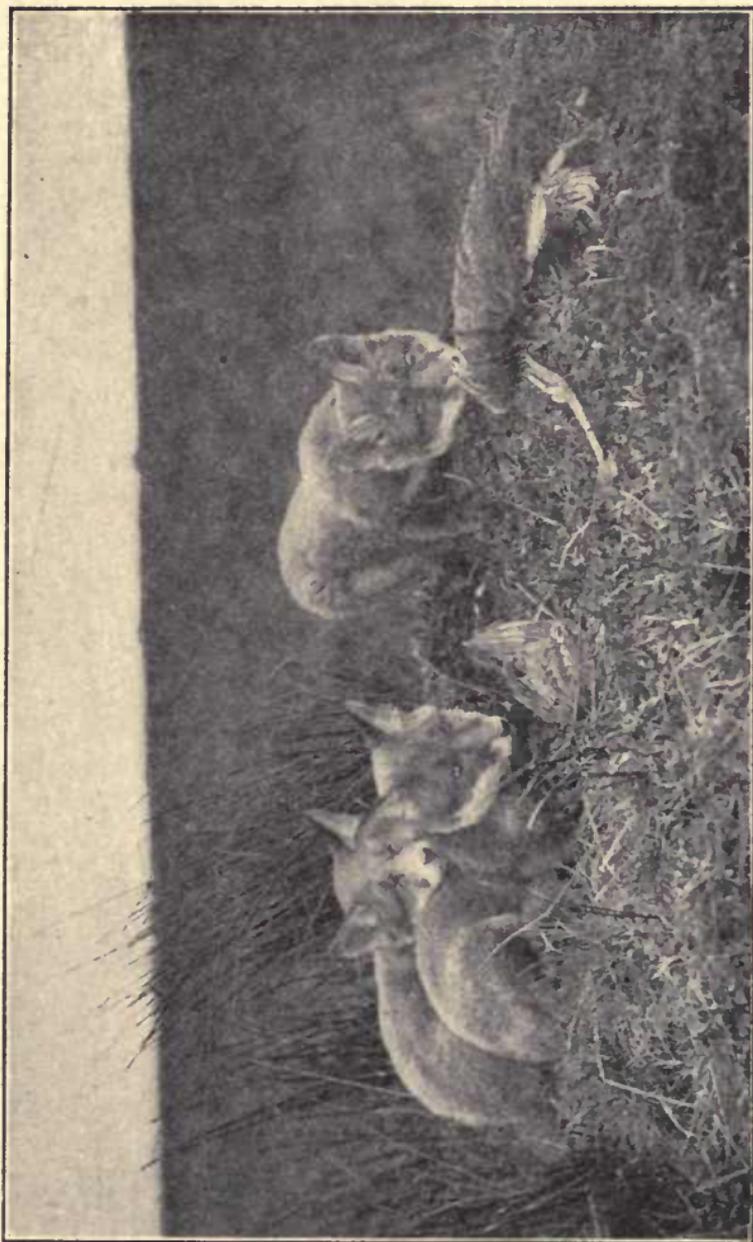
frightened and rejoin the main herd. The does make almost as good sled deer as the bulls and geldings, although they are slightly smaller and less enduring.

The Chuckches deer cost in Siberia about four dollars a head for a full grown doe or bull. The fawns born in Alaska are larger and heavier than the parent stock. The Tungese deer cost nearly \$7.50 each. By the addition of the Tungese breed it is believed the Alaskan stock will be improved and toughened.

The reindeer cow gives about a teacupful of very rich milk, nearly as thick as the best cream, and making delicious cheese.

Even if no more reindeer are imported from Siberia, and the present rate of increase continues, doubling every five years, and there is no reason why this should not be the case, within the next twenty-five years it is declared there will be at least a million reindeer in Alaska. This is a conservative estimate, including, of course, only the so-called domestic reindeer, and allows for the deer which die from natural causes and for the many which will be slaughtered for food.

The pelt of the Arctic fox is so valuable that several years ago the project of raising such



A Fox "Farm."—There are One Hundred and Fifty Foxes on the Place at One Time.

foxes on farms was attempted with gratifying results. At present there are a number of fox farms in the United States, most of them being in Alaska. There is one very prosperous undertaking of this sort in Maine, and another in Pennsylvania, both conducted by men who have enjoyed Alaskan experience, and who, on their return to the East, brought with them some fine specimens of the fox for breeding purposes.

Fox farming flourishes on the islands in Prince William Sound in Southern Alaska. In this locality a fox farm is simply a wild island seized upon by enterprising white men, who proceed to make it the undisturbed home of families of foxes. The foxes are fed with considerable care, and at the proper time the farmer selects those whose fur is in best condition, and sends their pelts to the buyer.

Feeding foxes prevents their migration to other islands or to the mainland in search of fresh hunting fields. The foxes become accustomed to the man who feeds them, and readily familiarize themselves with specially constructed feeding houses. These houses are often provided with floors that swing on pivots, the floors being



A Long Island Duck Farm.

clamped tight during the whole year until the date selected for trapping, when, by pulling out a few plugs, the feeding house is transformed into a fine trap. Some farmers set numerous small box traps in order to catch as many of the foxes desired as possible before the alarm is spread from burrow to burrow.

The food provided by the fox farmer for his queer live stock consists wholly of fish. Every summer the streams of Alaska abound with salmon. The humpback and the dog salmon are not considered first class for packing or canning, but they are caught by thousands for fox food. So, for a short time in the summer, the fox farmer has a busy season in catching salmon for his winter supply of fox food.

In California, the State Board of Horticulture has an insect farm in which are raised insects whose existence is deemed necessary to the preservation of citrus trees and yield. A notable achievement of this farm was the propagation of a colony of ladybirds, natives of Australia, the object being to use the ladybird as a means of destruction of the cottony cushion scale that was killing the lemon and orange trees of California. It was found that each ladybird would lay



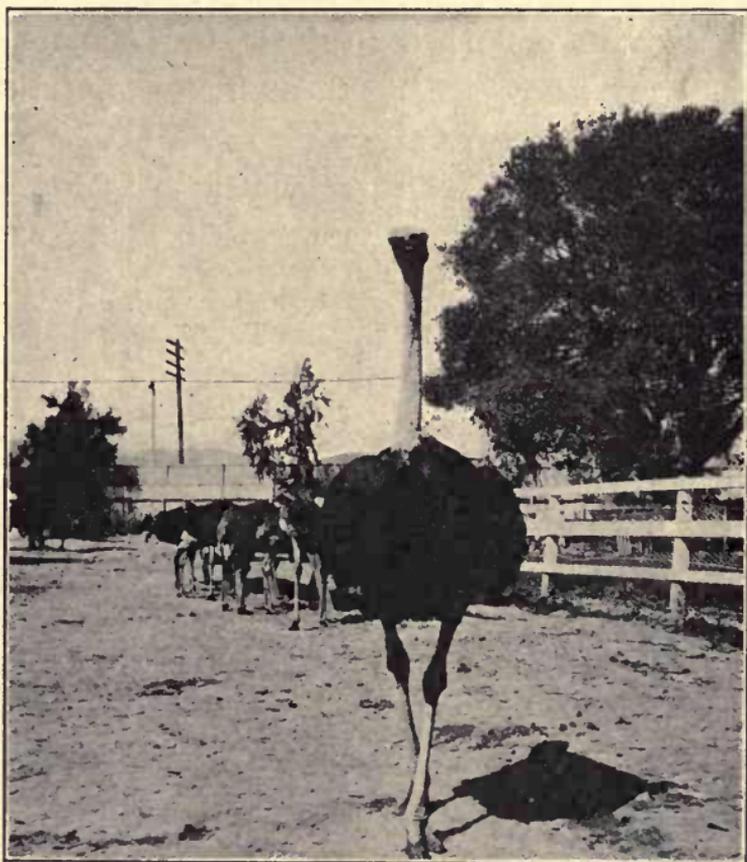
Another Duck Farm.

two hundred and fifty eggs every forty-two days the year round. Thus the offspring of a pair of ladybirds in a year would number into the millions.

The ladybirds first raised were sent out in small colonies all over California, wherever an orange or lemon orchard was affected by scale, and released among the trees. The result was the speedy cleaning up of the pest, which has remained in subjection ever since. Thus the insect farm has taken its place as an institution worthy of preservation.

While poultry farming hardly comes under the head of curious features of the calling, it is interesting to know that it is specialized in ways that are profitable and extensive. The arms of Long Island Sound in the vicinity of the country about Eastport are utilized by the duck farmers, who raise Pekin ducks by the hundreds of thousands. The work has been carried on for many years, and the product is scattered over the United States from the Atlantic to the Mississippi river. The feathers form no small feature of this industry, and the profits therefrom are a welcome addition to the bank accounts of the men who live among honest quacks.

In California the ostrich farmer is seen at the highest stage of development. Ostriches are, of course, raised solely for the plumes they grow,



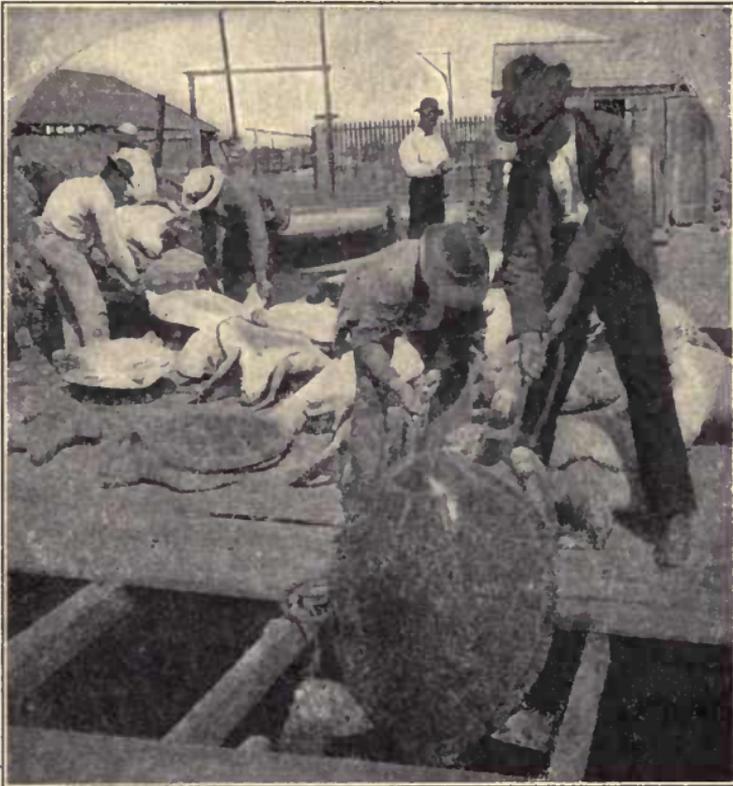
Ostrich "Farm" at Los Angeles, Cal.

and although it is not yet possible, for some undeclared reason, to equal the plumage of the South African ostrich, the California plume has

reached a quality stage that gives it high rank. The industry is growing, and the work, though attended with some danger, owing to the bad temper of the birds, seems likely to continue so long as the profit grows at its present rate of increase.

In several of the Southern States, notably Texas, silkworm farming is carried on to a large extent, in some instances with the aid of the Department of Agriculture, which is deeply interested in its development. The principal species cultivated are common cross yellow, crossed Japanese and Chinese breeds. When the worm is young, the leaves of the mulberry tree are sliced in small strips and scattered over the trays on which the worms repose. When the worm is further advanced in development it is fed upon leaves just as they are taken from the tree. The waste and fiber of leaves unconsumed are carefully removed, and great care taken to make the worm comfortable and clean, and to ensure an even temperature so far as practicable, because cold or too much exposure to the sun may cause the worm's death. Worms are fed day and night at short and regular intervals until they mature, so the silkworm farm is not a place where the workers enjoy unusual ease.

The snapping turtle furnishes an opportunity to the men who conduct unusual farming schemes. It is found from Canada to Florida and Alabama,



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Shipping Green Turtle at Key West, Fla.

and as far west as Missouri and Louisiana. Turtle farms are not uncommon, and have proved fairly profitable, as there is a great demand for turtle flesh, which is exceedingly palatable and



An Alligator "Farm."

savory. The North American snapping turtle lives largely in marshes. Its food is principally fish, although other things are eaten by domesticated turtles.

Alligator farming is a successful Florida industry, which flourishes in places along the bayous and creeks that gridiron sections of the State. The alligator farmer requires little equipment to carry out his plans, but his task is attended with considerable danger, because domestication of the alligator is an impossibility. The 'gators are kept in captivity until two or more years old, when they are killed and their hides sent to the tanner.

An interesting fact in connection with the branches of farming described is that each is profitable. To the novice they offer small attraction, but to experienced men they have proved the high road to fortune.

The Schoolship

IT was back in 1843 that a staunch little corvette was launched at the navy yard at Washington, and they named her for a county in southern Maryland. She was a marvel of grace, and when put to the test proved herself worthy of the purpose for which she was built.

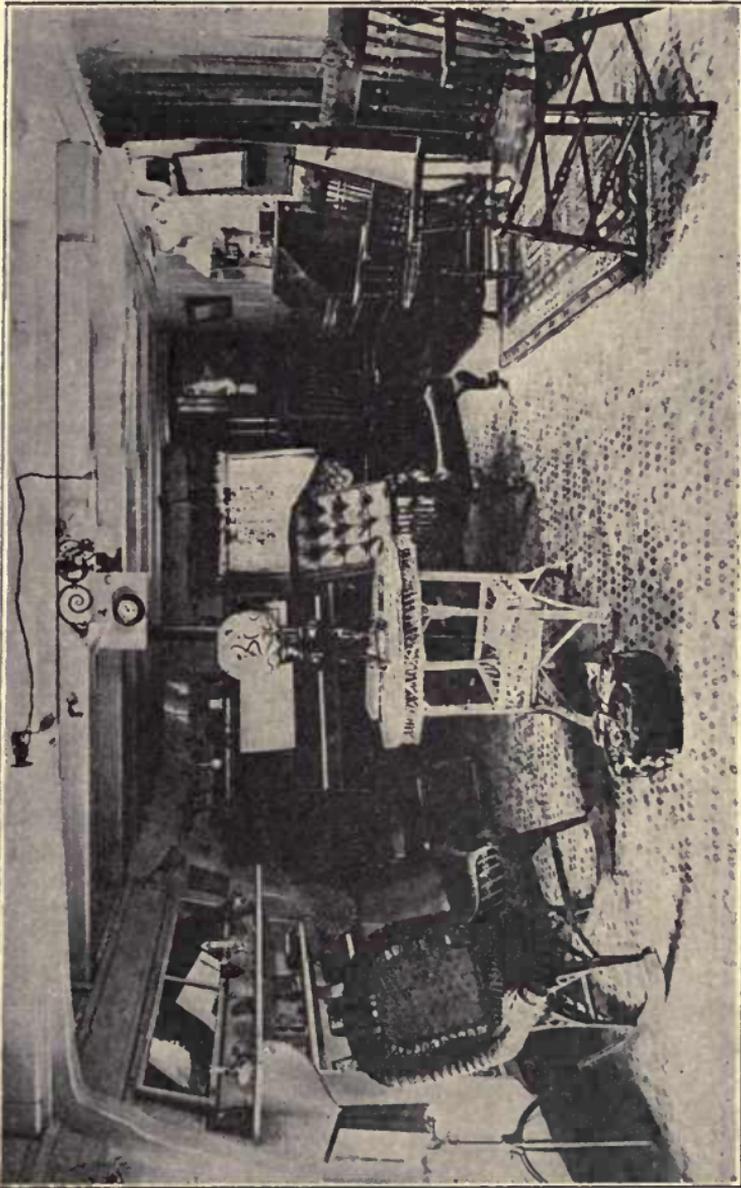
That purpose was to wage war upon the slave-traders, who still plied their nefarious traffic of carrying helpless negroes from their far-off homes to a strange country to sell them into bondage. They soon learned to fear the swift corvette and her sixteen thirty-six pounders.

But there was other work in preparation for her. When, in 1846, we declared war against Mexico, the "St. Mary's" was one of the blockading squadron; and later, in company with the Potomac and the Raritan, she captured the port of Tampico and landed troops at Vera Cruz.

After the brief contest that ended so disastrously for our little sister-republic, the sloop of war did patrol duty for many years along the Pacific coast. Here she was when the Civil War

was declared. These were not the days of steam; unlike the Oregon, the "St. Mary's" was kept at her post and did not round the Horn.

It so happened that toward the end of the Civil War the sloop, under command of Captain George M. Colcorasses, was at Valparaiso, Chili, when that port was threatened by a powerful Spanish fleet under Admiral Pinzon. Colcorasses was very active in protecting American citizens living there, and his name is indelibly stamped on the pages of the history of his adopted country because of his success, and because of his correspondence, now famous, with the Spaniard. It chanced that one day the "St. Mary's" was anchored in front of the business portion of the city and between it and the Spanish fleet. Almost immediately a boat was dispatched from the Spanish flagship and a curt note was delivered to the American commander, to the effect that it would be safer for him to change his anchorage, because the city was to be bombarded and the Spanish admiral would not be responsible for any damage she might receive. The prompt reply lacked neither explicitness nor force: The first words informed the Spaniard that Colcorasses was particularly well pleased with the place he had



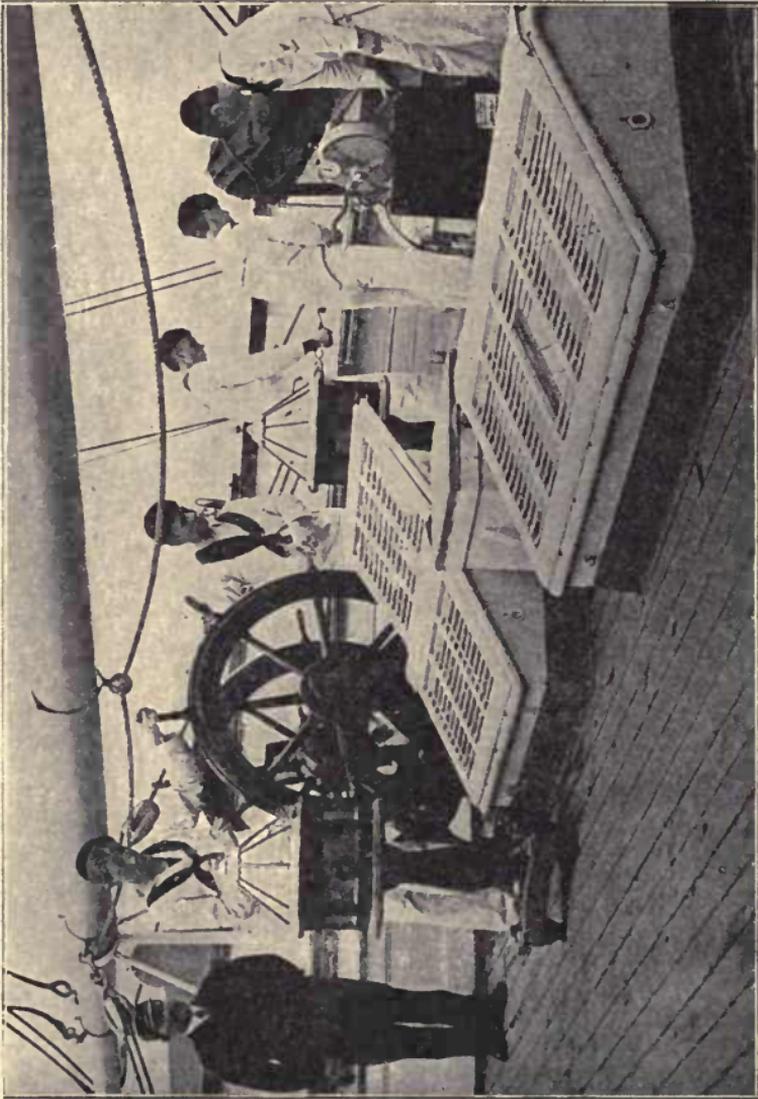
The Officers' Ward Room.

chosen, then followed: "In the event of a bombardment. . . . I beg you, sir, to have a care that none of your shot touch the hull of the 'St. Mary's.' I am perfectly aware of the weakness of my corvette, . . . but I beg, sir, to remind you that the flag that floats at her peak represents three thousand guns on the sea!"

Pinzon did not bombard Valparaiso.

In 1874 the "St. Mary's" was given by the nation to the Board of Education of the City of New York, and since that time has been a schoolship—which must not be confounded with a "training-ship," an entirely different institution.

The only right the United States now has is to appoint the instructor. The complement of scholars is one hundred, and an idea of their character may be gained from the fact that there are always among them sons of bankers and men of similar position. She is in no sense a reformatory, though many have this erroneous impression. In order to be accepted, a boy must be between the ages of sixteen and twenty, of average size and constitution, and free from physical defects. He must have credentials testifying to his good character; and he will not be accepted without



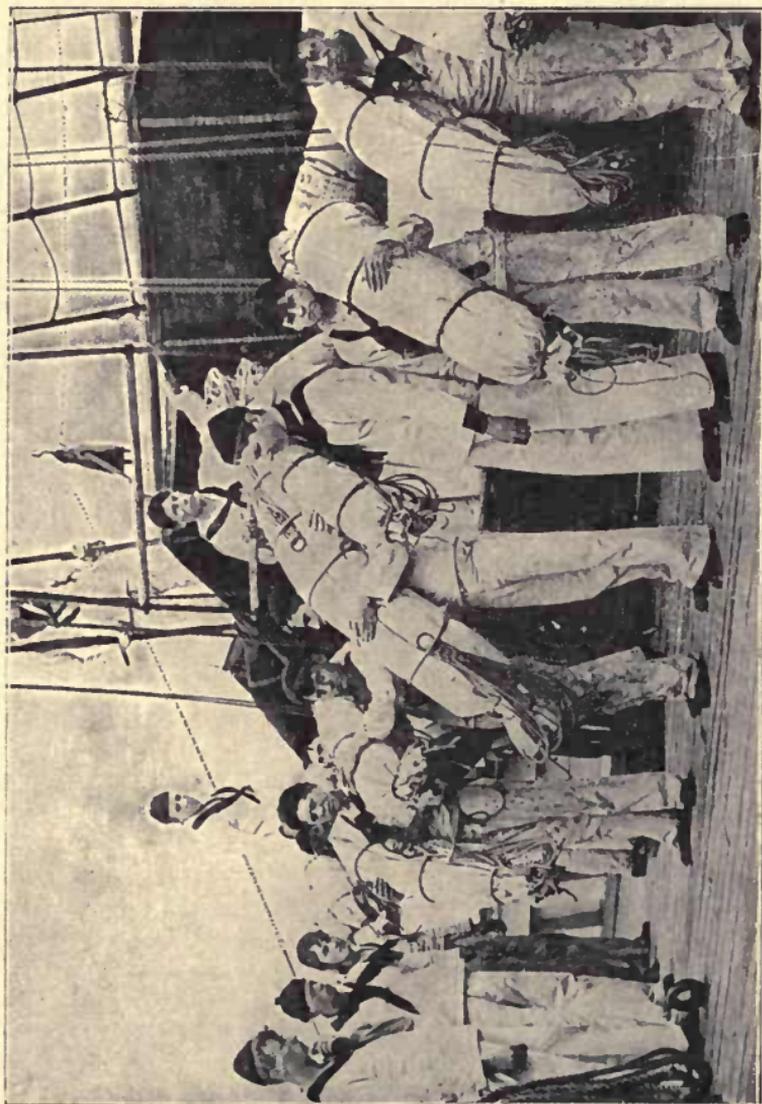
Studying the Compass and Lead.

the consent of his parents or guardians, or against his own desire. He must have some preparatory education and must be a resident of New York City.

The only expense involved is an entrance fee of twenty-five dollars—to pay for three suits of clothes, which are supposed to last him for the full term. Any boy can become a sailor by applying in writing to the chairman of the executive committee of the nautical school, or by applying in person on board the vessel when she is in port. In order to secure a certificate the student must complete two summer cruises and pass a satisfactory examination.

The "St. Mary's" is available for the poor as well as the rich. The winter school term ends on April 1, when there is a ten days' vacation, after which the students rig and prepare the ship for the summer cruise.

When at sea, the divisions of boys are arranged in two watches, which relieve each other at four hour intervals of deck duty day and night. Just at dawn there comes a long, piercing whistle, quickly followed by the hoarse voice of the boatswain's mate: "All the starboard watch rouse out!" Down on the gun-deck, where the

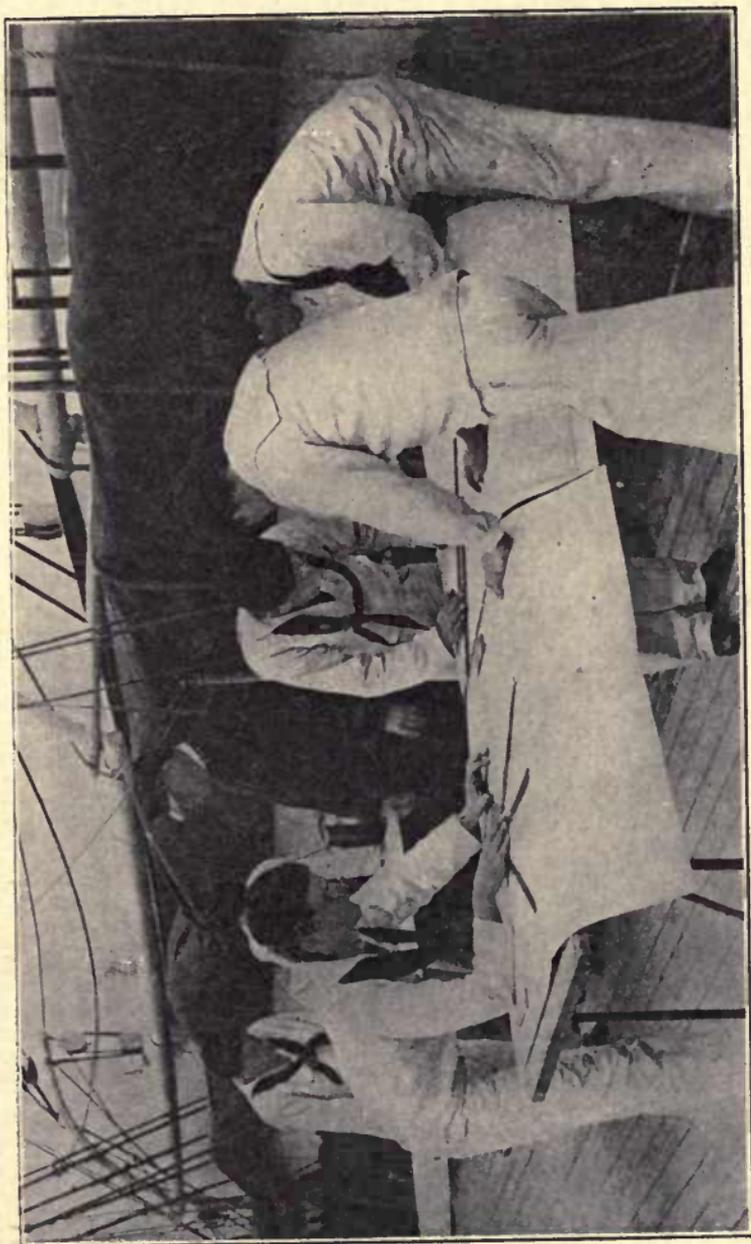


Bringing up Sails.

boys have been asleep, all seems confusion; but it is only seeming, for in an incredibly short time they have their hammocks lashed, carried up to the spar-deck and stowed away in the nettings, the wheel and lookouts are relieved, and the rest of the youngsters join their respective divisions. Meanwhile the port watch has gone below for three hours' sleep—that is until seven o'clock.

Now comes the order "turn to," for the morning watch is a busy one, and washing down begins. The decks are flooded, and soon they are covered with suits of "whites," the boys bent over them and scrubbing vigorously. The washing would scarcely improve laces, but it serves to keep the duck suits sufficiently clean. When these are "stopped" on the lines and "triced up" in the rigging to dry, the embryo sailors are ready for the bath—and there follows a half hour of royal fun.

At seven o'clock the port watch is roused, but does not go to work until after breakfast, when all hands turn to and clean up for the daily inspection. By half-past nine the vessel and the boys are "spick and span," for "seams" or bad marks mean extra work and all sorts of unpleasant things.

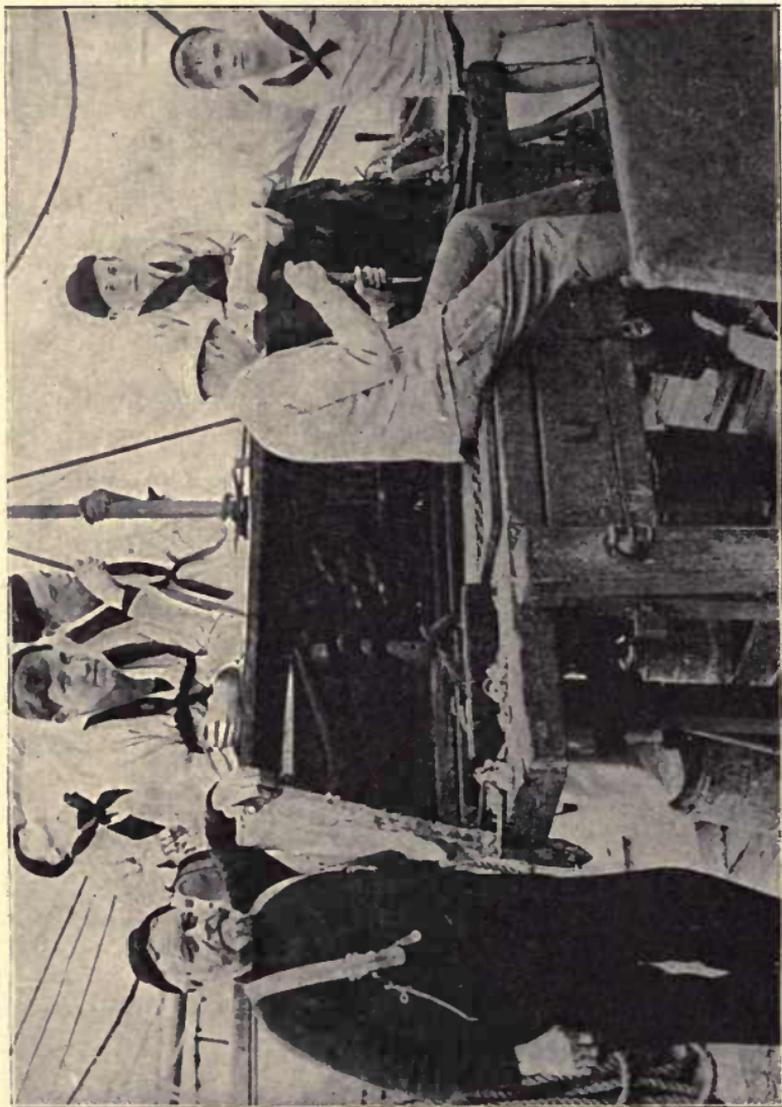


Studying the Construction of a War Vessel.

Meanwhile sick-call has been sounded, and those who have received slight injuries—inevitable in such a life—have gone below to consult the surgeon, who soon discovers any shamming and “makes the punishment fit the crime” with specially prepared pills. Between seven o’clock and breakfast, if the weather permit, the boys “shoot the sun,” securing altitudes to be worked out later in the day.

After inspection the routine is continued. In addition to their general studies the boys are taught to heave the lead, steer, keep lookout, work the ship, and set, reef, or furl sail as required. Boy-quartermasters are appointed, who attend in turn to the reading of barometers and thermometers, keep account of the ship’s run, write up the log book, and obtain a thorough insight into the duties which they will be called upon to perform should they rise to positions of officers in the merchant marine, for which the course is intended to prepare them.

Thus the work goes on, with never a chance for monotony, for, whether in calm or storm, there is always work for the boys to do. Of course there is a sufficient crew of experienced



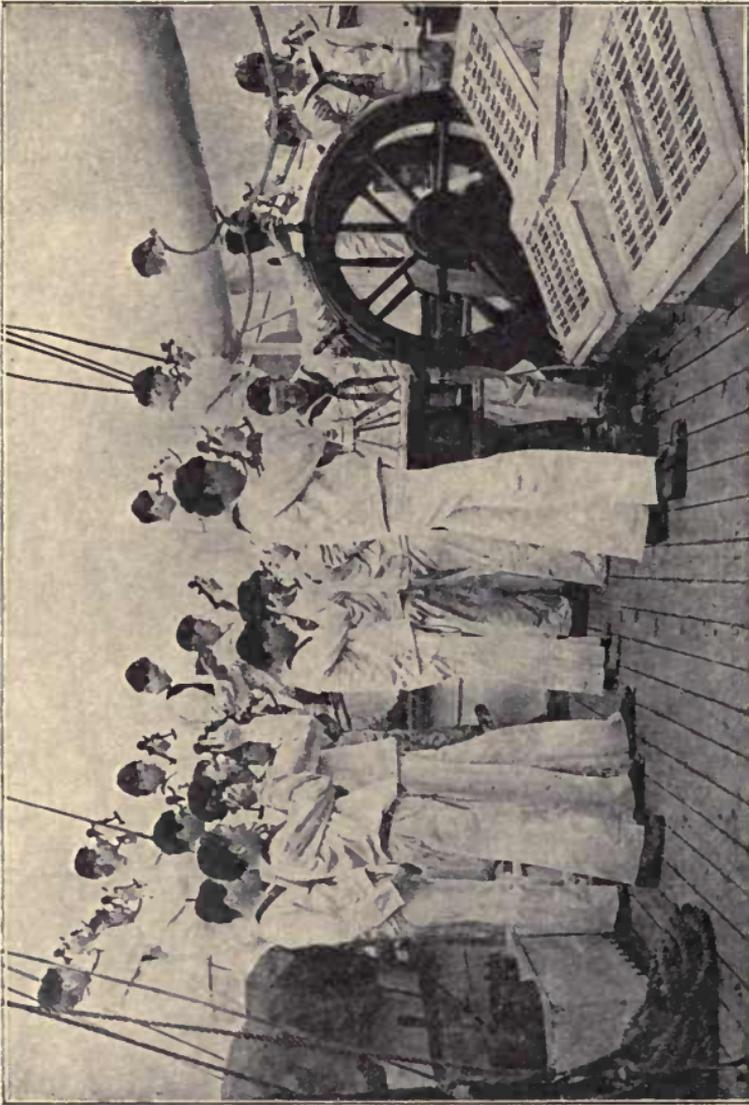
Taking Lessons from a "Ship's Carpenter."

sailors to manage the vessel in case of necessity, but for the most part the students are permitted to handle the ship. The trip is an education in itself, for many ports are visited, and whenever possible shore leave is given, but all the students must report at sundown.

In October of each year the graduating exercises are held. When a boy has finished his course he is competent to navigate a vessel. He understands dead reckoning and how to find the latitude and longitude by the sun, moon, stars, or planets. He also knows the duties of a seaman, is familiar with the rules of the road—in fact, is well equipped to follow his chosen calling.

There is a law requiring a vessel to be officered by Americans and to carry a cadet for every thousand tons burden, and this, together with the government rule giving preference to schoolship boys in the collier service, renders it a very easy matter for every graduate who chooses to do so to find a place where he can use what he has learned.

No matter to what high position they may



Reading the Quadrant.

rise, however, their thoughts turn with fond recollection to the days they spent on the "St. Mary's." The experiences they have had there will probably never be repeated. The days of sailing vessels are past—the days when the seaman used nature to conquer nature, when the safety of a vessel depended not so much upon calculation as upon skill. In those days the skipper who understood his vessel, the winds that blew over the sea, and the waves upon which he rode, held the tiller in his hand and felt the thrill of life, the joy and fear of power. How his heart leaped as the spray dashed in his face, when the wild winds whipped the seas and tossed the frail bark from wave crest to wave crest! Those glorious days the average seaman knows no more, for the vessel of to-day is a machine—but the boys of the schoolship know them still—and he will be a strange lad indeed, who does not finish his course better, braver, stronger, and happier for his experience!

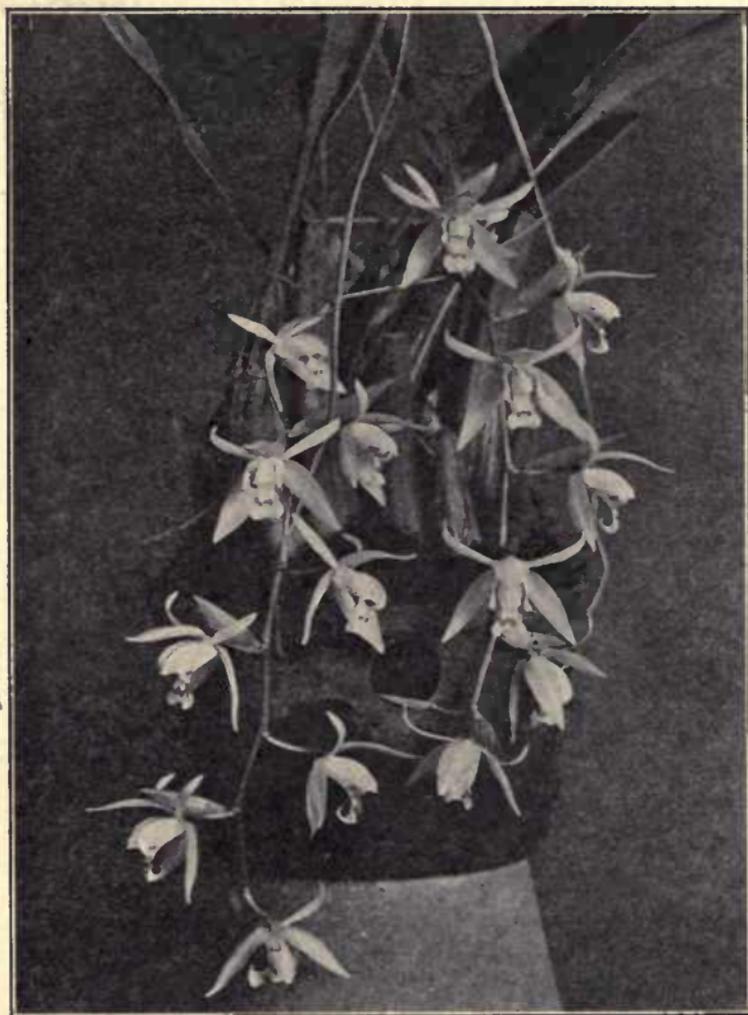
Orchids

THE fairies of the plant world, orchids are like some weird, strange fantasies of earth and air, scarce flowers, but more like winged blossoms of the sky. Delicate, perfumed things, filmy as my lady's laces, airy as her gossamer fan, they are yet energetic little members of society, propagating readily, their labellum, or lip, being particularly well suited for the visits of insects. The brilliant and bizarre coloring of the flowers makes them great favorites with hot-house cultivators, and, as the simple violet or the golden-hearted dandelion may be called the flower of the poor, the orchid is the blossom of the rich. Costly, rare exotics, they are plucked from their conservatory homes to wilt in the stifling air of the ballroom, most favored of all the bouquets which the débutante wears as she is launched into the maelstrom of society.

Writing of orchids in Hamilton Gibbons' charming book, Laura Jelliffe says: "Orchids are the nobility of the flower world. They stand in pur-

ple and gold, with all the shades between the faintest gleam of pearl and the intensest crimson violet. Like scions of a noble race, they have a curiously devised heraldry, and may be known by their horns and antlers and queerly fashioned crests. Like the lords of feudal days, they are served by many, who in serving serve themselves, for the insects that fetch and carry their pollen live on their lord's bounty, in the form of nectar. Just as there is more ceremony connected with taking a meal in a baron's castle than at a farmhouse, so there is more ceremony about an orchid's guests. The golden-rod is swarmed with striped bugs and flies, but the orchids have their one or two bidden guests who come as though specially invited. The moths which come to an orchid from any particular part of the world are born to feast from its particular cups. Their coiled tongues are of exactly the same length as the spur which holds the nectar, and their heads are adapted to the space between the pollen sacs."

It is a curious fact that orchids can not be reproduced from their own seed. They are an example of the reproduction of plant life by cross fertilization, a fact discovered by Darwin. Their formation has a great deal to do with this, and it

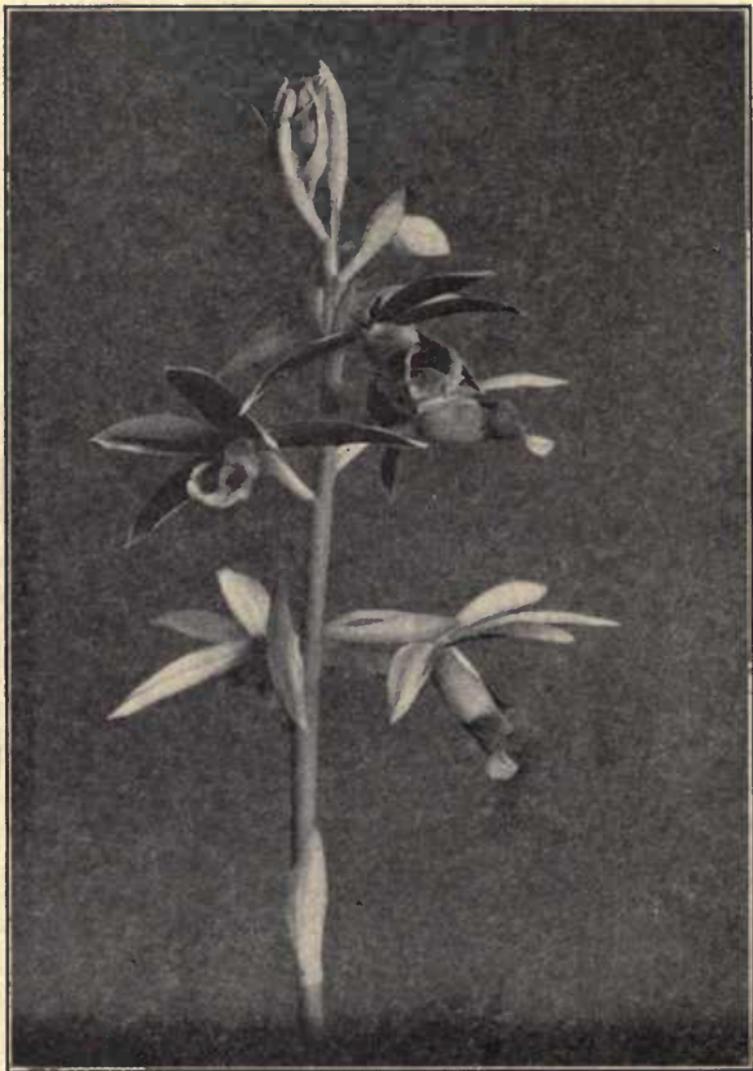


The Fairy Orchid.—Coelogyne flaccida.

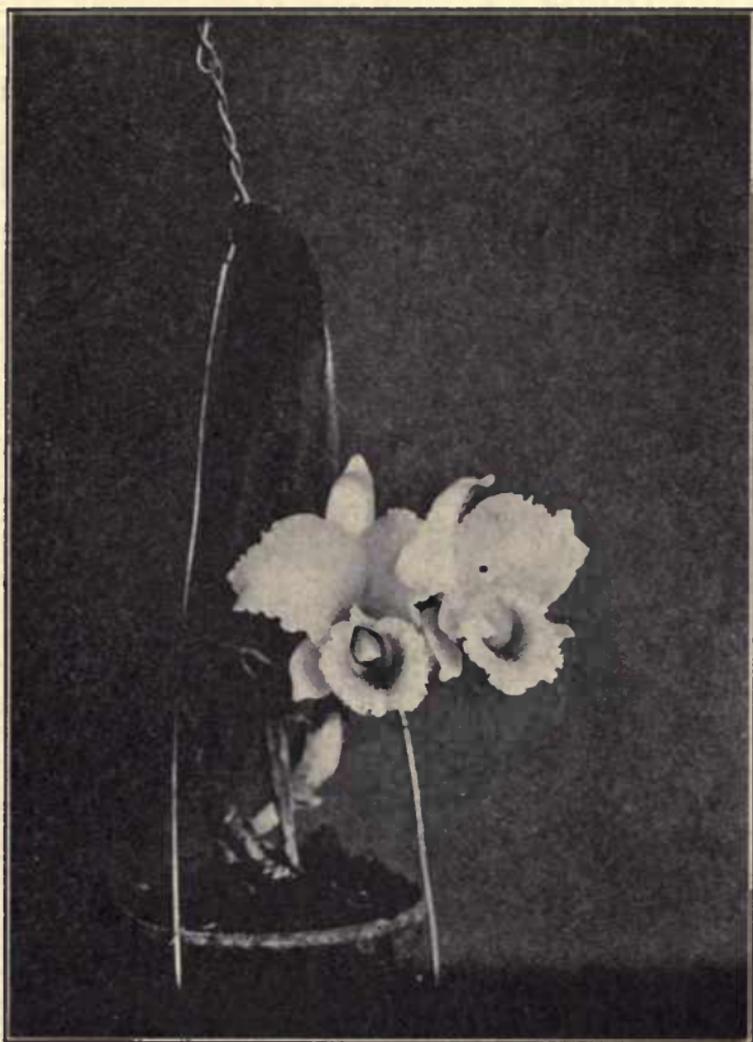
is very curious to study the manner in which reproduction takes place. One stamen of the orchid has no pollen upon it, but is generally spread out in an umbrella fashion above the other stamens to keep them from the rain or dew. The pollen is not dry and dusty as is so often found in flowers, but is a pulpy mass, sticky enough to adhere to an insect which brushes against it as he passes to seek nectar from the heart of the flower. The brilliant veins and spots of the petals at the mouth of the labellum are nature's dainty adornings wherewith to attract the bee or moth, and as he passes into the flower he brushes the stigma, where he brushes off against a tiny comb of little teeth, the pollen which he has acquired from the last flower he visited. Then burying his head in the cloying sweetness of the orchid, he squeezes in under the stigma-laden pollen and acquires a fresh dust of pollen upon his handsome coat. This he can not brush off in this flower upon going out, because the orchid closes up the opening where her serrated comb lies and forces him to go out another door, so that he takes with him the pollen acquired from her, leaving it with the next flower from which he drinks. He is a gay rover. is that handsome buzzing old bee, "who has pow-



The Guome Orchid.—Dendrobium Nobile.



The Bird Orchid.—Phaius Grandiflora.



The Short-stemmed Orchid.—Cattleya Schroderae.

dered his helmet with gold," and he is a special favorite with the proud orchid, whether she is the fairy-like *Coelogyne Flaecida* or the gnome-like blossom of the wood, *Dendrobium Nobile*, peering from behind rough leaves and rougher stems, like quaint little brownies from the giant trees of a Norse forest, or the bird-like *Phaius Grandiflora*, queen of the tropic forest where,

"Fringing the stream at every turn,
Swing low the waving fronds of fern."

There are nearly ten thousand varieties of orchids, of which seventy-five species are found in the United States and Alaska, but the tropic climes produce the greatest variety. The prevailing colors are rose, violet, lilac, yellow, white, and green, and in many cases the stems are saprophytes and have become brownish in hue. Among these are the happy-go-lucky little coral roots, the degenerates of the proud orchid family, leafless, uncanny creatures, beggarly nomads of the woods. Linnaeus named such *Corallorhiza*, from their coral-like root stocks, which exhibit remarkable chemical properties. Rather than beggars these should perhaps be called members of the leisure class, living on dead or dying wood under the ground, nourished by



The Azalea Orchid.—Cattleya Trianae.

no effort of their own, cousins german to those brilliant orchids which garner life from air and moisture, as they are caught in the snare of the fowler in some hothouse or conservatory, aerial spirits, their tangled roots hanging down to absorb water.

To grow orchids it would seem that only a little care must be taken. The roots are placed in pots filled with moss or fibrous peat; others are put in baskets or fastened to blocks of wood or cork, with a little moss around them to retain moisture, and suspended from the roof of the hothouse. The air must be constantly hot or humid, since in their natural environment the plants are exposed to both a wet and a dry season.

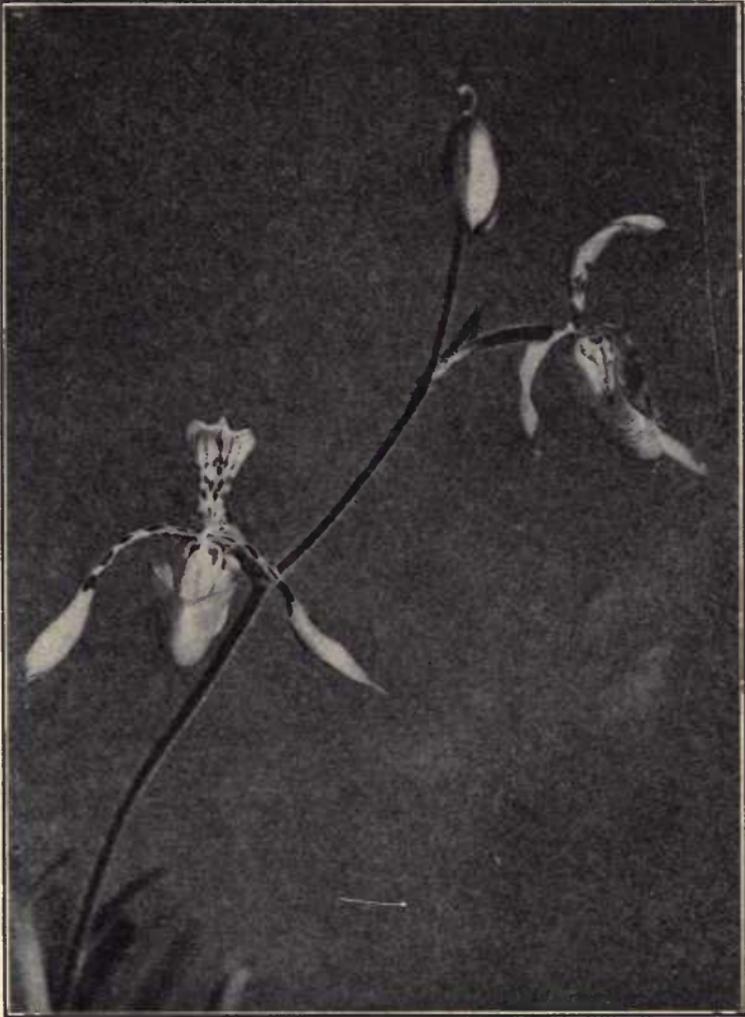
The leaves of the orchid are generally ugly, long, and sometimes rough, but the flowers are remarkably interesting. Many of them are pure white, large and striking, with the labellum well opened, and the spike, which is a continuation of the labellum, not well developed. Others have an immense spike or spur, at the bottom of which the nectar is situated. In a Madagascar orchid the spur grows to be ten inches long. A curious thing about this flower is that its stamens, instead of being distinct as in the rose or lily, are often



The Spider Orchid.—Cypripedium Roolschildianum.



The Lady Slipper Orchid.—Cypripedium Insigne.



Cypripedium Haynaldianum.

fused into one central mass called the column. The fruit of the orchid is a capsule filled with seeds as fine as sawdust, and there are so many of them that a botanist once estimated that a single capsule of a maxillaria contained more than one and a half million seeds.

Orchid plants are sometimes bloated and distorted, looking like coarse bulbs, but as a fair face attracts, no matter how plain the gown, orchids are generally admired despite their unattractive leaves.

In some varieties, as the *Cattleya Schroderae*, the stems are very short, and when growing, the plants have the appearance of deformity, but the flowers plucked are beautiful. Even handsomer are the *Cattleya Trianae*, growing straighter, with more slender leaves and the open portion of the labellum exquisitely lined in color. The flowers of these genera, the *Cattleya*, are pure white, flecked in color; they are not unlike an azalea in outline, and are found in great quantities in Mexico and Central and South America.

Of all the orchids, only the Salep and the Vanilla have a commercial value, except from their cultivation as ornamentals. The vanilla is one of the most interesting of orchids. A native of



Cypripedium Luridum.

the tropics, its seedlings germinate in the earth and climb as high as thirty feet on trees, to which they cling by their rootlets. The stem is four-cornered, the leaves long, the fragrant flowers grow in spikes, the fruit is a long pod. The *Vanilla Planifolia* is that from which the bean is used in commerce, and it grows all over South America, the West Indies, and Mauritius. It bears a crop in three years, and bears steadily for thirty or forty years. For the best vanilla, ten to fifteen dollars a pound is obtained, and so hardy are these orchids that they prove a very lucrative crop. From the vanilla is obtained the most delicate of flavorings, and one more used in the realm of cookery than any other.

Among the orchids known by their common names, and not perhaps as orchids at all, is the moccasin flower, whose real name is the *Cypripedium Humile*, and this is an old friend indeed. *Cypripedium* comes from the Greek word *Kypris*, a title given to Venus, goddess of love and beauty, and *pes*, a foot, and it was given to this orchid because its toe-like pouch looked like a shoe or slipper. Venus' Slipper easily came in Christian lands to be called Our Lady's Slipper, and the Puritan maids of Colonial days named it Mocca-



Cypripedium Sallerii.

sin Flower, from the moccasins of the Indian braves who roamed the woods where the dainty orchid grew. A variety of this orchid has been termed *Calypso*, and a poet has told a pretty story of it in the lines:

“Calypso, goddess of the ancient time
 (I learn it not from any Grecian rhyme,
 And yet the story I vouch is true),
 Beneath a pine tree lost her dainty shoe.

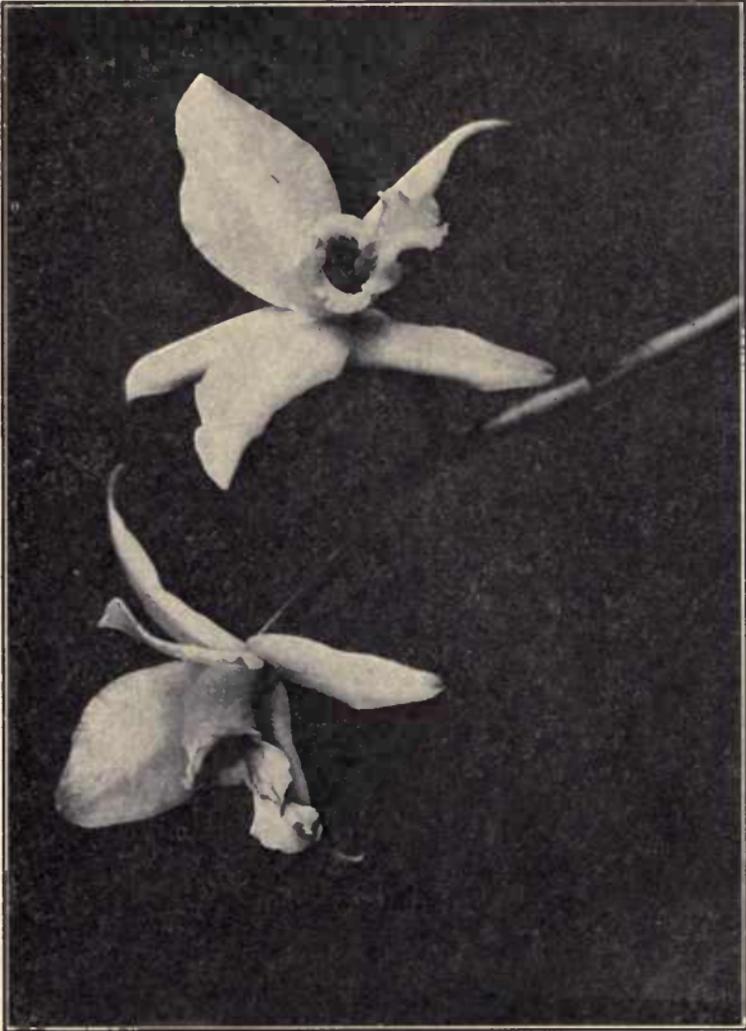
“The goddess surely must have been in haste,
 Like Daphne fleeing when Apollo chased,
 And, leaving here her slipper by the way,
 Intends to find it on another day.”

Other common orchids are the Lady's Tresses or *Spiranthes Cernua*, Snake Mouth, *Pogonia Ophioglossoides*, Grass Pink, *Calopogon Pulchellus*, and the Rattlesnake Plantain, which grave orchidists tell us is *Goodyera Repens*.

We have often seen the Indian Pipe, or *Monotropa Uniflora*, a charming plant, growing cannily in northern forests, where

“Humbly it wears its robe of snow
 When summer gives its buds release,
 And Indians called it long ago,
 The calumet, or pipe of peace.”

We have met many of these beauties on our country rambles; but failed to recognize them as anything remarkable, not knowing the stately

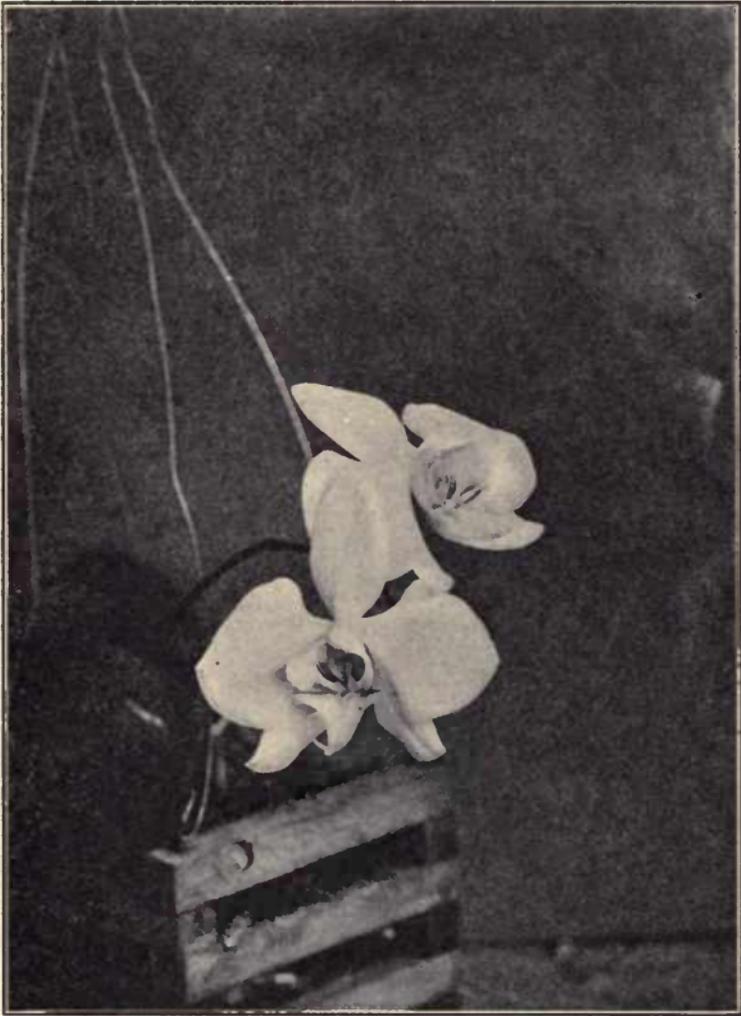


The Star Orchid,—Laelia Anceps Stella.

names with which these genial friends were burdened.

We did not realize either what grand connections they had! Had we only known that the moccasin flower which we played with and threw away was first cousin to the wonderful *Cypripedium Roolschildianum*, we might have treated it more respectfully. There is much in a name, and while a rose by any other name would smell as sweet, still a proper title engenders respect. The *Cypripedium Roolschildianum* is an evil-looking beastie, almost like a striped spider, but the *Cypripedium Insigne*, its cousin of Nepal, is a charming little creature, a Lady's Slipper with her Sunday frock on, all pink and white and gold in a harmony worthy of a Worth creation. Japan boasts another cousin, the *Cypripedium Debile*, a bloom as quaint and charming as are the little brown people of Nippon, and others of this family of terrestrial orchids are the airy, spotted *Haynaldianum*, the rich-hued *Luridum*, and the brilliant, striking *Sallerii*, with its delicate-hued pouch and spur, and its gorgeously spotted petals flung wide open to the kiss of the sun-god.

Wonderful freaks of nature are these exotics, whether *Phalaenopsis Amabilis* or *Laelia anceps*



Phalaenopsis Amabilis.

stella, or any other of the strange varieties, seeming to blend within themselves the properties of sky and air, of fire and dew, of insect and flower, useful because serving in the Eternal Order to satisfy man's deep, inherent love for the beautiful.

MARY F. NIXON-ROULET.

Artificial Ice

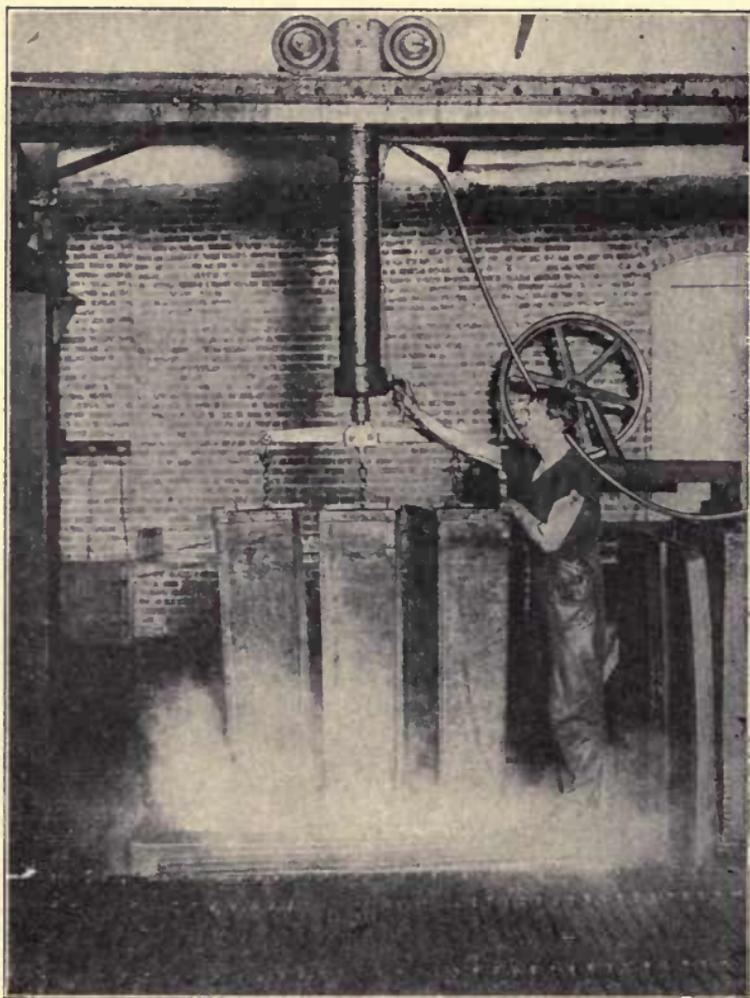
IN our minds we always associate ice with winter—with great, glistening surfaces that cover the rivers and the lakes, with blustering winds and skimming feet, with the sizz—z—z of the ice yacht and the ring of skates; yet nature itself proves how inaccurate we are. In the United States, and in other countries too, there are caves and mines where natural ice abounds in summer as well as in winter. Within these caves the atmosphere is at all times lower in temperature than the degree at which water freezes. When the ice and snow that have crested the rocks above them throughout the winter season begin to melt beneath the rays of the summer sun, the water, pouring down into the caves, is quickly deprived of its heat and becomes ice again. Just as strongly as nature abhors a vacuum, it loves and seeks equalization of temperature.

“Cold” is a sensation, not a condition, and the term merely describes a low degree of heat.

Freezing is the process of absorbing heat-units and carrying them away from the substance frozen. Whether or not the ancients were familiar with the fact that the essential feature of making ice is the absorption of the latent heat from water, whether or not they were acquainted with the scientific principle involved, it is certain that at a very early day ice was made by semi-artificial means.

In Egypt and India it was the custom many centuries ago to set out water in jars or clay during the cool hours of the night; with the result that in the morning a supply of very porous ice might be secured. In Greece at the beginning of the second century before Christ we find the same custom in vogue; and while Pliny gives to Nero (first century B. C.) the credit for the discovery of the method of first boiling the water, it would seem that even this process was known as early as the fourth century before Christ, for Aristotle, who lived at that time, describes a method in which water was first exposed for a time to the rays of the sun and later to cool air.

In 1550 A. D. the refrigerating qualities of saltpeter were first made known to the world by the Italians, Blasius Villefranca, a Spanish physician



Taking the Cans from the hot Dip Tank, where the Ice is Melted from the Sides so that it can be taken out of the Cans.

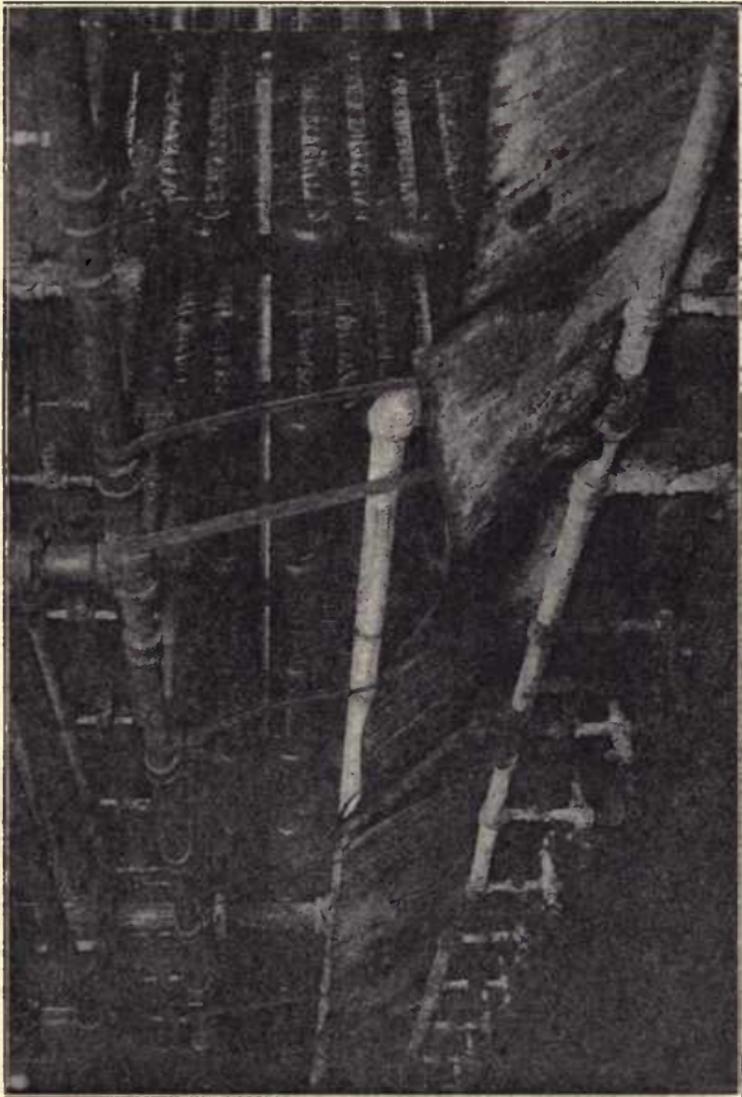
practising in Rome, claiming the merit of the discovery.

In the beginning salt was used in combination with water and for cooling purposes only. Liquids

were poured into long-necked bottles, and these bottles were immersed in receptacles filled with water, to which saltpeter was gradually added, the bottles being meantime rapidly revolved. In 1644 Father Cabens, a Jesuit, claimed that he had produced a block of solid ice in the same way, but since that time it has always been found necessary to use ice or snow in combination with the salt to accomplish this. The last method was discovered in the early part of the seventeenth century and is mentioned by Lord Bacon (in 1622).

It was not until the beginning of the nineteenth century that artificial ice became an important article of commerce. In 1805 Frederick Tudor of Boston began to manufacture it for sale, thus becoming the first ice dealer known to history. In the course of the next few years he introduced his product into London, then throughout Great Britain, and finally into Spain, earning the title of "The Ice King of the World." In 1820 it was sold in appreciable quantities in the United States, but it did not become popular in England until 1845.

Space will not permit us to describe, step by step, the improvements made in ice machines.



Steam Condenser.



Charcoal Filters (large). Blotting-paper Filters (small).

With a hasty glance at some of the earlier ones, we must hurry on. In 1755 a machine of reasonable practicability was constructed; others followed, each an improvement upon the former, and much

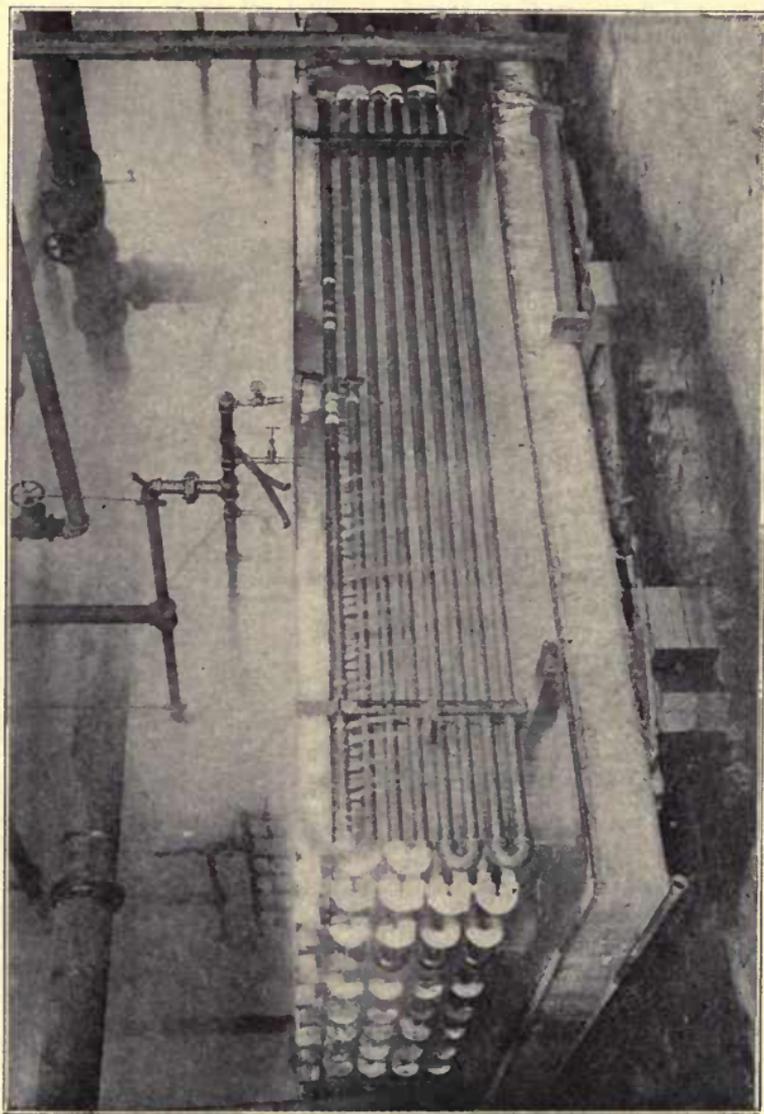


Lifting Cans by Compressed Air Lift from Freezing Tank.

attention was given to experimenting for the purpose of discovering better refrigerating agencies. In 1810 the affinity that sulphuric acid has for water was discovered, and applied to the

manufacture of ice. Notwithstanding the interest betrayed in the industry, however, it was not until 1834 that a machine really practicable for the manufacture of ice in commercial quantities was patented. In this, ether, which still finds favor, was the refrigerating agency made use of. In all essential features the process closely resembled the one in use to-day—although, of course, the method was crude.

Ammonia was first used in a machine patented by a Frenchman, Ferdinand Carré, in 1858. This medium has survived all the others. Since the introduction of Carré's machine, every year has seen a wonderful advance in the output of artificial ice; and within the past twenty years the increase in the industry has been phenomenal. To-day, establishments are to be found in every quarter of the globe and in the most unexpected places. The modern ice plant is a maze of intricate machinery, a glitter of shining rods and glistening wheels; and only here and there throughout its extent is it evident to the onlooker that ice is being manufactured in large quantities—to the uninitiated the establishment might just as well be a power-house or a steam-plant of any description.

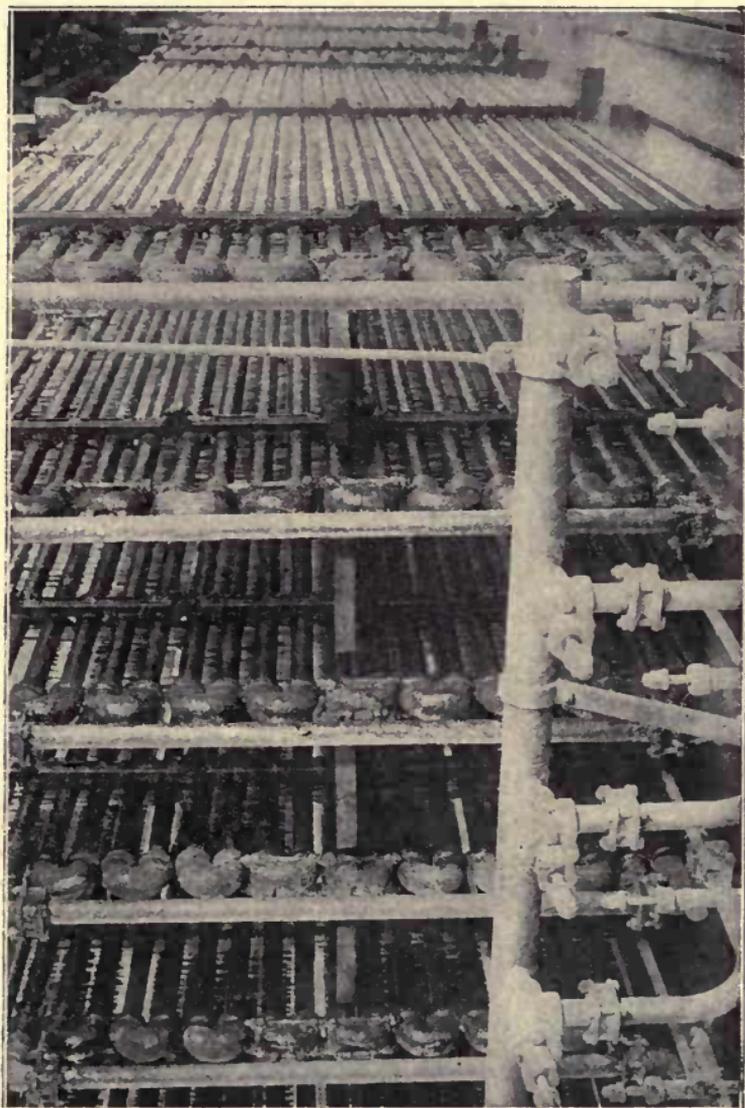


Old Steam Condenser.

Without attempting to trace the course of the water from the well pump to the loading platform or to describe the ingenious machines, many of which are admirably represented in our illustrations, let us take a general glance at the modern process.

We have said that the making of ice consists in taking from water a sufficient number of heat-units to reduce it to the degree of temperature at which it becomes congealed (32 deg. Fahr.). The only means by which heat can be removed from a body is by bringing it in contact with a body colder than itself. Various agencies, each freezing at a much lower degree than water, have been used from time to time, but ammonia is admittedly the best that has yet been discovered. This can be so manipulated that it becomes cooler than water; then, when its mission has been performed, passed on through the system, and deprived of its acquired heat it may be used again. Thus it acts as a sponge, absorbing heat at one point and releasing it at another. The process employed involves compression, condensation, and expansion.

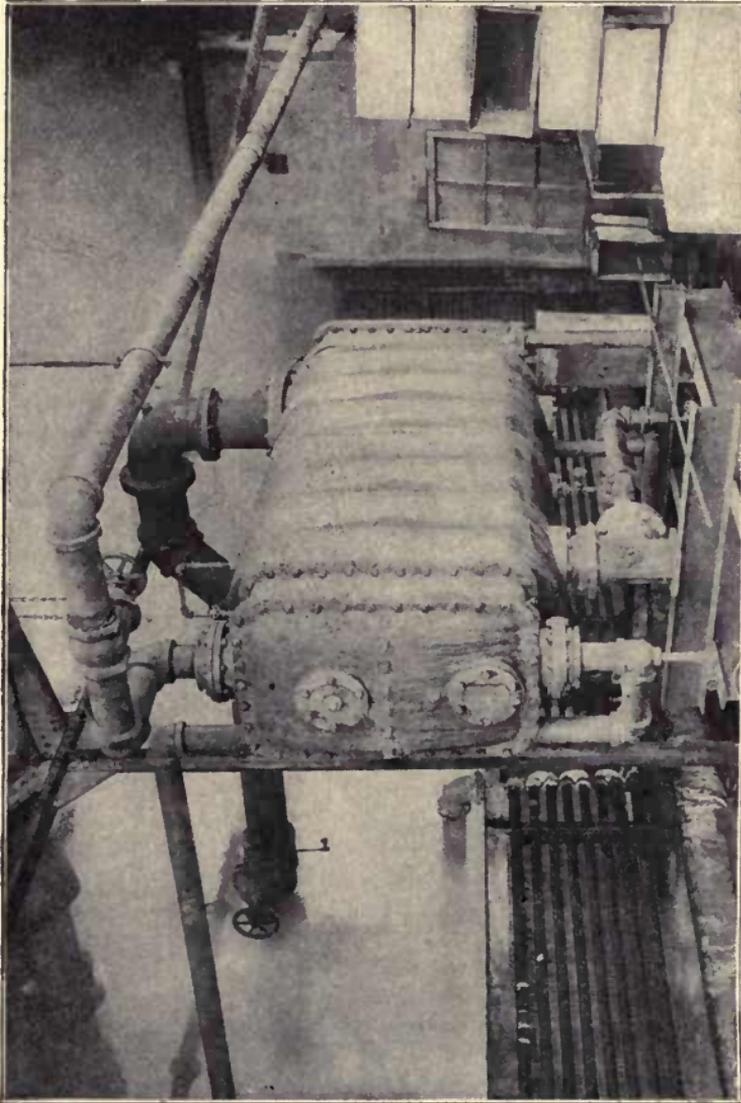
In the first operation of the cycle the anhydrous ammonia, that is, the gas freed from water, passes



Ammonia Condensers.

into the powerful compressor, whence it is forced into the condensers. These are coils of pipe either sunk in, or constantly sprayed by water, and within them there is a constant pressure of from 125 to 175 pounds per square inch. In the condensers the ammonia liquefies and parts with its heat, which is taken up by the water flowing over the pipes. The resulting liquid flows, through a minute passage controlled by a stopcock, into the expansion side of the plant.

The expansion, or cooling, side consists of a coil of pipes similar to the condensers, though used for the opposite purpose. From them the compressor is constantly drawing its supply of gas, and the pressure within them consequently is greatly reduced, averaging from ten to thirty pounds to the square inch. The liquefied ammonia entering these coils through the minute opening, suddenly relieved of the high pressure necessary to keep it in liquid state, develops a strong affinity for heat and begins to boil, drawing the necessary heat from the surrounding substance, whatever it may be—air, brine, or water. This operation causes the evaporation of the ammonia, which returns to its original gaseous state, cooling



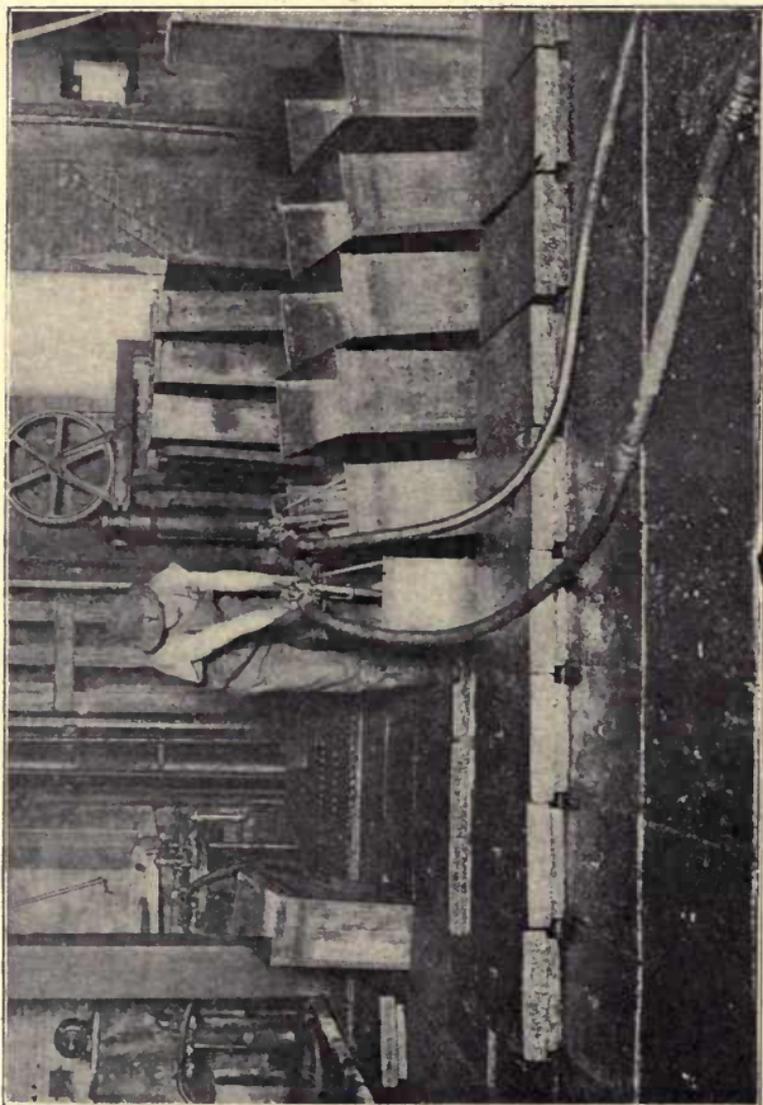
Condenser, where the Steam from the Filtered Water, after going through the Boilers, is condensed back to Water.

the air or the brine or freezing the water in contact with the coils.

Whatever the purpose of the plant the substance in immediate contact with the expansion coils is brine. If refrigeration is sought, this brine is pumped through pipes and channels circulating through the various rooms to be cooled; the manner in which it is used for making ice will be described further on. The gas from the evaporating coils is sucked into the compressor, and again goes through the same cycle, losing so little in its course that when a plant is properly installed one charge of anhydrous ammonia is sufficient, without increase, for a number of years.

There are three systems of making ice in general use to-day, ammonia being the refrigerating agency in each instance: the removable can system, the plate system, and the stationary cell system.

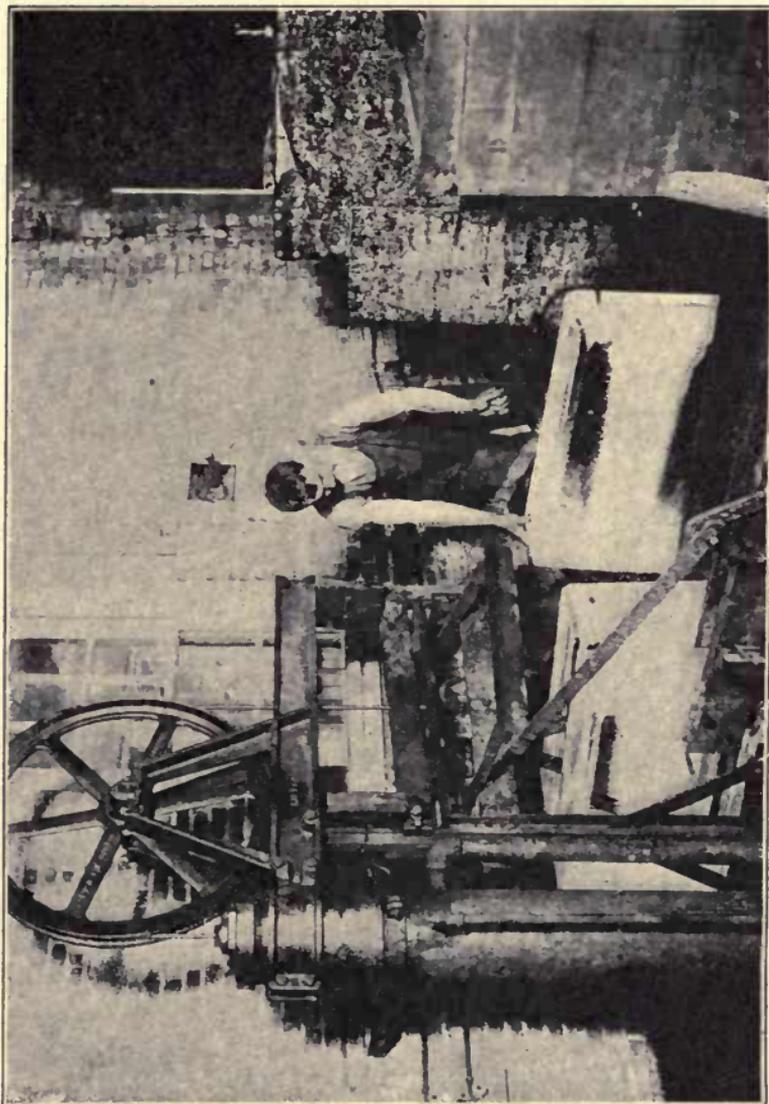
The first of these is the one usually employed. The evaporating coils containing the compressed ammonia are located in a tank filled with brine, which is kept below the freezing point through their agency. In this brine galvanized iron cans filled with water are immersed. In the course



Filling the Cans with the Water that has been Steamed, Condensed, Reboiled, and Filtered four times. Automatic in cutting off supply of Water going into Can.

of time, the period varying according to their size, each can produce a solid block of ice. One after another they are lifted from the tank, sprinkled with or dipped in tepid brine to release the ice, filled with water again and returned to the tank. The process is thus continuous. There are some machines which are capable of producing five hundred tons of ice each in the course of twenty-four hours.

In the plate system, in which the pieces of ice weigh, as a rule, one or more tons each, the evaporating coils are inclosed in a hollow plate of boiler iron filled with brine, or in a separate tank attached to this plate through which the cooled brine is circulated, and the plate immersed in a tank of pure fresh water. Ice forms on each side of it, and gradually two sheets are built up. When these have attained the proper thickness the brine is drawn off, the circulation of ammonia stopped, and tepid brine is poured into the plates. The last operation loosens the sheets of ice, which can then be lifted from the tank by means of cranes and cut in pieces as desired. Sometimes these boiler plates are bolted directly to the evaporating coils. In this event only one sheet of ice forms on each, but several can be placed in



Putting Ice on Automatic Elevator to lower into Storage Room.

one tank. No matter what the system employed may be, there are always several tanks in a large plant, so that the manufacture can be continuous.

In the stationary cell system, cells with hollow sides and bottoms take the place of cans, and the process is practically the same as that employed in the plate system. When the ice is removed, it may be sent at once to the loading platform, or it may be kept for weeks in the storage room, which is artificially cooled. Lack of transparency in ice is due to the presence of too much air. Agitation during freezing has been found efficacious in securing clearness, and so has the method of freezing at a comparatively high temperature. Both of these methods were found to have serious drawbacks, however, and after much experimenting the present process was evolved. In these days a thoroughly modern ice plant is equipped with apparatus for distilling water under exclusion of atmosphere. The result of this extremely effective method is the production of ice that is not only serviceable, but pleasing to the eye as well.

While ice may continue to remind us of winter, while it may still bring to our minds pictures of the invigorating scenes we have witnessed when



Taking the Ice into the Storage Room.

the natural product was being harvested, the pleasant hours spent upon the lakes and rivers, the long leaps over the holes made by the ice-men's saws, we can not but rejoice that we are no longer dependent upon the fitful season for our supply. Artificial ice has been a boon to the world; commerce, agriculture, the sick-bed, and the hospital, all have been inestimably benefited by the limitless production of the greatest preservative with which nature has endowed mankind.

Fox-Hunting in America

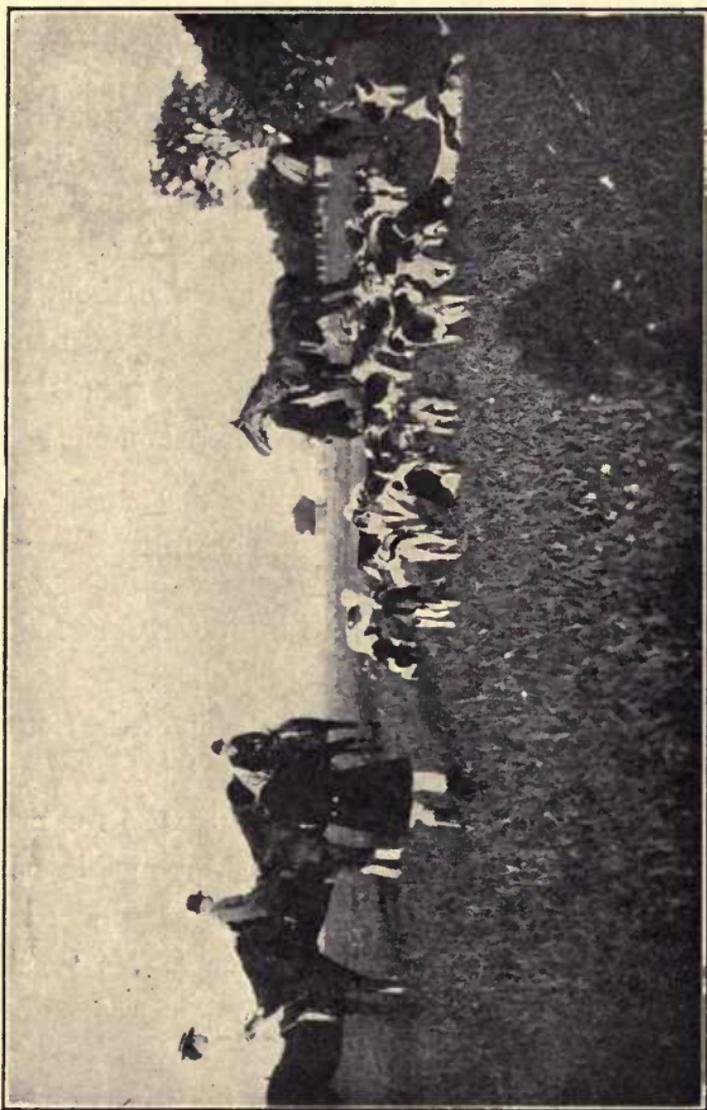
EVER since the time when it was George Washington's custom to make a daily inspection of his stables and kennels at Mount Vernon, fox-hunting has been a cherished joy in America. Long before that day the fields and covers of great Southern estates resounded with the "gone away" that spurred horse and hunter to action. Persons who refer to the present as the first generation of fox-hunting have in mind only the development of this feature of sport in the North. In the South the fox has been hunted for one hundred and fifty years.

If it still exists, the brush of the first fox-hunt is held in England. Tradition has it that the original pack of fox-hounds was kept by Lord Arundell, sometime between 1690 and 1700. However that may be, this sort of hunting was in full cry in 1727, when the Belvoir pack, famous in English history, gained prominence. By 1791 fox-hunting had obtained a high place in England, and sometimes reached a degree of

luxury. For instance, John Archer, widely known at the period named, traveled to different fox-hunts with an enormous cavalcade. There were several out-riders, and an escort of men armed with blunderbusses. Archer journeyed in a phaeton, snugly wrapped in a coat lined with swansdown. His wife and his servants followed in chaises and coaches, while hounds and horses in cloths of scarlet trimmed with silver brought up the rear.

Occasionally one hears fox-hunting in America called a fad. The fact is that its popularity in this country has gained so steadily that to-day the United States leads the world in the number of events which center about the pursuit of the fox.

In England, owing to changed conditions, fox-hunting is waning, although several hundred packs of hounds are still hunted. It is true that on this side of the Atlantic, hunting the wild fox sometimes gives place to drag hunting, but the practice in principle continues with unabated fervor. Drag hunting means to follow the trail the fox has made to his kennel, or more often a trail created by the use of an anise seed bag. The South hunts almost entirely in the old-

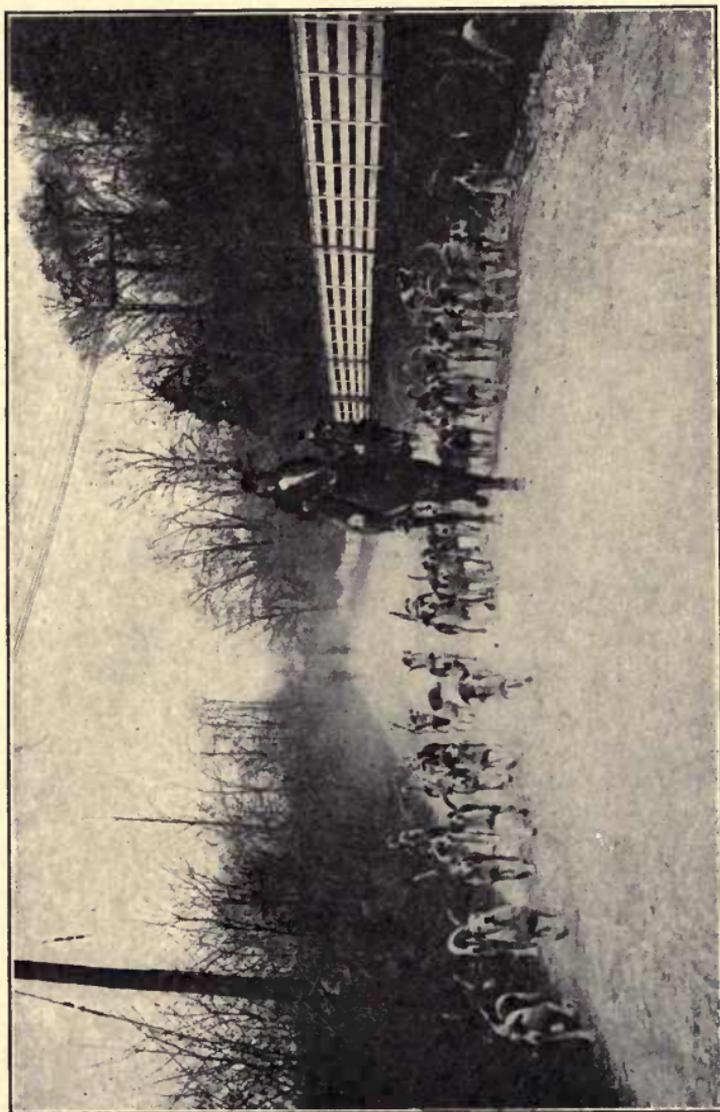


A Run of the Monmouth County Athletic Club at Newport.

fashioned way, but drag hunting is yearly becoming more popular.

Fox-hunting at present is distinctly an Eastern and Southern sport, so far as the United States is concerned. As yet, it has found no place in the West, although the prediction is freely made that the ensuing five years will witness a marked change in this regard. So it has come about that the hunting clubs in the first two sections named make the fox their centerpiece. Most of these clubs are active, although now and then one hears of an organization like the St. John's Hunt Club in a South Carolina parish, which, although its inception dates back one hundred and six years, has yet to record its first hunt for four-footed or feathered game.

Christmas, the chief festal season of the Southern year, is and has been for more than a century the time when in the South the fox must husband his strength and sharpen his wits. Should he be started in the open, a good run is had, often with a kill, although if fortune favors the fox he may escape to the mountains. Here, in some clearing where the wind cuts like a knife, or in a thicket of frosty pines, the hunters meet and wait for a signal from the



Meadowbrook Pack going to the Fields.

pack. Sometimes the hunters dismount to rest their horses, and if it is very cold a fire is started, the horses being sheltered behind ledges of rock or vine-hung thickets.

Perhaps several hours pass, and then there sounds a long drawn note that sends the hunters to saddle in a trice. Another moment, and the pack streams along the new-found scent, sounding its call as it goes. The horses gallop down a mountain side so steep and rough as to seem almost impassable. Long ledges of rock, and boulders that jut up behind a clump of trees, obstruct their progress. There are treacherous gullies filled with dead leaves, ravines torn out by mountain torrents, rotten logs and tangled vines. Taking all chances, the riders spur on, though the spur is almost needless, until finally open country is reached. If the quarry is still afield, either the brush or defeat is near. More often it is the brush that the fox has gallantly carried many a mile, only to surrender it at last to a foe who knows no mercy.

In some sections of Virginia, fox-hunting, in modified form, is conducted on about the same plane that ruled before the Civil War. In general, however, it is on a different scale. Farmers who



The Hunt takes a Fence.

love the sport keep a few hounds and gain much pleasure thereby. Throughout the State hunting differs. In the sandy pinewood sections there is little of either jumping or galloping, and gray foxes are most common. In the Piedmont section, the red fox is in evidence, and he will give the stoutest hound and the longest-winded horse all they want to do.

In the North, fox-hunting is frequently called cross country riding. The pioneer organization dates back thirty years, when F. Gray Griswold established the Queens County pack, and W. Austin Wadsworth, the Genesee Valley hounds. Since then, these hunts, among others, have been organized, and remain in a flourishing condition: The Radnor Hunt, near Philadelphia; the Myopia and Dedham Hunts, near Boston; the Rosetree Hunt, near Philadelphia; the Elkridge Hunt, near Baltimore; the Meadowbrook Hunt, on Long Island; and the Chevy Chase Hunt, at Washington. In addition to these are P. F. Collier's Monmouth County hounds, an exceptionally fine pack; C. F. Mather's private pack, and Thomas Hitchcock's American hounds.

In the South, the enjoyment of a hunt is largely found in the working of the hounds, and there is



Following the Hounds.

little or no jumping. Often a pack is made up of dogs belonging to half a dozen owners, never running together except at some particular event. In the North, the hounds are kenneled and trained

to run in packs, which makes all the difference in the world. Thus the Northern hunter as a rule rides to jump, and the working of the hounds, provided only they are fast and can hold a line, is a secondary consideration.

At Myopia, Meadowbrook, and Dedham, drag hunting is the vogue. There the sport consists entirely of riding across a line of country with plenty of good sized jumps, and at a smart pace. In such an event the hounds merely show the way.

At Radnor, and in the Genesee Valley, the hounds hunt wild foxes, and probably offer the greatest attraction of any of the American Hunt Clubs. The charm of drawing one covert after another with the momentary possibility of hearing the hounds give tongue and seeing the fox go away, and the adventurous gallop which a find entails, is great indeed. The six or eight hours in the saddle which make up such a day pass all too quickly, and leave only pleasant memories.

Drag hunting has proved popular in communities where relatively few men could devote entire days to it, as fox-hunting requires, or where difficulties with land owners make hunting the

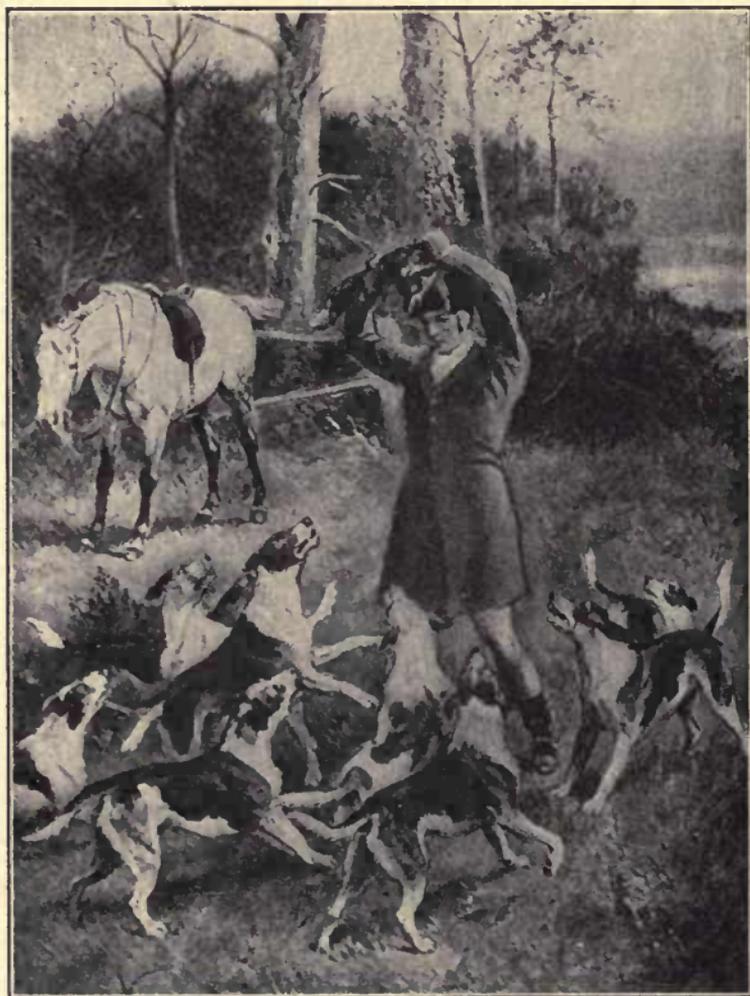


A Christmas Day Hunting Party.

wild fox impracticable. At Dedham, for example, the drag hounds meet early in the morning, and a man may have a ten mile gallop and be in Boston at his business at the usual hour.

Furthermore, drag hunting naturally paves the way to the old-fashioned fox-hunting. Younger men who enjoy the sharp gallop after drag hounds, when they reach middle life naturally come to prefer the working of the hounds, the delight of a long day out of doors, and the excitement which lies in the uncertainty of hunting wild foxes, to a race over a prearranged line. The inclination to give up drag hunting for old time fox-hunting is, in the very nature of things, apt to be accompanied by the means and the leisure which make fox-hunting possible.

After all, it is the well bred, well trained hound that makes or unmakes the hunt. Too little thought is sometimes given this feature of fox-hunting. The buckhound is the ancestor of the modern foxhound. In the early days he was not bred to follow the fox, but each pack received training along the line indicated by the owner's bent of mind. At the beginning of the eighteenth century there existed four distinct types of hound—the buckhound, the southern hound, the fox beagle, and the smaller blue mottled beagle. The southern hound was bred for nose and nose alone. Long ears that swept the



The Fox run to Earth.

ground, and a deep bell-like note, were his chief features. The beagle is practically a small edition of the buckhound, trained for the one purpose of hunting the fox.

The finest foxhounds in existence are owned in England—the Belvoir pack. It is to-day generally agreed among authorities that they approach perfection more nearly than any others, and the best packs in America allow their debt to the Belvoir strain. For more than two hundred years this pack has not been dispersed, and practically for the entire period has been in the care of one family. The hounds of to-day are the direct descendants of the old buckhounds on the Duke of Rutland's estate in the eighteenth century.

New blood has of course been infused into the pack, but this long unbroken history has had the effect not only of perfecting the hunting qualities, but also of producing a distinctly marked race of foxhounds. Every Belvoir hound has a black saddle and tan patches upon the purest white ground. So uniform is the coloring of the pack that the eye at first sight can detect no difference between one hound and the next. The pack began to hunt foxes in the days of John, third Duke of Rutland, who succeeded to the title in 1721.

Of the five animals regularly pursued by hounds in the countries where hunting with



Foxhounds and Hunters.

hounds is carried on—the red and the fallow deer, the fox, the otter and the hare—the fox leads all others as a beast of the chase. Fully three hundred and fifty packs of hounds are maintained solely for his pursuit. It has become to many men the most delightful amusement the world affords.

In olden times fox-hunting was considered a lordly pastime, and many persons so regard it to-day. Thousands of others look upon it as a goodly sport at any time, and their hearts swell in sympathy to the old Virginia toast: “Here’s to horses, hounds, and the fox-hunt!”

Wonders of America's Proudest Waterway

THERE is no river, ancient or modern, about whose name history and legend are more closely entwined than the historic Hudson. The first steamboat made its initial voyage on its waters. The craft upon whose principles are founded the great navies of all nations was launched from a shipyard on its banks. The "Great Eastern," forerunner of the mammoth ocean liners that ply between the United States and the ports of Europe, began its maiden voyage from a Hudson River pier. For more than a century it has, at its point of confluence with the Atlantic, been a Mecca for ships flying the flags of every maritime nation. And in addition to these claims to greatness, its scenic beauty, from Manhattan Island to the head of navigation, is so marvelous as to win for it the undisputed title of the American Rhine.

One of the most interesting facts concerning the Hudson is that it was pure accident that led

Henry Hudson, the English navigator in the service of the Dutch West India Company, so to direct his voyage, that in 1609, he discovered the river that bears his name. He was looking for a northwest passage through polar seas, and believed when he saw the Hudson, which he aptly called "the great river," that he had found it. Then the sails of his stout ship were spread, and he continued on up the river, northward, it is true, but far from the goal he sought. Great was his disappointment when he reached the head of navigation and found his error. So he returned, heavy-hearted, to the present site of New York City, never dreaming that he had immortalized his name.

The river at the time of Hudson's voyage must have presented a scene of strange yet solemn beauty. The sweeping verdure of a nearly unbroken forest on one bank, and precipitous, wild, pine-clad rocks on the other, bordered a land of mysterious possibilities and unguessed extent. The change wrought by the centuries which have passed since that day has been so tremendous that it is difficult to realize. Should a resident of New York half a century ago return to-day, for the first time since his departure, he

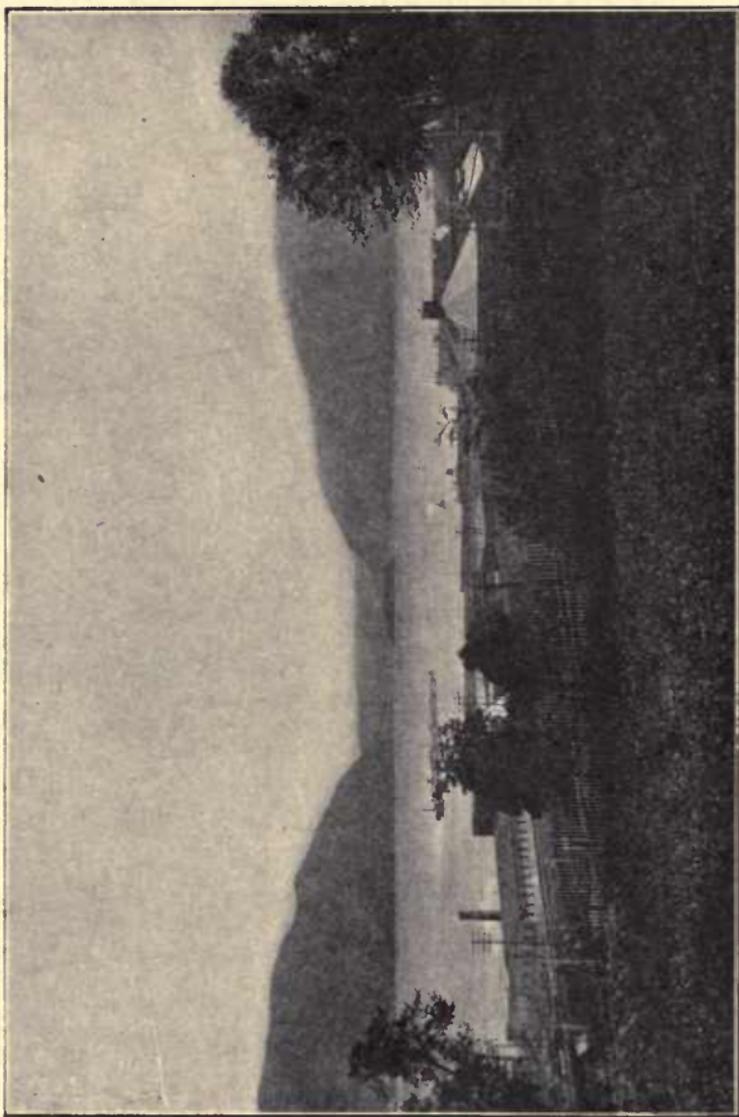


The Valley of the Hudson.

would find that, in spite of familiar shore lines and well-known contours, the aspect of the river would seem strange and new.

From the time of Hudson's memorable voyage to the present, the Hudson has been the scene of mighty achievement and a field of never-ending contention—first between monarchs of past centuries, kings and queens of men, and then a battleground for monarchs of commerce. Fulton's steamboat was followed in later years by the creation, under the direction of Col. John Stevens, of the first ferry-boat, a craft whose successors make constant pilgrimages on many waters. Then, in the early days of the Civil War, the same genius that created the ferry-boat evolved the first iron-clad, exemplifying the idea that has grown into the great war ships of the world.

Col. Stevens' descendants are still residents of Castle Point, Hoboken, that dark and bloody ground which gained unenviable fame as the scene of the massacre by Dutch and Mohawks of one hundred Indian women and children, during the reign of Holland in New Amsterdam. The Stevens mansion is a notable landmark on the high bluff just north of the steamship piers in

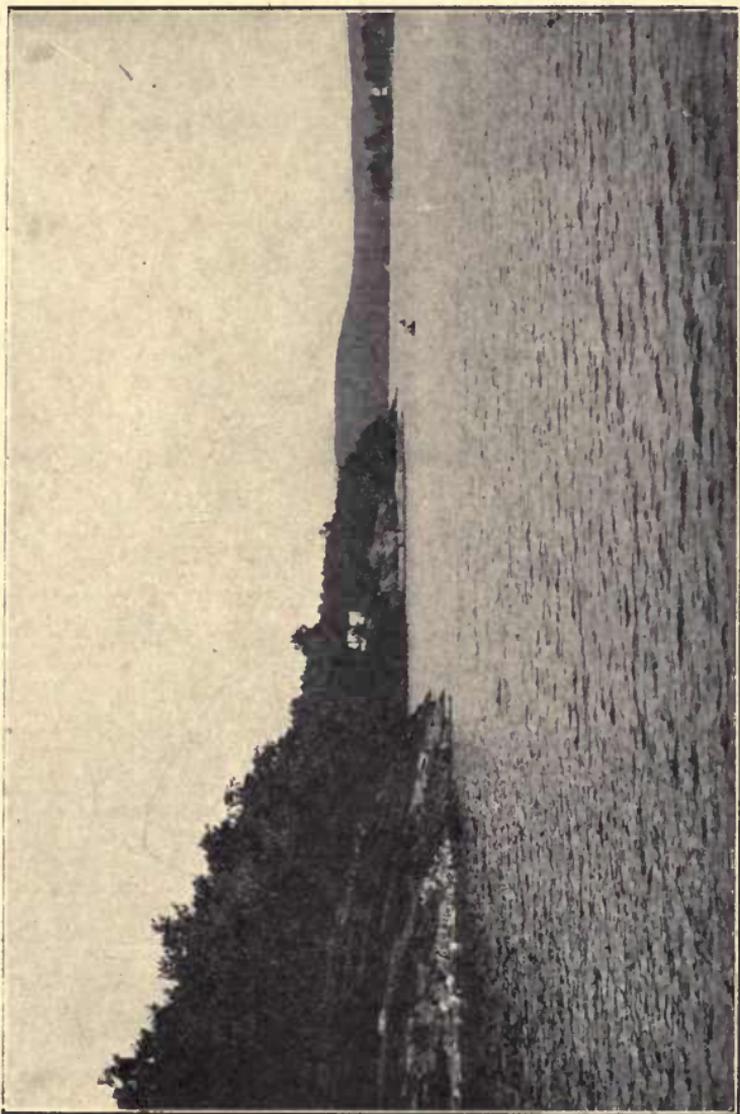


Looking down the Hudson from Washington's Headquarters at Newburg.

Hoboken, but few of those who pass up and down the river realize the part its builder played in American history.

Old rivermen measured the river by "reaches," counting fourteen of these between New York City and the head of navigation. The first extended past the long wall of the Palisades, the great "chip rock" of the old deeds. The second reach included the Tappan Zee, and took the voyager as far as Haverstraw, which gave name to the third. Beyond Haverstraw was Seyl-maker's Reach, then Hoge's, and next Vorsen's, which included the hazardous passage of the Highlands. After that was Fisher's Reach, to Esopus, and next Claverack, with Baserach, Playsier, Vaste, and Hunter succeeding one another as far as Kinderhook. To all but the veteran boatmen the "reach" is to-day a forgotten term, but it will be a part of the river vernacular so long as the Hudson endures.

Looking across from the Battery, the lower terminus of Manhattan Island, it is hard to realize that on that section of the New Jersey shore directly in the line of vision, a land to-day the theater of enormous traffic, was the ancient settlement of Communipaw, the last stronghold of



Looking down the Hudson from near Kingston Landing.

Dutch manners and customs that the descendants of the earliest settlers managed to hold for years against the ever-encroaching spirit of the age. It is now part and parcel of Jersey City, one of the greatest of eastern railroad gateways. Paulus Hook ferry was just north of Communipaw. In its day it was the chief point of communication between New Jersey and Manhattan Island. The Cortlandt street ferry of the present crosses the same waters, transporting daily a number of persons sufficient to populate a good-sized city.

Few changes are more impressive than those which transform field and forest into marts of commerce. Yet within the memory of persons who reside in New York and New Jersey to-day just such a change has taken place along the banks of the Hudson north of Twenty-third street on Manhattan Island and on the opposite Jersey shore. Ocean liners discharge their huge cargoes where, fifty years ago, school children played, and little more than a century ago Continental and British troops struggled for the mastery.

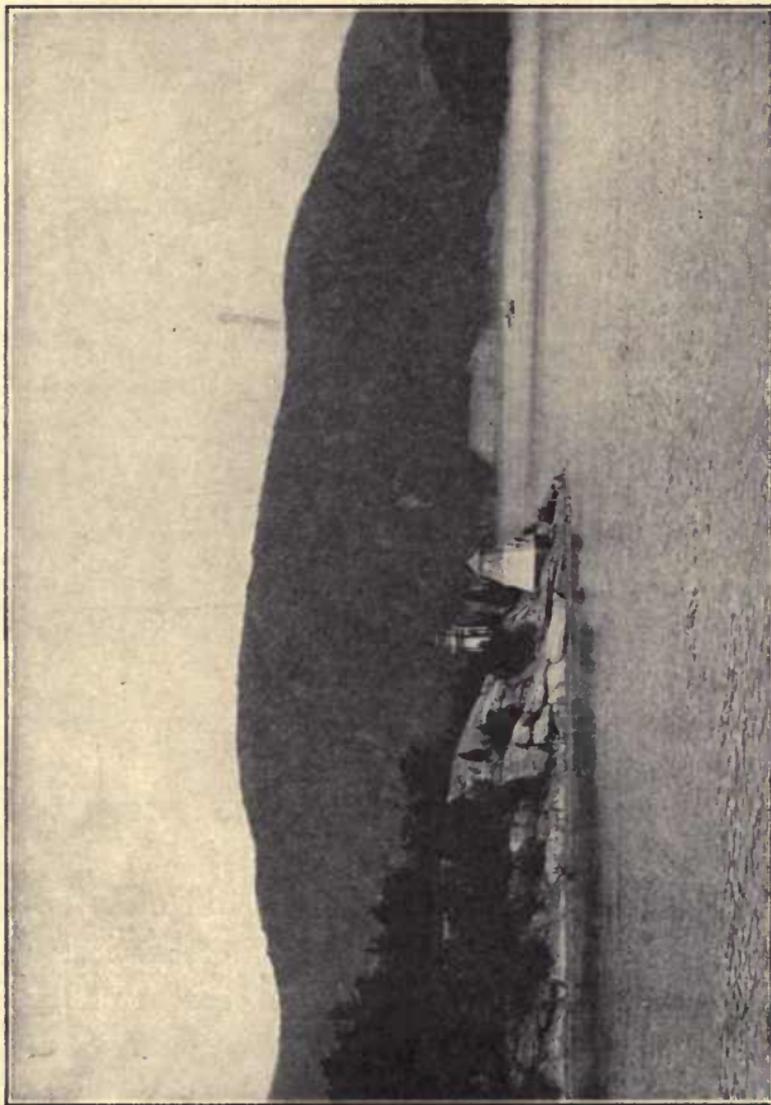
Harlem Heights and peaceful Fort Washington Park retain little to remind present residents of the strife that was waged for their possession.



View of West Point.

Weehawken and Fort Lee on the opposite Jersey shore are alike famed in history, and to-day equally tranquil in all but association. When the Hudson voyager on his northward journey passes the entrance into the Hudson of the Harlem Canal, he may, if he chooses, note where Spuyten Duyvil creek comes sparkling to mingle its waters with those of the Harlem and the Hudson. Should he ask why in the world any stream received so strange a name as "in spite of the devil," the only answer that can be given is to tell the legend of how one stormy night, when the flag of Holland floated over New Amsterdam, a traveler stopped at the inn not far from Spuyten Duyvil creek, then known by another name.

His host warned him that it was unsafe to proceed, but he declared that he would continue his journey "in spite of the devil." The legend tells how he did continue the journey later in the evening, and how as he forded the creek, a huge black hand rose from its depths, and, seizing horse and rider, drew them forever from view. This, it is alleged, caused the creek to be known forever after as "Spuyten Duyvil," a name that lent itself to the little hamlet that forms one of the outposts

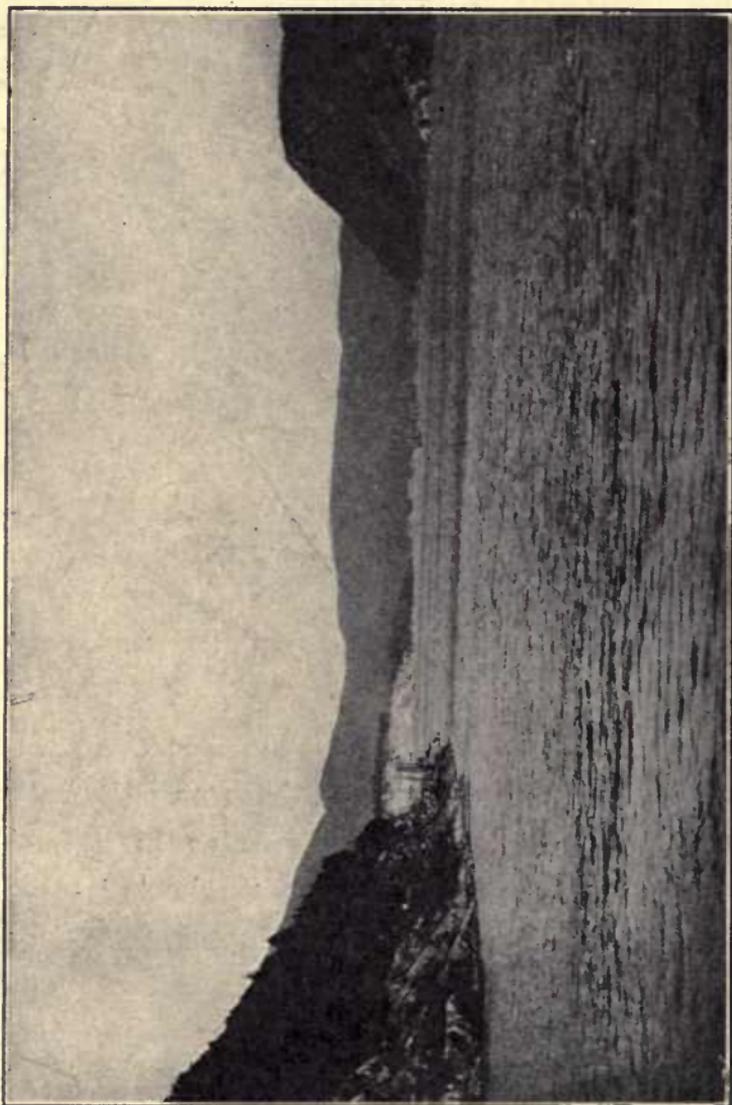


Crow's Nest, on the Hudson.

of Greater New York. To one who is learned, a journey up the Hudson gives a mental panorama of absorbing fact and ingenious fancy, the latter wreathed in many a tale that has made Washington Irving's name everlasting.

A notable Hudson landmark is located not far above Spuyten Duyvil—Mount St. Vincent Academy, one of the most widely known of Catholic educational institutions. The stone castle fronting the red brick edifice, a structure that has challenged the admiration of thousands, was built for his home by Edwin Forrest, long America's foremost actor. Subsequently the castle and grounds were sold by him to the Sisters of Charity, who erected the convent and academy of Mount St. Vincent, the school, now so famous, being opened in 1859.

Always associated with the Hudson, wherever that river is known, is its marvelous feature, the Palisades. Fascinating, if not beautiful, in general outline, wonderful in detail and often exquisite in color, the great mass of weather-beaten rock seems to rise out of the very bosom of the river. Deep at its base runs the swift current of the channel, and through its crowning belt of trees the clouds drift.



Lower Entrance to the Highlands.

It has required action by the legislatures of two States—New York and New Jersey—to prevent the absolute destruction of this marvelous creation of nature. The rock of which the Palisades are formed is the best obtainable for road-building, and blasting, under the orders of stone contractors, played havoc before the law's aid could be invoked. Indian Head, one of the Hudson's most famous monuments, was totally destroyed in this way. Present laws, however, make any further vandalism of the sort impossible.

The city that spreads over the bold and rugged eastern shore of the Hudson, a dozen miles north of New York City, marks the second landing made by Hudson's ship, the "Half Moon," on her voyage of discovery. The hills the city crowns are a portion of one of the most beautiful sections near New York, the hills of Westchester. They are the continuation of the Pocantico hills, made famous by Irving in his Knickerbocker Tales, Yonkers, the city in point, lying almost on the line of division. Only a linguist can fathom the source of this queer title, but the fact is, it comes from "Jonkheer," a title of nobility in Holland. It is significant of the changes wrought by half

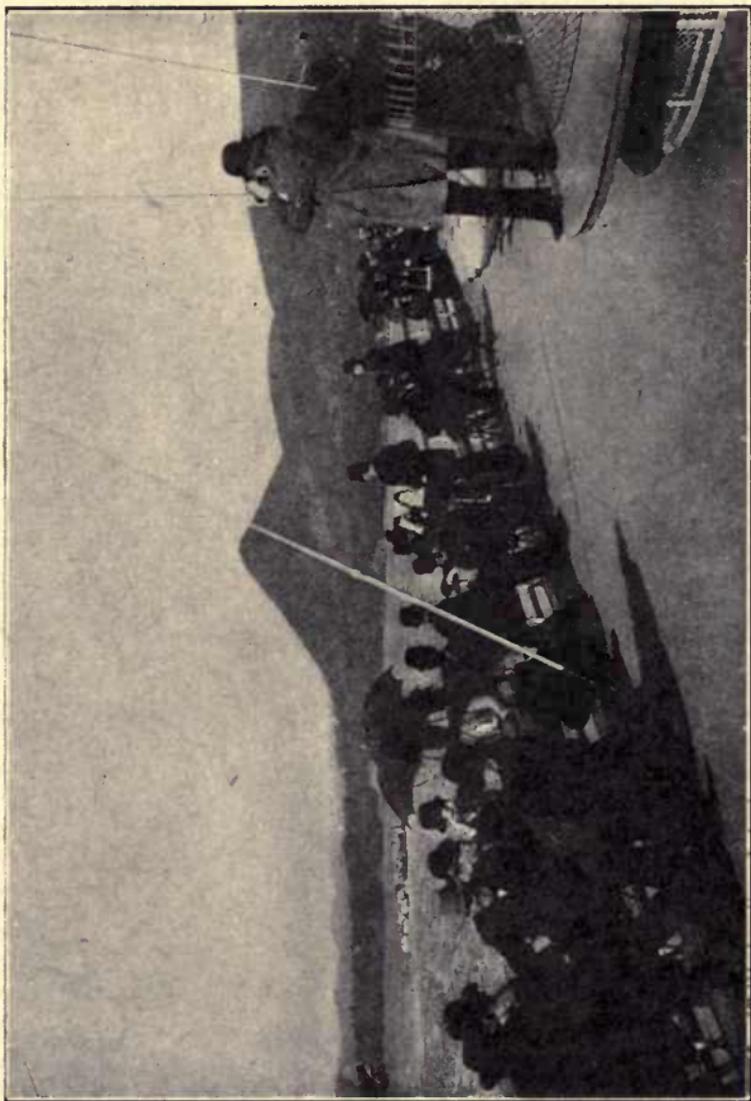


Upper Entrance to the Highlands.

a century along the river's banks that fifty years ago the land now forming the central portion of Yonkers was sold for \$50,000.

When, in their early voyages up the river, the Dutch sailed into the broad stretch of waters between Haverstraw and the Palisades, they were so impressed by the wide sweep of the river that they called it the Tappan Zee. It lies between sections of the most picturesque country that borders the Hudson. On its eastern shore lie Irvington, Tarrytown, and Dobbs' Ferry, while on the western bank the town of Nyack spreads like a handful of rice thrown broadcast. At Tarrytown, or rather about it, lie the scenes that again recall the marvels pictured by Irving. The little church of Sleepy Hollow still nestles in the tiny valley that has hedged it about for more than a century. The road where Ichabod Crane was overtaken by "the headless horseman" still winds its peaceful way down from the heights, and the little inn to which Irving gave fame holds open its doors with oldtime hospitality.

Beautiful country-seats, the homes of New Yorkers of wealth, crown the most attractive building sites, making one who returns after an absence of years appreciate with full force the



Sugarloaf Mountain—Highlands seen from the deck of a passing steamer.

wonderment of old Rip Van Winkle after the twenty years' sleep that followed his communion with the long departed crew of the "Half Moon."

The sweep of the Hudson from Haverstraw Bay to the Tappan Zee is around the curving base of that deceptive headland known as Point-no-Point, or Rockland Point. It juts into the current, the segment of a huge circle, just above the palisaded front of Hook Mountain, below the venerable crest of old Taur. With many a pleasant point and bay, the shore between Tarrytown and Ossining formed a picture of unusual beauty in years long gone, but the construction of the railroad that passes down the eastern bank of the river from Albany to New York, has rendered that beauty naught but memory. Frowning down upon its remains sits a huge group of marble buildings, the New York State prison—Sing Sing—that lies just south of the pretty village of Ossining, named after the Indian who in early days was leader of all the tribes dwelling in that section of the country. It is a pity the voyager up the river can not see a little further to the east when his eye rests on the country that borders Ossining on the north, for then he might look upon that great feat of construction, the new Croton

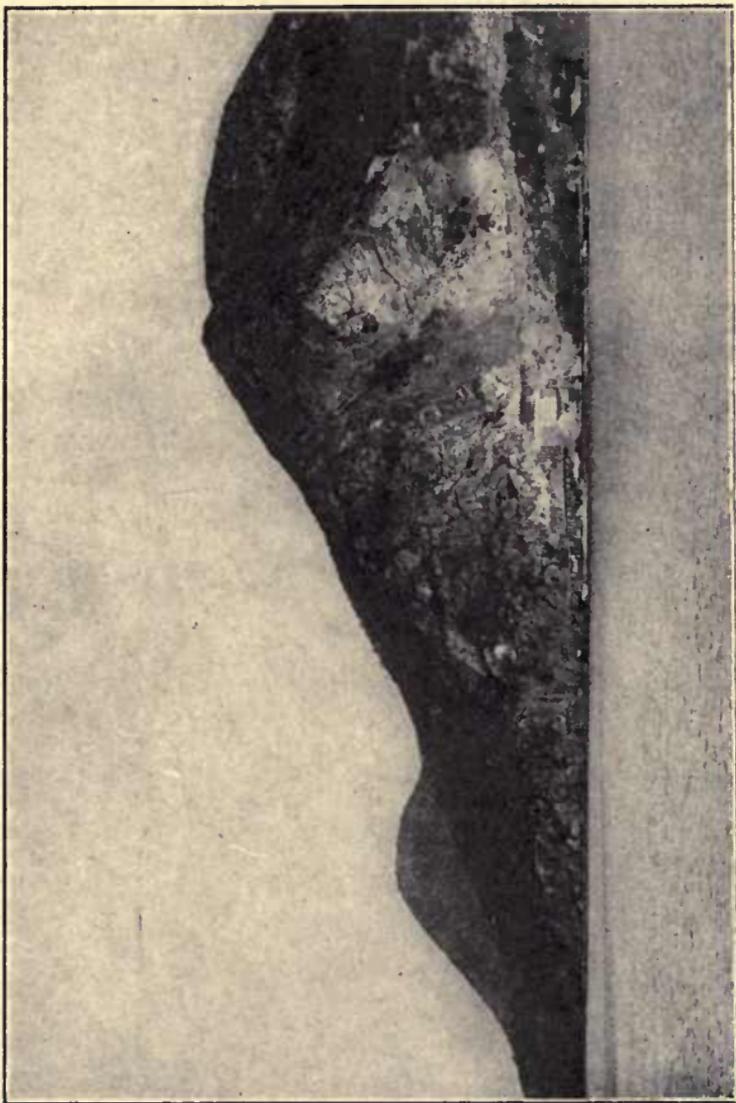
dam, or rather aqueduct, the most notable engineering feature of the system that makes certain New York's water supply. Part and parcel of this system is the Croton River, from whence in other days came the guided torrents that gave to Manhattan Island all the water that found its way into homes and business buildings.

Near the narrowing bay at the east of Ossining, below Croton Point and beyond the line of the railroad, is a quaint old mansion, the Van Cortlandt manor house, one of the most ancient and interesting in its associations of its class upon the Hudson. Originally it was a fort, but in the days of Queen Anne was enlarged to its present dimensions by John Van Cortlandt, the great patroon. Over its door still hangs the strong bow of Croton, the Indian sachem from whom the river gains its name.

North of the Haverstraw hills are the buttressed gates of the Highlands. But before these are reached there come Stony Point, and Verplanck's, the former on the west and the latter on the east bank of the river. Both are famous, one made so by General Wayne, and the other by General and Baron Steuben, by deeds that are bright spots in Revolutionary war history.

A poet was abroad when the hills of the Highlands were named—Dunderberg, Cro' Nest and Storm King; all three in view from Peekskill, which stands like a watchdog at the Highlands' very gate. Then there is Beacon Hill, reminiscent of the fires that blazed to tell the country for miles around that the end of the Revolution had come. Sugar Loaf was called so for the obvious reason that it is, in form, simply an old-fashioned loaf of sugar. Bear Mountain owes its name to a long forgotten hunter's exploit. Of all the Highland Hills, however, none is more famous than Anthony's Nose, which tradition has it, was named after the nose of a trooper, a nose so large and so rubicund that it gave fame not only to its owner, but to the section in which he dwelt. The legend gives his name as Anthony Van Corlaer, and Irving tells us his countenance was like "a mountain of Golconda." Peter Stuyvesant, the famous Dutch governor of the New Netherlands, is credited with naming the promontory.

A point of world-wide note near the northern reach of the Highlands is that on which the United States Military Academy is located—West Point. For more than a century the hills thereabout have echoed the crash of cannonading, first during the

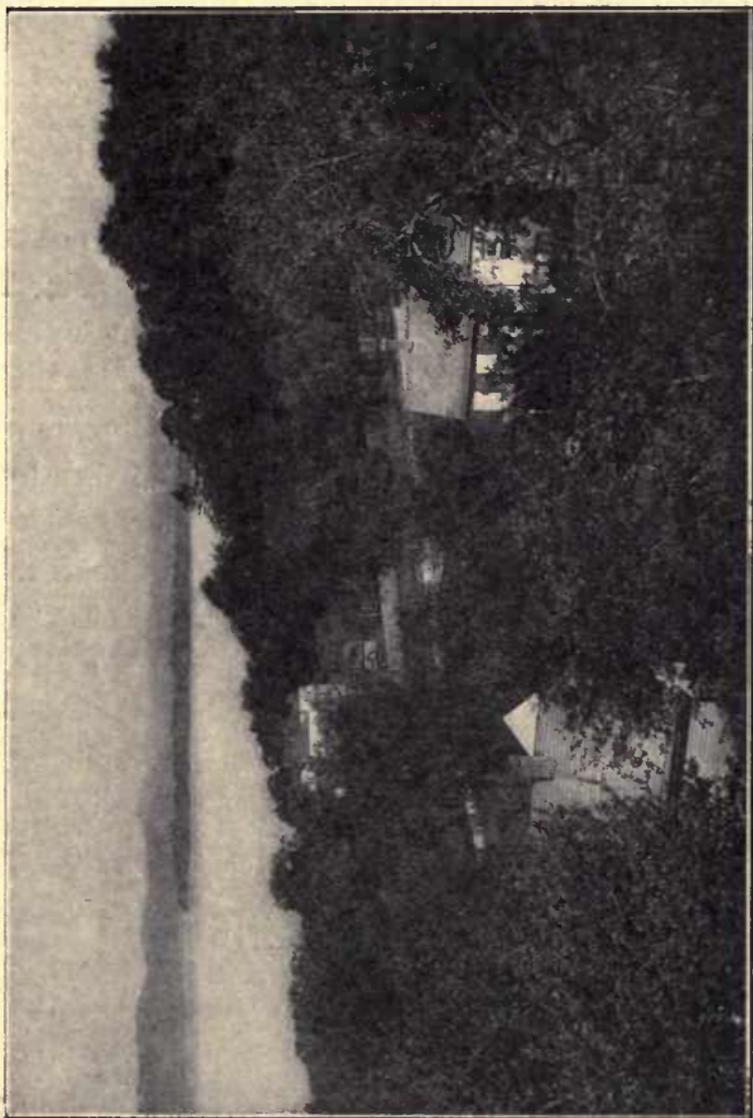


Breakneck Mountain.

Revolution and now to the salutes of peace. One of its most conspicuous landmarks is the Catholic Institute, plainly visible to all who journey up the river, as it lies in beautiful environment just south of the point.

Above the Highlands, and on the western shore of the river, Storm King declines into a bluff broken by numerous ravines. Close by is Cornwall, known for its picturesque surroundings, and as the residence of many persons who have gained renown in paths of literature. Following on, Newburg, once a headquarters' point for General Washington, comes into view, a thriving, prosperous city, where legends of the past have been merged with stories of modern business achievement. Spanning the river farther on is the cantilever railroad bridge that gave Poughkeepsie national fame. Nestling at its western end the town of Poughkeepsie looks out on the river, the buildings of Vassar College forming a central point of interest.

Still further up the Hudson are Rondout and Kingston, the latter the gateway of modern travel to the Catskills' central points for summer visitors. Beyond is the town of Hudson, picturesque and beautifully situated, still retaining the character-



"Sleepy Hollow."

istics given it by the New Englanders from Nantucket, Martha's Vineyard and Providence who gave it birth, and whose descendants still number a goodly portion of its population.

The river has been steadily narrowing, and when Albany and Troy, the head of steamboat navigation, are reached, there is little to recall the noble stream whose lower sections have been well-named the American Rhine. Just beyond Albany is the entrance into the Hudson of the Erie canal, the waterway that furnishes an avenue of progress for hundreds of boats from the Great Lakes to New York City.

The history of the Hudson River is in a measure the history of the United States. From the Battery to Albany Landing there is hardly a foot of soil along its banks that is not of historic interest. Its commercial progress, the growth of traffic on its surface, has been the barometer of a nation's prosperity. Famed for its scenic beauty, its lower waters thronged by the fleets of commerce, the country's proudest waterway, the historic Hudson has a place in the story of the world's progress that will always render the chapter which contains it one of absorbing interest.

The Porcelain of Saxony

As early as the sixteenth century, Portuguese navigators brought to Europe examples of Chinese porcelain, but it was not until 1602 that general interest was aroused in the new material. In that year, when the Dutch, more commercial than artistic, began to cater to the demand, importing samples from China and Japan, Germany, Italy and France multiplied their researches in order to produce the material themselves. Notwithstanding all the efforts that were made, however, it was not until the beginning of the eighteenth century that the first real porcelain was manufactured in Europe.

John Frederic Bottger was the discoverer. This Bottger was born in Schleiz, where his father was cashier of the mint, and had studied the sciences in the University of Magdeburg. In 1687 he entered the employ of a druggist in Berlin, and almost immediately associated himself with a famous alchemist in the search for the philosopher's stone. He made a name for himself

as a savant, and in the course of time his fame came to the ears of Frederic the Great of Prussia, and the monarch invited him to visit him. Bottger, having some individuality, was not particularly pleased with the interest evidenced by the monarch in his researches, and fled into Saxony. Frederic claimed that he was a swindler, and would have succeeded in securing his extradition had it not been for the interest of Prince Anthony Egon of Saxony, who not only gave the artist a refuge in his own laboratory, but secured for him the protection of the Elector of Saxony, Frederic August I., later King of Poland under the title of August II. the Strong.

Zealous, like all German princes of that time, to rival in splendor the court of Versailles, the latter made it a point to encourage the arts and sciences, and in spite of some failures on Bottger's part he employed him to endeavor to discover the secret of the manufacture of porcelain, in which he had been interested for some years. One of his protégés, Walter von Tschirnhaus, had already, in 1698, succeeded in manufacturing earthen vases covered with a white enamel which were not china, yet had neither the hardness nor the fineness of porcelain. Bottger associated himself with Tschirn-



"The American"—One of a series of allegorical groups.

haus, and, as a result of their collaboration there was produced a product similar to the Chinese porcelain—a sort of terra-cotta, which was given a polish by means of a grinding wheel. In 1708 Tschirnhaus died, and a few months later Bottger announced to August II. that he had at last discovered the method of making white

porcelain which, if it did not surpass, would at least equal the Chinese product.

Bottger exaggerated. The material he produced at that time was of very coarse texture, and the surface of a bluish tinge. It was not until 1711 that he succeeded in finding kaolin, the substance which alone furnishes the true porcelain enamel.

The story of the discovery has been told many times. It seems that Bottger's servant had for the sake of economy, purchased a white, odorless powder with which to sprinkle his master's wig. When his employer noticed the powder he became interested in it, and threw some of it into a crucible. To his great surprise the substance solidified when subjected to fire. Upon making inquiry he found that it came from a quarry near Dresden and thus, by the merest chance, kaolin, the secret of porcelain, was discovered.

Long before that time, however, August II. had established a factory at Meissen, and placed at the disposal of Bottger a force of men who worked in the strictest secrecy. The guards placed at the gates turned away all outsiders, and even the king, when he entered it, had to give a pledge of absolute silence as to what he saw within the factory.



Panther and Lion.

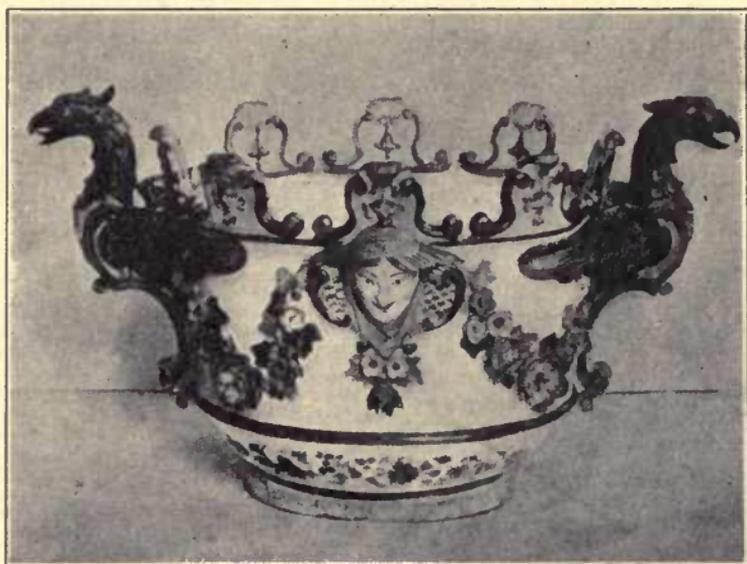
Bottger himself was virtually a prisoner, though he was supplied with every comfort and amusement. His home was palatial, and his pleasures amply provided for.

Naturally enough, under a management such as this, the progress made was decidedly slow. Although Bottger really was a man of great ability, he gave most of his time to dissipation; and, in spite of every precaution, workmen did escape, to found in other countries various competitive factories. The Bohemian life he led soon undermined Bottger's constitution, so that he died at the early age of thirty-seven.

In announcing his discovery in the first instance, he claimed that he would be able to decorate his work with paintings just as the Chinese adorned theirs, but the methods of coloring were not discovered until much later, and then only one color at a time.

The works of Bottger are all very simple, the earlier ones of terra-cotta, produced in conjunction with Tschirnhaus and polished with the wheel or adorned with paintings in oil. It was not until 1720, under the direction of the painter Herold, that the blue and subsequently the other colors employed by the Chinese were discovered.

The enthusiasm displayed by August II. over the results of Bottger's labors was nothing compared to the interest taken by his successor in the factory of Meissen. The latter had scarcely ascended the throne when he projected and began the erection of a Japanese palace on the banks of



Fancy Dish in Baroque Design.

the Elbe, which it was his ambition to decorate entirely in porcelain. For this purpose Herold, a miniaturist only, was not the man, but the king found the right one in Kandler, the sculptor. Kandler displayed the most admirable skill in designing amusing figurines and ornaments,

improving, with his relief work, the flat designs of Bottger. Without being so in name, he became in fact the director of the factory at Meissen, and the thirty years he spent there marked the time of greatest importance for the Meissen porcelain.

The Seven Years' War caused a break in this prosperity, and the love August III. had for his porcelains caused a break in the collection of Meissen, for when he was forced to flee he carried with him a great number of pieces which eventually fell into the hands of the enemy of him whom his cousin Frederic had sarcastically dubbed "the Porcelain King!"

The war over, the Meissen factory was reopened, and the advent of the German painter Dietrich and the French sculptor Michel Victor Acier endowed it with a new era of progress and success. Nor was its prestige lessened during the management of Marcolini (1774-1814), though the universal effort in art during that time, to imitate the classic works of ancient times, was not conducive to the popularity of a factory wedded to the more human art of Bottger and Kandler.

Outside of the larger pieces, those executed for the decoration of palaces, the collection of Chap-

pey, a French lover of porcelain, is probably the most complete Meissen collection in the world. Within his cases there are no less than thirteen



Dog. Mounted on Bronze.

hundred pieces, exemplifying the various stages from the time of Bottger to that of Marcolini.

Commencing with the table services, to

which the first efforts of the Saxon ceramists were applied, the bouillon cups in the Chappey collection enable us to follow step by step, not only their progress in technique, but the changes in popular fancy as well.

In the beginning, Bottger contented himself with copying the Chinese decorations, and forms, confining himself to the use of those colors with which he was familiar. As a consequence the series open with extremely simple cups, provided with the regulation flat handles, their chief decoration consisting of miniatures of Eastern personages painted upon panels of white enamel. At that time there were very few shades employed, but among them were some very charming colors, especially a lemon yellow of exquisite delicacy. Gradually, however, the lines became more graceful, the colors more plentiful; ornamental handles succeeded the plain until, as time passed on, it became possible to reproduce in porcelain the works of such artists as Watteau and Wouverman.

In all probability the art owes more to Kandler than to any other artist artisan. He has enriched it with a wealth of magnificent works, a number of which we reproduce. Not only was his genius



Autumn.—An Allegorical Vase.

admirable in other respects, but he possessed an ability as a caricaturist that has never been surpassed. He might indeed be called the Cer-

vantes of ceramic art, for he has amused himself by caricaturing every important personage and fad of his time. One of the most celebrated of his smaller works is the piece representing the tailor of the Count of Bruhl. This honest artisan, puffed up with his importance on account of the friendliness which his patron exhibited toward him, conceived the idea that through the friendship of his employer he could secure an invitation to a court dinner. When he made the request the count replied, "you will be there" and immediately ordered from Kandler a figure of the ambitious man.

On the day of the dinner the guests were greatly amused with the result of Kandler's efforts. The statuette represented the tailor in gala attire, wearing a three-cornered hat and riding upon a goat (in Germany this animal is a symbol of the tailor).

The goat was supplied with warlike harness, but his bit was a flat-iron, and from the holsters there protruded, instead of pistols, cards of buttons and balls of thread and the rider brandished a pair of shears in lieu of a sword. Thus it was that the tailor attended the dinner of the Count of Bruhl! Of Kandler's larger pieces, too much could not be

said; they exhibit character, life, and coloring that have never been surpassed.

With the advent of Acier as director (1764) , quite a different style of art made its entry into Meissen. Finer modeling and more graceful lines



Hen—One of a series.

succeeding the bold and frank sculpture of Kandler.

What is considered the masterpiece of Acier is his series entitled "The Cries of Paris." In this series we find the knife-grinder, the flower-girl, the fish-woman, the vegetable, and poultry



Vase in Baroque Style, with Statuettes.



Flower Clock.

vender, and all the other itinerary tradesmen of Paris, represented with admirable fidelity and amusing variety of physiognomy and attitude.

Under the direction of Marcolini the influence of French art was more than ever evident in the factory of Meissen, for the designs were close copies of the famous Sevres china.

Although Meissen may rightly claim the honor of having introduced porcelain into Europe, it did not long keep the monopoly of its manufacture. Without considering France or Holland, which had become quite respectable competitors, there were in Germany itself, as far back as the time of Bottger, a number of rival factories. The founders of these places were as a rule artisans from Meissen, who had escaped from the surveillance under which they worked, seduced by brilliant offers to carry abroad the secrets which they had sworn never to reveal. None of them ever reached the same important position as that occupied by the Meissen factory, but each of them, under the temporary direction of capable artists, has had its period of success.

Notwithstanding the competition with which it was met, however, the factory of Meissen is

still in existence, and within its walls are to be found a magnificent collection of large and small pieces exemplifying the work of a long line of famous artists and artisans.

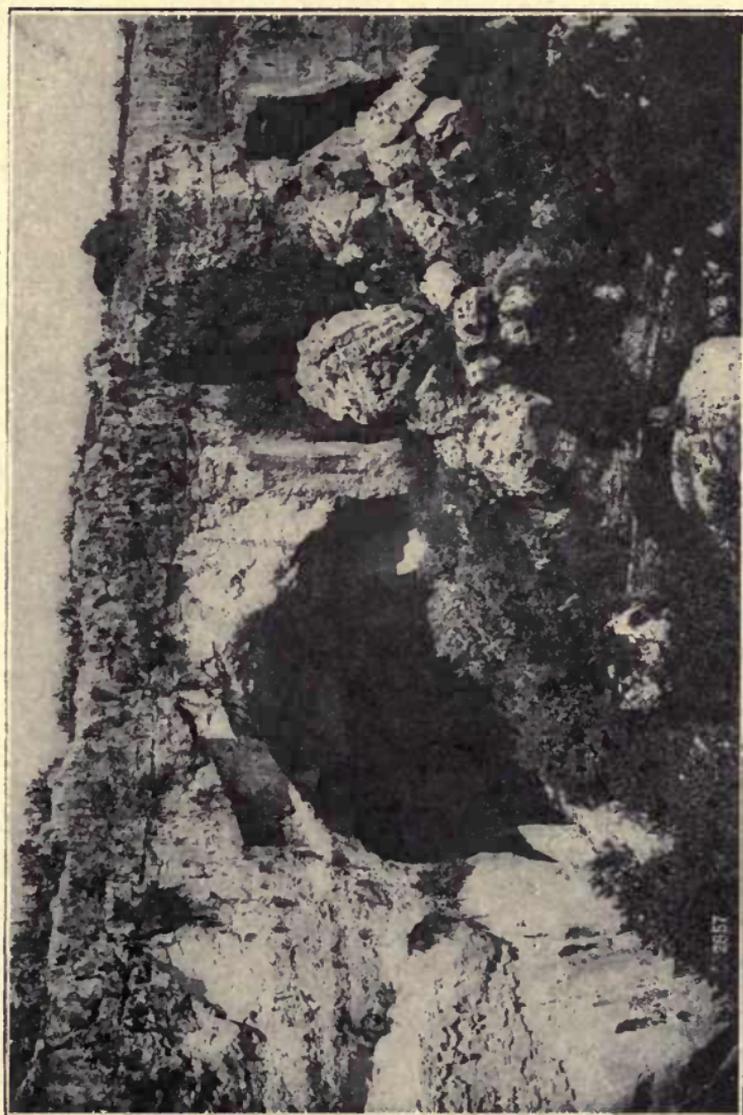
Sixty Days—of Wonders

FOR two years systematic effort has been made to open to the army of tourists, never so great as now, new paths to interesting places and scenes outside the beaten track of travel. The number of such places is legion, but in the desire to show as much as possible in the shortest space of time, tours hitherto arranged have been planned along the line of seeing the most possible in the shortest space of time. Now, however, a person of limited means may journey within sixty days to a thousand spots of rare beauty or commanding interest hitherto almost inaccessible.

Not the least of these plans include visits to the out-of-the-way sections of North America, particularly Canada, where time seems to have wrought but slight change, and the lover of Nature and her ways can find his desires satisfied to repletion. Nova Scotia, Newfoundland, New Brunswick, all familiar names, are becoming known to thousands of Americans through

personal inspection. Chief of the reasons that has kept these sections of the western world in the background so far as tourist travel is concerned has been the matter of expense. At the maximum rate of fifty dollars it is now possible for any one to view the beauties of many towns and villages, of mountain and valley, queer little seaports, and ways of living to which most persons have been utter strangers.

The land of Evangeline, the marvelous tides of the Bay of Fundy whose waters recede and rise eighty feet in a day, bleak Cape Sable—all these are within the means of the seeker of vacation pleasures with two weeks of leisure and forced to keep expenses at the minimum. New Brunswick, which offers such attraction to those in search of Nature in her wilder moods, Prince Edward's Island and Cape Breton are all within reach of this sort of tourist. On the south shore of Nova Scotia beautiful harbors are to be found without number, from Cape Sable to Cape North, none surpassing those of Argyle, Pubnico, Barrington and Shelburne. In the country back of them are trout streams where a catch of a hundred trout a day by a single fisherman is not uncommon.

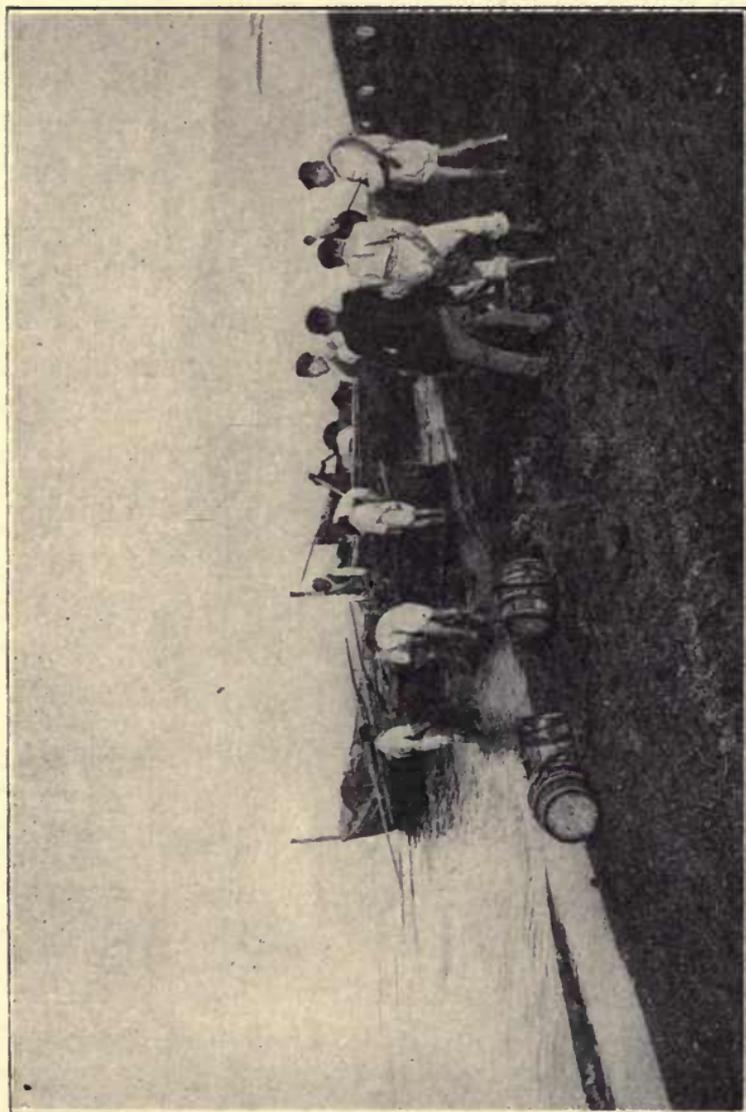


Entrance to Caverns of Paradise, near Firenze, Italy.

Inland, on the Canadian mainland itself, that magnificent stretch of country lying between the Batiscan river on the east and Georgian Bay, an estuary of Lake Superior, on the west, is just being opened to the tourist with whom time and money are at a premium. He may journey up the Saguenay, past mighty Cape Eternity, to Lake St. John, and westward through the Muskoka country, dotted by six hundred charming lakes, and thence by rivers whose banks teem with natural wonders. to the rockbound shores of Georgian Bay.

One of the growing points of interest to the summer traveler is that almost unknown section lying within the Arctic circle—Labrador. Here is little to appeal to one's sense of beauty as interpreted by Nature, yet the fascination of the forbidding coast and bleak interior, the latter practically uninhabited, is unmistakable. Steamers journey along the coast, landing at settlements here and there, marking spots where the efforts of the Catholic missionaries have created civilized conditions.

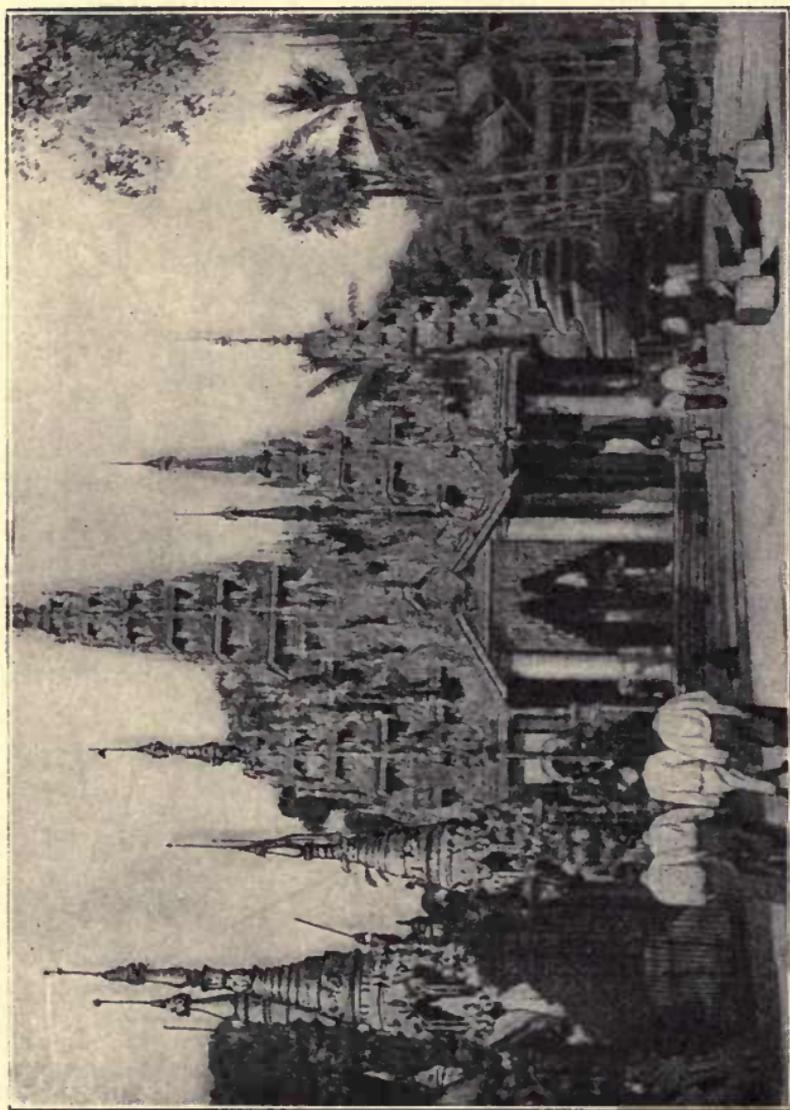
The stern grandeur of Labrador is hardly realized until Hamilton Inlet, or Esquimaux Bay, is reached. At the head of this bay is the



Neapolitan Fishermen hauling the Seine in the Bay of Naples.

Narrows. On either side mountains tower to the height of over a thousand feet, wooded with spruce from base to summit. Through this gloomy portal is an unbroken vista extending many miles, until it is lost in the shadow. Beyond the Narrows is Melville Lake, a great inland sea, where the frontier Labrador post of the Hudson Bay Company is located. This is the chief trading post of the mountaineer Indians of Labrador, a branch of the great Cree Indian nation of the west, driven, during the early French régime in Canada, northward from their homes on the lower St. Lawrence river by the Iroquois, chief of the Six Nations who in early days ruled the State of New York. Several years ago a Canadian explorer took two Iroquois Indian boatmen with him to Labrador, and it was with the greatest difficulty that he secured mountaineer Indian guides to direct him, so great was their fear of the representatives of the nation that conquered their ancestors.

One of the most interesting features of the new departures instituted on behalf of the traveler in search of that which is new and interesting is found in the fact that beginning with the year 1906, the fact that the greatest of all globe



A Burmese Temple.

trotters is the American, has found formal recognition. Another feature is that the prominence given Spain by her unpleasantness with the United States has just brought Andalusia into the cycle of tourist travel. One who goes to Gibraltar, that massive headland of Jurassic limestone which neighbors Spain and faces Africa, will now find the same sightseeing automobiles, familiar to visitors to American cities, waiting to take him about. They are of American make, owned by American companies, and in charge of Americans. From Gibraltar one enters Andalusia, where special arrangements have been made to receive and care for exclusively American tourist parties. It is almost an entirely new field of travel, as the tourist has hitherto been a novelty in that section of Spain.

The American invasion, as it has been termed, extends to Italy, for the sightseeing auto has made its appearance there, under conditions similar to those existing in Gibraltar. One steamer company has placed six American launches in service on the Nile, heads the American invasion at Gibraltar and Naples, and has made it possible for the tourist to see what most travelers have missed, the life of the people



Part of a Caravan in the Desert.

outside the cities and lines of tourist travel. There is nothing in all Italy more picturesque than the fishing folk and their customs, few things more novel than the rural methods of transportation, where men and women alike share the burden of labor, with perhaps the greater share allotted to the latter.

A novelty of modern travel, which has just come into the category of things easily possible, is camping out in that comparatively unknown region to the American traveler lying between Khartoum in Egypt and Wadi Halfa, far up the Nile. Hitherto the most adventurous of travelers has been content to end his journey at Khartoum, but now one may go to the very borders of the Belgian section of the Congo Free State. No outdoor pleasure has gained greater favor in the last five years than camping out, but in this instance one sacrifices few comforts. The usual camping party is made up of ten tourists. Provisions are secured at Khartoum, and the journey is made camel back. Enough wall tents are transported by the baggage camels to enable the assigning of a tent to each two persons. This is for sleeping only. Beside these are dining, parlor and kitchen tents, as



Coasting down a Street in Trinidad, Madeira Islands.

well as bath and lavatory tents. Usually a camping trip of this sort requires thirty days, an escort of soldiers accompanying the party to render progress perfectly safe when the borderland of the African wilderness is reached. These parties are by no means confined to men, as all arrangements are made for the comfort of women members of the party. It is interesting to know in view of the hesitation shown by American tourists when the matter of going up the Nile farther than Khartoum has been suggested, that next December a party of five hundred American tourists has arranged to take the trip described.

The truth is that travel in Egypt and the Holy Land has assumed entirely new aspects within a short space of time. By the six new steamers to be placed on the Nile before the first of 1907, it will be possible to journey from Luxor to Assouan, one hundred and thirty-three miles, in twelve hours, instead of a day and a half. Dahabeah progress has practically been revolutionized. The wonders of Gizeh, the Sphinx, Sakhara, the Colossus of Memnon, Heliopolis, long considered far from the line of march of the ordinary tourist, are brought within reaching distance. The marvels of the



Wash-day on the Borders of the Nile.

Soudan are no longer practically unattainable. The Soudanese, a people of marked interest, can be studied by the American tourist through personal observation instead of with the aid of books of travel. In sixty days one may travel from New York via Gibraltar and Naples to the heart of the Soudan, have leisure to study the marvels that present themselves, and land again at the New York pier at which he began his journey. The expense depends wholly on the traveler, but it is less at the maximum than the former cost of a visit to points of interest in Great Britain and France.

This seems to be the time when it has become possible to reveal to the eye of the traveler much of interest in the lands of ancient civilization from which the traveler on pleasure bent has until now practically been barred. An excellent example illustrating this fact is offered by Burma, where the oldest settlement dates from 850 B. C. Travelers are now permitted to view the native processions and allowed to inspect the marvelous pagodas of the native government at Bhamo and Mingoan. The Burmese no longer consider the white traveler an intruder; largely owing to British influence. Mandalay,



Types of Peasants at Capri.

which leaped into fame at the touch of Kipling's pen, has long been a tourist point, but the interior scenes and objects of interest rank among the new opportunities of the traveler from other lands.

While the Cinghalese, as the natives of Ceylon are called, are comparatively well known in the United States, where many of them are tea sellers, Ceylon itself, so far as the interior is concerned, has been to a great extent closed to travelers. This is no longer the case, and such wonders as the 100 foot bamboo tree at Kandy, that during the rainy season grows twelve inches every twenty-four hours, are now accessible to any one who cares to take the time and trouble to view them.

Curiously enough, some of the sections recently opened to the tourist are in the very countries for a century considered the Mecca of European travel. Notably is this the case in France, in whose charming capital, Paris, most Americans have been content to begin and end their knowledge of the Republic. The tide of travel now, however, is centering in a measure in four of France's fairest districts—Touraine, Brittany, Auvergne, and the Pyrenees.



Coral Rock Formation, Cruz Point, near Funchal, Madeira Islands.

Touraine presents an almost unequaled variety of chateaux, from the formidable feudal stone castellations to the delicate floral sculpture of the sixteenth century. In its mediæval cities,—Orleans, Blois and Tours, the latter famed for its Charlemagne tower—an endless source of interest appears. In wild and rugged Brittany one comes in actual contact with the primitive and Old World life and customs of its Celtic people—fisherfolk and peasants.

Auvergne is a land of volcanic mountain and rock. Its volcanic fires are long extinct, but the fantastic cones, jagged peaks, chasms, torrents, ravines, and cascades are impressive. Few places exist where a wider study of the convulsions of Nature and their effects is possible. It is in the interior of the province that one finds the new and unusual, new in that heretofore the traveler has been guided to the border resorts and left in ignorance of the far more interesting sections where Nature's handiwork is seen in bold outlines.

It seems strange that the traveler in search of the new and novel should be told he could find it in the Pyrenees, but the very fact that this mighty range of mountains has for centuries

constituted one of the Old World wonders illustrates how much can be passed over for lack of a little enterprise and improvement. It is now possible to see here the most primitive and attractive characteristics of mountaineer life, a life that to tourists has been a sealed book, because there was no other than a most troublesome and often dangerous way of reaching the sections where it could be seen. To travel the new paths created is like stepping back into the seventeenth century, for the customs in vogue to-day have suffered little change in the last three hundred years.

While it is, of course, impossible to see all that has been outlined, to tread every new path of travel, in sixty days' time, it is quite possible to enjoy, through a combination of a number of these points of interest, sixty days of world wonders as interesting and instructive as the most earnest seeker for pleasure and profit combined could desire. Nor is the expense so great as to be prohibitive. Whether the tourist desires to "follow the man from Cook's" or to travel independently, he will find a journey to the most faraway of these points within the limits of the moderate income.

The California Bungalow

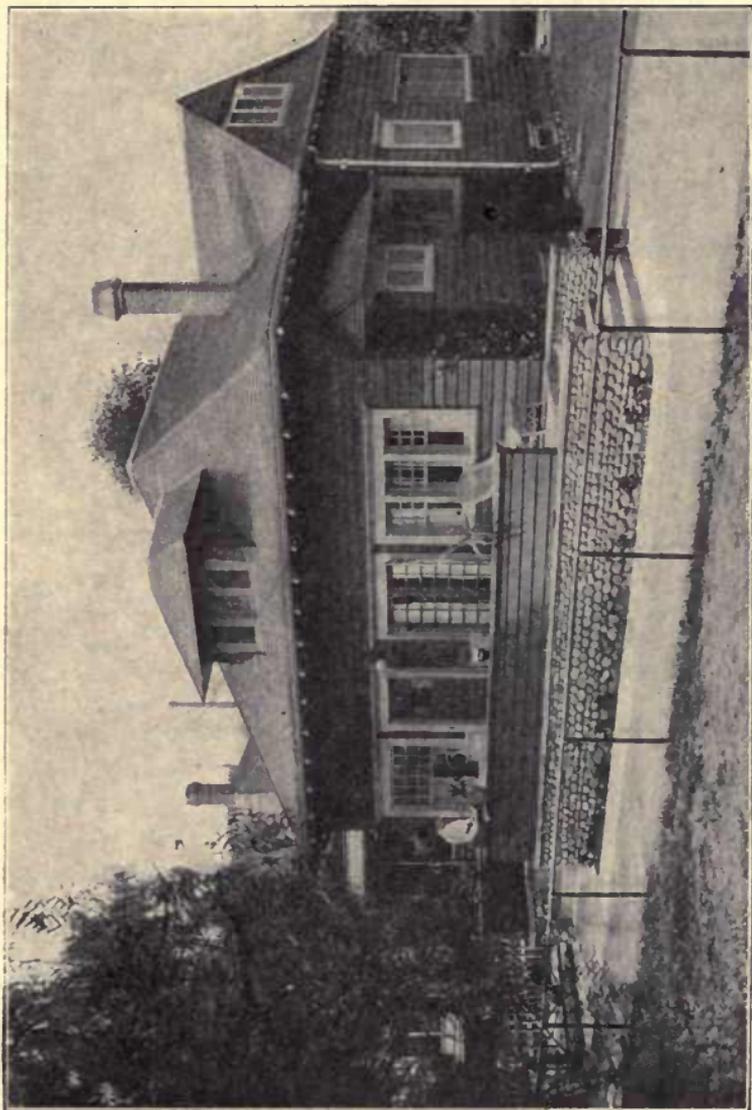
DURING Spanish rule in California, the character of its architecture was modeled in as far as possible on that of Spain. The Missions were excellent illustrations of this type, while the dwellings of the Mexican *rancheros* were exact copies of those of the mother country, save that the latter were composed of stone, and the former of *adobe*, made from sun-dried bricks of native clay. The ranch-house of old California days was as unlike the bleak, bare, unlovely New England farmhouse as that stern type of dwelling is different from the pleasant low-roofed cottages and bungalows now dotting—and increasing in numbers every day—a large expanse of the Golden State.

The walls of these California homes were very thick, making the dwelling delightfully cool in summer, and, if old-time Californians are to be credited, sufficiently warm in the rainy days of winter, for that is all winter consists of in this region. There were seldom fireplaces in those

thick-walled adobe houses, nor any means of getting warm except a brazier, which, to our thinner American blood, would not have been altogether satisfactory. Nowadays, when the prospective house-builder begins to design his cottage or bungalow, his first thought is for an exterior veranda, instead of the inner court or *patio* of his predecessor; his second, how he shall build his fireplace, whether with an inside or outside chimney, for whatever else the dwelling may lack, piazza and hearthstone are indispensable to his ideas of comfort.

After the cession of California to the United States, and the coming of the "Yankees," the typical American frame house began to make its appearance, very soon entirely superseding the former adobe structures, so admirably adapted to the country and climate. During the past twenty years, however, especially since the great influx of homeseekers to California, the building plans of both mansion and cottage have undergone a remarkable change.

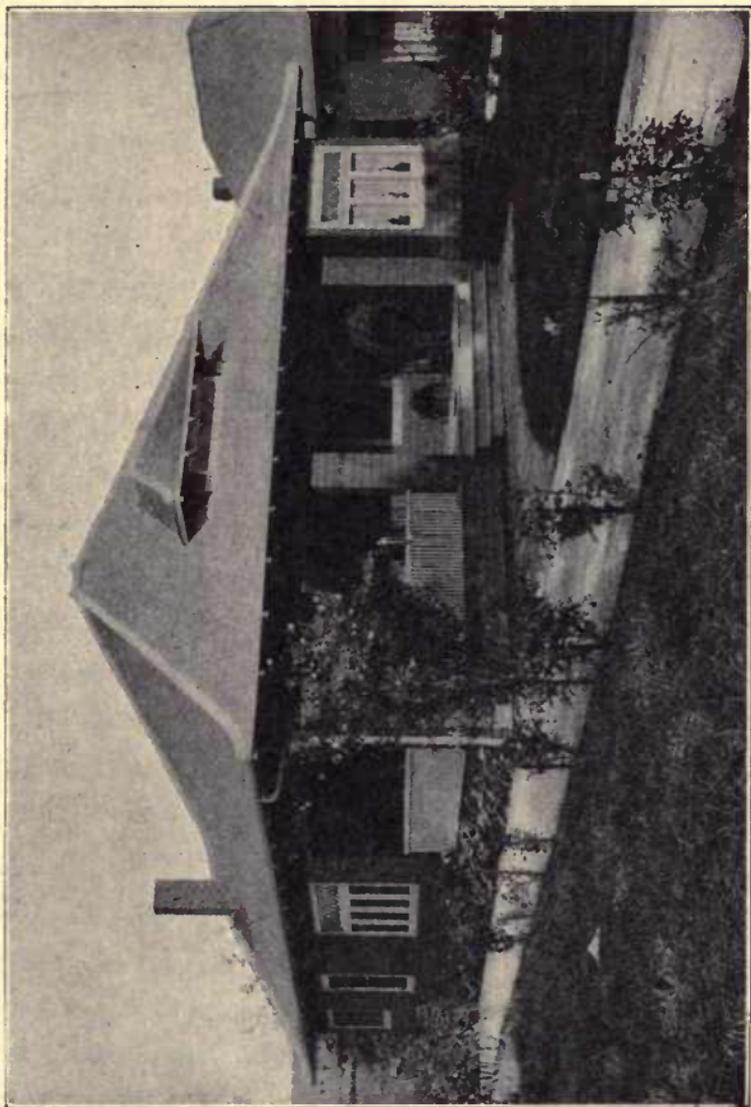
This has been more radical perhaps in Southern California than anywhere else, because the even, equable climate renders thick walls unnecessary, and broad, open piazzas desirable. In that



A Bungalow of Seven Rooms, built at a Cost of \$3,000.

balmy air, where one can live out of doors all the year around, many windows and ample porches are the principal features of the majority of the dwellings. Under these needs and conditions the bungalow has been evolved, or rather adapted, with such modifications, suggested by taste or necessity, as have practically created a new style of architecture in that locality, which, though somewhat composite, still remains simple, beautiful, and above all, unique.

The term bungalow, in California at least, has quite lost its former and particular application. It was originally applied to the sunproof, squat houses of India, built with a veranda, extending around the four sides, over which the roof projects. The American bungalow retains at least a portion of this main feature, as well as that of the broad piazza or outdoor living-room. This kind of dwelling is used to some extent in California, but each succeeding year sees fewer buildings erected in the genuine bungalow style, which is being altered to conform to milder conditions of climate. In California it has been demonstrated that verandas entirely surrounding a dwelling cause it to be too dark and cold, for with all its warmth and brightness the difference

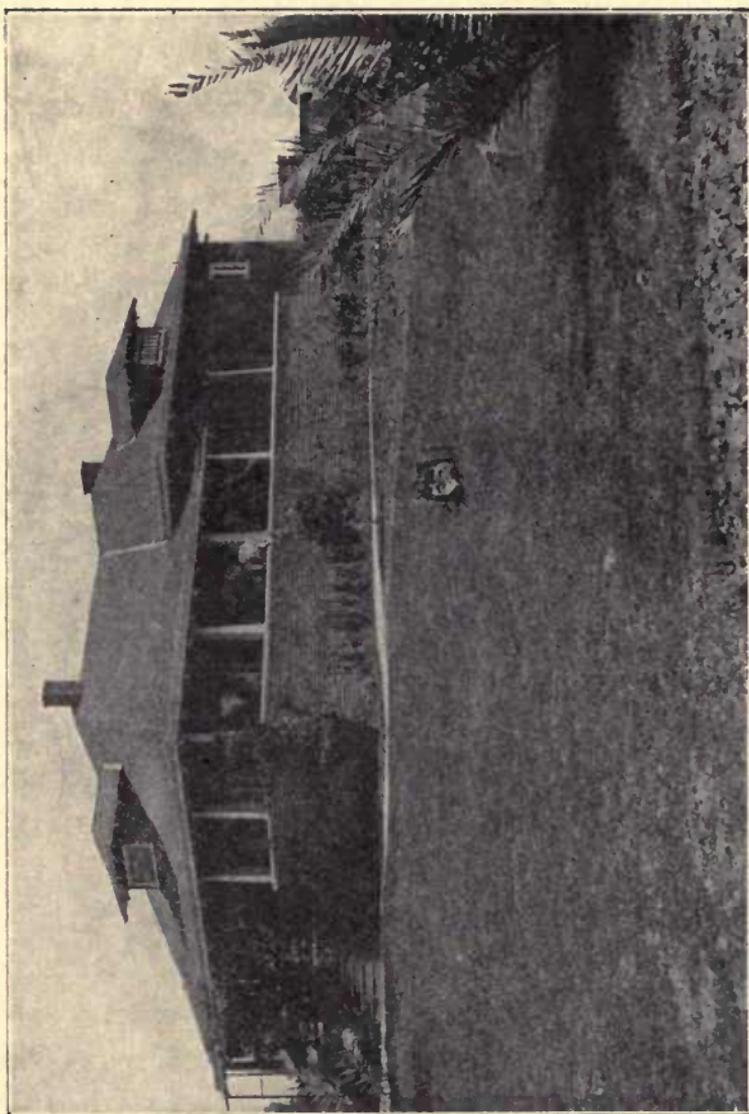


A Bungalow of Six Rooms, built at a Cost of \$3,000.

of temperature in sunshine and shade is remarkable, and not to be realized by the inexperienced "tenderfoot" until he has seen for himself how the room with southern exposure and that with a northern outlook might, by a slight stretch of imagination, not inaptly serve as illustrations of the torrid and frigid zones.

The bungalow affords ample opportunities for picturesque effects, principally through its windows, which may crop out in all kinds of unexpected places, in all shapes and sizes. These effects may be elaborated to a great extent, and at great expense. The central plan remaining the same, results are graduated by the taste displayed more than by money expended. Several thousand dollars may easily be spent in interior and exterior ornamentation, however, without attaining the satisfactory results to be gained by adherence to the original lines of a bungalow dwelling.

Bungalows have been and are still constructed of any house-building material, but there is no doubt that the best general effects are achieved, effects more consistent also, with the features of country and climate, when wood is used for the main portion of the building. A cement or con-



A Bungalow of Seven Rooms, built at a Cost of \$3,500.

crete foundation gives a substantial tone to such a dwelling, the slight extra expense which it entails counting but little when weighed with the results. This foundation should be as low as is possible to give symmetrical effect, and once established, the accessories may be as diversified as the owner chooses, although the best taste must always deprecate a great outlay of money on such a dwelling, the average cost of which may range all the way from six hundred to six thousand dollars, with the balance of beauty and fitness sometimes in favor of the more humble residence.

Dwellers on the other side of the Rocky Mountains would be surprised to learn how cheaply a pretty and comfortable bungalow may be erected. This is especially true of mountain and seaside cottages of this style, built as temporary resting-places where their owners may recuperate from the demands and exertions of the strenuous life, by swinging the pendulum to one that is all, or nearly leisurely, and all out of doors.

For convenience no less than picturesqueness these bungalows are built on one floor. The material used is generally California redwood, which has a great capacity for rich effect, darkening with time, however, unless oiled or varnished

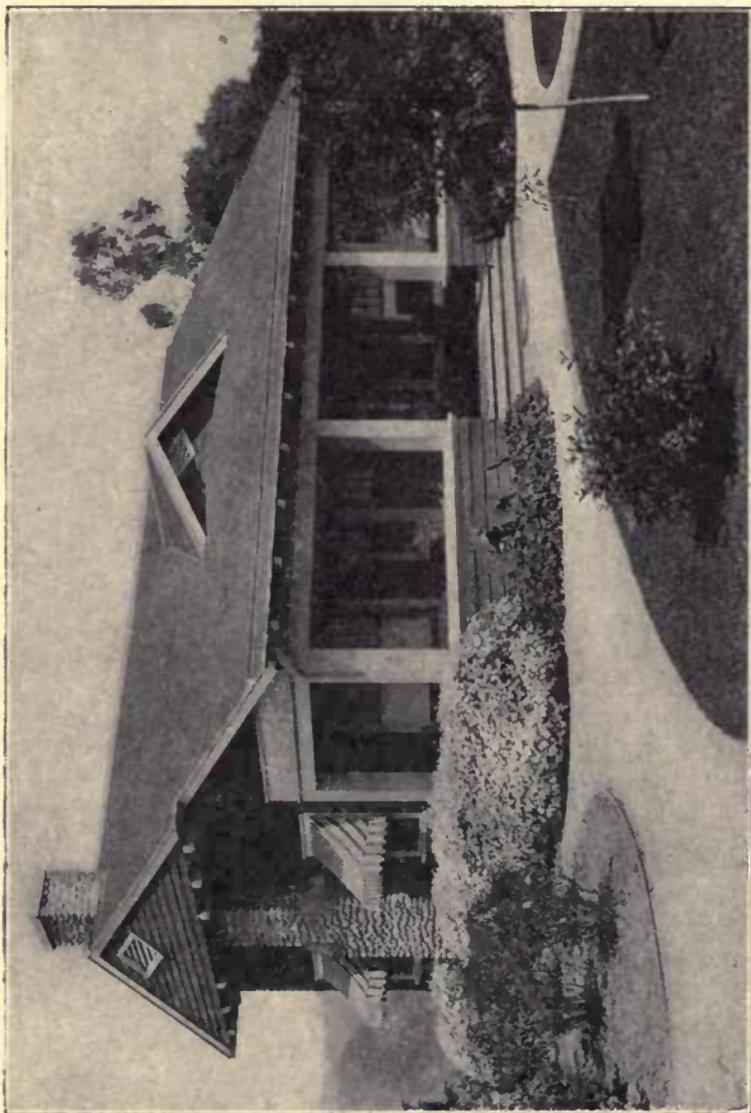
and in either case growing more beautiful with age.

All the inside walls are innocent of plaster, being what is called ceiled. The roof is usually beamed, which also gives a rustic and charming effect. These walls, whether of redwood or pine, make a fine background for brightly colored pictures, photographs, etchings, autumn leaves, mosses and berries—in the mountains—or at the seaside, marine plants, shells, and the wonderfully diversified seaweed of the Pacific coast.

The living-room, opening directly off the veranda, is the artery from which diverge all the other rooms of the house. From it lead the chambers, which are for the most part, rather small, as they are used only for purposes of sleeping. Many bungalows combine living-room and dining-room. Sometimes there is the suggestion of a division by means of portières, but frequently not even that. Divans, simple, but broad and comfortable, are formed by the low window-seats or built under them, if they are not too low. Swinging couches, hung from the ceiling at one side are often a pretty and comfortable feature. Enticing hammocks swaying softly in the breeze that wafts the perfume of

mountain sage, or the grateful twang of the salt air to the veranda, invite one to day-dreams which usually end in slumber. Within the furnishings grow more *bizarre* and Oriental in color suggestion every year, though the material of which they are composed may be of the cheapest and so all the more appropriate.

The window and door hangings are generally of figured or self-colored denim, or bright flowered *cretonne*, the sash-curtains of cheap net or dotted Swiss. An abundance of cushions is an essential of the California bungalow. They make an effective note of color, and suggest the acme of rest and comfort. The broad hearth very seldom contains either grate or andirons; it is the fashion to burn there, on chilly evenings or rainy days, oak logs, manzanitas roots, the berries of which often hang in clusters above the mantel, or drift-wood, when obtainable. When built in the shadow of the hills, these charming retreats are usually left unpainted, and they gradually assume the hues of their surroundings, even to the green of the mosses beneath the oaks, which as time passes reproduces itself on the roof and eaves. But at the seaside, the imagination is allowed more latitude. Sometimes the roof is stained a

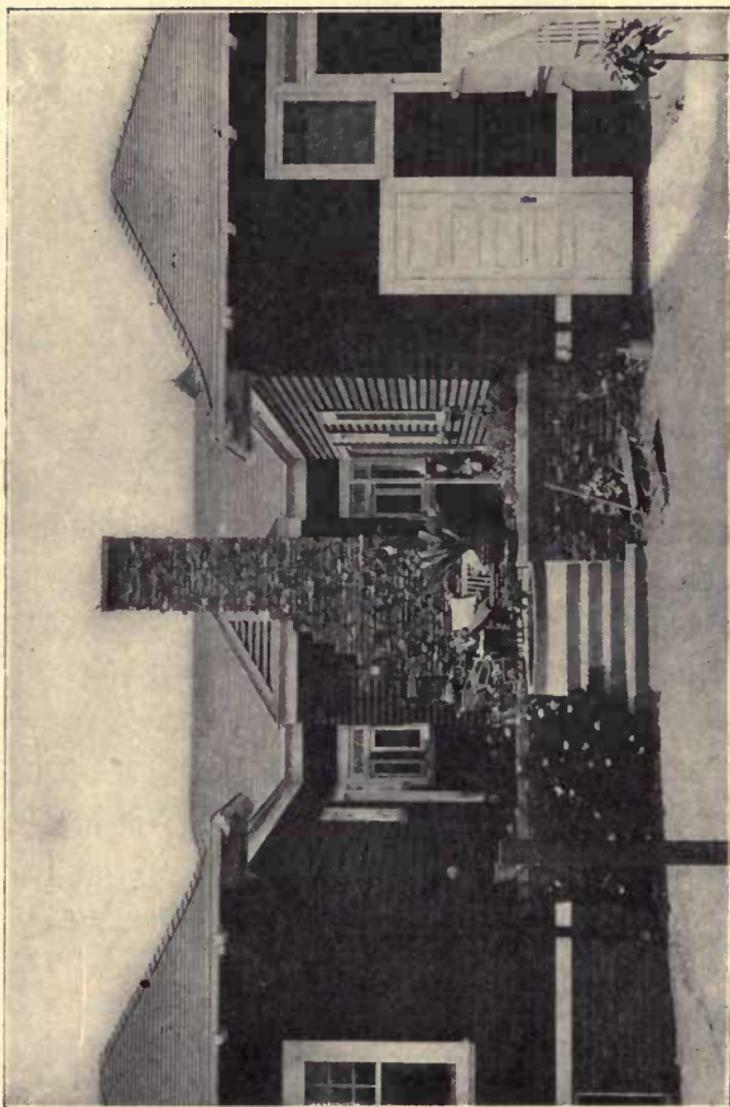


The Home of a Boys' Tennis Club at Pasadena, Cal., built at a Cost of \$4,000.

moss-green, the body of the house being of a darker shade, or perhaps an Indian red. When the former, the door and window-trimmings may be of a rich cream, making a bright and pleasing contrast. If the main note is red, the accessories are often medium or olive green, or a soft gray, sometimes black. Or the house may be a lighter green with gray trimmings, or yellow with white or brown relieved by cream or again green, which seems to be the favorite color. Scarlet geraniums run riot everywhere, even climbing to the low roof of the bungalow. The effect of this radiant color scheme may be better imagined than described, whether subdued by a woodland setting, or open to the intense blue of sea and sky.

Many of these bungalows, especially at the seashore, are occupied all the year round, and it would astonish the unsophisticated Easterner to learn how much of comfort and beauty they offer at a cost ridiculously low. And when everything is said, it is the moderately cheap dwelling which most appeals to the average householder.

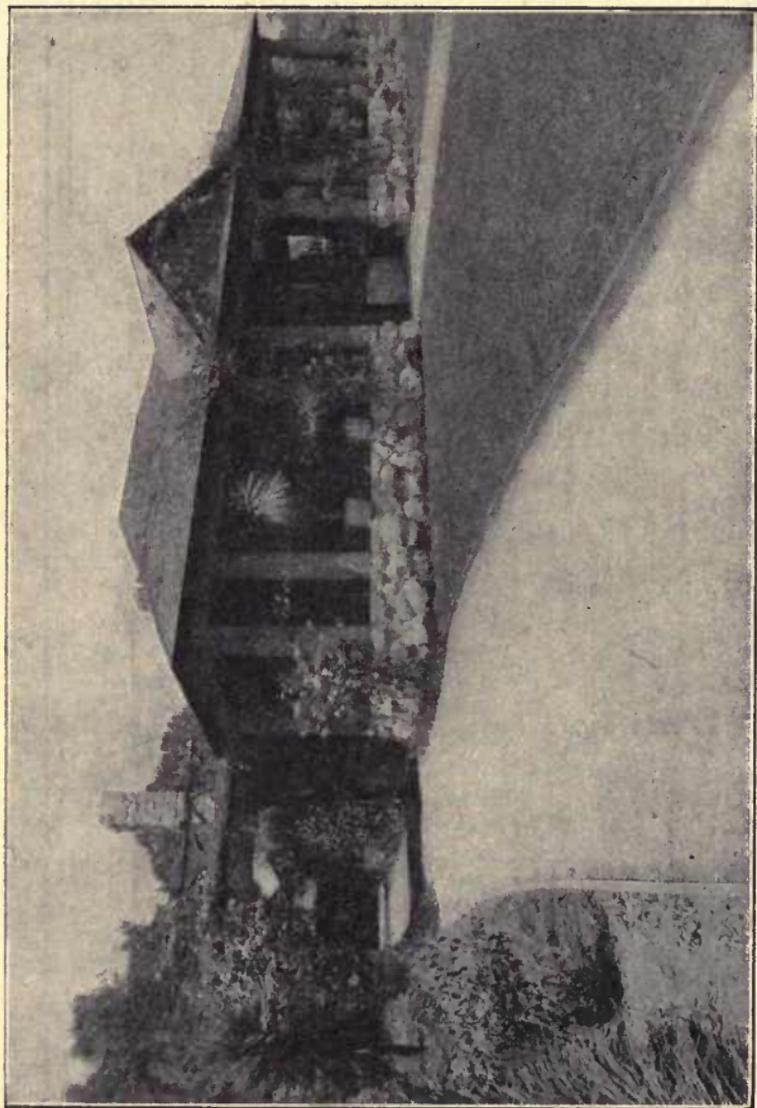
I have in mind a pretty little bungalow, recently built at one of the most homelike and attractive seaside resorts of the Pacific shore. It has a low, broad veranda facing the ocean. One half of this



A Bungalow of Eight Rooms, built at a Cost of \$4,000.

veranda is enclosed in glass, thus warding off the breeze, which at times is apt to become too lively. From the porch opens the living-room with three windows, one directly overlooking the sea, while from each of the others more than a glimpse of the water may be obtained. Between these two windows is the fireplace, with a rough outside chimney—on a cobble-stone foundation. The dining-room also opens from the veranda, and may be reached as well through the living-room. There are two small bedrooms, a bath-room with porcelain tub and stationary wash-stand, a tiny but convenient kitchen, and a small screened porch. The floors are all painted. In the living and dining rooms are gayly colored "hit and miss" rugs of rag carpet; in the bedrooms smaller ones that can be taken up and shaken every day. Divans filled with gay cushions with several rattan chairs and rockers, form the furniture of the living-room. We must not forget the reading table in the center, over which hangs a quaint lamp of unique design. Curtains of flowered cretonne hang from all the windows, the sash curtains are of figured Swiss.

In the bedrooms, large, comfortable couches take the place of ordinary bedsteads. The outside

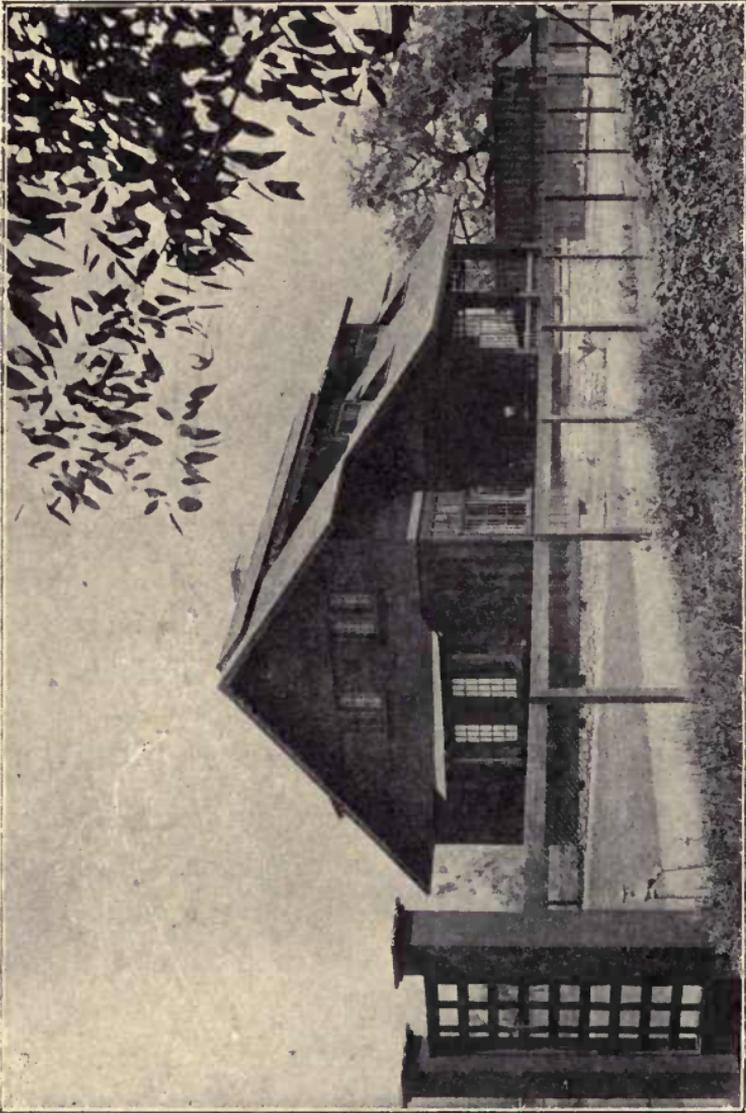


A Log Cabin Bungalow of Seven Rooms, built at a Cost of \$5,000.

coverlets are of the same material as the closet portières, substituted for doors. The drapery of the washstand, consisting of a shelf nailed across one corner, is the same—a cheap but pretty and durable cretonne. The kitchen and dining-room have convenient closets, those of the latter with glass doors. The outside of this charming bungalow is stained a dark green with cream facings. The roof is a green, a couple of shades lighter than the body of the house.

This cottage was built and furnished at a cost of \$1,000. It may readily be seen from the description what possibilities lie in \$2,000 or even \$1,500 in the sunny clime of California, where the bungalow has become an institution destined to remain.

It must not be forgotten that in nine cases out of ten, weather conditions being favorable, the veranda is the real living-room of the bungalow. It may be any width, from six to ten or even twelve feet, the wider the better provided its dimensions do not altogether dwarf those of the house proper. Here, sheltered from the sun, enjoying the deliciously fragrant air, the family may gather with books or work. Rugs of matting or fiber on the floor, comfortable porch

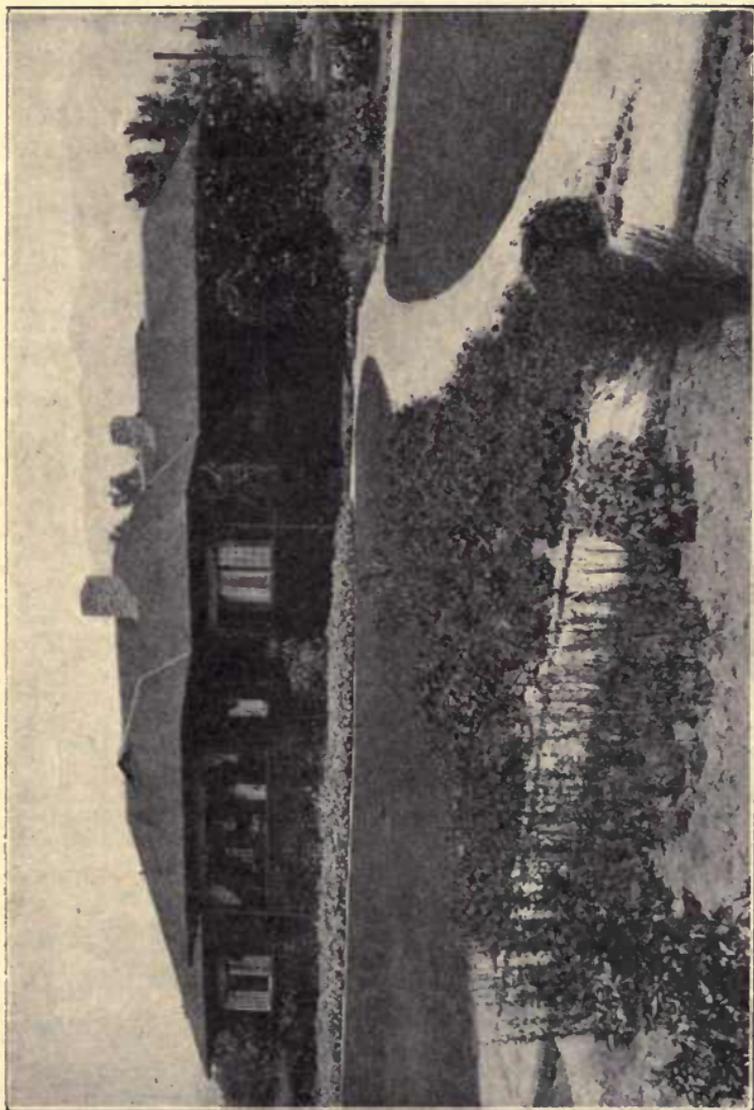


A Bungalow containing Seven Rooms and two Baths, built at a Cost of \$5,700.

chairs, rustic but pretty, convenient little tables, hammocks in different corners, with hanging baskets on which the brilliant little humming-birds often poise to sip of the sweets they contain—all are invitations to the tastes of the busy, the intellectual, the esthetic, and the indolent. Sometimes great banks of daisies or calla lilies present a beautiful and effective foreground, with brilliant beds of many-colored flowers making a vivid contrast.

Greater seclusion may be attained by building the back part of the house around a small court, where the family may sit unobserved by passers-by. This court usually overlooks the rear portion of the garden, and doors from the bedrooms often open upon it. In city bungalows this arrangement is desirable for many reasons.

The delight of living in the open air as much as possible can hardly be realized by those who have never been fortunate enough to do so. The bungalow with two stories is an innovation, but it can be made satisfactory in an architectural way if due proportions are carefully considered. By pitching the broad roof somewhat higher a bay story may be formed, available in every way for the uses to which it is to be put—that of sleeping



A Bungalow at Altadena, Cal.

room. Dormer windows on two or four sides make a pleasing break in the monotony of the roof. These may be of various shapes, but generally extend outward, as it gives more room inside and the outside effect is more harmonious. Occasionally, when the house is large, these dormer windows are utilized for ornamentation, serving no other purpose, as in such cases the house consists of but one story. Now and then, also, in large one-story bungalows the additions of wings gives an excellent effect. Observation of the changes which have taken place in the methods of building as applied to cottage bungalows tends to the opinion that the four-sided veranda is almost a thing of the past in California.

Given a broad front piazza, the remaining three, or at least two sides, are apt to be open to the sun and light, roofs being now constructed so that the low eaves overhang the other portions of the house, thus shading it sufficiently, yet admitting all necessary brightness and sunshine. There is another advantage connected with bungalows which has recently been demonstrated. In the late terrible earthquake in and around the city of San Francisco, none of these buildings

suffered the least damage. Low and broad, they cover an extent of surface somewhat disproportioned to their height, which renders them capable of resisting the greatest shocks. This ought still further to recommend them in the future to the home-builder in California.

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