ROUND THE WORLD

VOL. VII

ROUND THE WORLD SERIES

VOLUME VII

ROUND THE WORLD

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

VOLUME VII

Trees, Historic, Wonderful, and Ordinary. Furs and Fur Hunters. German Folk Lore. Floating Mines. Santa Catalina Island. Gold Mining in Mexico. Mountain Climbing in America. Old Style Writing. Canoes and Canoeing. Hunting Rubber in the American Tropics. Outdoor Bird-Taming. The Landmarks of Old Virginia.

WITH 100 *ILLUSTRATIONS*

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CONTENTS

	PAGE
Trees, Historic, Wonderful, and Ordinary	7
Furs and Fur Hunters	31
German Folk Lore	49
Floating Mines	65
Santa Catalina Island	81
Gold Mining in Mexico	95
Mountain Climbing in America	115
Old Style Writing	131
Canoes and Canoeing	141
Hunting Rubber in the American Tropics	157
Outdoor Bird-Taming	175
The Landmarks of Old Virginia	205

Trees, Historic, Wonderful, and Ordinary

To walk unseeing among trees is to lose not only much of the beauty of Nature, but also the peace, rest, and beneficence of feeling, which a true appreciation of that wonderful mother gives to the human soul. They afford an almost inexhaustible subject to the pen and pencil of the writer and artist; their characteristics are so different, and so numerous, growing more and more interesting as one becomes familiar with their infinite variety.

That monarch of English and American trees, the oak, formed from the smallest beginnings, and needing a long period of time for the attainment of its perfection, is beautiful from the moment it begins to put forth the buds which later are to develop into a very wilderness of leaves. It is moreover, as modest as it is strong, as hardy as it is beautiful. The most widely scattered species known in England and America is the white oak, towering high above all its

Large Yew Tree of very great age near Küchou, southern Shantung, China. Confucius is said to have rested under its shade. Its Circumference is 30 odd Feet.

companions and adapting itself to various conditions of soil and climate. It thrives best, however, on dry ground, though it also attains goodly proportions close to the water. And yet there are

Mammoth Live Oak.

persons, who, having the good fortune to possess an oak-tree will ruthlessly cut it down to make way for insignificant shrubs and bushes, excusing the vandalism by maintaining that it would, if left in the spot where Nature placed it, destroy the symmetry of the lawn or garden! To the true lover of trees there is nothing in all the world more typical of strength, endurance, and natural magnificence than a rugged-trunked, broad-branching, high-reaching oak, standing alone; for when crowded these trees do not give us their best effects; they need space, and the sunlight filtering through their branches, and a blue or opaline sky smiling down above them.

Sycamores, elms, and the various kinds of maples we also have in abundance; a volume might be written about the beauties, peculiarities, and various qualities of each. Of these the elm is beyond question the most attractive. It is an exceedingly graceful tree, introducing into any landscape a distinction and elegance not belonging to any other. Upright and strong, the free swing of its wide-spreading branches, make it plain to the observant mind that it was among the trees, "God's first temples," that

A Freak of Nature.

man originally obtained his designs for building them of ensculptured stone.

As characteristic of the North as palms are of the South, pine trees carry with them the thought of mountain-sides, rugged, precipitous paths, and snowy forests. There are over thirty different species in the United States. There is nothing more solemn in Nature than a walk through a pine-forest, the soughing and moaning of whose branches is as melancholy and even-toned as the sighing of waves upon a lonely shore.

In various parts of the world we find numbers of curious and wonderful trees—some of historic interest, others made memorable by peculiarity of form, or immense size, or certain conditions of growth and structure. Going back to the time of Our Lord, there still exists in Egypt a tree under which the Holy Family is said to have rested during the flight from Herod and his assassins. Penetrating still farther into the traditions of the Jews, we are shown "Absalom's oak," from which he hung suspended, caught by his hair, as he fled across the plains of Palestine. Many of us have seen, and every Christian has heard of the olive trees of Gethsemane which have outlived the centuries since Christ knelt, in a sweat of

From stereograph, copyright, by Underwood & Underwood, N. Y.

Absalom's Oak, Palestine.

blood, beneath their gnarled branches, the night before His Passion. In America we have the tree, in Havana, Cuba, under which Mass was first celebrated; the tree beneath whose sheltering boughs Cortez wept on the night of his defeat, and others which space will not permit us to enumerate in this article.

This Western Continent also, may justly lay claim to the possession of many wonderful trees, especially in California, where the exceptional range of climate enables that State to produce some of the largest and most curious in existence. One of these giants, far up in the Sierras, is one hundred feet in girth, and is many centuries old. It is remarkable principally because it stands alone, and is supposed to be the sole survivor of an ancient grove or forest.

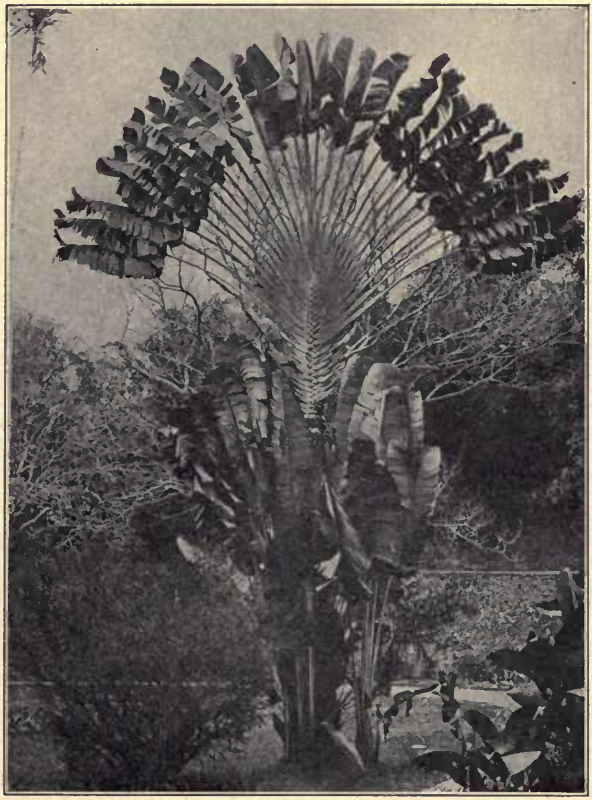
At the present day the redwood or Sequoia tree, of which family the tree above described is a member, lives only in a narrow strip of the coast range from ten to thirty miles wide, extending from the extreme southern border of Oregon to the Bay of Monterey, in Western California, while what is called the "Big Tree," to differentiate it from its smaller companions, is confined to a slope of the Sierra Nevada Mountains along a

Royal Arch Oak, Ormond.

Palmetto Palm.

distance of two hundred and sixty miles. These Big Trees are unique in the history of the world.

The Mariposa Grove is the only one which is at



Traveler's Palm.

present safe from destruction, as the others are private property. And this grove is by no means as interesting as the Calaveras Grove, which, to

our shame be it spoken, was purchased by a lumberman in 1900, and bids fair to go the way of so many of its fellows.

It is situated in the county of the same name, and contains between ninety and one hundred giant trees. About six miles south of this is another grove, which still contains five or six hundred trees, none as large as the Calaveras group.

The largest tree in the Mariposa Grove is "The Grizzly Giant," which is ninety-three feet in circumference at the ground. Eleven feet above the ground its diameter is twenty feet. Some of the branches are fully six feet in diameter, the size of the large elms of the Connecticut Valley.

The third most important grove of Big Trees is the Stanislas, which contains 1380 specimens. Many of them are one hundred feet in circumference, and nearly three hundred feet in height. It is not to be thought that because of their great size, these Sequoias are unsightly or cumbersome objects. They are very symmetrical, graceful, and beautiful, and some of the younger ones—not more than five hundred years old—though not nearly so large, are exceedingly handsome. It is a pity that any individual,

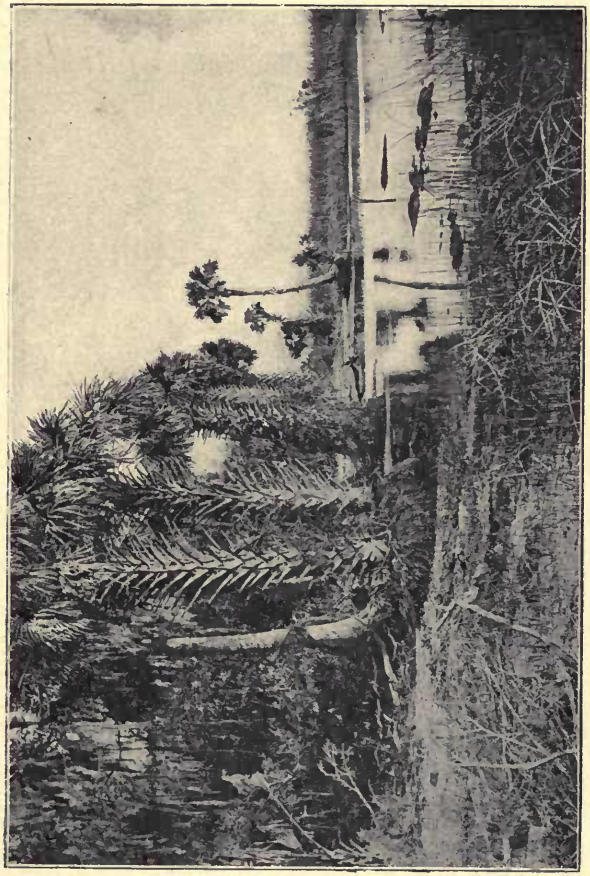
largest of these, known as Montezuma's tree, is one hundred and seventy feet high and forty-

Gathering Para Rubber on the upper Amazon River.

six feet in circumference. The dark, stately branches are unmoved by the light winds that

sweep gently through them. The leaves are of dark green, and among the foliage, gray as the centuries, dead and buried, of which they are an offshoot, hangs a waving parasite of creeping moss. This species of tree is called Ahuehuete. Beneath its somber shadow, says the legend, Montezuma was wont to meditate. One evening he had a strange vision of a cross framed along the branches of his favored Ahuehuete. It was probably some effect of the moonlight, but it filled him with foreboding fears, and the next day he learned that Cortez had landed at Tabasco. And the cross of the Christian was placed on the Tlocali of the Aztec.

In the mountains of Puebla there are large trees of the same species, so large that twenty men can scarcely stretch hands around the trunk. But the largest tree in Mexico, and perhaps in the world, is one in the churchyard at Mitla, in the State of Oaxaca, about three hundred miles south of the city of Mexico. It is one hundred and forty-five feet, two inches high, and one hundred feet in girth. In 1804, the great traveler, Humboldt, placed a tablet on this tree, but the growth of the bark, in a hundred years, has almost entirely obliterated it.



Palms bordering Lake George, Fla.

California also boasts some very large trees of the Gravilla Robusta, as well as immense pepper trees. These trees, when first beheld by the traveler from the east, are a delight to the eye, as being so very different in appearance from any other seen in his part of the country. At a distance they somewhat resemble the weeping willow, though at nearer approach the likeness is not so marked. They are larger, their branches are broader and thicker, and the delicate leaves smaller and more lace-like. When in full bloom, the scarlet pods which give name to the tree scattered thickly among the leaves, it is a thing of beauty. It gives fine shade—one of ordinary size, as pepper trees go, forming in itself a beautiful arbor.

Sometimes a single tree measures over eighty feet across from branch to branch, and can best be described to one who has never sat beneath its boughs, as a huge, lacy, green umbrella with scarlet dots, the tips of the branches falling like the edge of a giant parasol to shade the ground beneath.

The luxuriant vegetation of India, producing the wonderful banyan tree, as well as thousands of others forest-like in their abundance and

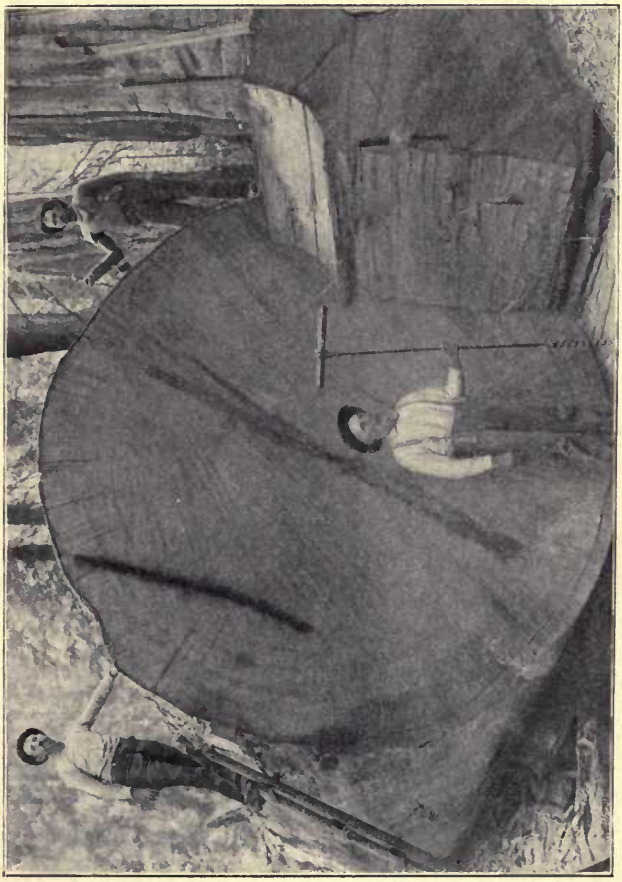
From stereograph, copyright, by Underwood & Underwood, N. Y.

The Virgin's Tree, supposed to be the tree under which Mary rested during the Flight into Egypt.

immense size and variety, has long been the theme of travelers and artists. The banyan, reproducing itself from the tips of its own branches

descending into the fruitful earth, and forming new trunks, is capable of sheltering a whole village under its boughs. And yet in our own country the everglades of Florida, with their palmettos and cypress, curtained by the gray moss that hangs from every branch, recall to our minds the wonderful undergrowth of the tropics. "Land of the Palms" some enthusiastic admirer has called the wonderful State, but a couple of days' journey from the frosts and snows of New England. And again in the marvelous beauty and variety of her palms, California comes to the front. Though only a semi-tropical region, there are few varieties of palms that do not grow and flourish to perfection within her borders. They beautify her gardens, and line, in glorious profusion, many of her most celebrated drives.

To the Southwest also belongs the giant cactus, which on the deserts of Arizona and New Mexico becomes really a tree, grotesque in form, springing from a soil so apparently arid that human incredulity marvels at its results. The effect produced by these groups of cacti on the desert as the traveler whirls past in the train, is weird in the extreme, particularly in the early dawn, before the sun has silhouetted their shapes upon the sands; or



One of the famous "Big Trees."

better still, when moonlight has softened and changed their sharp and picturesque outlines.

At one moment they resemble a crowd of ragged beggars, hurrying to make an onslaught on some prince of the Sahara as he passes in his lordly caravan; at another the remnants of a routed and scattered army fleeing from the triumphant conqueror. Again, it would take but a slight stretch of imagination to fancy them gaunt phantoms of the long ago, fading and hurrying away through the misty dawn, or the melancholy moonlight, from the scene of their former habitations, pursued by the Cyclopean flaming eye, brazen throat, and fiery breath of that iron monster that has conquered time and space in the swift march of modern civilization.

It is a relief to turn, both in sight and contemplation from these offsprings of the desert and its desolation, to what we delight in calling "God's own trees," though it is but a childish expression, "for all things are His, and He made them." After all, there is nothing in Nature like the heart of the woods, in the flush of spring, with the new leaves in a haze of greenish beauty, each different from its neighbor, in the charm of delicate tint and variety of subtle shade and tone.

Or in the summer, when they are in their highest bloom, crowding each other, a very mass of shade and intermingling aroma, the birds twittering in their branches, beginning already to desert the nests they built so carefully in spring. Or more charming still, when the first hint of frost in the air begins to mark a change in their coloring and depth of foliage, when the leaf turns, trembles and flutters slowly to the ground, beginning to weave anew the soft, many colored carpet that welcomes the feet of October. Or even in the snowy winter days, when the boughs, snow-laden, crack and bend beneath the icicles that weigh them down, for the Nature lover, as he walks abroad, knows that the white shroud which envelops them will soon be cast aside and a new life and new garments be theirs at the first sweet breath of spring.

Furs and Fur Hunters

It was in search of the skins of wild animals that the feet of the white man first turned from the Canadian lakes and the borders of Hudson Bay into the remote interior of the vast region which still furnishes a great portion of the furs that are used throughout the world.

The first *coureurs des bois* were French Canadians; men who were filled with the spirit of adventure as well as the desire to put an occasional gold piece in their slender purses. Usually, however, they traded the skins they brought back for the supplies necessary to their sojourn in the wilderness, which sometimes lasted several years. This arrangement was, in every case, far more advantageous to the merchant than to the hunter, who after severe hardship, and often at peril of his life, had succeeded in obtaining skins of very great value. It was by means of the birch-bark canoe that these voyages were accomplished.

The modern *voyageur*, or trapper, is the true successor of the old *coureur des bois*. He

Muskrat. *Polecat.* *Sable.*

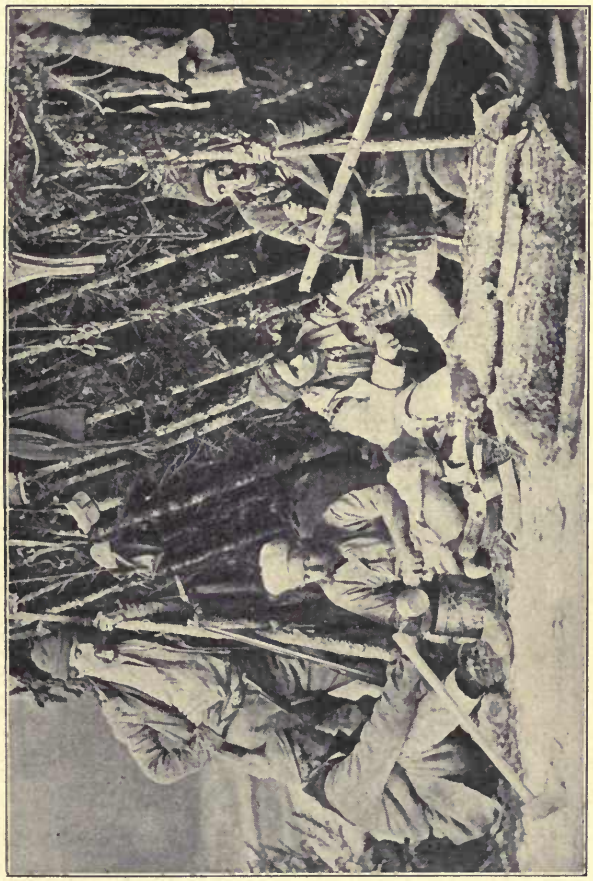
still uses the birch-bark canoe, without which no intercourse could be carried on through a country covered with a network of streams, flowing over stony ground, and interspersed with cataracts and rapids. The crew generally consists of eight or ten men. These *voyageurs* are often of mixed French and Indian blood. They are a mingling of light-heartedness and apathy, full of jest, song, and anecdote, quick of foot, light of hand, sure of aim, reliable, enduring, polite, and affable. The labor of these men is incredible; they work eighteen hours out of the twenty-four. Once they were independent, but since the founding of

Polar Foxes.

Sea Lions.

the Hudson Bay Company in 1670 they have been in the pay of the British merchants who control the trade from Canada to the far north. The Indians of this region, amounting to perhaps one hundred thousand hunters and trappers, are all actively employed by the Hudson Bay Company. The standard of exchange in all mercantile transactions with these people is a beaver-skin; they receive all their food, clothing, and ammunition on credit in the autumn, to be repaid by the produce of their hunts during the winter.

The chief fur-bearing animal of the Hudson Bay territory is perhaps the black bear. It is certainly the most valuable, having long black hair, beautifully smooth and glossy. He is found in the forests of North America; in summer retreating farther and farther inland, in spring he hovers about the rivers or lakes, on his way from the hollow tree or snow-bed where he has passed the winter. He is a great climber, but from over-excess of caution often becomes a ready mark for the hunter. Rising on his hind legs at the slightest noise to look over the bushes, he is easily located and shot by the ever-watchful marksman. He is very alert in spite of his great



Hudson Bay Hunters in Camp.

size. The fur of the brown bear is not so valuable as that of his black brother, while the skin of the grisly bear is but little prized by the hunters. The raccoon is found in Canada, the United States, and also in the Hudson Bay territories. His fur forms a staple article of commerce, being very fashionable in Russia.

The skin of the American wolverine is much used for furs and linings; yet the Indian hunters are its inveterate enemies, as it constantly robs their traps on which they depend for their best skins. The pine-marten is another much prized animal, its fur being remarkably fine, thick, and glossy.

The mink is an important fur-bearing animal, though the fashion of it varies greatly. Just now the mink is in high favor. It is used largely for trimming, as well as for muffs and boas and circular capes.

The red fox of the Hudson Bay region is a much finer animal than our common fox, and its fur is also much more desirable and more highly prized by hunters and trappers. One skin is worth twenty-five dollars—in the rough. Peltry is still more valuable. This is the skin of the black or silvery fox. The beaver plays a very

Trapping the Lynx.

important part in the fur merchandise of this northern country, as does also the muskrat or musquash, as it is called in that region. This is a very curious little animal. It lives close to the

water, driving tunnels into the bank, all opening on to the surface of the stream, or river. Sometimes, in very marshy lands, it builds curious little huts from three to four feet high, which it strengthens on the outside with rushes. Though fond of the water, it always lives in some place where it can be thoroughly dry. There are various ways of killing these little animals. When the snow begins to melt, the Indian steals up to the musquash house, and, driving his spear through the mud walls, pierces the animals inside. Another way is to block up the different tunnels, and seize them in large numbers. They usually use the trap, however, as a means of destruction. The skins are annually exported to England for making hats. It multiplies very rapidly and is found in nearly every swampy lake, as far as the confines of the Polar Sea.

Siberia has many fur-bearing animals, the sable being pre-eminent for the beauty of its skin, which is very valuable. The chase of the sable is attended with many hardships and dangers. At the beginning of winter the hunters repair to the forests, where they erect their huts. They at once prepare to lay traps for the sable, usually by placing loose boards over deep pits which they

have dug, into which the animals fall, and are thus secured.

The ermine, the sea-otter, and the lynx are highly prized.

Seal-hunting both by sea and land is among the most profitable, though the wholesale destruction of these valuable animals threatens to exterminate them altogether, if the existing laws are not better enforced. Land-killing is the only legitimate method of destroying them—as the killing in this instance is confined to the young males only, without disturbance of the breeding herds. The seals are attacked while sleeping, and the hunter, with spear or shot-gun, puts an end to his prey.

When the hoar-frost begins to be heavy in the autumn mornings, the trapper also begins to move. He is never attired in the tawdry, flash-clothing of romances; they would at once reveal him to his quarry. His attire is in consonance with that of the autumn forest through which he moves; he must be alert, noiseless, full of stratagem as the prey of which he is in search. Generally, trappers build a central lodge from which they hunt from point to point. In his hunting-bag four things are absolutely required:

Watching the Trap so as to kill the Animal before it injures its Fur.

an axe, a gimlet to bore holes in his snow-shoes frames; a crooked knife, and a small chisel. Firearms, canvas for a tent, etc., complete his equipment. His dog is his friend and companion. He very soon acquires the habit of moving through the bushes with noiseless stealth. He must also imitate his game, which can deceive the hunter by standing inanimate when he is tracked, thus putting him off the scent. The trapper must also learn to see as well as the caribou and smell better than the wolf, otherwise he will not be a successful hunter. When the severe frost comes, and in the early dawn he leaves his temporary cabin to hunt the wolf or the moose, a white man would naturally cover up his face as much as possible with comforter or fur collar. But he has learned better from the Indian. Throwing open his coat, that the thick part may not turn his breath to frozen moisture, he begins to run, and so, with dry skin and quickened blood, he hastens on his way. He swings forward in long, straight strides, deviating neither to the right nor the left; he assumes, for the time being, one might almost say, the personality of the Indian. He baits his small traps with poison, but without help he

Skunk. *Pine-Marten.* *Ermelin.*

does not attempt to hunt the wolf or the moose. To the amateur sportsman it does not much matter that his hunting ground becomes each year more and more restricted, but to the *voyageur* it is not a pleasant look forward, and to the Indian trapper the prospect is still more gloomy. He now holds only a fringe of hunting grounds in the timber lands of the Great Lakes. But in the Hudson Bay region the Indian trapper will hunt as long as the game shall last, for in many parts of it the white man can not exist.

In no part of the world does the amateur sportsman find his days so uniformly pleasant as in California, for the climate is perfect, and out-of-door pastime always in season. In Lower California, that sparsely settled wilderness between the Pacific and the Gulf, hunters come from various points of the United States to hunt antelope and mountain sheep. These are mostly amateurs, however, and can hardly be classed among fur-hunters, though the chase is very interesting in this region, portions of which are almost inaccessible by reason of the great number and variety of the cactus, which grow so densely in places as to be almost a forest. In the heart of the high hills the beautiful mountain-sheep

Starting on a Caribou Hunt.

are found, with their thick, creamy white coats, and huge antlers, one pair of which, at least, every hunter aims to bring home as a trophy.

The hides of these animals, when well cured, make beautiful rugs, heavy, warm and soft. They are valuable, because so rare, for the race is fast becoming exterminated.

The establishment of forest reserves should also include the preservation of deer, mountain-sheep, and the bear in those localities where it still lingers, giving shelter and protection to the rapidly diminishing animals of the larger kinds, which will, unless some such recourse be taken, share the fate of the bison, once so plentiful on the Western plains. The time has already arrived when a buffalo-robe is worth almost its weight in gold to the curio-hunter or the enthusiastic lover of natural history.

With the moose it is different. Their great strength and hardihood, the immense territory they range, so far removed from contact with civilization, and the rapid disappearance of their greatest enemy, the Indian, assure them the promise of an existence much longer than that of any other wild animal on the American continent.

Apart from the lucrative features of hunting as practised in the far North, and along the Canadian lakes, though the life of a hunter and

trapper is one of privation and endurance, there is probably no calling in the whole world that so

In the Wilds of the Canadian Forests.

stirs the blood and permeates the whole being, as that of the man who sets forth in the fall of the

year to spend the long winter months in the recesses of the icy forest, crossing the frozen streams on foot, and dragging behind him his birch-bark canoe. He knows all the signs; he can tell the time of day by the length of the shadow cast by the sun; the snow crackles under his feet, the exhilarating air fills his lungs. He does not descant on the silent beauty around him, but he sees it so thoroughly that it becomes part of his nature. And when, in the spring, he returns to civilization, or the edge of it, laden with skins, his occupation gone for the time being, he no sooner falls into the more monotonous routine of ordinary village life than he begins to long once more for the shortening days, the fall of the leaf, the first breath of frost in the air. So much for the white man; to the Indian, heaven is a happy hunting ground, complete because it is eternal.

German Folk Lore

"From the Land of the Cornflower and the Vine."

"When God created Adam He made him from eight things—the bones from stone, the flesh from earth, the heart from mud, the blood from water, the thoughts from clouds, the sweat from dew, the hair from grass, the eyes from the sun, and then blew into him the Holy Spirit." Thus runs an old bit of German folk-lore, and no land has quainter legends and lore than the land of the cornflower and the vine.

Many of these old legends are religious in character, and deal with the saints, angels, and the Blessed Virgin. A quaint story is told of

Delve in North Ditmarschen, that the site of a church was decided upon by an image of Our Lady being tied on the back of a mare which was turned loose to run all night whither it would. Where it was found next day, the church was built, and called "*Unse leve Fru up dem Perde*," "Our Lady on Horseback."

Folk-lore says there must be no spinning on Sunday or on Saturday evening, and the tale is told of one woman, more boastful of her skill than of her piety, who persisted in spinning on Saturday evening to show how much more she could spin in a week than could her rival. The next week she died, and the following Saturday, when her rival was engaged in prayer, the ghost appeared to her, and, showing her a burning hand, sighed:

> "See what in hell have I won
> Because on Saturday eve I spun."

Witches, were-wolves, kobalds, and changelings are all prominent personages in German folk-lore, the latter being dwarf children changed from new-born human babies—to prevent which the nurse always blesses a new-born babe the moment it arrives. The deeds of dwarfs and goblins seem, in German folk-lore, to be always

The Fairy Tale.

malicious. There is about these fancy-people none of the cheerful and kindly temper which is so largely German. They seem born with a grudge against mortals, and they exercise it in many malicious pranks.

A builder had promised to have the church at Eckwadt completed at a certain time, and was in black despair because he felt himself unable to keep his contract. Wakeful, one night, he wandered far afield, when he was accosted by a little hill-man, who promised to finish the church by the day appointed if the builder could at that time tell the dwarf his name—if not he should belong to the hill-man, body and soul. The builder thought this an easy bargain, promised, and the church went up as if by magic. But he could not ascertain from any one the dwarf's name. Despairing again, he walked to the hills in thought. Passing by a mound, he thought he heard some one crying on the other side and paused to help, when he found that the crying came from within, and plainly distinguished the words: "Hush! be still, my child; to-morrow comes thy father Zi with Christian blood for thee!"

The builder rejoiced—he knew that he was saved! Next day, just as the dwarf was placing

The Pied Piper of Hamelin.

the last stone, the builder cried out, "*God Maaen, Zi, God maaen, Zi, Saetter du nu den lidste Steen?*" —"Good morning, Zi, are you placing the last stone?"

When the goblin heard his name he dashed the stone from him and rushed away, the hole which he left never being filled up, for what was placed there in the daytime, at night would be cast out. At last a holy window was placed there, and this the dwarf suffered to remain.

The "Man in the Moon," in North German lore, is a real individual and there for a purpose. A man once stole his neighbor's cabbages and was seen running away with them, when the owner wished the thief up in the moon, and lo! there he may be seen, cabbages and all, on any clear night. Many more things are in the heavens besides the stolen cabbages, according to folk-lore. Charles' Wain, or the Great Bear, is the chariot in which Elias went up to heaven, while the star above the center-pole is the wagoner, Hans Dumkt. Hans was a servant of Our Lord, who grew careless and cut his chaff badly, until Christ was displeased and set him on the wagon-pole of the celestial wain as a warning to all careless servants.

Another quaint tale tells how Our Lord, when

Death of Elizabeth

on earth, sent His disciples to beg a loaf from a baker, who harshly refused it. His wife and her six daughters standing at the door gave him bread secretly, and for this they were placed in

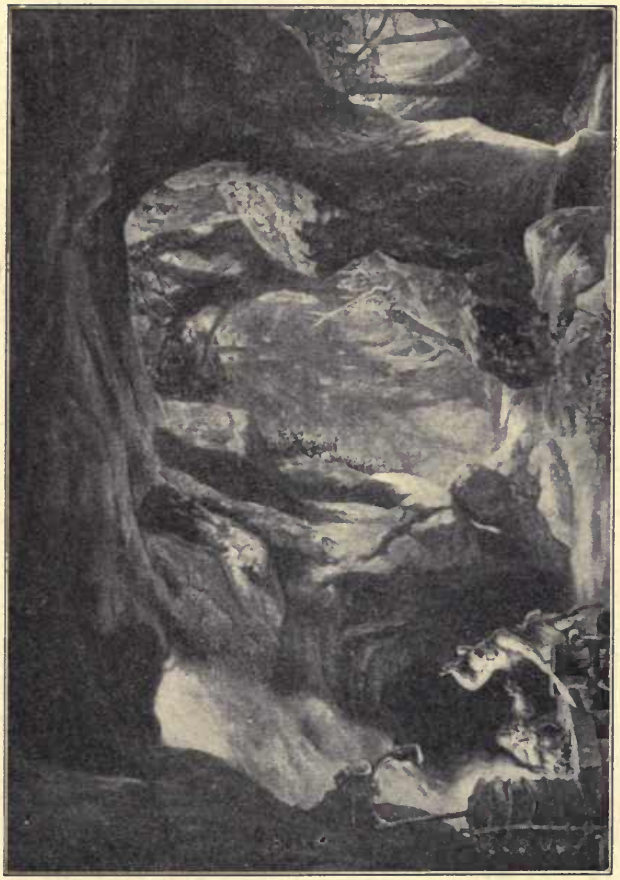
the Heavens as stars, and are to be seen in the Pleiades. But the baker was changed into a cuckoo, which bird tells of spring from St. Tiberius' day, April 14, to St. John's day, June 24, as long as the seven stars are visible. The cuckoo's coat is dough-colored, as if sprinkled with flour like a baker's.

There are many bits of German folk-lore not religious in character, yet nearly all embodying some primeval truth or virtue.

Among the quaintest legends is one well known to American children. How the "Pied Piper of Hamelin town" piped away the rats which were plaguing the burg, and when the people refused to pay him, he piped so sweet and clear that all the children followed and were seen no more.

"Small feet were pattering, wooden shoes clattering,
Little hands clapping, little tongues chattering,
And like fowls in a barnyard when barley is scattering,
Out came the children running.
All the little boys and girls,
With rosy cheeks and flaxen curls,
And sparkling eyes and teeth like pearls,
Tripping and skipping, ran merrily after
The wonderful music with shouting and laughter."

This is a favorite legend with Black Forest fairies, whose dark eyes grow wide with wonder as they hear the story and that of Faust, the



Siegfried in Mime's Cave, fashioning the magic Sword with which he is to slay the Dragon.

wicked old man who sold his soul to Satan that he might grow young again and win the lovely Marguerite.

How quaint and interesting are the old Rhine legends retold, as folk-lore ever is, from father to son, from old grand-dame to little children, spellbound when listening to fairy-tales!

The poets of Germany drew their material from varied groups of legends, each teaching some quaint moral truth. The beautiful story of "Lohengrin," the "Swan Knight," and Elsa, his lovely but weak bride, teaches in all its delicate imagery the ideal of wifely faith, while "Tannhäuser" inculcates the power of virtue and prayer over men's evil natures.

None of these German legends is more poetically beautiful than that of the Nibelungen Lied, the hero of which is the matchless Siegfried, from Xanton on the Rhine.

Siegfried, the Volsung, is not a historical but a mythological personage, the old Sun God—and the lay of the Nibelungen Lied, which sings his romaunt, has been called the German "Iliad." The whole life of this hero of German folk-lore is a fairy romance, yet full of a moral significance. Loyalty is the actuating motive in the Nibelungen

The Marriage of Siegfried and Kriemhild.

Lied, and so long as loyalty and honor go hand in hand the bells of happiness ring like Christmas chimes.

Child of Sieglind, Siegfried is reared in the forest by Mime, the Dwarf, slays, with his magic sword forged in Mime's cavern, the fearful dragon, Fafner, and, wandering in search of adventure, he reaches the court of Günther, a ruler of the Rhine country. Here a love philter is administered to him to cause him to forget all former loves and care for Kriemhild, the sister of the king. Siegfried sees the fair maid and needs no love philter, for in the quaint wording of the Lied:

"And now approached the fair one, e'en as the morning glow,
From out the veiling cloudland, there parted from his woe
He who in pain had borne it for many a day and night,
Grief fled the heart of all those who gazed upon this sight."

The marriage of Siegfried and Kriemhild being celebrated with great pomp, the pair lived happily in conjugal fidelity, the hero aiding the Burgundians in warlike pursuits. King Günther, Kriemhild's brother, however, is desperately enamored of Brunhilde, a mighty maiden who has sworn to give her hand to none but he who

Kriemhild accusing Hagan of Siegfried's Murder.

can overcome her in combat. And here comes in the flaw in the beauty of the Lied, for Siegfried sins through loyalty to Günther, aiding him by means of magic strength to surpass Brunhilde. Believing that Günther has overcome her, she is forced to become his wife to keep her vow, though disliking and distrusting him. Günther fails utterly to win her love, and, discovering that Siegfried has aided him, she determines to destroy the Burgundian hero, persuading Hagan to murder Siegfried in the chase. Kriemhild denounces Hagan over Siegfried's bier, when his body bleeds afresh at the murderer's approach,* and devotes the rest of her life, in her loyalty to Siegfried's memory, to wreaking vengeance upon her husband's foes.

Perhaps the most beautiful of all folk-lore legends of the Rhine country is the story of the "San Grael," which Wagner wrought into his matchless drama of "Parsifal." The Christian idea of God finds almost superhuman expression in this conception of genius. In the story of the castle-sheltered Grail, the holy cup used by Our Lord at the Last Supper, and afterward the chalice in which His blood was spilt, we see the

*A medieval superstition.

Siegfried slaying the Dragon.

devotion of the early Middle Ages. Parsifal's conquest of himself, his baptism of Kundry, the healing of the king, the uncovering of the Grail, which could be revealed only to a youth whose

> "Strength was as the strength of ten
> Because his soul was pure,"

all these are links in a legend of such beauty as to endear to us the quaint, interesting, and charming folk-lore of Germany.

Floating Mines

THE conflict between the Russians and the Japanese has taught the world many a lesson, but in military annals it will always be noted as the war which first saw the practical test of the immense number of engines of destruction developed during the latter part of the nineteenth century.

It was the moving mine, or torpedo, that gave the first staggering blow to the Russian cause—when the reckless Japanese torpedoed the Czar's armorclads in the harbor of Port Arthur; and the fixed, self-acting mine played an important part in the final result. Besides the "Czarevitch" and "Retzivan," the battleships "Pobieda" and "Sevastopol" fell victims to one or the other.

While there is good reason to suppose that mines or torpedoes of some kind were used in the early days of gunpowder, the first time they appeared in the history of the world was in 1585. In that year an Italian engineer, Gianibelli, devised an apparatus operated by clockwork, with which

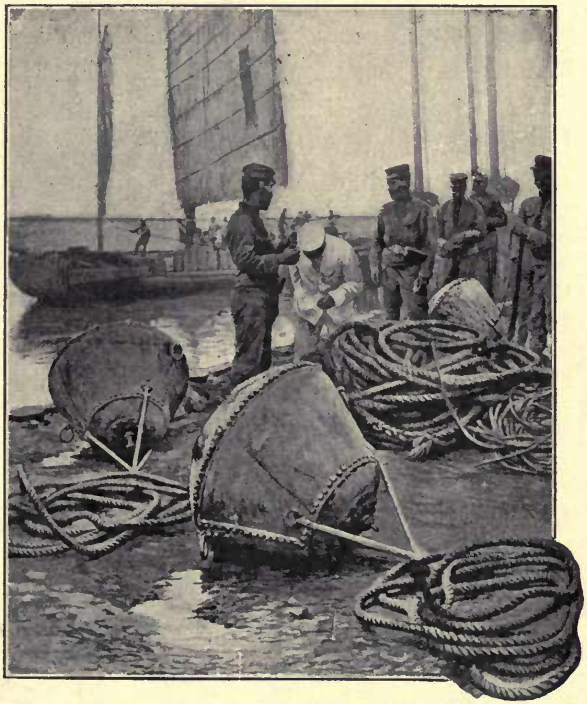
he was partially successful in destroying a bridge that spanned the Scheldt at Antwerp.

In 1730 Desaguiliers, a French scientist, is said to have succeeded in destroying a number of boats with torpedoes of the rocket type, which were fired under water.

It remained for an American first to employ torpedoes in war. In 1776 Capt. David Bushnell, of the tiny American navy, constructed torpedoes for use against the English, and the Revolutionary war was the first in which these terrible engines of destruction were used as weapons of offense and defense. Because of the ignorance of their handlers, they proved of little benefit, but from that time they became identified with warfare.

Robert Fulton, of steamboat fame, turned attention to the subject in 1797, and in 1801 one of his torpedoes, containing twenty pounds of guncotton, destroyed a small boat in the river Seine, where he was making his experiments.

Another American, a Mr. Mix, sought, in 1812 and 1813, to aid the American cause by the production of a practicable floating mine, but again the novelty of the weapon caused its failure. The time was approaching, however, when the torpedo would assume a permanent



Floating Mines set in the Niou-Tchouang River, by the Japanese during the Japanese-Russian War.

place in the armaments of the world. In 1829 Col. Samuel Colt began his investigations, which resulted in the development of the electric mines of to-day.

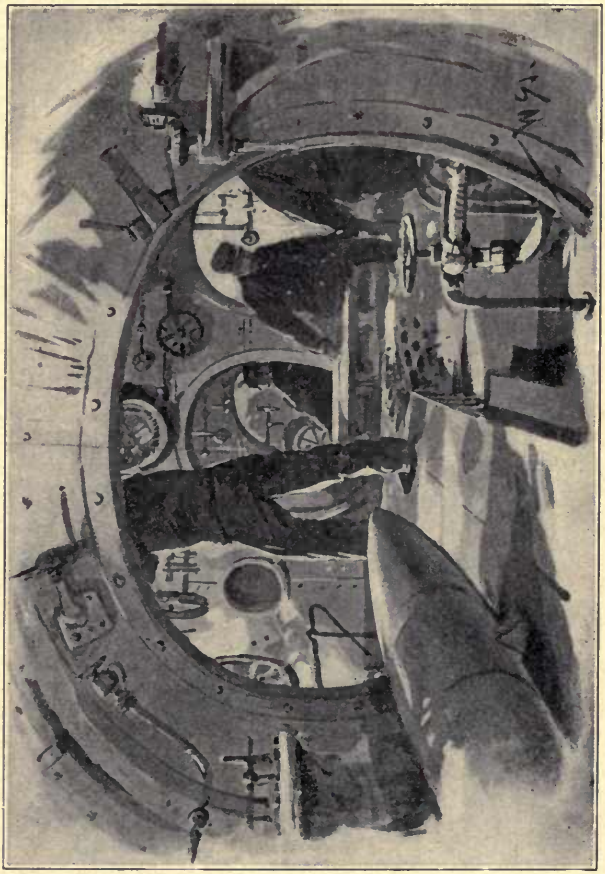
In a general way, the floating mine of the present period consists of a hollow shell provided

with a charge of guncotton—the chemical combination of cotton waste and nitric acid, molded into small slabs or disks. This is not affected by moisture, and after the explosion there are no smoke and no residue.

For fuses, or detonators, fulminate of mercury is employed. This is a very powerful chemical—the combination of mercury with alcohol and nitric acid.

Just as the Revolution saw the first use, the so-called Civil War, the fearful conflict in which brother was forced to murder brother, saw the first practical application of the naval torpedo. In the middle of the nineteenth century mines had reached such a stage of development that they were extensively used for the protection of harbors and the destruction of ships.

The Federals could gain but little benefit from their use, because their opponents owned so few vessels; but mines of many kinds, some of them extremely crude in construction, were employed by the Confederates with such success that in the course of that carnival of slaughter, seven ironclads, nine gunboats, six transports, and one cruiser were either sunk or destroyed, and many other Federal vessels seriously damaged. In



Interior of a Torpedo Boat.

return the Northern forces succeeded with their aid in sinking one Confederate vessel, the "Albemarle," which was destroyed by Cushing, who used a torpedo of the spar type—so called because it was carried on a long spar and held against the vessel attacked.

Torpedo mines are "self-acting" or "controlled," according to the conditions under which they are fired. Self-acting mines may be exploded mechanically or electrically.

Many different mechanical methods are employed, but the one in most general use consists of a set of pins or spines projecting from the shell of the mine, any one of which, when struck, is driven down upon a fulminate primer in communication with the charge, or releases acids which, combining with the mercury, cause its detonation and the consequent explosion of the mine.

Electrically fired mines may be divided into two classes—simple buoyant mines, anchored not less than five or more than twenty feet below the surface of the water, and combination ground mines, arranged to explode when struck by a passing vessel (or when a contact piece is struck). These are also known as "observation" and "automatic" mines, respectively. Observation

Torpedo Boat descending into the Water.

mines are fired by watchers on shore when an enemy's vessel is observed approaching. One ingenious fuse employed for the purpose may be described as follows:

A small wooden head has two holes bored in it

and lined with metal. Into these two holes are inserted the bared ends of two insulated wires, held firmly in place by cement. The two ends of the wires are drawn through holes at the bottom of the cavities and joined together by a small piece of very fine platinum wire. On top of the wooden plug there is a tin tube containing about a thimbleful of fulminate of mercury, while the space around the platinum wire is filled with guncotton dust. When a button is pressed at the mine station, a current of electricity sufficiently strong to fuse the platinum wire is created, and through sparks from the guncotton dust, the fulminate detonator is caused to explode the mine.

Electric contact mines are provided with a "circuit closer." This consists of a steel cylinder through which there passes an iron spindle, pointing down into the tube. The lower part of the cylinder is filled with the purest redistilled mercury up to a point just below the end of the spindle—to such a point that when the apparatus is tipped at a certain angle, usually about 70°, the circuit is completed (the mercury forming a part of it) and the mine discharged. In practice the wires are so arranged that the circuit may be

kept open or closed, at will, at the shore end. When closed the mine is prepared to explode immediately upon contact with the hull of a vessel.

Authorities on the subject claim that while self-acting mines are comparatively cheap, can be kept in store ready for use, do not require specially trained men to handle them, and can easily be improvised, they are dangerous to pick up, their condition can not be examined with safety, they are as great a menace to friend as to foe, and the appliances for exploding them so soon become inefficient that they are practically useless in an emergency.

The last contention was proven conclusively in the Spanish-American war. Two United States vessels struck mines of this class, yet escaped injury; indeed the propeller of the "Texas" actually tore one of them from its anchorage without exploding it.

On the whole, controlled mines, whether observation or automatic, are preferred, the former advocated when both friend and foe may be expected to sail over the same area, and the latter when only hostile vessels are looked for.

There are times, of course, when the attacking

fleet will have recourse to mines; for example, when the enemy's vessels are bottled up in a harbor, the blockading fleet will scatter mines over the entrance; but as a rule the floating mine has an honorable duty to perform—that of protecting the shores of a country from the foe.

Oftentimes mines breaking loose from their anchorage become a menace to all shipping in near-by seas—particularly if they are of the self-acting, mechanically exploded type.

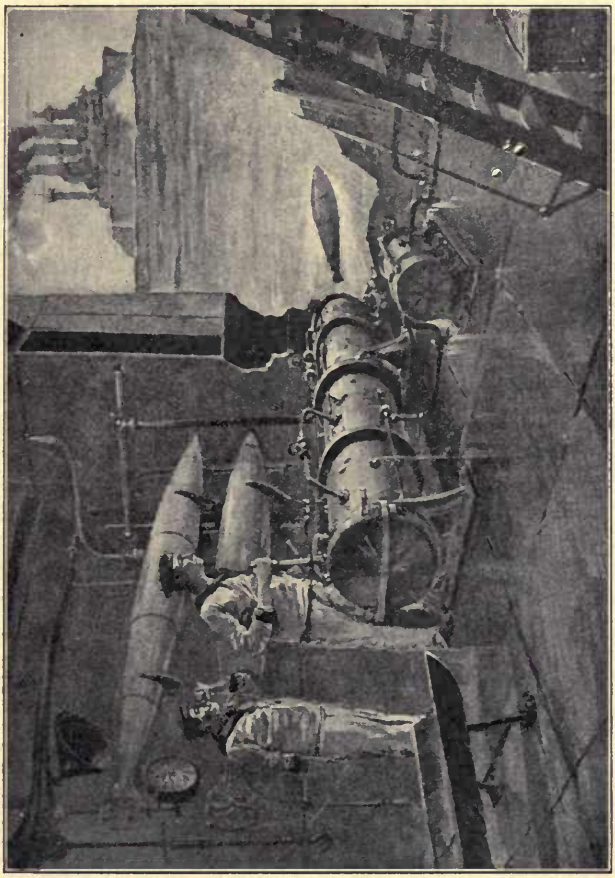
One that had probably floated from Port Arthur was picked up by the United States war-ship "New Orleans" in the harbor of Cheefoo, China. It was of the self-acting type, spherical in shape, and provided with a number of lead spines. Inside each of these spines there was a thin glass vial containing acids, while a receptacle beneath contained zinc-carbon elements. The intention was that upon contact with a vessel the lead spines would bend, breaking the vials, and permitting the acids to fall into the receptacle below, instantly creating a spark which would ignite the fulminate detonator and explode the mine. Fortunately, the apparatus was imperfect —otherwise there would have been little hope for the vessel striking it. Doubtless many a vessel

Torpedo Boat taking Observations on the Surface.

did strike this mine carried such a distance by wind and tide; and only its imperfection prevented fearful loss of life. As a matter of fact, it was drawn up on an island, torn by a shot from the launch of the "New Orleans," carefully examined by the officers, and subsequently exploded by them—at a safe distance.

While the handling of explosives is an extremely hazardous vocation, the men become so familiar with them that they betray no fear in working with most of them. Strange as it may seem, they handle without a tremor guncotton, dynamite, and the like, and have even devised amusements with these high explosives; for example, the reproduction on iron of a coin, a leaf, or a delicate piece of lace. This is accomplished by placing the article to be reproduced upon the iron, and exploding the charge of, say, guncotton, on top of it. For some inexplicable reason the reproduction is not sunk into the metal, but appears in bas-relief.

As the world advances, more and more uses beneficial to mankind are found for high explosives, yet inventors, almost to a man, seem to bend their efforts toward the production of machines for the destruction of human life. Unfortunately



Despatching a Messenger of Destruction.

there is one argument open to them all, an argument that is applied on every occasion—the fact that the development of death-dealing machines is justified by the possibility that one's own country may be attacked. Of these instruments perhaps the torpedo mine, the most terrible of them all, is in the highest degree entitled to the benefit of this argument, for it is essentially protective in its application. A harbor properly guarded by floating mines offers such fearful menace to a foe that he is a rash captain who will guide his ships across the "zone" they occupy.

It is true that in the history of naval warfare we have two instances of bravery, or foolhardiness, on the part of commanders who disregarded the danger from these hidden destroyers, yet were fortunate enough to escape damage to their ships, but it is safe to assume that both Farragut and Dewey had good reason to believe that the elements had rendered the mines useless.

As yet an attacking fleet may count on this possibility Thus far, man has been unable to protect floating mines from ineffectiveness as a result of barnacles, but the time will come when

inventive genius will find a way to accomplish this result—then woe indeed to the ship that attempts to enter a harbor protected by these powerful engines of death!

Santa Catalina Island

FLOATING upon the bosom of the Pacific, a few miles from the coast of southern California, stationed like guards to warn of the approach of an enemy, there are a number of islands of volcanic origin. In the course of many ages the winds and the waves have hollowed out in their precipitous sides wondrous caverns, many of which have never been explored, because he is a hardy mariner indeed who will even enter these cavernous recesses, whose yawning mouths give forth such awe-inspiring echoes.

Just above San Clemente, which is the southernmost, is one of the most interesting, though not the largest of these islands—the fisherman's paradise, Santa Catalina, a world within itself, with mountains, hills and valleys, rivers, creeks, inlets, and bays.

It is a peculiar condition of affairs that exists on Santa Catalina—a puzzle to the student of government, for such absolute private ownership is probably unknown in the United States.

Santa Catalina is twenty-two miles long and

averages eight miles in width. It has two towns, Avalon and Cabrillo, located on the only level spots found upon the island, and is part of a Spanish grant dedicated to the use and comfort of Don Pio Pico, one time governor of California. The governor sold it to the Lick estate, and then it came into the possession of the father of the present owners, Phineas Banning.

It is due to the management, expenditure, and exploitation of the three Banning brothers who now own it, that the island owes its popularity; or rather that it was brought to general notice, for nature furnishes all the charms to the weary traveler or inquisitive tourist, to the seeker for health, rest, or amusement; because, although there is upon the island a municipality containing a population of two hundred merchants and their families, a government post-office presided over by a regularly appointed official, a justice of the peace, two churches, Catholic and Protestant, streets, alleys, and city improvements, every inch of the land is owned and controlled by these three brothers Their father paid about sixty thousand dollars for it, and the fact that the sons ask seventy million dollars for the island indicates its growth in popularity. Nor is this popularity

Seals Sunning Themselves.—A Common Sight.

undeserved, for travel where you will, it is doubtful if you will find a corner of the earth so fitted for its purpose as this sun-kissed isle.

Standing upon the further shore of this many-hued gem of the ocean, rising from the clear waters of that beautiful blue which so charms the visitor to the Mediterranean, its rocks covered with mosses and seal, and looking out across a semi-tropic sea, there come to the mind suggestions of mysterious archipelagos scattered star-like over the ocean's face thousands of miles away, before a continent is reached, and one vaguely imagines unknown races, coral reefs, and shores of lofty palms.

A delightful health resort, rich in flowers and fruits at all seasons of the year, Santa Catalina is especially charming during the summer months; and it is then that thousands of people flee to this magic isle, overflowing its hotels, and there arises a tented city upon the beach of Avalon.

Avalon! Who that has visited that magnificent bay can ever forget its charm? Through the glass-bottomed skiffs you can gaze into the transparent waters, and far down to the bed of the ocean a hundred feet below, watching the fishes, brilliant as the rainbow in color and grace-

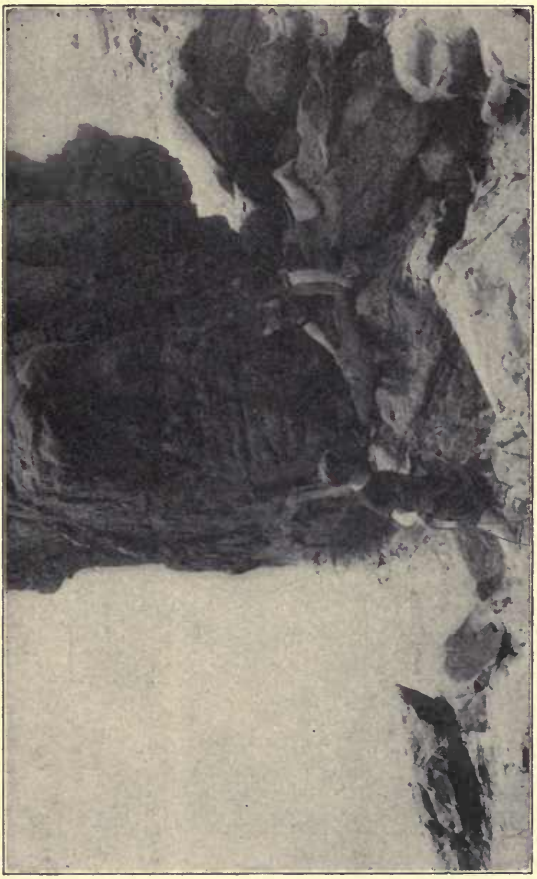
Another View of the many Seals abounding about the island.

ful in movement, darting about in miniature forests of waving green—you can see in their homes the giant star-fish, the emerald fish, vying with that jewel in brilliancy, the sluggish abalone and the villainous-looking octopus with its terrible eye and horrible arms.

Perhaps your fancy leads you to climb the overhanging cliffs; the view will well repay the trip. Hundreds of feet below you the fishermen's boats seem to float in air, for at this height the dividing line between sea and air is lost, while a hundred feet lower still you can catch the flash and glint of colors that tell of the fish that play beneath the waters.

Should you elect to walk along the shores your journey will be replete with surprises—a horn shark hatching in some secluded nook, seal-hunters clambering over the slippery rocks, ready to "rope" their prey, or, and this you may see at any time, the hundreds of sea-gulls, as tame as tame can be, that gather upon the beach and eat from your hand.

While there is still some game on the island, the chief sport that Catalina has to offer the visitor is fishing. And what fishing it is! Awaiting you are the barracuda, the moonfish, the sea salmon,



Lassoing Seals.

the angel fish, the sea bass, and the *tuna*. No fisherman need be told why the name of the last is printed in italics, for the mighty monster of the deep is the king of all the fish that swim the seas the world over—not excepting the gamy tarpon familiar to Eastern devotees of the rod and reel. Visitors come from every part of the globe to battle with this giant game fish—that has been known to tow a boat containing three people for twelve hours—and so popular is the sport that there is on the island a tuna club that issues diplomas and prizes to those who capture the biggest tunas during each season.

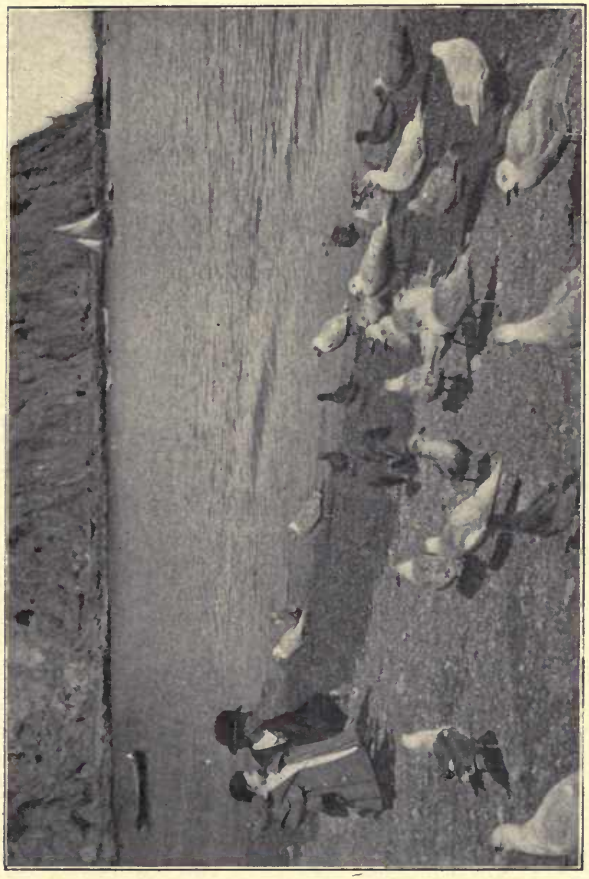
Like the tarpon, the tuna is especially fond of flying fish as diet; and the waters about Catalina are not niggardly in supplying him with this delicacy. Nowhere else are these "swallows of the sea" so plentiful; standing at the bow of a steamer approaching the island one wearies of counting them. The distance these little fish can "fly" is a source of constant wonder. In size, form, and color they chiefly resemble the mackerel. Their "wings" are muscular fins connected by thin but strong membrane to the body, and are four in number. The hind fins are small, but the foremost "wings" are seven or

Angel Fish.—Peculiar to Santa Catalina Waters.

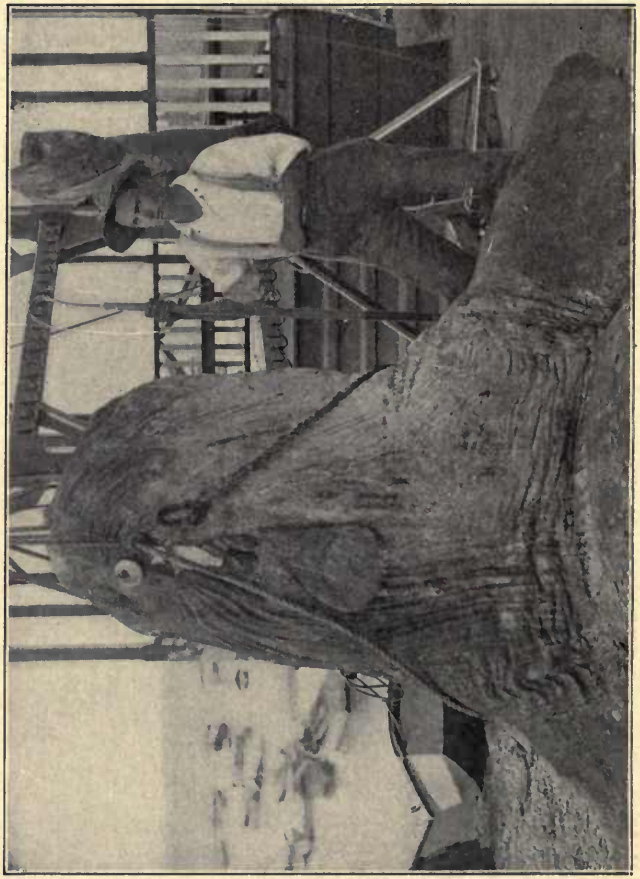
eight inches long and, when extended, about two inches in width. Breaking from the water at a high rate of speed, but at a low angle, they scull with their forked tails, the convulsive wriggling giving them the appearance of actually flying, and this additional impulse lifts them clear of the water into the air above it, through which they float for quite a long distance before sinking into their native element. It is while they are "flying" that the tuna hunts them, hurling his huge bulk high into the air and dropping down upon his quarry.

Tuna fishing is similar to tarpon fishing, but more exciting, for the Western fish is stronger, swifter, and more gamy than his Eastern brother, though the latter is a royal fighter.

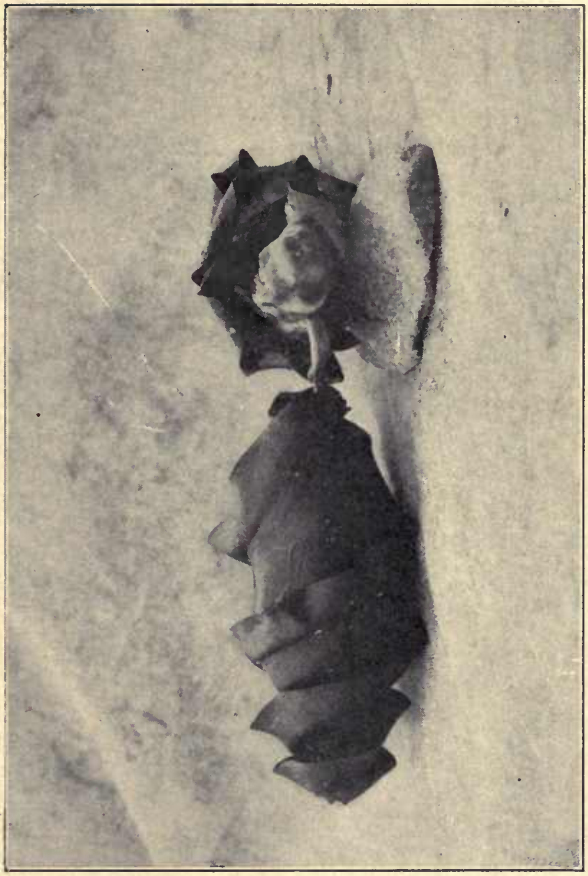
The fisherman who visits Catalina will come away with the memory of many an hour's sport and a determination to return, while he who seeks the beauties of nature will probably bear longer in his memory the recollection of the Bay of Avalon at night, for only in the Arabian Nights are scenes of such magic beauty imagined. Floating gently over the moonlit waters one gazes far down into the ocean bed, lit up by myriads of sparkling lights and brilliant gleams,



Tame Sea-Gulls gathering on the Shore.



A Mammoth Sun Fish captured at Santa Catalina Island.



Horn Shark, Hatching.

bringing out of the shadows grottoes and forests, hills and valleys, swaying trees and moving forms of many hues—a veritable fairyland, for the waters beneath him are crowded with phosphorescent fish—the watchmen of the deep who light with their lanterns the sunken gardens of Avalon!

Gold Mining in Mexico

Mexico has always been considered as principally a mineral country, and it is so in fact, as was proven by the enormous quantities of silver that were sent to Spain during the period of the conquest, especially when the famous ship from China used to arrive bringing goods for consumption in order to take back the precious metals.

The mother country was amply supplied from the constantly increasing wealth of New Spain and of all the conquered countries, but, with the exception of that from Peru, silver chiefly came from Mexico. Only a very small amount of gold was mined, and that in a primitive way. Notwithstanding this, Señor Carlos S. Breker, an honorary member of the Mexican Geographical and Statistical Society, in his last paper before that scientific body, said:

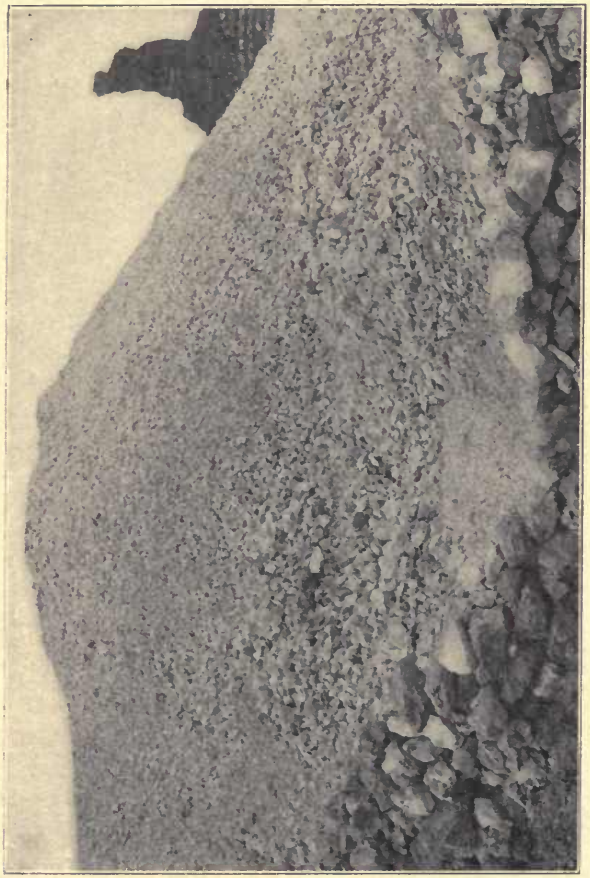
"Mexico was the first country in America to send gold to Europe. It is evident that there was much gold mixed with the great quantity of silver forwarded. Mexican argentiferous ore

contains a great deal of gold, varying from 1 to 33 per cent. Separation of the gold from the silver took place rather late, and it is only from the year 1690 that the amount of gold, as distinguished from the silver, is known. By a royal decree issued at Toledo (Spain) on September 6, 1525, King Charles I. ordered that the gold should be melted and marked separately; this order was repeated on November 4 of the same year, but as far as known no notice was taken of the command."

From the remarks of this learned writer it is evident that the gold which was most used was that which had been separated from silver, and that gold was not worked on a large scale, notwithstanding the tenor of the decree of King Charles I.

Nevertheless it was natural, that the price of silver going down in the course of time, business men, and especially miners, directed their attention to the necessity of working gold, thus counterbalancing the decline in the white metal.

It became the understanding in all countries that the time to adopt the gold standard had arrived; but those who could not do this for lack of coin (as Mexico for example) gave to silver a



Ore from San Vicente.

fixed value in order to avoid the disarrangement which would necessarily take place in its competition with the yellow metal, making a distinction between the minted money and bullion. Thus, presumably, the moment to effect a radical evolution arrived.

This is not the place to speak of other metals which are just beginning to be dug to-day, but rather to note how important mining companies became possessed of a species of craze to spend large sums of money in working veins of gold. These really existed in great abundance, according to the data we have at hand, and there is no doubt that the mines and auriferous deposits that have been discovered are not all that were reported to exist, and that there are still many to be discovered. At that time the desideratum sought by the currency reform law had been attained, and a stock of gold was kept up to maintain the equilibrium of the silver in circulation.

Bearing in mind the existence of gold in the country, we are going to give a brief account of some of the mines and placers found in the republic of Mexico.

Let us begin by pointing out in alphabetical

Ore Train Ready for Mill.

order the states in which auriferous deposits are most abundantly found. Lower California: twenty-four mines and three placers. Chihuahua: mines and placers in the districts of Aldama, Bravos, Camargo, Degollado, Galeana, Guerrero, Hidalgo, Jimenez, Matamoros, Meoqui, Mina, and Rayon. Durango: Real del Oro and Guarisamey—we will give an account of this mine further on. Jalisco: Fapalpa. Mexico: Mineral del Oro and Ixtapan del Oro. Michoacan: Tlalpujahua and Sinda. Oaxaca: in Zamatlan three mines are worked and one in Ixtlan; and there are also nineteen unexploited mines in Zamatlan, one in Ixtlan, ten in Nochiatlan and fifteen in the Centro, making a total of forty-nine. We omit the deposits of mixed gold and silver, as our special object is to mention those of gold, whether mines or placers.

Let us here refer to the Guarisamey mine, which once enjoyed great prosperity but to-day is totally ruined. It belongs to the San Dimas district in the state of Durango. Rugged mountains surround it, and in the Carboneras valley is found a great auriferous deposit, whence ore, on being assayed, gave a very good alloy. However, as this wealth is located in the midst of rugged

Picking Over an Old Dumping Ground.

mountains, at a great distance from Durango, Culiacan, and Mazatlan, it can not be worked on account of the lack of means of communication. To set up even one mill there would be so expensive that it would yield no profit whatever. The roads are mere paths, passable only by mules, rendering the transportation of goods difficult. With such obstacles, it will be understood how impossible it is to work this deposit.

This is one of the reasons that explain why, having gold in the district, no profit is derived from it. When means of communication increase, bringing populous centers in touch with the places where there are gold mines, even though these may be in the heart of the mountains, the situation will be completely changed.

A short distance from San Luis Potosi there is a flat, stony tract of land. One of the natives collected some stones, without suspecting their value, and showed them to a mining engineer. The latter took good care not to tell what they contained but offered to buy them. The man accepted, selling a bag full of stones, weighing a hundred pounds, for 75 cents. The engineer resold them for about $500. The natives are suspicious, especially the Indians, and so the man

Sorting Ore.—The Ore as it Comes from the Mine is Broken up and Sorted by this Method.

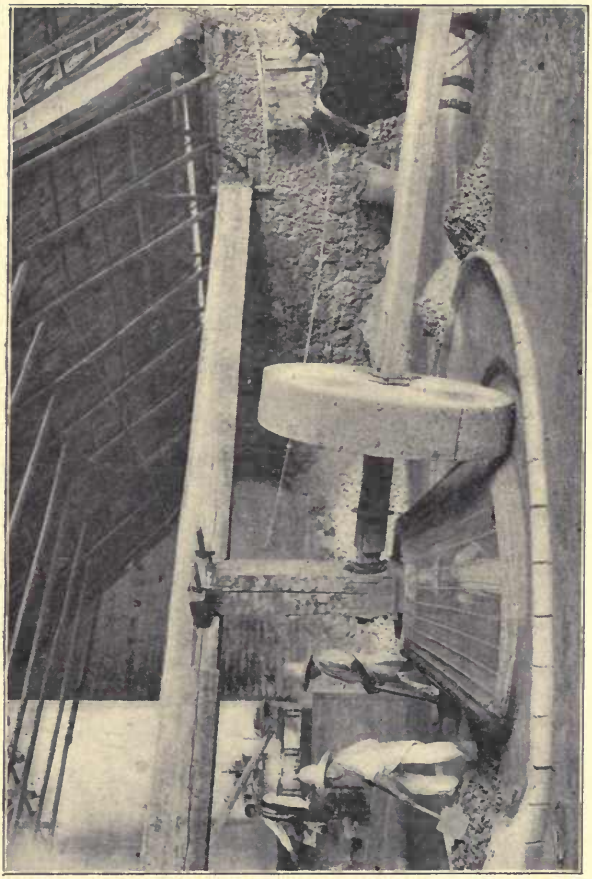
refused to tell exactly where he gathered the stones. He told the engineer what kind of land it was, but did not give the slightest idea of its locality.

Our article would be interminable if we attempted to give even an imperfect idea of all the places where auriferous deposits are found, and the greater number of which are not worked. We will, therefore, give the latest facts. In making some excavations near Coyuca de Catalan in the state of Guerrero a gold mine has just been discovered. It is not known what the ore will assay, but it is certain that the proprietor of the land is well satisfied with his find.

Various companies, the greater part American, are working gold mines, deposits, and placers, with more or less success. We indicate those that are the richest and most profitable.

The Mineral del Oro mines in the state of Mexico are very prosperous. There are three principal gold mining properties there: the Dos Estrellas, the Esperanza, and the El Oro Mining Co., which bears the same name as the famous district, and they produce at present about $2,500,000 a month.

The first notable returns of the Esperanza were



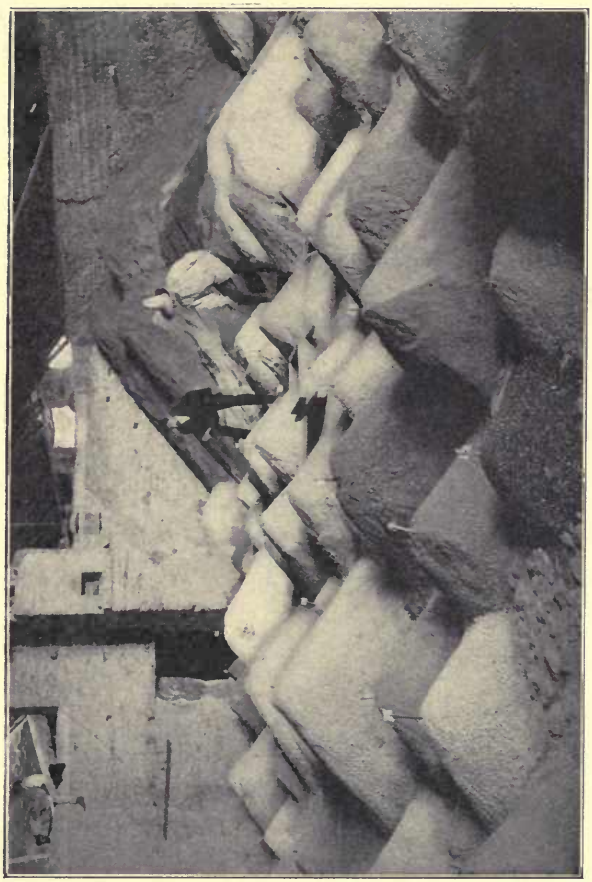
The Patio Process.—The Crusher, on which the Ore is Ground and Made Ready for Amalgamation.

made last April, and were so great that its fame spread throughout the world, raising the price of its shares, which were issued at five dollars per share, to thirty dollars. The Esperanza is producing at present one million Mexican dollars a month.

Alarming rumors have been current regarding the Oro, but luckily they turned out false. It is stated that they had no foundation. The shares of the company have recently advanced, owing to the fact that the mine and its machinery are maintained in splendid condition, and on account of the increasing output. It is expected that the payment of dividends will be made on a very liberal basis before the end of the year. Dividends were suspended when new machinery was put in.

The Dos Estrellas is a mine which continues to exceed the hopes of those interested in it. A new vein has been struck at a depth of 1650 meters (5413 feet). The shares of the Dos Estrellas have risen to $4300 Mex.

There are only 3000 shares issued at $100 Mex. per share of the Dos Estrellas, which at the above price would be worth $12,900,000. There are in the Esperanza 450,000 shares issued at



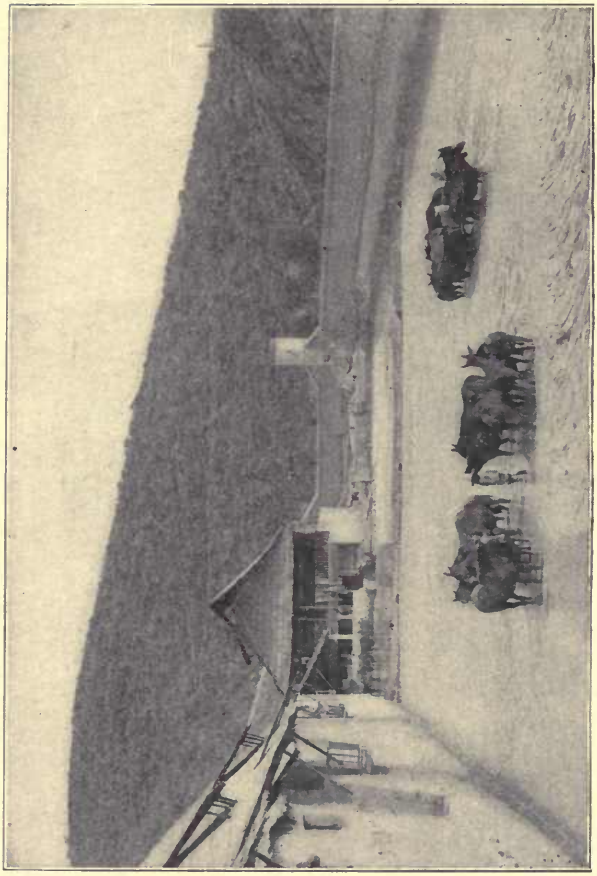
The Patio Process.—Ore Ready for Amalgamation.

five dollars per share, which at thirty dollars would amount to about $27,000,000 (silver standard).

The Oro will soon be fully operated by electric power furnished by the Necaxa plant. About half the machinery in the Esperanza is operated by power furnished by the Compañia Mexicana de Fuerza y Electricidad. On January 1, 1906, the Dos Estrellas will also be ready for operation with power from Necaxa.

If what we have reported be taken into account, any one may convince himself that nowhere in the world are there richer mines than those of the Mineral del Oro district.

The Aztecs obtained gold from placers and also from great depths, but knew no other metallurgic process than washing or simple calcination. This method is still followed in the Real del Oro district in the state of Durango. There is there a river, or rather a stream, which ordinarily has very little water, but when the torrential rains fall the channel becomes wider, covering a great deal of land. When the waters subside the natives, who are remarkable for their laziness, go to the river with a ladle made of horn, wash out a quantity of earth, collect grains of gold, and by



The Patio Process.—The Ore is Mixed with Chemicals, Placed in Shallow Basins, Covered with Water, and Treaded Out by Mules for a Period of Days.

means of fire form little balls which they sell in the market.

Next came the amalgamation process, but the preceding methods were also successively improved. Mr. F. Kirke Rose, in a report, gives a detailed description of different experiments which he made with the object of studying the suitableness of oxygen gas and of air to refine gold bars and precipitate cyanide. The baser metals may be removed from gold bars by means of a current of oxygen.

Losses due to volatilization and projection are insignificant. Those which occur in the slag are slight and may be saved by suspending the process before the refining is completed. The initial losses in the slag vary from .03 per cent. to 1.7 per cent. of the value, the average being .73 per cent. The higher figure of 1.7 per cent. was only reached in one experiment when the slag became doughy. The greater part of the valuable metal in the slag can be recovered by trituration and pulverization. Pure oxygen gas and air have the same effect, and there is scarcely any doubt, if a compact mass of metal is taken, that their efficiency will be at least 80 or 90 per cent.

As to the output of gold, it can be affirmed that

it goes on increasing from year to year as is proved by the statistics published by the Ministry of Industry. From official documents, we learn that the output of gold in the first six months of 1904–05 was $7,295,672.95 against $5,829,321.90 in the corresponding period of the previous fiscal year.

Gold exports during December, 1904, amounted to:

Metallic gold in ore, dust or earth.	$ 122,019.70
Gold in ingots	1,035,974.18
Gold in cyanides	20,713.83
Gold in sulphurets	22,061.70
Coined gold	85,549.00
Total	$1,286,318.41

Exports of gold in the fiscal decade which ended in 1905, according to official statistics, amounted to $46,434,630. If to this be added the exports from July, 1904, to April, 1905, which were $9,913,939, we will have the sum of $56,348,569.

Other statistics, also official, make known the existing titles to mines, which, in the entire republic, number 1485 properties with 20,540 hectares (50,757 acres) in round numbers. It is possible that to-day there are more, for, although some

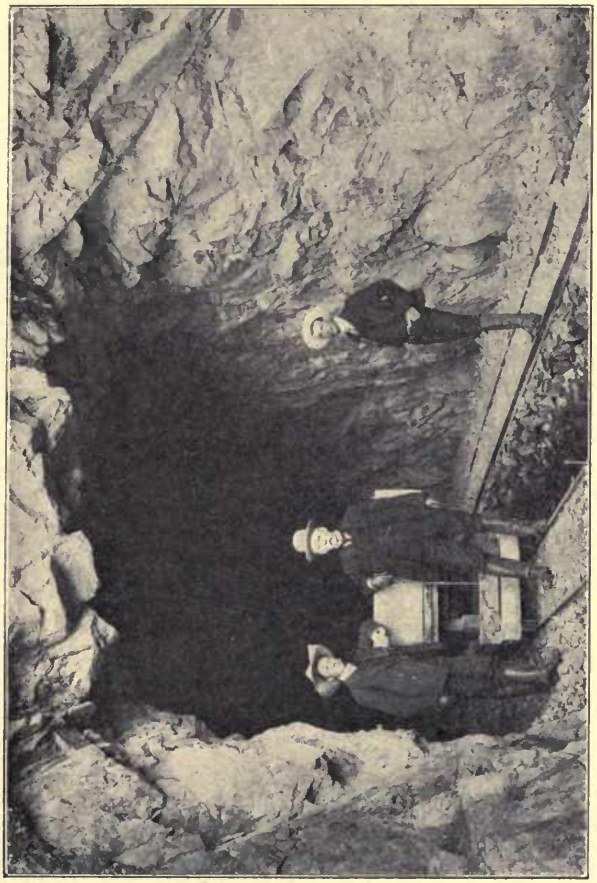
have lapsed, new titles are being constantly granted.

As we said before, it is impossible for us to give more details of this subject. But in closing let us say a few words.

Questions relative to mining are the affair of the Ministry of Industry, at present in charge of the well-known engineer, Don Blas Escontria, who a little while ago was governor of the state of San Luis Potosi. He is a man of many brilliant qualities and has displayed great activity and intelligence.

It would not be just to omit that he has had an efficient collaborator, the engineer Don Andres Aldasoro, sub-secretary of the department, who has had a brilliant career, is much esteemed in Germany, and is an expert on mining subjects, as was shown when he conducted the negotiations as to San Andres de la Sierra, Durango.

Both are authors of very thorough and splendid reports: the one presented to the Minister of Finance when he proposed to carry out the reform of the currency, and the other sent to the World's Fair at St. Louis. Besides other subjects, they treat the gold question with a master hand.



Laluz Tunnel.

It is to be hoped that, as heretofore, the work of exploitation will go on, making of Mexico a gold mining center sending its share to the world's markets in union with other gold-producing nations.

Mountain Climbing in America

Illustrated by stereographs, copyright, 1904, by B. L. Singley.)

THERE have been indications in recent years that Americans were at last beginning to take a greater interest in their own country, and to recognize the fact that its natural wonders surpass any that the Old World has to offer. A constantly increasing tide of tourists, ignoring Europe, annually sets westward to the great hunting-fields of the northwest, the wonderful national parks, and the picturesque mountain scenery of the Rockies and the Pacific slope. Foreigners, too, are becoming more and more attracted, and it may not be rash to predict that another generation will see present conditions reversed, and the bulk of transatlantic travel in spring and summer headed away from the channel and the Mediterranean toward the St. Lawrence and Sandy Hook.

Besides mere addition to one's knowledge of a people or country, physical health is one of the

prime objects of traveling, and the most useful and invigorating means of promoting it is mountain climbing. "Alpinism," as the art has been called, is fast becoming a misnomer, and in view of its rapid spread in this country some other name should be speedily chosen. The United States certainly offers as much variety as any other land in accessibility and in picturesqueness, from Mount Washington in the east, with its railway and automobile road to the summit, to the untrodden glaciers of Mount St. Elias in Alaska, and from the placid beauty of the Peaks of Otter in the Blue Ridge, to the rugged majesty of the Yellowstone National Park.

It is, however, in the northwestern plateau of Washington and Oregon that one may still find nature in all her wild and naked beauty, without the subservient routine of frequently traveled paths with comfortable hotels, or the expensive and arduous journey to Alaska's famed mountain.

For the healthful purposes of mountain climbing, the Cascade range, which stretches from northern California just across the border into the Dominion of Canada, offers unrivaled advantages. This whole range is volcanic. Mount

Baker on the north has been in eruption as late as 1870; smoke and steam are frequently seen rising from Mount St. Helene in the south, while

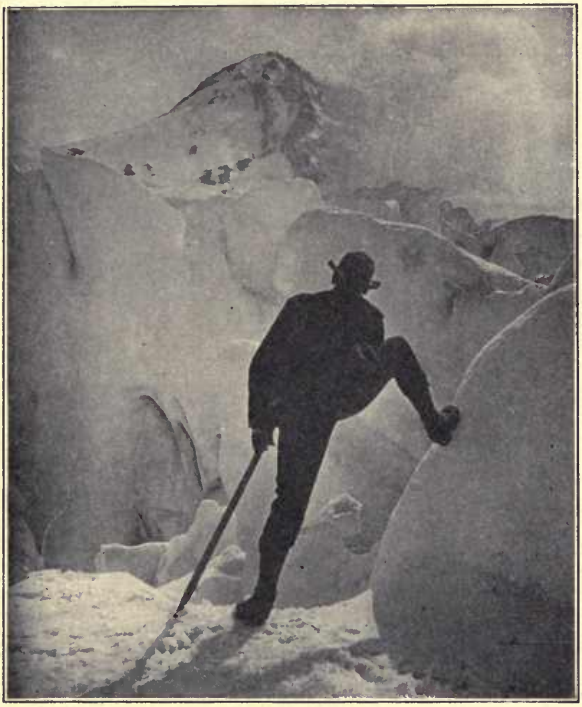
Above the Clouds on Mount Hood.

from Mount Rainier, which is 14,444 feet high and dominates the range in the center, jets of steam issue from the crater. Below these comes

the Columbia river with the famous Dalles, formed out of old horizontal lava beds, a stratum once fully three thousand feet thick, through which the stream has forced its way in some remote geologic period, wearing them down to within one hundred feet of sea level. Then to the south the Cascade range rises again, stretching right across the State of Oregon and finally linking itself with the Sierra Nevada near Mount Shasta, in the northern part of California, the Klamath river being the natural boundary between the two ranges.

Mount Hood stands guard over this southern half, situated not far from the Columbia, to which it sends an affluent, the Hood River, whose waters run icy cold from their source in the eternal snows. This stream, which empties into the Columbia about fifteen miles west of the Dalles, is an ideal place for trout-fishing, and the starting point of excursions to ascend Mount Hood, whose peak rises 11,225 feet above sea level at a distance of about twenty-five miles southwest from its mouth. It is not a large river, and perhaps with all its twistings and turnings it is less than forty miles long, but it is situated in one of the most picturesque spots of

the northwest. Houses are few and far between, and tourists must rely on a supply of provisions carried with them. Only a few years ago bears



A Near View of the Majesty and Splendor of Mount Hood.

were frequently seen in the neighborhood and even the sound of the woodman's ax is the only evidence of proximity to civilization. It is

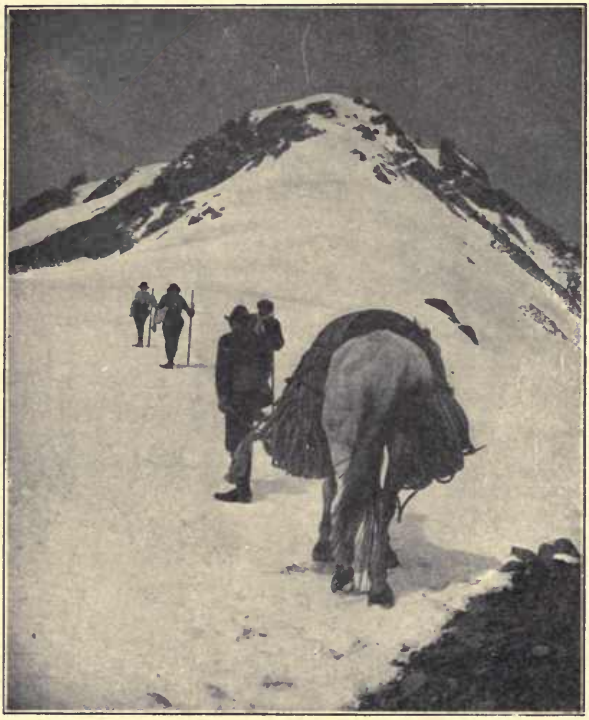
unfortunate that the forest reservation of the United States, which takes in the whole Cascade range, stops just short of this beautiful spot, and its verdure-clad slopes of Oregon pine are doomed to disappear, perhaps within a score of years.

After passing through this forest above the gorge, one comes to the rolling plateau of the Hood river valley, which gently ascends as one approaches the mountain. Soon one may see the peak of Mount Adams to the rear, forty miles away on the other side of the Columbia. Between these two mountains are scattered orchards, where the famous Oregon apple is cultivated.

This was unknown a generation ago, but some farmers accidentally discovered that the clear atmosphere allowed the sun's rays to give the fruit a rare, ruddy tint, while the cold breezes sweeping along the valley made it hardier, so that it will keep better and is peculiarly fitted for export.

On approaching the main slope of the mountain the traveler must rely upon his own resources for direction as well as for commissariat. The region has never yet been topographically sur-

veyed, and the height of the peak has only been obtained by the barometer. From the 5,000



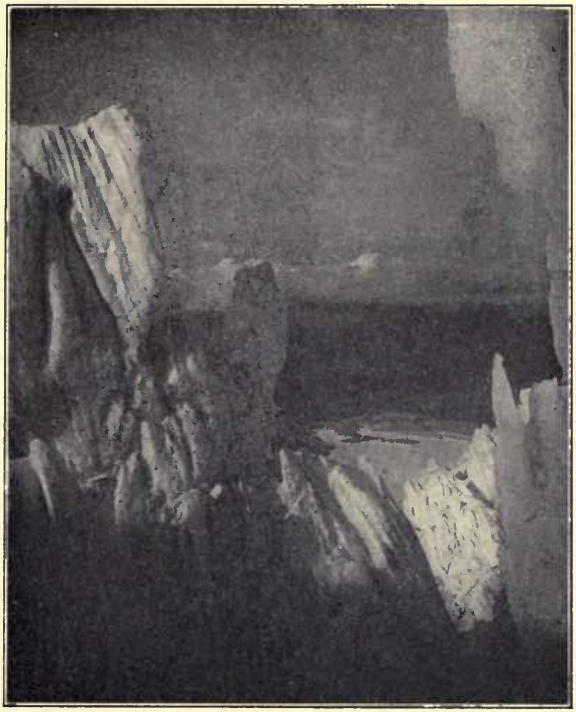
An Adventurous Party ascending Mount Hood.

foot level, about half way from the river, it is a hard, steady climb of nearly ten miles over huge boulders and irregular masses of lava, which,

a little higher up, are always coated with ice, even in midsummer. The alpenstock is indispensable, green goggles are needed for the eyes, and the party should always carry plenty of rope in case of accident. There are steep precipices with sheer falls of hundreds of feet, beside which the palisades of the Hudson would be dwarfed. Between the jagged, ice-covered rocks, looking like portions of huge broken stalactites, occasionally a panorama of surpassing beauty unfolds, with the Columbia and its little bays and inlets in the foreground and the abruptly rising continuation of the Cascade range to the north as far as the eye can reach.

Then the boulders become rounder and bigger, usually seven or eight feet in diameter, heaped together in indescribable confusion. Paths between them are few, but by dint of pulling and dragging, a party of four some three years ago managed to get a horse up through this rocky region to the comparatively level topmost plain, just below the summit of the mountain, where they enjoyed a Fourth of July meal above the clouds—doubtless with a good appetite owing to their hard climb. It is here that one of the finest panoramas of the United States may be seen in

clear weather. The beautiful Columbia river winds along, seemingly at one's very feet, and far



The Wonderland of the Northwest.

to the west the waters of Puget Sound and the Pacific Ocean with a good glass may be descried.

As with other achievements, such recompense

is only attained with some hardships and danger. Crevasses must be passed, snow-slides and avalanches are a menace, especially in spring. Some words as to the precautions to be adopted in mountain climbing like this may not be out of place here. Snow shoes are preferable, though the party already referred to wore only strong boots. The dangers to be encountered divide themselves broadly into two classes—that of falling and of being fallen upon—and the methods of avoiding them have been distinguished by the terms snowcraft and rockcraft.

As the surface of the earth is constantly deteriorating, especially in its highest points, owing to the action of the weather combined with the force of gravitation, there are constant falls of rock, especially above the snow line. It is usually possible to dodge falling stones, but great care should be taken in ascending any of the gullies frequently worn in the sides of a mountain. Although offering more foothold than a bare rock surface, there is much greater danger from this source. Mount Hood, however, being a lava mountain, is singularly free from this species of obstacle, in that respect differing from heights formed of stratified rocks.

There is very little danger from falling ice on Mount Hood, there being no glaciers to speak of,

A Fourth of July Banquet, Two Thousand Feet above the Clouds.

but snow-slides and avalanches are not uncommon early in the year. When snow has recently fallen and is succeeded by mild weather, moun-

tain-climbing is inadvisable; it is better to wait until a cold spell sets in. Avalanches usually take the same paths and can be easily avoided. More serious occasions of falls are the rocks covered with a thin coating of ice. In Europe climbing-irons are used to pass over such difficult places, and they are gradually coming into vogue in America.

But the best protection against bad falls is a good stout rope. One should never attempt mountain-climbing alone, and on the other hand there is danger in too many companions. Four is generally considered the best number for such a party, and the members should be roped together by their waists, about twenty feet apart. Strong Manila cord, called Alpine Club rope, is most frequently used, but sometimes a thinner cord, doubled, is employed. Only one individual of the party should move at a time, the first man obtaining a firm foothold, and the others coming up in succession. Thus the three who are not moving act as a break-weight in case their companion slips. With such precautions and an ice ax to cut steps in perpendicular or highly inclined surfaces, the worst parts may generally be passed in safety. These steps should be slightly inclined

inwards, so as to give as firm a footing as possible, and should not be far apart, especially if the descent has to be made by the same route. The

An Expert Mountain Climber.

ice ax is like a small pickax with a somewhat longer handle and a spike at the end so that it may also be used as a walking stick.

In ascending snow slopes care should be taken to mount as nearly as possible in a direct line to the summit. Doubtless an oblique direction would make easier climbing, but the path made by the mountaineers by cutting across the mass of snow might dislodge it and bring on an avalanche. For the same reason it is better to ascend snow slopes in the morning, as the afternoon sun is likely to render the whole mass loose. Snow bridges and hidden crevasses are the greatest dangers, and against these the best protection is the rope.

In every party the most experienced should be chosen as a leader, and his decision should be final. None of the others should attempt any feat in which he has failed. Haste should always be avoided, the best progress being that which is steady and sure. Care and attention should be given to every step, ascertaining that one's foothold is firm before essaying the next. Alcoholic drinks should only be used in the greatest emergency, such as a bad fall which has rendered a man unconscious, and then only enough to revive him. The rarefied air of the mountain tops itself acts as the best stimulant to the energy of the climber.

With the precautions above noted, there is no reason why mountain climbing should not be indulged in, despite its dangers. It is certainly far less dangerous than hunting, football, or automobiling, for instance, and is conducive to health to a much greater degree, as its steadily increasing popularity shows.

Old Style Writing

It is strange to think in this age of a time when not only people, but peoples, had to learn to write. We may not be quite of Dogberry's opinion, that "To be a well-favored man is the gift of fortune; but to read and write comes by nature," for most of us remember the slow process by which our little cramped and aching fingers learned to write. But at least it seems as though there must always have been our elders and betters who knew how to teach us the art, so important and natural a part of our daily life.

Yet there was a time when men could not write, a time so long distant that it dates back to the very beginning of man's life, and of course antedating all records of that life. The first letter must have been written as soon as man was able to express himself by signs, those picture-words which reached their best known and most interesting development in the hieroglyphics of the Egyptians. The first letters were not written on paper, and the material used in the earliest

forms of writing played an important part in the history of the art. A letter is a letter whether inscribed on stone, wood, wax, or paper. The efforts of the first letter-writers were directed to discovering that material which should best unite the qualities necessary to transmitting their communications uninjured, and, at the same time, be light enough to be easily conveyed from point to point.

Letter Box in the Seventeenth Century.

There was a singular method of letter writing employed by the Spartans which is described for us by Plutarch, who says that when the Spartan Ephori sent a general to battle he was provided with two sticks exactly alike in length and thickness. One of these was given to the general, the other the Ephori retained. When the general had something important to communicate to the government a leaf of papyrus, cut into a slender band, was wound around his stick,

so that it was completely covered. Upon this papyrus leaf the message which was to be sent was written, and it was then enrolled and sent home. In order to read it the Ephori must roll it on the stick corresponding to the general's which they retained; a method which undoubtedly secured secrecy, though it could not have been convenient.

One of the most primitive forms of letters was messages recorded in knots, a method found in use in Peru by the Spaniards when they conquered it, and which was also employed in China in earliest times. The Peruvian knotted letters, if one may use such an expression, were recorded on a "quipo," according to descriptions given us by travelers. This quipo consisted of a main rope, upon which were knotted, at certain intervals, fine cords of various colors. Each color bore its own signification, and by means of these colors, and the position of the fine cords on the main rope, the message was conveyed to the person to whom this quipo was transmitted. The quipo is still used by the Peruvian shepherds to record the condition of their flocks. In the cities there are public letter writers, as there are in the East, and it is the duty of these men

to translate the meaning of the quipo, whence their name of "quipucamayocuna," and in spite of the inconvenient form of these missives they are most skilful in deciphering and tying the knots.

No one who has read Greek and Roman history is ignorant of the important place the scribe held in those communities, nor is unfamiliar with the wax slate used in them which we see in our next illustration. The record was cut in the soft wax with a delicate pointed implement called the *stylus*, much as the little needle of the phonograph records the impressions on the soft wax of the cylinders. This was a long stride in advance of such primitive methods as knotting rope, for it involved possession of an alphabet, and knowledge of reading and writing.

Here again the public scribe came in to practise these accomplishments for those not fortunate enough to possess them. The literary and learned men in Athens and Rome carried their own slates, and each had his own stylus, which was often beautifully carved out of precious metal, and set with jewels.

Envelopes are only of very recent date; our great-grandfathers were still folding over the

The Wax Slate of the Greeks and Romans.

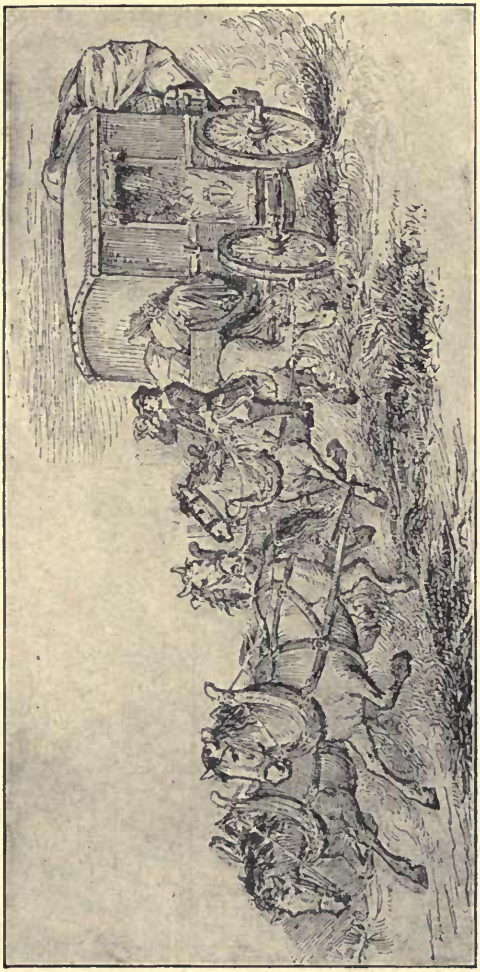
sheet of paper upon which they had written, and sealing it on its edges, without a thought of putting it in a separate paper case. But the earlier letters were not even sealed; they were rolled and tied together with silken strings. The Romans used seals, which were beautiful works of art, highly prized by them, but the impression was not made in sealing wax, which was then unknown, but in a clay suitable for the purpose. Sealing wax made its way from China, where it was first used, to India, whence it was brought to Europe through Portugal in the sixteenth century.

In early days letters were forwarded by messengers—a process which prevented tidings re-

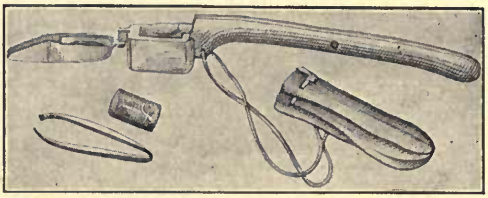
ceived from an absent friend being in any true sense news of him. It was no unusual thing for a Crusader to be killed in battle long before his last letter announcing his safety to his beloved ones at home reached their hands. The Romans established a chain of couriers throughout the empire who were to forward news and dispatches —hence the name post-office, from the Latin *postum*, placed, or fixed. But these couriers were only intended to forward public matters; the first letter post was not established till the thirteenth century.

A penny post, as a private speculation, was set up in England in 1685, which for the sake of its gains was claimed as a prerogative of the crown, to which it was annexed. This was the beginning of the post-office system, and it was followed by the mail-coach, which traveled daily between certain points, carrying mail and passengers.

Letters then had to be heavily charged for carriage, except one was a privileged nobleman, and had a "frank," as it was called, enabling his letters to pass free. Our next illustration shows us the lumbering mail-coach of those uncouth days, uncomfortable to ride in, and more than likely



The Mail Coach.



Chinese Writing Implements.

to be attacked by "bold Dick Turpin," or others of the highwaymen who levied tribute of life or money from the travelers and mail-carriers of their time.

Sir Rowland Hill is the father of the present post-office system, with its low rates of postage paid to government by the purchase of a stamp, which insures safe and speedy delivery

Thus through the ages has come the gradual development from the knotted rope of primitive races, the stone and wax cutting of the ancients, the written parchment painfully transmitted by runners, stage-coach, or rider, to the sealed, convenient envelope, whisked to its destination by steam, under the protection of the government, and delivered at any hour of the daylight twelve in our great cities, for the sum of two cents.

We may many of us "hate to write letters," but when we are inclined to grumble at the task, let us reflect, what a burden letter writing once was, and sit down with light hearts to a work the march of progress has made so easy.

Canoes and Canoeing

WHERE and when the first canoe danced upon the untried waters we do not know. Doubtless it was the result of long and arduous study on the part of those primitive inhabitants of the globe to whom history has given the name of "lake dwellers" because they chose to make their homes near the water. This, however, is merely a conjecture—the origin of the canoe is lost in the obscurity that spreads between the beginning of things and the dawn of history.

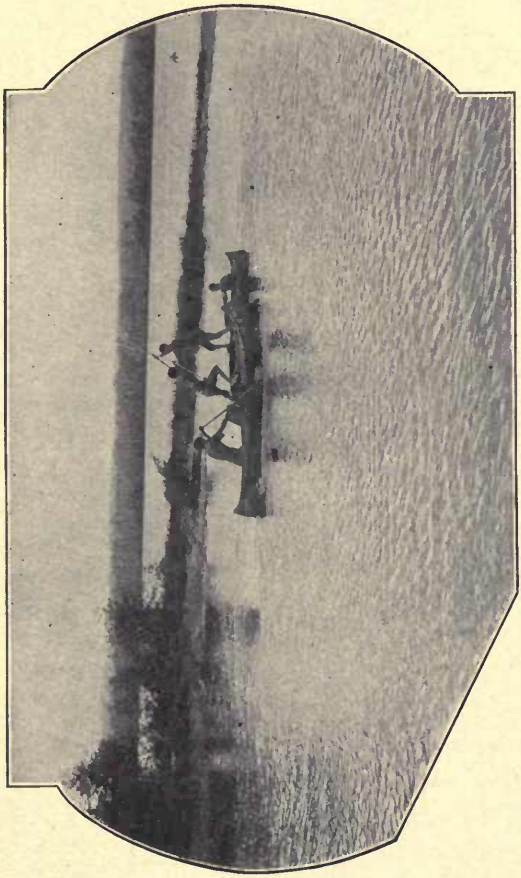
We do know, however, that from the very earliest times the canoe, in one form or another, was known to man; and its evolution, though the stages are few, is fraught with interest.

The earliest canoes were simply thin strips of wood laid across each other to form a sort of mesh which, when turned upward, produced a framework similar to that of an umbrella. Over this frame the skins of wild animals were stretched, thus forming a frail boat in which the men of forgotten times made long journeys over lakes and

rivers, many of which have, in all probability, ceased to form a part of the geography of the world.

The next step seems to have been the tree-trunk hollowed out by nature or by fire. Strangely enough, this, one of the first forms, survives to-day—to see it one need travel no further than to our own Southern States, where the dugout is a familiar sight. Untrustworthy as it seems, it responds readily to proper management, and until very recent years served to transport all the commerce of the "dark continent." Even in the most turbulent streams a skilful paddler need have no fear for his safety.

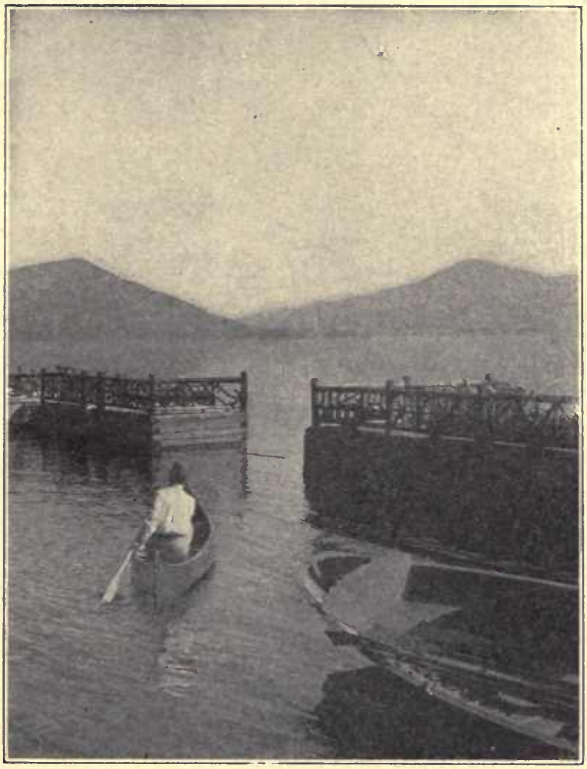
The Pacific Islanders are credited with the building of the first canoes fashioned of planks. The inhabitants, forced to make long journeys by water and poorly supplied with large timber, were compelled through that universally acknowledged mother of invention, necessity, to adopt this form of construction. In some instances the canoes were fastened together in the form of a catamaran; indeed the clever islanders developed many varieties, according to their special needs. Nor were the inhabitants of the mainland far behind them. The coasts of



Canoe Tilting Contest.

China, Burma, and Siam have for many centuries swarmed with canoes of endless variety.

It is to the American Indian we must turn, however, if we would study the canoe in its highest development. When the vessels of the first explorers of the Western world dropped their anchors in its harbors, after their venturesome journeys across unknown seas, they were quickly surrounded by swarms of graceful little boats that skimmed the water like gulls and with incredible swiftness. As years passed on and daring travelers penetrated deeper and deeper into this wonderful new continent, they found the canoe, in various forms, in general use—from the skin-covered framework of the Esquimaux, harking back to the earliest times, and the dugout of the Seminole floating about the everglades of Florida, to the well-nigh perfect craft of the dwellers upon the shores of the Great Lakes. It was here, among the savage inhabitants of the wilderness of the Northwest that the canoe as we know it was developed. The lines of these boats were graceful, their weight inappreciable in comparison with their capacity. It was frequently necessary for the red man to travel long distances partly by land and partly by water,



An Early Morning Start.

hence his canoe was made so light that one man could transport over the many "carries" or "portages" a canoe which, placed upon the water, would safely bear six or eight men.

The skill of the paddlers was the marvel of all who witnessed it. Even those early explorers, hardy men that they were and strangers to fear, felt that it was wantonly inviting death to trust themselves in these frail craft. It was not long, however, before they became accustomed to them and had no hesitation in braving the whirlpools and rapids with which the region abounds, with perfect confidence in the cockleshells. The history of our country is crowded with instances of the amazing skill of the Indian paddlers, and Fenimore Cooper has immortalized it.

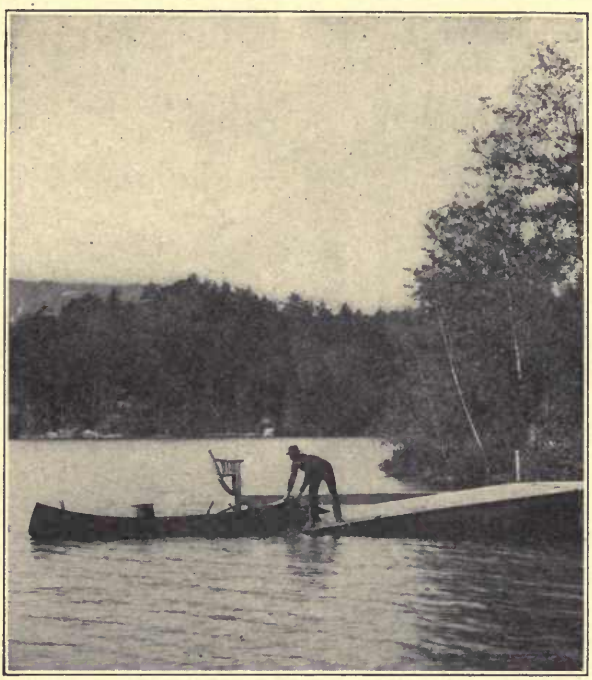
Very naturally, the canoe is indissolubly linked with the settlement of the United States and with the evangelization of the Indian tribes. It was in birch-bark canoes that the hardy missionaries of the West and Northwest fared forth to win souls for God, and it was in these same craft that many of the most important discoveries were made. A canoe was the vantage of the great apostle of the region, Père Marquette, when he discovered the "Father of Waters," the Mississippi, our most magnificent river, that bears so close a resemblance to the ancient Nile.

The City Sportsman's Method of portaging his Canoe.

In the early American wars, Lakes George, Champlain, and Ontario and the St. Lawrence River were, time and again, the highways over which passed great military expeditions made up of several hundred canoes; in truth it would take a volume fittingly to describe the importance of the canoe to the early dwellers in our land.

In Puget Sound, Alaska, and in British America, the Indians still use the form of canoe that was famous among them when the first white men visited their homes. It is perhaps the swiftest of all, and is decidedly unique. A peculiar feature of their canoes is the long, overhanging front. The prow is made in rude imitation of the head and neck of a deer and extends several feet in front of the boat proper. The sides are slightly flared outward to permit the ready return of the paddles without touching the boat and thus interfering with its speed. The skill and endurance of these Indians is well-known. Half-sitting, half-kneeling, they will ofttimes paddle continuously throughout an entire day. The larger boats, some as long as sixty feet, are frequently ornamented with grotesquely painted figures.

With the advent of the white man and the needs resulting from his commercial spirit, boat-building advanced so rapidly that the canoe was soon pushed into the background; and its present popularity as a pleasure-boat is due in a great measure to the efforts of two men who were the first to realize its possibilities. They were not Americans. That America can thank England

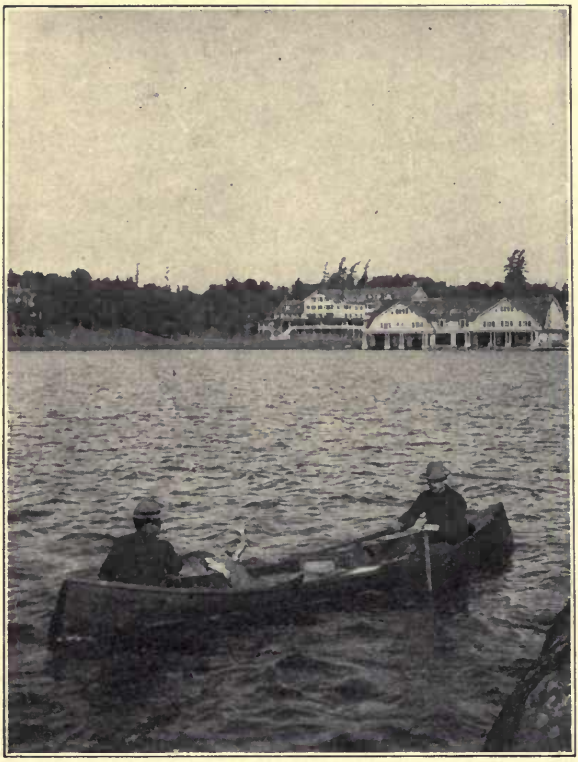


The Right Way to launch a Canoe.

for the best appreciation of the character of Washington is a well-known fact—whoever has read Thackeray's "Virginians" must grant the palm in this regard to the English writer. But it may not be so generally known that MacGregor and Baden-Powell, two Englishmen, rescued the canoe from oblivion.

In 1865 MacGregor built the "Rob Roy" and cruised in her for about a thousand miles. She was a covered canoe, modeled somewhat on the lines of the Esquimaux *kayak*, but built of wood instead of skins. Not long afterward Baden-Powell built the "Nautilus," a canoe of slightly different type, adapted to carry small sails. In it he took many long journeys over the lakes of Switzerland. The book written by MacGregor and the tales of Baden-Powell's trips aroused great interest in the sport in America, and it soon became so popular that amateur canoe clubs were formed. The first of them was the New York Canoe Club, founded in 1870 and still a thriving organization, devoted to the paddle.

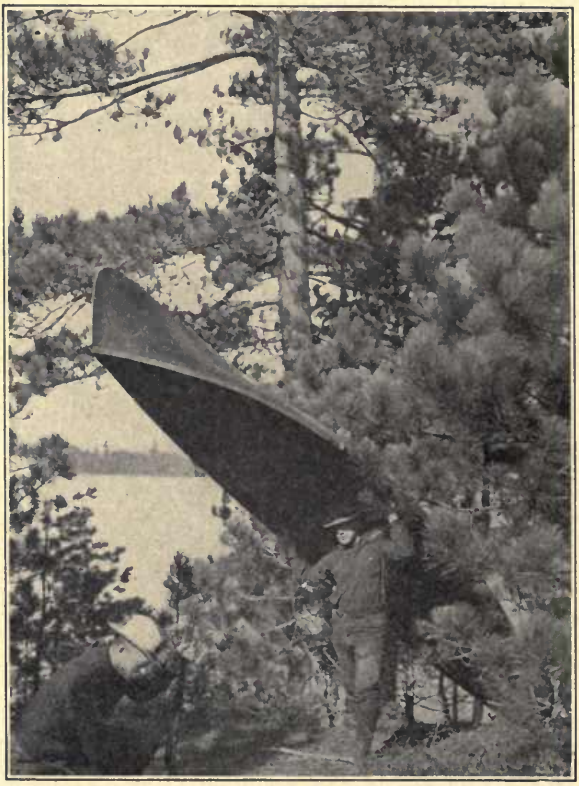
The canoe has two characteristics distinguishing it from the boat properly so-called. In the first place it is pointed at both ends, a feature rendering it capable of proceeding equally well in either direction. Secondly, it is propelled by a paddle and with a forward movement, the paddler always looking in the direction in which he is traveling. In all probability this last characteristic was born of the conditions existing when canoes were first built. In those days man was constantly menaced by enemies of all



Canoe used by Deer Hunters.

kinds, and it behooved him to see ahead of him. Moreover, the method is unquestionably more natural than that employed in rowing.

For all practical purposes canoes may be divided into two classes—the open and the decked. In



The End of a Carry.

length they range from twelve to thirty feet. Of course there are canoes shorter than twelve and longer than thirty feet; but for pleasure outings the twelve-foot canoe seems best suited

Portaging through the Woods.

for one person and that about thirty feet long is the most comfortable and satisfactory for two. According to individual choice, single or double paddles are employed.

Those who do not know the canoe, or who are but little versed in the method of handling one, are wont to decry it and maintain that it lacks the security to be found in boats of other construction. Experience has proven, however, time and time again, that the canoe is the safest of all small craft when it is handled by a man who understands it.

To those who know it, it holds forth an invitation that is most difficult to resist. They long to hurry away from the turmoil of the busy city, to fly from the marts of trade and glide through beautiful waters, past wood and forest and everglade, to hear the swish of gentle waves against the graceful prow.

The canoeist is not a hunter who merely delights in slaying; he is not a fisherman who revels in the size of his catch; he is, and needs must be, a lover of nature, of earth and water and sky, who knows the charm that lies in watching the beasts of the forest and listening to the songs of the birds, without a thought of harming them. These are the honest pleasures his canoe invites him to enjoy.

Betake yourself to the shores of some beautiful river, such as abound near-by, no matter in what

Canoeing for Pond Lilies.

part of the country you may dwell; raise your tent upon its bank, and as evening falls push your canoe into the stream—and canoeing will have gained another votary! As you glide along, the moonbeams shining through the branches cast their shadows upon the glistening surface of the river; the narrowing vista formed by the

water and the gently swaying trees that arch above it opens to your view as if at the command of some mighty magician. And all the while your senses are soothed by the lapping of the waves against the prow commingling with the sounds and calls of the wood—"close to the heart of nature" ceases to be a poetic expression, and becomes a glorious reality.

Hunting Rubber in the American Tropics

After sugar and coffee, crude rubber is the largest of the tropical imports of the United States. More capital is invested in this by residents of the United States than in any other industry outside our national boundaries. One of the most striking results of the industrial progress of the last and the present centuries is the rapid multiplication of the uses of rubber, and the ever-increasing demand for the raw material.

For several decades the world's needs were met by the Para district of Eastern Brazil, but with steadily advancing prices as an inducement, the entire Amazon valley, and, indeed, all the tropical regions of the western hemisphere, have been ransacked in search of additional wild supplies. Within the last decade the value of good grades of rubber has passed from the neighborhood of twenty-five cents to a dollar and upward per pound. The impetus given by these prices was sufficient to cause the rubber

industry to expand sufficiently to keep pace with the demand, which resulted in a tendency toward moderation of prices. The steady increase of the use of rubber in the arts, however, indicates that the question of the world's future supply is apt to cause serious consideration.

The preservation of wild rubber forests is receiving more and more attention in the countries in which they are so important a source of wealth. Rubber is largely a product of savage rather than civilized industry. In fact it is by far the most important contribution of comparatively savage races to industrial civilization.

Realizing the wasteful methods of the native rubber hunter, a widespread effort is being made to cultivate rubber plantations, where the trees may be grown and the milk extracted with the best results and the least waste. Rubber culture was attempted some thirty-five years ago with moderate success, and that is about the extent of the success up to the present time.

There have been and still are three general opinions regarding rubber culture. The first is that rubber can be produced at a profit wherever the trees will grow. The very frequent failure to secure rubber in paying quantities from

Self-pruned Branches of a Rubber Tree.

planted trees gave rise to the second opinion that rubber could not be produced in cultivation. But both these ideas are beginning to give place to the third view that rubber, like other agri-

cultural crops, can be produced profitably only under favorable conditions.

It is easy to distinguish the rubber tree from other tropical growths. It has a rather smooth, light gray bark. Its slender, simple branches, with their large oval leaves, pendent in two rows, are similar to those of very few other trees. In trees two or three years old the leaves are larger and the branches longer than in trees of greater age.

The apparent impossibility that a young tree should have longer branches than an old one is realized through the tree's curious habit of self-pruning. An eighteen-months'-old rubber tree has no true or permanent branches, which generally do not appear before the third or fourth year. The temporary or false branches have a special layer of tissue at the base, which softens and releases them from their sockets, these being soon overgrown by the bark, so that the scar itself becomes almost indistinguishable. Even the branches called true are not always permanent, but are occasionally subject to the self-pruning process.

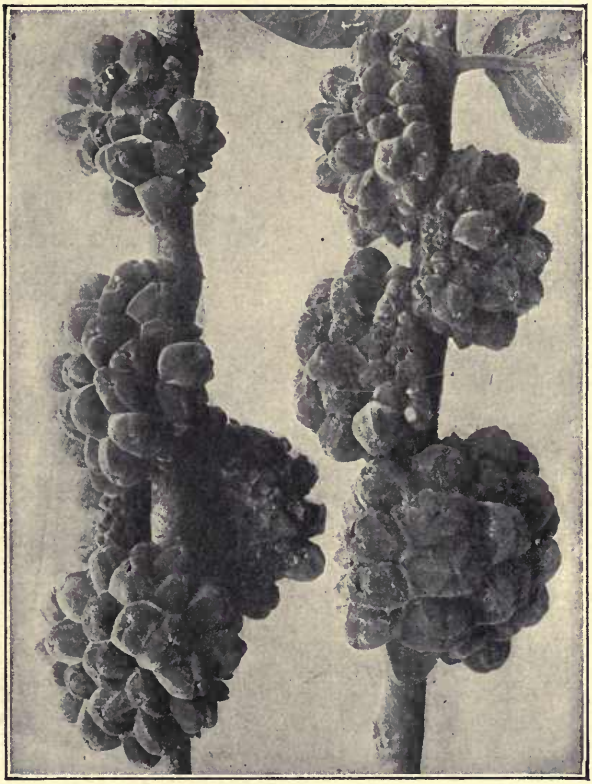
The hairs or bristles which clothe the branch are of a dull greenish yellow, or brown color.

Showing just how a Rubber Tree cuts off its own Branches.

They are sharp-pointed, and with age become stiff enough to penetrate and irritate the skin of the hands like the fine spine of a cactus. Each leaf is covered, before it begins to open, by a

The Fruit of the Rubber Tree.

large hairy bud scale, ribbed lengthwise. On falling away this leaves a narrow scar, which extends completely around the branch. Below the scar is a row of small warts, at first white and then turning reddish.



Ripe Fruit of a Rubber Plant.

The leaves are of a fresh, light green color. When young, they are decidedly yellow below, because of the presence of numerous greenish yellow hairs, somewhat softer than those of the

branches. The fully expanded leaves appear less hairy because the hairs are distributed over a larger surface. The base of the leaf consists of two broadly rounded lobes, which often extend past the stem and overlap.

There are two very different kinds of flowers, although both are usually found upon the same tree. These consist of scaly, flattened pods, opening along the edge like an oyster shell. Inside is a mass of creamy white growth. The whole flower or head suggests a flattened fig, opening along the edge instead of at a small aperture in the middle.

As the fruits approach maturity they enlarge and spread apart until the scales which formed the sides of the young flower cluster are carried back underneath to furnish a base for the orange-colored ripe fruits. This fruit has a faintly sweetish taste, but is without appreciative flavor. The unripe fruit is filled with milk, and experiments are making to see if it is not possible to utilize this milk as rubber.

Rubber is made from the milk of the rubber tree. It is not the sap of the tree, and can not be drawn out by boring holes in the trunk, as is done with the sugar maple. The milk does not

Tapping a Rubber Tree.

pervade the tissues of the tree, but is contained in delicate tubes, running lengthwise in the inner layers of the bark. To secure milk in any quantity it is necessary to open many of these

tubes by wounding the bark. The rubber is formed in floating globules inside the tubes and can not pass through their walls, so that even a suction apparatus would not bring it out unless the tubes were cut.

The native method of tapping the rubber tree is to make with a machete, or large knife, or sword, diagonal lines of gashes that open channels along which the milk can flow until it is all brought to one side of the tree, whence it is led down to a cavity hollowed in the ground and lined with the tough leaves of the Calathea tree. These are dexterously lifted up and the milk is poured out into a gourd or other vessel and carried away to be coagulated, or for the liquid and solid to be separated.

These diagonal channels are from two to three feet apart, and those of each successive tapping are inserted between the older scars. Even this rough handling is an improvement over the previous and primitive method of cutting down the trees entirely, or else hewing steps in them by which the rubber gatherer could climb to a desired height. Formerly large trees were ascended for thirty feet or more by means of ropes, vines, climbing irons, and steps cut in the tree trunk.

A Rubber Tree tapped at the Base until exhausted.

In the forests of Nicaragua, when a collector finds an untapped tree he makes a ladder out of the lianas vines that hang from every tree. This he does by tying short pieces of wood across

the vines with still smaller vines, many of the latter being as tough as the stoutest cord. He then proceeds to score the bark with cuts, by the aid of his machete, cuts that extend nearly around the tree, like a letter V with the point downward. The milk will all run out of the tree in about an hour after it is cut. It is collected in a large tin bottle made flat on one side and furnished with straps to fasten to the collector's back.

A decoction is made from the lianas, also known as the moon vines, and this being added to the milk, coagulates it into rubber, which is made into round flat cakes. A tree five feet in diameter will yield when first cut about twenty gallons of milk, each gallon of which makes two and one-half pounds of rubber. Of course the collector can not put any such quantity as this into the bottle he carries. When a tree of the size mentioned is tapped preparations are made for speedily handling its output.

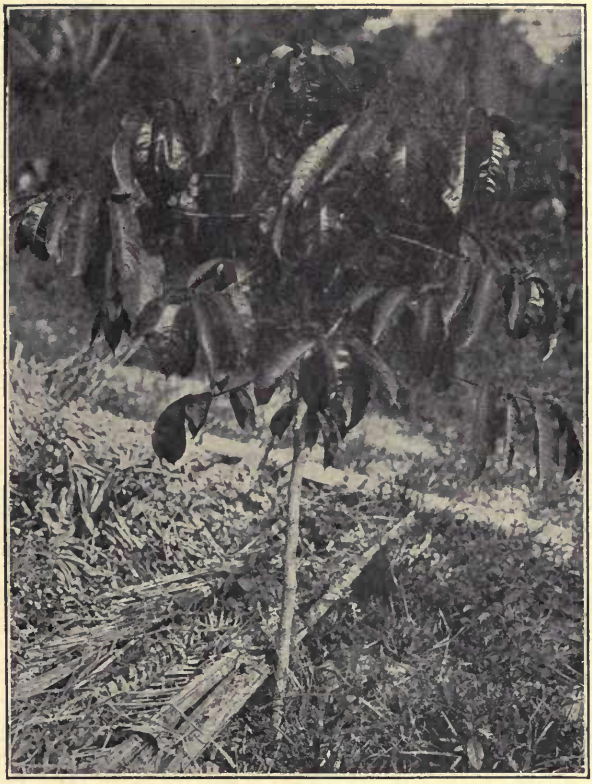
The earliest age at which rubber trees may be tapped with safety is from eight to ten years, although half a pound of rubber a year is not infrequently taken from trees of six years' growth. The inferior quality of rubber obtained

Rubber Coagulated by the Juice of the Moon Vine.

from young trees has a tendency to lessen any desire to tap them. Rubber of this sort is better known as "resins."

An Eighteen Months Old Rubber Tree.

The Guatemalans in tapping a rubber tree also use the machete. For this purpose the end of the blade is bent back until a groove is formed about broad enough to lay the finger in. The



Rubber Tree One Year Old—Eastern Guatemala—Planted in the Open and exposed to the Sun.

cutting edge of this groove is well sharpened. With this instrument the workmen tear horizontal gashes in the bark of the trees, and indeed

over half or three-quarters of the circumference of the trunk. The grooves are cut at a distance of one and one-half feet, one above another, up to the principal branches. The milk at first flows out in drops which fall to the ground. These are allowed to go to waste, because the quantity is small, and the milk very watery. In a moment or two the dropping ceases. The milk which then oozes out is pulpy, and remains in the furrows, where it hardens into strips of rubber.

In two days these strips are pulled out, washed and dried in the shade, and are then ready for market. The trees are tapped four times a year. A tree's average yield is a little more than two pounds a year. The tree's wounds heal in about three months.

In Brazil, rubber is spread in thin layers on wooden paddles, which are held over burning palm nuts. The highest grades of commercial rubber have been produced in this way, but the process is slow and laborious. The Central American and Mexican method of coagulation is different. In this case the milk is spread in a thin coating upon the large, banana-like leaves of the Calathea, and laid out on hot bare ground in the open sun. This exposure to heat, light,

A Finished Sample of Rubber.

and air turns the milk dark with great rapidity, and in a few minutes it has become firm enough to permit a second layer being spread over its surface.

Subsequently two of the rubber covered leaves are placed together, the rubbered surfaces facing. They are then trodden upon until the rubber unites and becomes a single leaf-like sheet, from which the leaves themselves are easily stripped away.

Crude rubber is prepared in many forms, but nothing is done to it after the collector has finished with it, except to place it in bulk and ship it to various sections of the world. In this form it is taken in hand by the many manufacturers who either make rubber goods altogether, or utilize rubber as a constituent of whatever may be their output. Mexico is considered by many as the coming rubber country and strenuous efforts have been made to push and expand the industry there. Rubber culture is undergoing its experimental stage in Porto Rico and the Philippines. So, after all, the world's rubber supply is really in no danger of becoming insufficient.

Outdoor Bird-Taming

"THEY live from hand to mouth like the birds of the air," said Sir Boyle Roche in the Irish Parliament, in the course of a pathetic appeal on behalf of some distressed peasantry. I wonder whether any of my readers have ever seen, as I have, the birds of the air literally living from "hand to mouth"? Pray do not mistake me, reader, and imagine that I am about to commit the banality of taking an Irish bull by the horns and explaining it. I merely wish to hang a tale thereby, and tell you of a garden that I love where the landlord and his bird tenants live on terms of such friendly intimacy that the sound of his voice, his whistle, or his footstep, brings the small birds flying from all sides to meet him, and follow him as he walks, some eating at his feet, others perching on his hands for food, and fluttering up from time to time to take a crumb from between his lips.

This is no imaginary description of a Utopian

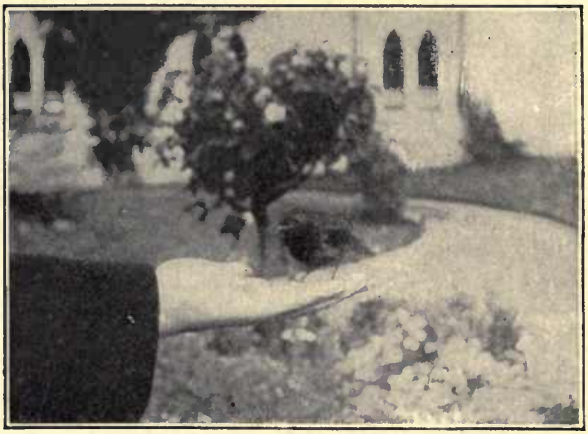
bird-paradise, but a glimpse of what happens every day in the garden of a country house in North Wales, where I spent four pleasant years, devoting some leisure moments each day to bird-taming.

The present article describes the methods employed by myself and others of the household, and their results. And first as to our system, which is neither complicated nor original. Every one will have noticed how daring our wildest birds become during a hard winter, when frost or snow has cut off their natural food supply and starved them into dependence on man's bounty. This is the bird-tamer's opportunity. He will spread food liberally and regularly on window-sills, doorsteps, and garden paths until the birds have learned to expect it. The next step is to withhold their breakfast on a cold morning that hunger may drive them to approach the crumbs sprinkled close to his feet. During the early stages of the frost the birds are shy in the presence of their host, and wait at a distance till he has laid the table and retired. Day by day their courage increases and they approach a little nearer, gradually learning to stand their ground while the crumbs are dropped, then following

Birds assembling for Breakfast.

them to his feet or catching them in the air. Any change of attitude on his part, any rapid movement of the arm, will disperse them now, for they are still suspicious. Even the forward robin, his best ally and decoy bird, will hesitate a little before learning the next lesson, that of snapping up the crumbs that lie around the finger-tips of his hand laid flat in the snow. But not for long.

A few more lessons will see a robin filling his beak unconcernedly on the palm of your hand, finally flying on to it as you stand with outstretched arm. On these occasions the robin



Young Robin eating Nut Crumbs on Hand.

acts the part of the friendly resident, who is the first to call on the stranger coming to live in an exclusive neighborhood. When the redbreast family has called on us, shaken hands, and pronounced us harmless, their example is soon followed by some of the bolder members of the feathered aristocracy of the garden. Blue tits, chaffinches, cole tits, great tits and hedge sparrows come one after another to make our acquaintance.

Perhaps our blackbirds and thrushes retained too vivid a recollection of the gardener's gun

Blue Tit on Writer's Hand, eating Walnut.

and their own struggles in the strawberry nets to trust us too implicitly.

They were frequently to be seen on the outskirts of the crowd at our feet, but few ever ventured to peck a crumb off the hand, and none could be induced to perch there. As for the vulgar hedge sparrows, it required positive discouragement on our part to exclude these professional hustlers from the bird table, where their pushfulness threatened to expel the more interesting species.

Many kind patrons of the starved birds in winter are inclined to regret the thaw which

deprives them of the company of their lively little clients. But such partings of friends are by no means so inevitable, otherwise the pastime of bird-taming would lose almost all its charm.

They have trusted us as friends in need; they have yet to realize that we are friends indeed.

If the frost has lasted long enough the birds will have developed an incipient tendency to rely on man for food, which grows as they realize how much easier it is to beg for their meals than to work for them. The success of the bird-tamer depends on fostering this tendency till it becomes a habit, and the birds are reduced to something like the condition of sturdy beggars, spoiled for work by indiscriminate charity. It was on this principle that we always provided an extra supply of their favorite dainties on the approach of open weather. Then their acquired craving for walnut and cheese proved superior to the attractions of a laborious search for seeds and insects, with the result that our bird tables continued throughout the year to be patronized by a varied list of feathered visitors.

The most spectacular exhibition of tameness displayed by our birds is undoubtedly the feat of snatching away while on the wing a crumb

Robin in Flight taking Crumbs from the Writer's Lips. Notice Beak in my Mouth and Legs resting on my Chin.

held between the lips. This accomplishment had been regularly practiced by our robins for some years before it extended to some of the chaffinches. When a nut crumb is placed between the lips and the breath drawn through them with a sucking chirp of invitation, the swoop of the bird at one's face is startling in its suddenness. At the moment of seizing the

crumb, robins always rest their claws on the chin or underlip, producing a momentary pause, which allows the photographers a chance of a picture. Chaffinches who do not use their feet execute the maneuver too rapidly for a successful snapshot.

Here we may qualify somewhat our appreciation of the robin's services as a decoy bird. His forwardness has its drawbacks, for he is a jealous and quarrelsome guest and a redoubtable duellist withal. Though his bulging red waistcoat may indicate repletion and suggest post-prandial repose, the approach, even of his own mother, is enough to wake the combativeness of this fierce little swashbuckler. In a moment his lance is in rest and he runs a tilt at the intruder. The distraction afforded by this family imbroglio is at once turned to account by the waiting tits and chaffinches.

After the robins the blue tits are our aptest pupils. Three blue tits perched on the hand simultaneously is no unusual sight in hard weather, when food has been removed from the tit-larders to whet their appetites. Here, clinging to our fingers, their restless activity as they cock their blue bonnets and swear at one

Hen Chaffinch taking Crumbs from Lips. Camera held within a Yard of the Bird.

another between the mouthfuls make them the despair of the photographer.

Waiting in groups by the garden door of the house they descend upon the first person who appears, fluttering round him and alighting on his shoulders and arms at the least indication of latent food supplies.

Owing to their similarity in plumage it would

be difficult to estimate the exact number that had learned to perch on the hand during any given year. On a rough calculation, based on the number seen perched at the same moment on the hands of several persons, four or five pair would be no exaggerated estimate.

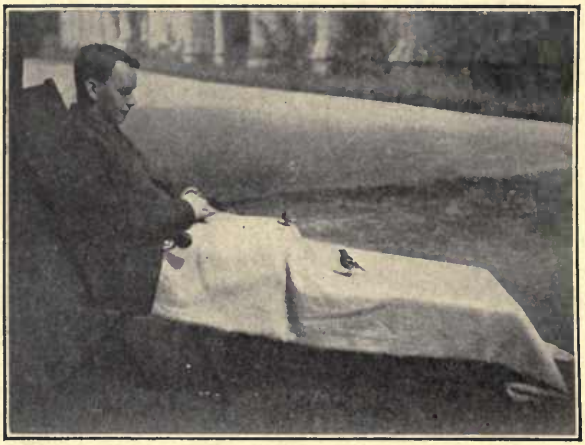
Early on a cold morning when the birds were ravenous I have seen a tripod camera literally stormed by tits. The moment it was planted one alighted on the lens, another on a leg, and a third on the bellows.

Like the robin, the blue tit is not content with mere outdoor relief. If you have no time to pay him a visit he will call on you in your room bringing with him at times quite a large family party. I have seen as many as eight of them in a room where food was regularly placed on the floor near the open window. Some of these scarcely needed the crumb-covered causeway of lathes leading from the window to the table to encourage them to approach the occupant. "Pray don't stir, I'll help myself," they seemed to say, as they proceeded to explore the room for nuts, occasionally flying on to the table to take a morsel from the fingers of their entertainer.

But it goes without saying that the robins are

On the Window-sill.—Blue Tits on Walnut in Fingers of the Left Hand, looking suspiciously at Camera in the Right Hand.

the privileged guests. Each robin has his favorite rooms, where he is sure of a generous meal. If dinner is not served in one room off he goes to another, sometimes completing quite a round of visits in a few hours. It soon becomes apparent, however, that the excursions of every robin in the garden are limited by some rigid unwritten law. Each has territorial rights to



Chaffinches on Leg Rest of Invalid.

certain rooms, paths, shrubberies, and plots of ground. Unauthorized robins found trespassing within these private domains are prosecuted by the proprietor with the utmost rigor of beak and claw.

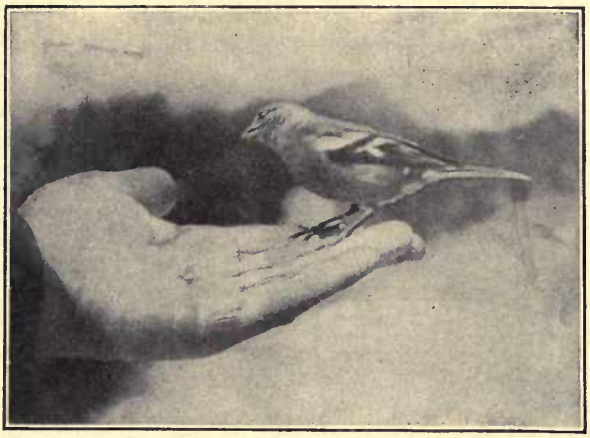
Though jealous and quarrelsome, the robin yet remains our prime favorite. Our other birds say good-by when they have had enough to eat. Their attachment is but cupboard love. Robin alone seems to take a pleasure in man's society for its own sake. Not content with board he will have lodging, too. I have often known him to sit for an hour or more after his meal,

Blue Tit eating Walnut on Hand.

perched on table or mantel enjoying a siesta, removing his head from under his wing at intervals to warble a few drowsy notes.

Individual robins have been known to pass a whole night in a friend's room, flying in at dusk and roosting in a warm corner till daybreak. When a robin appears on your window-sill late on a cold evening and shows no inclination to go after his meal, even when you move to shut the window, you will know what to expect. His sleepy twitter has an unmistakable meaning: "Dine and sleep? Eh! What? Well I don't mind if I do."

When the pairing season arrives, our blue tits, like the other species, become scarcer round the house and garden as they disperse abroad in quest of nesting-sites. The few who remain beg food with undiminished impudence. That those who leave the garden for the woods do not always forget their old friends, the following experience of mine will tend to show. I had just fired a shot in a wood distant about half a mile from the house, when I noticed a pair of blue tits on a bush near me apparently making signs of recognition. On holding out a handful of crumbs the newly-wedded couple flew on to it at once and made a hearty meal. In this case both husband and wife were tame birds; but such appropriate matches were by no means the rule among our pets. A tame bird often chose a wild mate, with whom it reappeared in the garden. Then the attempts of the tame bird to coax its timid consort to beg for crumbs were very interesting and not seldom partially successful, especially in the case of chaffinches. At first the trained partner after alighting on the hand would content itself with looking back and chirping at its mate between each mouthful, as if pointedly enjoying its unshared banquet. Then it resorted to the



Hen Chaffinch collecting Crumbs for her Young.

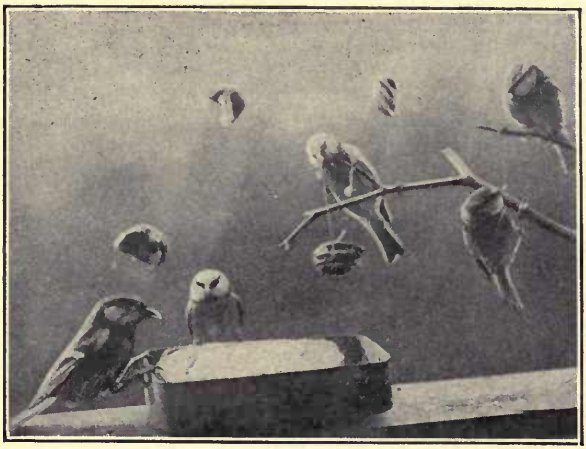
tactics of a parent bird teaching its young to fly, fluttering up to its mate and back to us, ending by taking the poor thing a crumb. The gift of speech could not make its meaning plainer to the beholder. "Taste that now. Isn't it good? See what you'll get if you come with me."

Many of my observant readers will have noticed among wild and tame birds alike that graceful rubric of sylvan love-making, which requires that the cock bird during the honeymoon, even before the nest is built, should make frequent presents of food to his inamorata. Every spring this little comedy was daily acted at our very

feet by all the tame species with one curious exception. In the course of all the years during which our friendship with the small birds gave us exceptional opportunities of observing their habits at close quarters, we have never seen a cock chaffinch feed his bride.

One can afford to overlook this little deficiency in connubial gallantry in birds which make such tame and charming pets. At first they were very shy and unresponsive to our blandishments. My notebook for the year 1902, while mentioning that all had soon learned to assemble at the signal for food and follow us about the garden, only records two cocks and one hen who perched regularly on the hand and one or two more who would snap a crumb from the fingers without perching. The next year witnessed a notable increase in tameness, all the more remarkable from the fact that our most conspicuous successes were gained during the spring of that year and consequently just at that season when an abundant supply of their natural food was everywhere obtainable.

Perhaps some of these tamer birds were absentees from the preceding autumn, returned from a winter migration. In one instance it was



Great Tit and Blue Tits at Window-sill Larder.

certainly the case. This exceptionally tame bird, a hen chaffinch easily identified by her unusually dark plumage and eyes, and something peculiar in the shape of her head, had left us in the autumn.

On the very day of her reappearance in April she took crumbs from our hands and lips with all her former audacity. Before the end of the month six more hens were perching on our hands and about an equal number taking crumbs from our lips. From this time onward throughout subsequent years the tame hen chaffinches greatly outnumbered the cocks. In begging for food no bird is more insistent than a chaffinch.

Hen Chaffinch on the Right Hand; Left Hand on Shutter of the Lens.

Flying along beside you as you walk, he alights at intervals immediately in front of you as if daring you to step on him. If this stratagem fails, it is often followed by a realistic feint at a direct frontal attack pushed home by a swoop that brings him within a few inches of your eyes, where he hovers for a moment yelping his shrill appeal.

Hen Chaffinch with Beak full of Caterpillars and Nut Crumbs.

"I won't be snubbed. You can't pretend you don't see me now, or hear me either. Tweet, tweet, tweet." I have often met a friend on his way back to the house to fetch a forgotten crumb-box, grumbling good-naturedly at the futility of attempting to read on a path infested by hungry chaffinches. An illustration shows the rug-covered leg-rest of an invalid friend occupied by a party of chaffinches. At this al fresco table

d'hôte all our tame birds were represented, including even great tits and hedge sparrows. Only one pair of each of these species were ever known to perch on our hands. In other respects they were almost as tame as any, and much more so than our thrushes and blackbirds.

At all such gatherings there is one little bird whose canny ways will at once attract the observer's notice. Though the smallest of the company he consumes the lion's share of the food. "He's little but he's wise," is a true thumb-nail character-sketch of the cole tit, the smallest but by far the most intelligent of our tame birds. Wherever food is going he is there. The moment a crumb falls, he is on it and away before his slower-witted competitors realize his presence. He is incapable of the penny-wise and pound-foolish precipitancy of our other birds, who take the first crumb irrespective of size. As he alights on your hand his beak never fails to close on the largest available morsel. His continued departures with well-filled beak might lead one to credit him with the appetite of a cormorant. But he is too long-headed to consume his meal on the premises. It is not merely to escape aggression that he retires so promptly.

Chaffinches learning to take Crumbs off Finger Tips of Writer's Hand in the Snow.

"Enough for the day" is a maxim that finds no place in his economy.

If you follow him with your eye as he leaves your hand you will see him flit away to some leafy hiding-place, preferably a cabbage, and there "cache" his dainty with elaborate care. His invariably roundabout return journey seems to imply a fear lest his line of flight may betray the whereabouts of his safe deposit. Each crumb is hidden in a different place and his activity in accumulating stores is practically unlimited.

Standing, watch in one hand and food in the other, I have attempted to gauge his carrying

capacity. Twenty visits to the quarter of an hour was no more than average performance. Whether he is able to remember these hiding-places is more than we can say. The gleeful chuckle he emits when he finds a buried hoard may probably indicate a mischievous delight in plundering a neighbor's store as well as just satisfaction at reaping the fruits of his own industry. The fact that the treasure trove is usually re-hidden elsewhere certainly suggests some knavery.

In the nesting season our cole tits are quite as fearless as at other times. The two pair that frequented our garden showed no displeasure at a crumb-spread hand, displayed at the entrance to their nesting-holes. Pecking the food off the fingers, they promptly transferred it to the throats of their nestlings within.

Situated in holes as tits' nests are, it was impossible to test the tameness of the sitting bird by photographing or feeding her on the nest, a liberty which was not resented by some of our chaffinches who nested near the ground.

An illustration shows a hen chaffinch feeding her young. In this case, although a tripod camera was planted within two feet of the nest on one

The Hedge Sparrow.

side, and a hand camera facing the bird at point blank range on the other, not only did she continue her occupation, but improved the occasion to levy a contribution of nut crumbs for her children, snapped from the hands and mouths of the photographers. Her beak was half full of caterpillars when she took the nuts, yet this strange diet of walnut with caterpillar sauce, on which so many of our young birds are

fed, seemed to produce no ill effects on her infants. As a rule our nesting robins are less confiding than the chaffinches. The young robins are none the less enterprising on this account. Some of them, within a few weeks of leaving the nest, might be seen perched on our hands, heads, and shoulders. To the bird-tamer one of the most interesting stages in the lives of his pets is this season when the young have left the nest. Then the trustfulness of the parent birds is shown at a period when all wild creatures are most shy and suspicious.

It is true that the cole tits and blue tits habitually see their young safely perched in the trees before they fly down to our hands to get them crumbs.

The jealous robin parents, too, seem anxious that their children should not remain in the garden to claim their share of the paternal acres. Hence the robin population of the garden remains pretty constant. Cole tits and great tits for this or some other reason never exceed two pairs. Blue tits, chaffinches and other resident species are steadily on the increase as might be expected from the recognized law that bird population varies with the food supply. The chaffinch

A Tug of War.—Cock Chaffinch trying to pull a Crumb out of Writer's Fingers.

parents, unlike those of other species, seem to regard early lessons in begging as an essential element in the education of their offspring. Each family of young chaffinches, almost as soon as they can fly, are taken by the old birds to beg at our feet. Here they stand, a quaint little circle of fluffy figures waiting for their mother, as she flies to and fro from the hand that holds the crumbs. When she alights, what a shuffling of wings there is and rocking of bodies and eager whinings from gaping mouths!

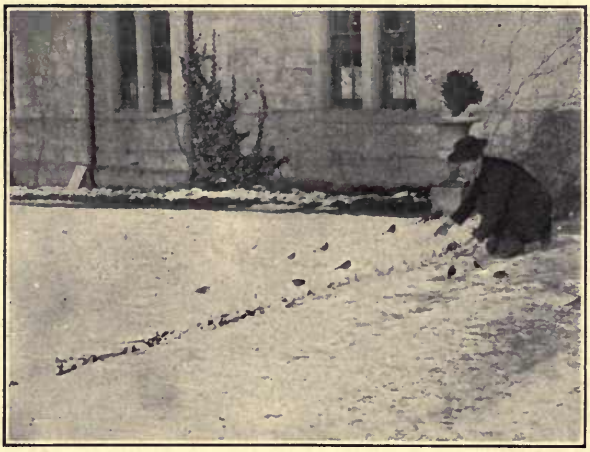
"My turn next, Mummy. You forgot me

last time." Sometimes an adult hen chaffinch, while on my hand or at my feet, has imitated with winning playfulness the begging antics of her infancy, crouching, whining, and shuffling her wings before she filled her beak.

I may mention here that the majority of the photographs shown as illustrations were taken in spring or summer, when the stronger light was more favorable for rapid snapshots. In those in which only one hand with the bird appears, the camera was held in the other hand, a thread, extending from the lens to the crumb-hand to mark the focal limit, being dropped as the bird alighted.

A word in conclusion on the subject of obstacles to bird-taming. I have already alluded to the sparrow-nuisance. It is not an easy thing to snub a sparrow. Experience has taught us, however, that a steady persecution in the farm yard will go far toward damping his enthusiasm for human society in the garden.

"Are cats incompatible with tame birds? Surely you will not ask me to part with my lovely pussy?" pleads a dulcet falsetto in accents vibrating with compassion. Madam, I hasten to reassure you. A few well-directed pebbles to



Chaffinches and Robins; Blue Tit on the Hand.

greet them whenever they appeared in the garden sufficed to convert our two feline sinners. Since then each has confined its attention to its professional rôle, that of "poyson ennemye to rattis and myce" as old Laurens Andrewe hath it. So little resentment did they harbor for this treatment, that one of them, a Persian, reared for us to maturity a family of young squirrels along with her own three kittens.

"But what shall I do when Tommy comes marching home for the holidays, bristling with catapults and breathing slaughter?" Need we

answer? *Mutato nomine, Thoma, de te fabula narratur.* Substituting the birch for the pebble, a judicious dose of the cat recipe—but surely such drastic measures will be not needed. A boy's natural love of pets and the inherent fascination of bird-taming will soon transform the most blood-thirsty young barbarian into a lover of all wild things "baith grit and sma'."

Even a gardener afflicted with avicidal mania can be humored as we humored ours. Blackbirds and thrushes caught in the strawberry nets were incarcerated in a temporary aviary till the season of temptation was past. Hawfinches were trapped alive and sold into slavery to save them from a worse fate. Meanwhile the storm of lead was allowed to spend itself on the hordes of bullfinches which devastate our fruit trees in the spring. For in that time-honored action for damages, "Hodge *v.* Pickabud" we fear that there is no case for the defendant. The antiquity of the indictment and penalty appears from the following entry in an old English garden diary, "Ye Bullefinche or Pickabud, a smale fowle, eats my apple buds. Kill him."

"Everything comes to him who waits," even wild birds, if you make it worth their while to

come by feeding them regularly with foods they like. Comparatively little trouble is entailed in spreading crumbs daily. It is the waiting necessary to coax the birds on to the hand, waiting sometimes in the cold with hand in snow, that will tax the patience of intending bird-tamers.

But is not the game worth the candle? I thought so, and I hope some of my readers may think so, too.

REV. FRANCIS IRWIN.

The Landmarks of Old Virginia

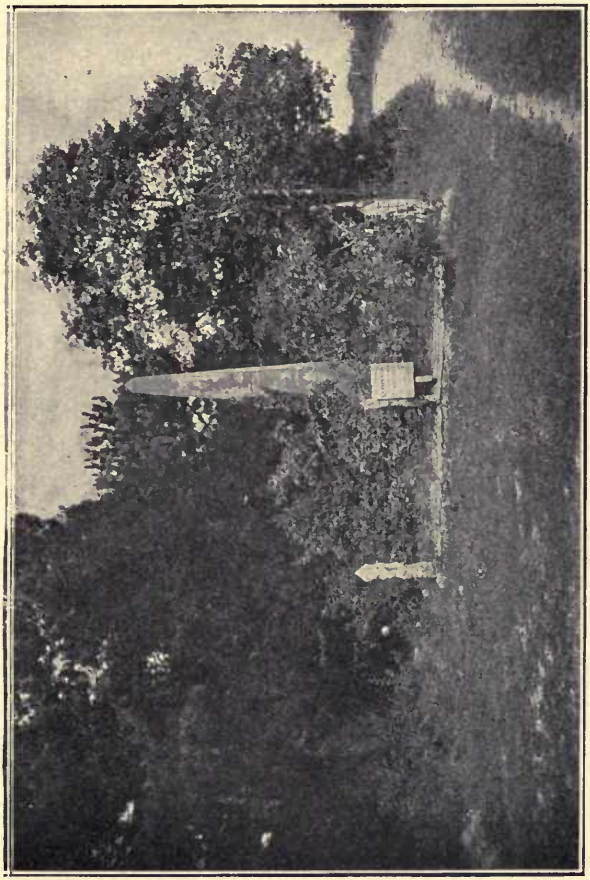
No international exhibition to which Uncle Sam has bidden the nations of the world has had as its setting a region so historic as that which constitutes the environment of the Jamestown Exposition of 1907. This is eminently appropriate, for the great show near Norfolk, Virginia, this year commemorates one of the most important events in the annals of the New World—namely, the first permanent settlement of English-speaking people in America, and, strictly speaking, the birth of the nation now known as the United States.

The region of the Old Dominion known as "tidewater Virginia," by reason of the fact that it served as a theater for the earliest English activities on this side of the Atlantic, has been denominated the cornerstone of the nation, but this early Colonial period did not, by any means, comprise the full sum of its historical significance. From this favored section, at a later date, came

the author of the Declaration of Independence, and a long line of patriots, headed by the peerless warrior-statesman who was "first in war, first in peace and first in the hearts of his countrymen."

This land of romance and tradition was the scene of the spectacular climax and culminating victory of the Revolution, and three-quarters of a century later its green hills again re-echoed to the thunder of cannonading, when it was invaded by the opposing armies in blue and gray. Fortunately for present-day pilgrims, a large portion of the localities and many of the buildings of historic interest have undergone little change in many decades. Most of them are away from the beaten paths of travel, and a majority have been out of range of the march of progress. These circumstances are truly cause for congratulation, since not only have they aided in the preservation of invaluable antiquities, but have left undisturbed something of the olden atmosphere of this beautiful region and the quaint life which was its chief charm in remoter days.

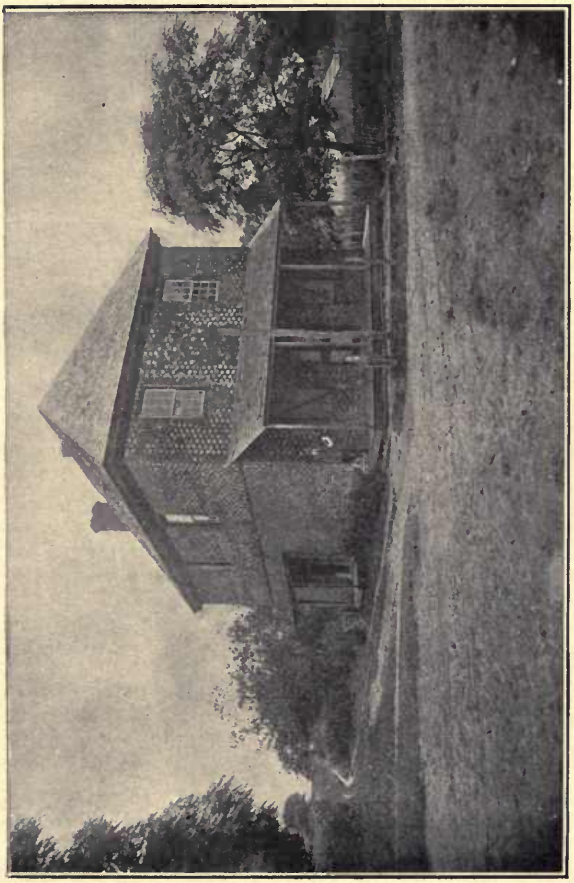
In the estimation of most Americans who will this year—the three hundredth anniversary of its settlement—visit this historic Mecca, the most interesting of the patriotic shrines is



Spot at Yorktown, Va., where Cornwallis surrendered to General Washington.

Jamestown Island, located about thirty miles from the mouth of the James River, the site of the first community established by Englishmen in the New World. This little tract of land was the scene of the first regularly organized English-speaking community, the first recorded wedding, and the birth of the first child of English-speaking parents. Here, too, was elected the first representative legislative assembly, not only in America, but in the world—one year before the landing of the New England pioneers at Plymouth Rock. Here the first jury was impaneled on American soil; on this island occurred the first resistance to taxation without representation, and here also occurred America's first rebellion when Governor Harvey was arrested for treason in 1635 and sent back to England.

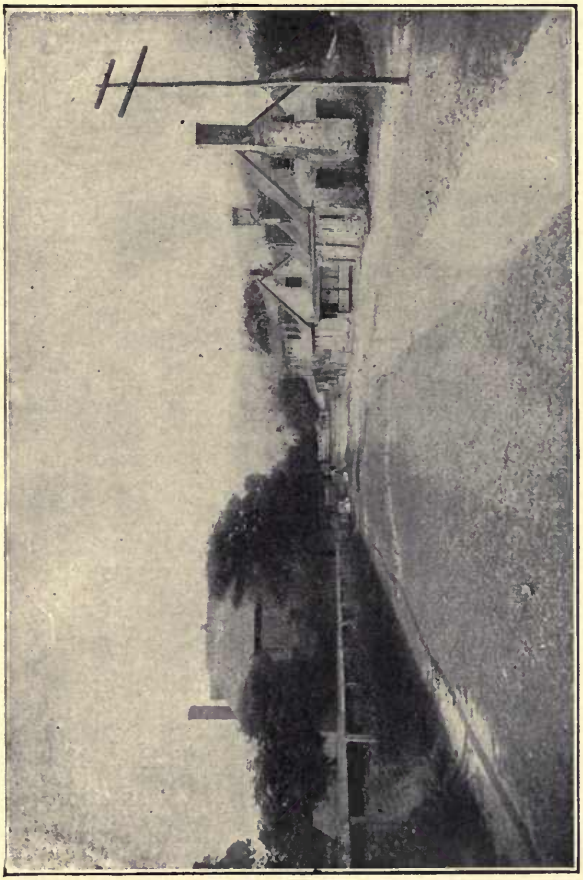
What is known as Jamestown Island is a low-lying strip of land that was formerly a peninsula. The waters of the river long ago washed away the neck which connects it with the mainland, and it is probable that the entire island would have gradually disappeared in the same manner had not a wall of stone been constructed to protect it from the action of the waves. It is a



Yorktown Custom House, the Oldest Custom House in the United States.

matter of chagrin that this, the most historic spot in America, does not belong to the United States Government. Instead it is the property of Mrs. Louise J. Barney, widow of the famous car-builder of Dayton, Ohio, who has a plantation in the vicinity. Mrs. Barney purchased the island at auction when no one else was patriotic enough to do so, and with great public spirit cleared up the island and took measures to preserve its venerable ruins.

A few years ago this Ohio woman, to whom the nation is indebted for the preservation of its most precious historical possession, donated to the ladies of the Association for the Preservation of Virginia Antiquities one end of the island, comprising about twenty-two and one-half acres, which was the site of the first English town in America. Before making the transfer she restored the old stone tower which is the only relic of the original Jamestown remaining. The foundations of many of the old buildings have been unearthed, and an effort made for the restoration of the old graveyard, the tombstones in which are, however, fast crumbling to dust. The United States Congress, in rather tardy recognition of the significance of James-



Principal Street in Historic Yorktown, as it appears To-day.

town Island, has appropriated funds for the erection of a suitable monument on the island.

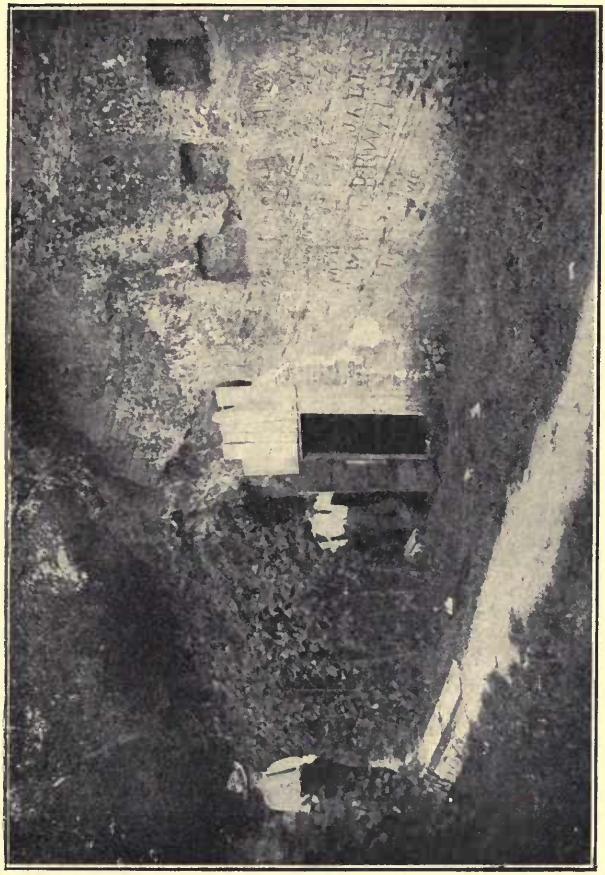
Twelve miles across the Virginia peninsula from Jamestown lies Yorktown, where was enacted the culminating scene of the Revolution when Lord Cornwallis, the British commander, surrendered his army to General Washington, commanding the Continental forces and the French allies. Yorktown on the York River, alike to Jamestown Island, is not situated on any railroad, and is accessible only by steamer or a journey overland. However, the visitor is quite ready to forgive it its isolation when he realizes how this circumstance has preserved the semblance of the days of long ago.

It might be difficult for the visitor to realize that prior to the Revolution, Yorktown was the chief port of Virginia, loading many vessels with tobacco for England; but as evidence of this fact there is pointed out the old custom-house, the first established in the United States, and still in an excellent state of preservation. Not far distant, and likewise in the best of condition, is the famous Nelson house, the home of Thomas Nelson, war governor of Virginia during the Revolutionary period, who sacrificed his entire

The Nelson House at Yorktown (Residence of the War Governor of Virginia).

private fortune in defense of the patriot cause, and during the siege of Yorktown offered a reward of five guineas to the American gunner who would throw a ball into his own dwelling-house, supposed at the time to be occupied by Lord Cornwallis and his staff. This historic mansion was again the scene of memorable happenings in 1824, when Lafayette, on his last visit to this country, made it his headquarters, and was there entertained with true Virginia hospitality.

Tourists who visit Yorktown are also shown the cave where Lord Cornwallis, according to tradition, sought shelter from the fire of the artillery of the allies. Half a mile from the eastern limit of the town is the field of surrender. A plain granite monument marks the spot of George Washington's greatest triumph. Some distance away, on a bluff overlooking the York River, stands the magnificent monument erected in 1881 by the American Congress to commemorate the all-important victory. Upon the four sides of the base are emblems of the alliance between the United States and France, while above, thirteen female figures, hand in hand, represent the thirteen original colonies.



Cave where Lord Cornwallis sought Shelter, at Yorktown.

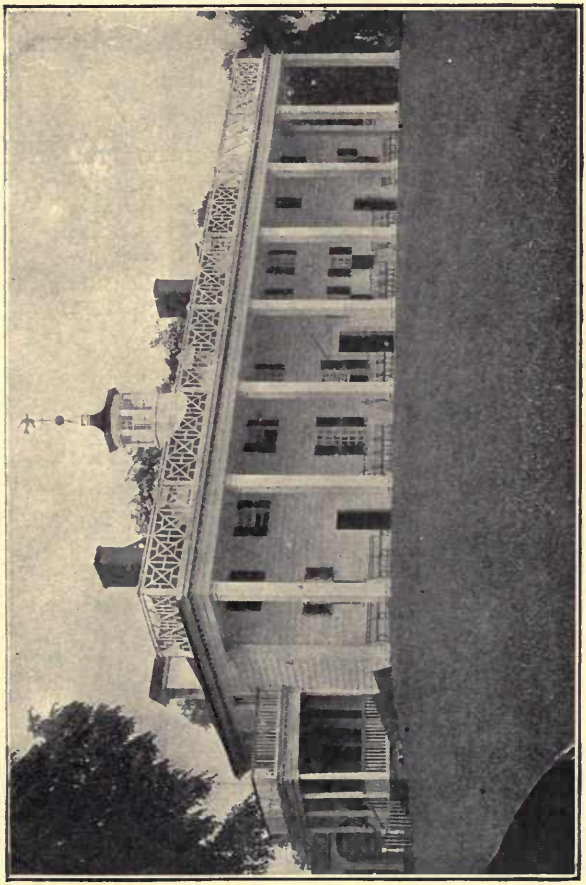
Almost midway between Jamestown Island and Yorktown is Williamsburg, the second capital of Virginia and a village so rich in historic landmarks as to well nigh bewilder the visitor. This was the home of the haughty beauty who in early days jilted George Washington at her father's behest, only to rue it bitterly later. Not far away is the "Six Chimney Lot," site of the home of Martha Custis, where Washington wooed and won the fair widow. Here, facing the green, in an excellent state of preservation, is the home of Edmund Randolph, Washington's Secretary of State, and the residence of Chancellor Wythe, which Washington used as his headquarters on his way to Yorktown. Near by are the buildings of William and Mary College, second oldest in the United States, and the house from which President Tyler passed to the White House upon hearing of the death of President Harrison. On every hand, indeed, we may gaze upon buildings which were the scenes of the oratory of the most remarkable group of men of their day—a coterie of statesmen that included George Washington, Thomas Jefferson, James Monroe, John Tyler, Patrick Henry, Chief Justice Marshall, and

A Virginia Vehicle.

Edmund Randolph. And, finally, the visitor can not mistake the significance of the old "Powder Horn," a brick building of octagon shape, which in the troublous days of the colonies held the highly prized and carefully hoarded supply of ammunition.

Eastern Virginia is a perfect network of waterways, but the key to all is that beautiful land-locked sheet of water known as Hampton Roads, the finest natural harbor in the world. On its shores cluster the cities of Norfolk, Portsmouth, Newport News, Hampton, Berkley, Phoebus, and the U. S. Government Reservation, Fortress Monroe, a cordon of historic outposts which vie with one another in traditions and memories. The very waters of the Roads are historic, for here took place the deadly duel between the "Monitor" and the "Merrimac," the most famous naval encounter of the Civil War. On that occasion iron-clad first met iron-clad, and from it dates the development of all the world's navies along modern lines.

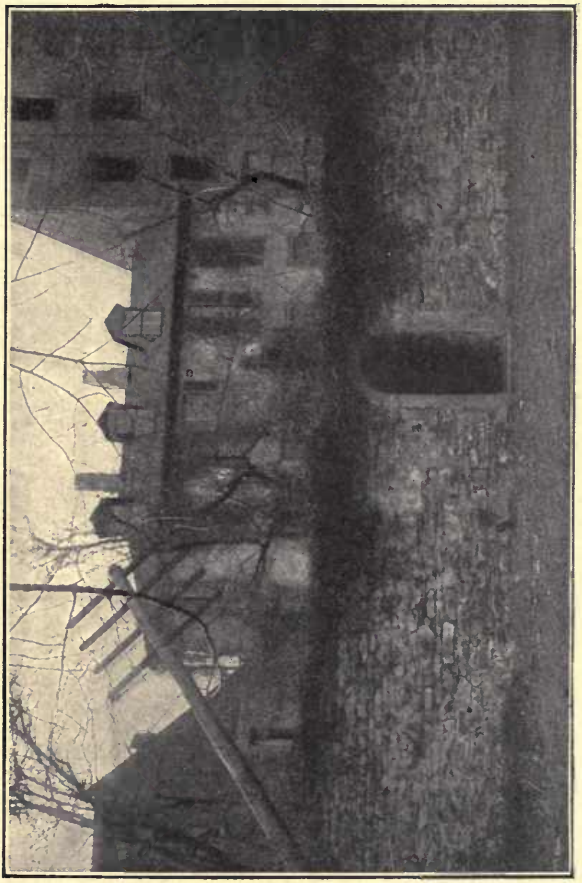
Looking down upon Hampton Roads stands Fortress Monroe, a sentinel guarding the entrance to Chesapeake Bay and the water approaches to the cities of Baltimore, Washington, and



Home of George Washington, Mount Vernon, on the Potomac.

Richmond. Originally a palisaded fort of the first settlers, planned in 1614 and fortified a few years later, it has gradually developed into the finest fortress in America and the chief artillery station of the United States Government. With the exception of Gibraltar it is the greatest fortress in the world, possessing the longest line of fortification, and when the improvements now planned, at a cost of millions of dollars, are completed, it will probably surpass even the rock at the entrance to the Mediterranean as the most formidable and best garrisoned military post on the globe. Visitors to Fortress Monroe are shown the cell in which Jefferson Davis, President of the Confederacy, was confined after the close of the Civil War.

Fortress Monroe has as her nearest neighbor the pretty little city of Hampton, which was an Indian village when the English came to America, and now claims distinction as the oldest continuous settlement of Englishmen in the New World. Linked to it by trolley is Newport News, a typical, progressive, industrial city of the new South and the site of a $15,000,000 shipyard that ranks as the largest steel shipbuilding institution in the world, and is the



The Historic Carlyle House at Alexandria, Va.

birthplace of many of the finest battleships of Uncle Sam's new navy. On the opposite side of Hampton Roads is Norfolk, the metropolis of tidewater Virginia, but not lacking in historical mementoes, as is attested by an old church erected in 1739, twice fired on by the British, and still retaining, imbedded in its walls, a shell fired from Lord Dunmore's fleet in 1776.

Connecting "tidewater Virginia" with the national capital, the Potomac River serves as a pathway for the patriotic pilgrim that is quite as rich in localities of historic interest as the region contiguous to Jamestown. For instance, there is quaint Alexandria, which was George Washington's "home town." Here one may see the streets he had paved by his Hessian prisoners, and visit the quaint mansion where he stepped the minuet at the "Saturday night dances." Or to turn to tokens of a yet earlier period, the sightseer may prowl about the mysterious old Carlyle house, where General Braddock held his counsel with five colonial governors before starting on his ill-fated Fort Duquesne campaign. Here, too, we find architectural masterpieces of rare interest in the old houses of the Fairfaxes, Lees, Fitzhughs, and other well-known Virginia families.

Facing the Potomac a few miles from Alexandria is Mount Vernon, the home and tomb of Washington, the old Colonial plantation house which is unquestionably the most interesting and the most precious building in America to-day, and which is filled with innumerable relics of the Father of his country. Across the river and nearer the capital city is Fort Washington, the plans for which Major L'Enfant drew as his last public service. Yet nearer the seat of government the Potomac approaches close to Arlington mansion, the stately old manor house which was for thirty years the beloved home of General Robert E. Lee, and which he left so regretfully when he cast his fortunes with the Confederacy. Yet another objective point for many a pilgrimage in the Old Dominion is Monticello, the home of Thomas Jefferson, situated in the mountains near Charlottesville. In a lofty woodland on this estate is the simple shaft which marks the last resting-place of the author of the Declaration of Independence.

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