ROUND THE WORLD

VOL. VI

ROUND THE WORLD SERIES

VOLUME VI

ROUND THE WORLD

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

VOLUME VI

Squirrels as Pets. Italy's Beautiful Lakes. The Culture of Rice. Where Rubies are Found. Iron Famine. Afloat with the Seagoers. Folklore of Italy. The Cliff Dwellers. Some Unknown Surgeons. Handling Mail for Millions. Gem Lore

WITH 87 ILLUSTRATIONS

NEW YORK CINCINNATI CHICAGO

BENZIGER BROTHERS

PRINTERS TO THE HOLY APOSTOLIC SEE | PUBLISHERS OF BENZIGER'S MAGAZINE

1909

CONTENTS

Squirrels as Pets

Of all the many pets which I have kept at different periods of my life, none ever excited so much interest and admiration among my friends as the squirrels whose portraits accompany the present article.

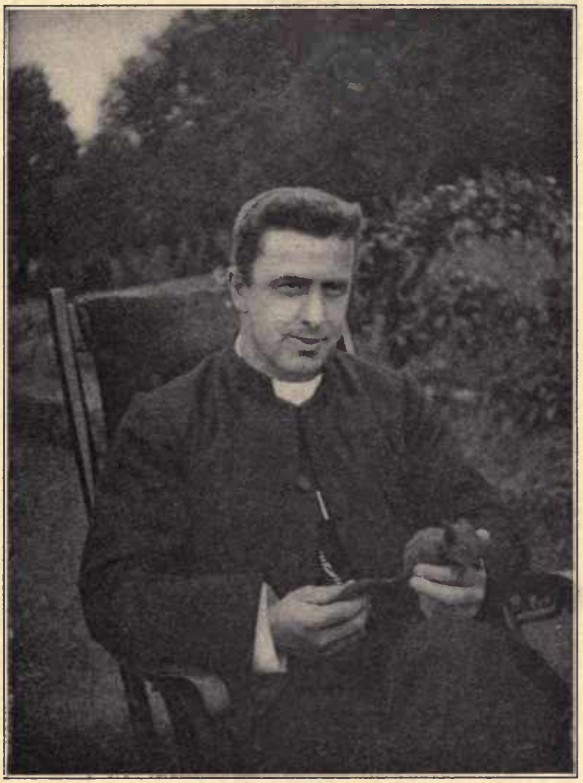
Some of my readers may have already come across their life history in an English periodical, a story which brought me so many questions on the subject of squirrels as to make me resolve—when time should allow me—to answer my questioners *en bloc* in the form of another article, which might satisfy the requirements not only of my friends but of any other lovers of animals who might wish to be initiated into the mysteries of squirrel taming.

No wonder their story excited interest, for a more precocious trio than the "Snark," the "Boojum," and the "Beaver" would be hard indeed to find. In ten minutes they had made themselves perfectly at home with their new foster-mother, and how attached to them she became! Every

morning at 5.30 I could hear her scratching for admission at my door, and what a picture it was to see her go straight to their nest in the old soap-box, and feel gently with outstretched paw among the hay until she had found them and summoned them to breakfast! And when they grew a little older and were able to run about and play with her, what a sight to observe her anxiety as they clambered for the first time up the pole of spruce fir which I had fixed for them as a gymnasium! Had I allowed her, of course, she would have carried them off to the loft where her own kittens were lying hid, and they would have grown up as shy as their brothers and sisters in the woods. But by constant exercise of authority over them, they came to know me as well as they knew her, and would romp about all over me with the most utter fearlessness.

But I am not now telling their story, and must proceed at once to the more practical if not quite as amusing subject which gives title to this article.

For the sake of those who may be tempted to try the experiment of rearing the little animals, I had perhaps better let my readers into the secret confided first to Hiawatha and eventually



The "Snark" and his Master.

passed on to me, as to "where they build their nests in summer." The best place to look for them is a plantation of fir trees—spruce by preference. The nest or drey, as it is called,

consists of a loosely put together bundle of dried grasses on a foundation of small twigs. With considerable difficulty I have succeeded in obtaining a photograph of such a nursery, the babies themselves being placed outside on a white handkerchief in order to show them up more distinctly. There is usually one entrance to the drey, and that sometimes impossible to find owing to the habits of the old squirrel of closing it up when leaving home. I must warn my readers, however, that they may have to ascend numberless trees before coming to an inhabited nest and this for several reasons. In the first place it is exceedingly difficult to detect an old drey from a new one without investigating it at close quarters; add to this the fact that squirrels, like wrens, apparently build nests for want of something better to do, using them merely as temporary sleeping-places, and the labor involved in the search becomes apparent. However, with the aid of an active son of the plough, a few hours' patient search toward the close of April should eventually lead to the discovery of such a family as are pictured here. Before attempting an investigation, I always make it a practice to tap the tree in which the drey is

"Attending to their Toilet."

situated, in order to give the old squirrel time to abscond should she be at home. Were this precaution not observed, a substantial bite might greet the intruding fingers. Again, it is well to know that as soon as the tree is disturbed the youngsters instinctively burrow down to the bottom of the nest, which, therefore, to the uninitiated may appear untenanted. On the other hand, I have known them, when sufficiently grown, to dart out as soon as the breach was effected, but there is little difficulty in achieving their capture in this case, as their limbs are not sufficiently developed to allow them to travel very far.

The best time for removing the youngsters from the nest is shortly after their eyes are opened, which event does not take place until quite three weeks from their birth. As to the manner of rearing them, undoubtedly the most effective plan is to enlist the services of a cat as nurse, provided always that care be taken not to allow her to carry them off as she would her own kittens to some dark corner of a loft or cellar, where, left to themselves for even a few hours, they would speedily perish of cold. Should puss however, be unwilling or not ready at the time

"Just left Home."

to undertake the charge, the little fellows may easily be brought up by hand, feeding them some four times a day on milk and water by means of a glass tube—a chemist's glass syringe will be found to answer perfectly—and taking care to dry them carefully before returning them to their nest, where they should be kept snug and warm between meals.

But what is to happen to the family when the members have attained the age of discretion, rather of indiscretion, and are able to run about? If we have large grounds at our disposal undoubtedly the best and most satisfactory plan is to accustom them to their freedom by degrees, feeding them always at regular times and fixed spots, by which means it is possible to keep them quite tame and tractable. Another method which I have found quite satisfactory and attended perhaps with less risk of loss from accidents, is that of keeping them in a large outdoor aviary. If the aviary is of sufficient size there is not much fear of the birds being inconvenienced, except, perhaps, during the nesting season when it would be wiser, if possible, to transfer the squirrels to other quarters. For, though I could never satisfy myself that they are the egg stealers

some would make them out to be, there is no doubt that their vagaries and evolutions in the neighborhood of a sitting bird can not be conducive to peaceful incubation.

Taking the Bottle.

I say that I never could satisfy myself that squirrels do eat eggs. The most that I should be willing to concede would be that individual squirrels, under certain circumstances, such as the lack of more suitable food or in a fit of mischief, may have been found guilty, but my own

experience inclines me to believe that this is no reason for pronouncing an adverse judgment on the whole race. As for accusing them of eating young birds, with no less an authority than Charles Waterton I should dismiss such an accusation as quite unproven. For as the great naturalist naïvely puts it in a letter in answer to a certain Mr. Wighton who has been denouncing squirrels as carniverous, from the fact that a tame squirrel of his devoured a swallow which was offered it: "Had the squirrel been wild in the wild woods at the time that Mr. Wighton saw it eat the birds, I should not hesitate to pronounce that individual squirrel to be carniverous, because I believe that Mr. Wighton would only state what he believed to be correct. . . but I gather from Mr. Wighton's communication that his squirrel was *in captivity* when it partook of a carnal repast. This single fact at once precludes the possibility of the squirrel family being raised to the rank of carniverous animals"—the reasons which he offers for this deduction being founded on the fact that the habits of animals in captivity will often undergo considerable change owing to alteration of circumstances.

Apart from the pleasure to be derived from

A Happy Family.

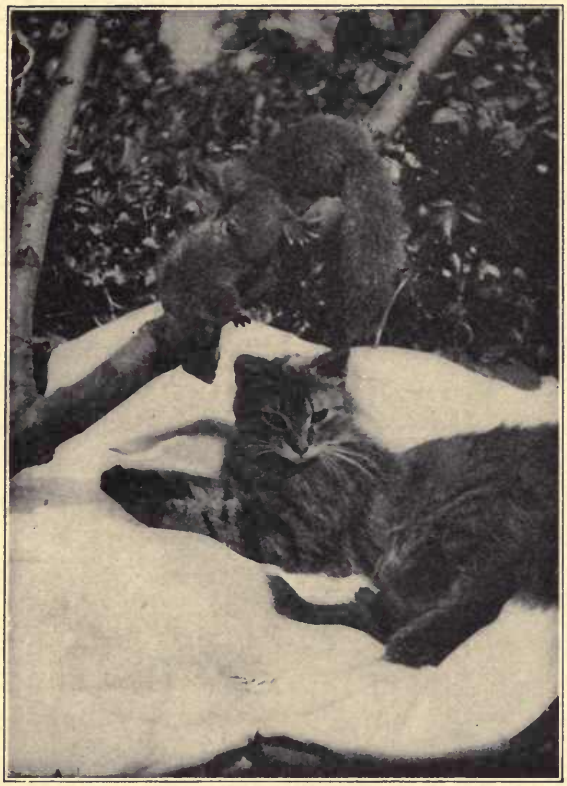
watching my squirrels romping and playing with one another in the aviary, it was most entertaining to notice their attitude toward the birds. At first the latter were inclined to be startled by their rapid movements, but in a very short time they became so accustomed to them as barely to move out of their way when the squirrels jumped on to the feeding board.

One bird they seemed to take especial delight in annoying. This was a golden pheasant, a magnificent fowl, who used to stride up and down the aviary with great dignity. The squirrels, however, evidently considered that he needed a "taking down," and consequently used to make a point of running after him and grabbing at his long tail, the fury of the pheasant at thus being compelled to alter his dignified gait to a most undignified retreat being a diverting sight. Another interesting incident which fixed itself in my memory, and which I have always wished I could have got a snapshot of, occurred when one of the squirrels disturbed a thrush which was sitting on its nest in the aviary. The bird rose quietly, and stood guard by the nest, confronting the intruder, who apparently merely wished to pursue his way and was in no humor to turn back.

The Aviary at Stonyhurst College.

There they were on a ledge of the wall, within two inches of each other, each intently watching the other's movements. The thrush, with lowered head and outstretched beak, was snapping her beak vindictively, while the squirrel, with feet firmly planted on the ledge, and tail erect, appeared to hesitate. Suddenly he put up a fore foot and pawed playfully at the angry thrush, with the action of a kitten pawing at a piece of dangled string—a maneuver which so disconcerted the poor bird as to cause her at once to hop aside and leave the gangway free. The picture was perfect.

But the laugh was not always on the squirrel's side, as the following incident proves. A pair of cockateels had taken possession of a nest box with a round hole as an entrance, which had previously belonged to the squirrels. One of the latter, happening to pass by, sniffed inquiringly, at the entrance, when suddenly out popped the hen bird's head, with the most vixenish expression I have ever seen on a feathered face. The squirrel drew back in astonishment, spitting like a squib-cracker and then sat up and pulled his mustache with immense vehemence. This operation finished, he ventured another peep, when



Hide and Seek.

out came the head again, followed by a loud hiss, which caused a second retreat, more spitting, and another furious bout of mustache pulling. This little Punch and Judy show was repeated

until the irrepressible mirth of the onlookers caused the squirrel to amble off in search of further sport in some other direction.

Of course these little fellows were perfectly tame, so tame indeed that it became quite a feat to enter the aviary without letting them out of the door. On several occasions one did get loose unknown to me, and sometimes was out for several hours among the trees. I always managed to get him back, however, by walking about the grounds and rattling a handful of nuts. This would invariably bring him down from wherever he might have wandered to onto my arm or shoulder, when I would offer him a nut to crack and while he was so engaged would walk back with him to the aviary.

My opinion has often been asked as to the advisability of keeping squirrels in cages as indoor pets, and I have almost always condemned the practice. I say "almost always," for the reason that squirrels kept under such circumstances to be happy and make good pets, require far more attention and care than most people are willing or able to give them. However, if taken when quite young and carefully looked after, a "house" squirrel may become a very interesting little

Their first Solid Meal.

pet indeed, but even then he should always be allowed a considerable amount of liberty. One that I knew had his headquarters in a cage for six years, but was allowed to leave it several times a day and to run about the room at will. He could by no means have been called a prisoner —indeed, he grew so fond of his cage that when running about the room, one had only to pretend to interfere with his bedroom, to bring him in haste from wherever he might be, to expostulate with the intruder into his privacy.

Still, I maintain that a squirrel is never quite a squirrel unless we see him in his natural surroundings, running up and down the fir-trees, throwing himself recklessly from branch to branch and from tree to tree, pausing now to drum with his forepaws on the bark—staring fixedly the while at the passer-by, the next moment hurrying down head foremost in quick, sudden jerks, to take the nut extended to him, either to crack and consume it at once, or to bound off with it across the lawn and over the flower beds to consign it to some hiding-place against a "rainy day."

REV. REGINALD RILEY, S. J.

Italy's Beautiful Lakes

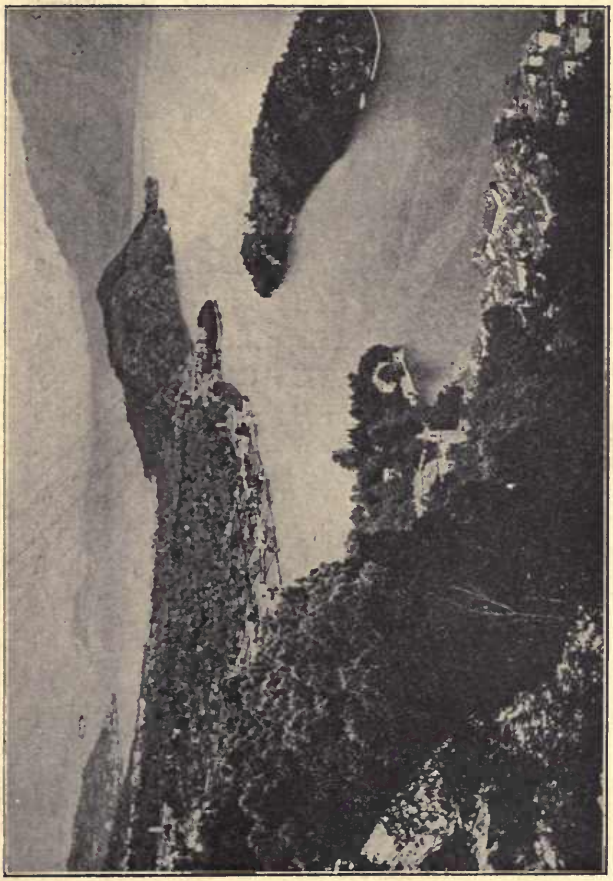
"Via del Paradiso," the way of paradise, a winding road between archways of vine or interlacing tree trunks, with glimpses of azure through the tangled green reflected in the waters of Lake Como! It is well named, for so fair is the scene one may well fancy it the way to heaven. Nowhere is there to be found anything lovelier in the way of landscape than the region about the Italian lakes. Prince and pauper bask in the sunny air, whose balmy breath, softly perfumed as a maiden's kiss, touches the cheek.

Como, Lugano, Maggiore—three names to conjure with, and what visions of loveliness are called up by these refreshing bits of nature's handiwork, a triple star in Italia's firmament! Little villages perch high above vine-laden slopes, and up the hillside winds the way of the cross, gleaming white in the brilliant sun as peasants pause to pray beside the wayside Calvary.

Best known of the lakes in this far famed region of Italy, Lake Como boasts a Lombard

town of its own name. Here great men lived and wrought for science and for art, for the two Plinys are among Como's mighty minds. Pope Innocent XI., Clement XIII., and Volta grew up beside this lovely lake, and here Volta made his wonderful discoveries in producing electricity by the action of chemicals on zinc and copper. The elder Pliny, who lost his life in the interest of science, and the younger Pliny, whose entrancing letters seem to carry us back to the days of ancient Rome, both lived at the Villa Pliniana, situated so beautifully among the serene heights near Torno. In the courtyard of the present villa, built by Count Anguissola in 1570, still ebbs and flows the spring of which Pliny tells how he laid a ring upon dry ground, lo, it was lightly sprinkled with foam, then concealed by the bubbling waters to be again revealed as the water sank again. Restless as was the water the scene must have breathed peace and rest, for Pliny writes, "Here I am assailed neither with hopes nor fears. I regret no word that meets my ears, nor any that rises from my lips, and I hear no bitter invectives against mankind."

Present-day aristocrats find living upon the shores of the lake quite as pleasant as did the

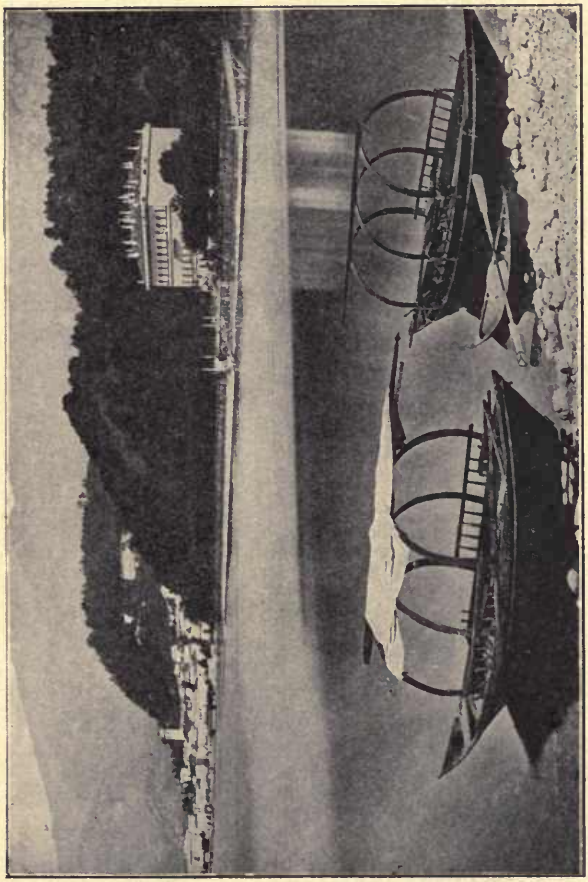


Lake Como and Como.

Romans, for all along the shores are dotted the villas of the Milanese aristocracy. Here are kaleidoscopic gardens blooming in beauty, vineyards of luxuriant growth, forests where glow the brilliant green of the chestnut tree, the deep hues of the walnut contrasting with the soft gray-greens of the olive. Oleanders and laurels grow in great profusion, rising up the mountain slopes.

Sightseers go to the show villas, notably the Villa Melzi, built for Count Melzi d'Erile, vice-president of the Italian Republic in 1802. Even more famous is the Villa Carlotta, formerly Sommariva, but christened for Carlotta, Duchess of Saxe-Meiningen, when it came into the possession of her mother, Princess Albert of Prussia. Its marble halls contain a frieze decorated by Thorwaldsen's famous bas-reliefs, for which $1,875,000 was paid; statues by Canova, Fontana's "Paris," "Mars and Venus," by Acquisti, as well as the works of many other noted artists.

The garden is a mass of beauty. It is said to contain the most luxuriant vegetation on the lake and, seen when the season of flowers is at its height, it is a sight never to be forgotten. Perhaps the most radiantly beautiful of all these Italian villas is the Villa d'Este, a marble palace



The Villa Melzi.

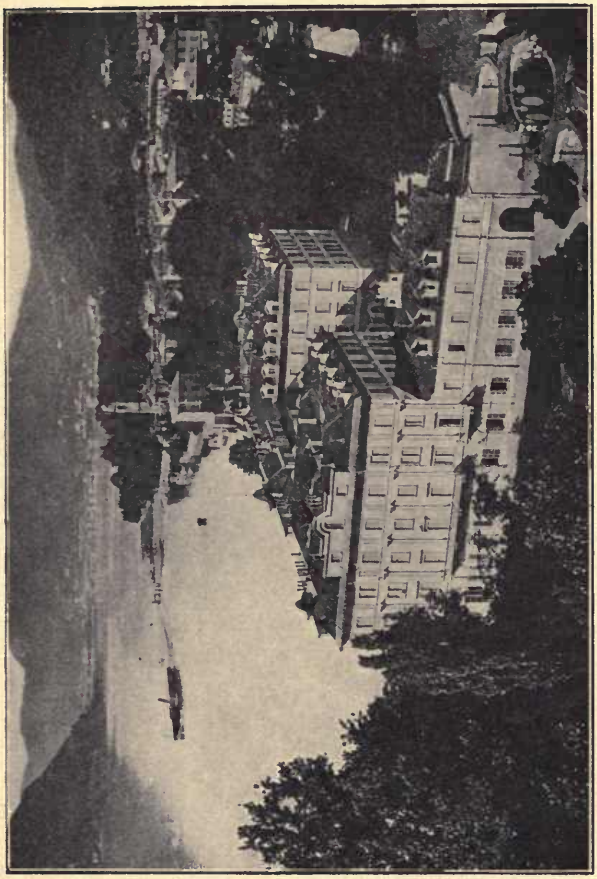
beside the water's edge, a dream palace to make one murmur

"I dreamt that I dwelt in marble halls."

Years ago Pompeo Gallio was born in the village of Cernobbio, child of a poor fisherman, and, grown to be a man, robed in the purple, the great Cardinal came back to his childhood's home and built a palace where once had stood his father's hut. And a veritable palace it is. Its marble walls, reflected in the water's sheen, seem as if a fairy wand had been waved and had placed them in their matchless surroundings.

Approached by the superb avenue of horse chestnuts, their snowy racemes in full bloom, the petals powdering the green sward until it looks like a Persian carpet, the May moonlight gleaming over the orange-bowered courtyard, the villa seemed to us a thing of enchantment. Roses clambered over the marble balustrade of the balconies, violets breathed fragrant benisons at our feet, a nightingale sang of love in the orange boughs, and the balmy zephyrs fanned our temples, night's soft caress upon our fevered spirit.

Yet all has not been happiness in this heavenly spot. The noble family from whom it takes its

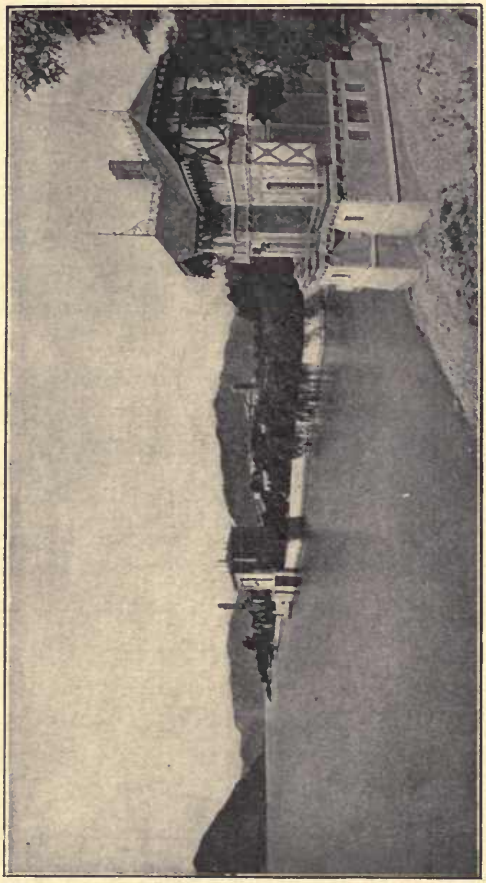


Villa D'Este.

name is extinct, and here, where His Eminence paced up and down as he read his Breviary, Queen Caroline, England's poor, discarded queen, dwelt with the suite which had accompanied her into exile. Now the villa is a hotel; happy the traveler who finds rest within its tranquil walls!

Lovely as is this spot, Bellagio has a fairer view. Gliding over blue waters one has glimpses of lovely shrines, set high upon the mountain, in the midst of cool green foliage, grottoes bathed in silver waters, tiny chapels almost hidden by trees, and "L'Orrido di Bellario," tumbling in shimmering spray from the crags forming the waterfall of Pioverna.

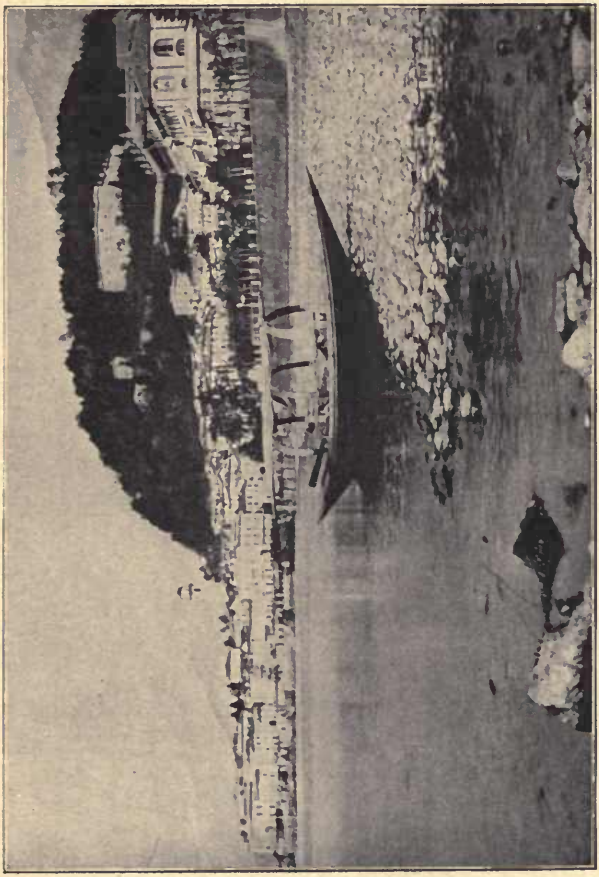
Lake Como is lovely, with its traditions of art and genius, but Lake Lugano is fascinating in its gentle beauty. Lying between Como and Maggiore, it is the connecting link in the chain of beauty which stretches across Northern Italy in ribbons of blue. The little town of Lugano, capital of the Canton of Ticino and of Italian Switzerland, was, in the sixteenth century, sold by the Duke of Milan to the Swiss Confederation, and is to-day a cheerful little city, an ideal spot shadowed by Monte San Salvatore, reflected in the pale blue waters of the calm and tranquil



Cernobbio.

lake. The banks of this lake are more somber than the smiling heights of Como, but about Lugano the vegetation is luxurious, and one can not realize that the glowing flowers are growing upon Swiss soil, so Italian seem the surroundings. Near-by is the quaint grotto of Osteno, the fisherman's gorge, and the pedestrian threads his way through a deep ravine curiously hollowed out by the water. High overhead glimpses of the sky may be seen through the green bushes overhanging the edge, and the grotto ends in an exquisite waterfall, shimmering through clouds of mist. In the church of Santa Maria degli Angeli, Lugano, are some of the wonderful canvases of Bernardino Luini, the painter of Lombardy, who lived long ago in the dim recesses of the past, yet whose canvases to-day glow with the mystic light of his genius. His "Last Supper" has a charm as great as that of the famous Leonardo's, and his lovely, gracious Madonna with Christ and St. John, is one of the creations which linger long in the memory, haunting with its womanly beauty and delicate charm.

Luini was born at Luino and one wonders not at the calm-browed beauty of his Madonnas, when gazing upon the gentle loveliness of this Italian



Bellagio.

town, nestled amid hills of nature's tenderest green, its shores laved by sun-lit waters of soft, cerulean blue, scarce bluer than the sapphire skies above.

If Lugano is calm and gentle, Maggiore is imposing. The larger of the three lakes, as its name indicates, it is over thirty miles in length, its northern portion reaching to the jagged peaks of Switzerland, whose snow-covered heads rise in the distance, while the Lombard hues grow richer toward the southern portion, and the luxuriant Sun-God of the south seems to reign in all his splendor. The broken chain of rocks skirting the shore is continued beneath the lake, and here and there peaks, protruding above the surface, form the islands with which the lake is dotted.

Looking through the graceful arches of the church of the Madonna del Sasso, perched like a great white bird upon the hillside overlooking Locarno, one has a marvelous view of lake, islands, and mountains, and wonders not that the road to this spot has been called the "way to paradise." It is hard to believe that heaven itself could be more fair. This old pilgrimage church has been the Mecca for piety for centuries. It is in the fairest type of Tuscan architecture, and

Lake Maggiore.

contains art treasures rich and rare, among them an "Entombment" by Ciseri, which is one of the most remarkable paintings of this subject in the world. The figure of Our Lord is awful in its deadly pallor, Our Lady's expression is one of sublime resignation, while St. Mary Magdalen is in a perfect abandon of grief. A remarkable thing about the picture is that it is one of the few portrayals of St. John where he is not depicted as an effeminate boy, with much sweetness but little character. The road to the church is a winding one, up a steep hillside, and it is dotted with Stations of the Cross, a beautiful Calvary. Lake Maggiore was the old Lacus Verbanus of the Romans, and is divided between two countries, the northern portion belonging to Switzerland, the southern and eastern portions being Italian. The scenery of the banks is diverse, from wild mountain scenes to soft southern vegetation. The water varies from the deepest sea green to the softest cerulean blue.

There are many interesting spots along the shores of this delightful lake, yet perhaps Pallanza presents more attractions to the ordinary visitor than any other town in this region. It is a

Costume worn by a Beautiful Italian of the Lakes.

thriving little village with delightful hotels and pensions, where one may live comfortably for less than a dollar a day, enjoying the *dolce far niente* of that soft Italian clime. The warmest and most sheltered spot on Lake Maggiore, it is a

charming winter resort and half-way house as it were between the Riviera and the more southern Italy. The quaint old church of San Leonardo with its fine campanile, built upon the foundations of an old castle, is an interesting bit, and the domed church of the Madonna di Campagna has fine frescoes of Gaudenzo Ferrari. The charm of residence in Pallanza, however, lies in the delightful little excursions to be made thereabouts, not the least delightful of which is to the Borromean Isles, the scenery in the neighborhood of which rivals that of Como in grandeur and surpasses it in soft sylvan beauty.

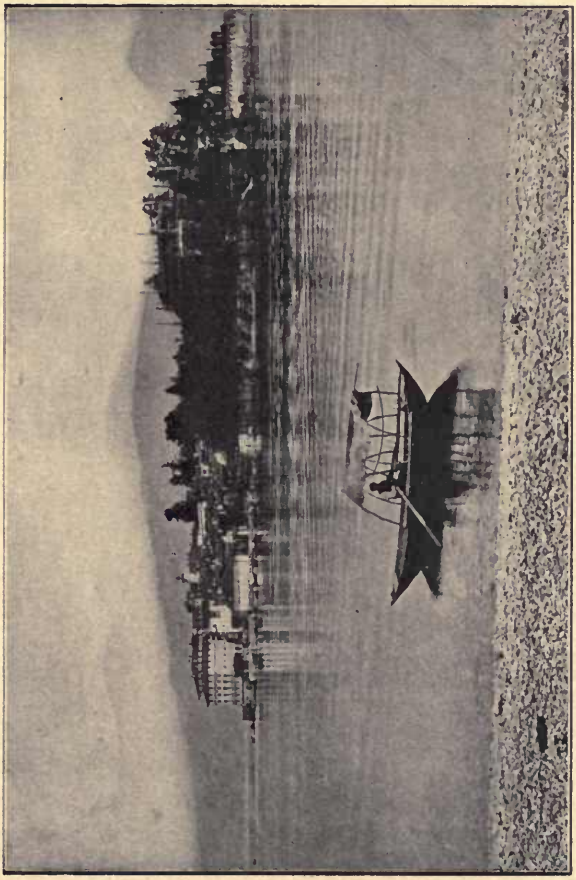
There are three of these isles, named for the great Borromean family, which boasted of St. Charles, the hero of the Milanese plague, as one of its distinguished members. Isola Pescatori, the largest of the islands is occupied by a fishing village. There is one narrow street running through the center of the village, fishing-boats and nets are heaped upon the shore, the soft lilt of the fisher's song is heard, and the whole place seems an ideal one for happy labor. Isola Madre is another of these islands, but for some reason it seems not so popular as Isola Bella. The first named has an uninhabited palazzo with a

The Borromean Isles.

marvelous view of the whole lake and surrounding mountains, and a garden of rare loveliness whose boast is that it contains a specimen from every zone. Here are camphor trees from the far east, cedars of Lebanon, stately pines and northern firs, palms, sugar canes and tea plants, the trees of the frozen north growing in friendly fashion beside their Oriental sisters.

Isola Bella is a dream of beauty. Once a barren rock, with a church and a handful of cottages, it was enriched by the skill of Count Vitalino Borromeo, in 1600, who fairly transformed it by the erection of his splendid chateau and by the laying out of a garden. The earth in which the trees were planted was brought hither in boats from the mainland, and after more than two centuries the vegetation is luxuriant to a degree. Everything seems to grow and thrive, and the garden is one of the most perfect examples of the Italian garden. It rises in ten terraces a hundred feet above the lake, and there are broad walks overtopped with orange trees, pomegranates, citrons, myrtles, and wild roses, while birds sing in the branches.

Within the garden are citron trees, cedars and magnolias, laurels, eucalyptuses, oleanders, helio-



Isola Bella.

tropes, growing to a man's height, while grottoes and arbors are picturesquely dotted here and there. Violets almost carpet the ground, and the view from the long arches of the gallery is very striking. One sees, far across the azure waters, the banks of the lake studded with snowy villas, clothed with chestnuts, mulberries, vines, and olives, and beyond the girdle of the snowy mountains. It is indeed beautiful, and sailing away from Isola Bella, as the Angelus rings from Pallanza's little church and the sun's last rays gild the waters into glory and the snowy mountains into rosy hues, there seems naught in all this world of beauty fairer than Italia's beautiful lakes.

The Culture of Rice

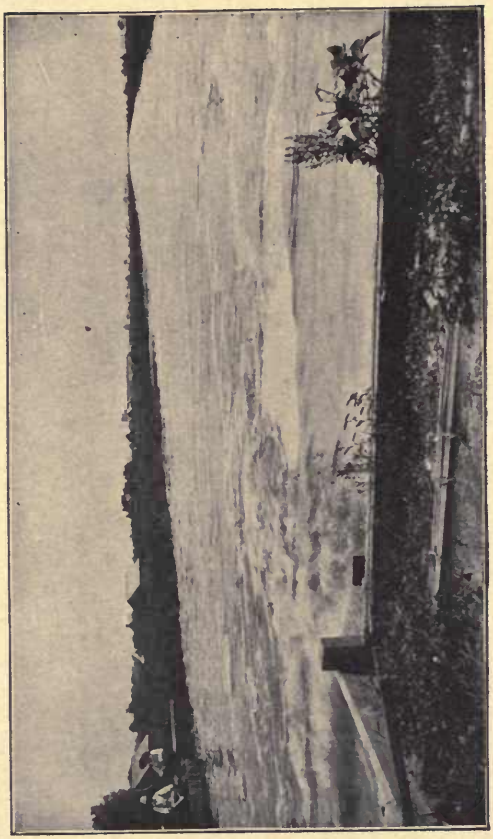
Rice forms the principal food of one-half of the population of the earth, and is more widely and generally used as a food material than any other cereal. Where dense populations are depending on an annual crop for food, and if the climate will permit, rice has always been cultivated. South Carolina and Japan rices are rich in fats, and hence are ranked high among rice-eating nations. In Ceylon alone, one hundred and sixty-one varieties are said to exist; while in Japan, China, and India, where it has been cultivated for centuries, there are no less than fourteen hundred varieties.

The two principal varieties grown in the United States are the "gold seed" and the "white rice." The first-named of these stands highest among the rices of the world. The rice-growing sections of the United States are the South Atlantic and Gulf States, where, in some sections, it is the principal cereal product. North Carolina, South Carolina, and Georgia

produced, before the war, on an average of 105,000,000 pounds of rice a year. But the industry was practically wrecked at that time, and changed labor conditions, lack of capital, and other causes have since prevented its full restoration. The output of these three States now is 46,000,000 pounds yearly.

Coincident with the breaking out of the Civil War began the development of the rice industry in Louisiana. Since 1880 the average crop of the State has been 86,000,000 pounds. The great development of the rice industry in Louisiana since 1884 has been the result of the opening up of a prairie region in the southwestern part of the State, and the development of a system of irrigation and culture which has made possible the use of harvesting machinery similar to that used in the wheatfields of the Northwest, thereby greatly lessening the cost of production.

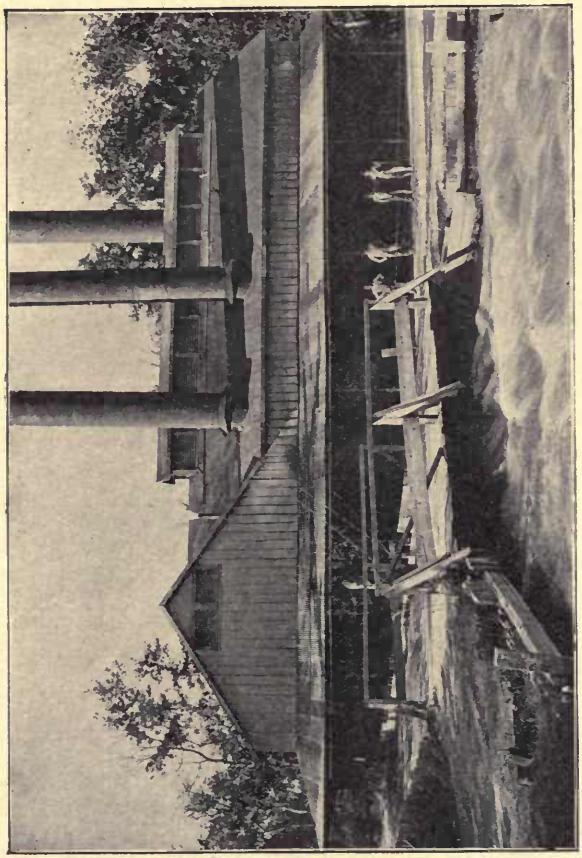
In rice culture the size of the fields depends on circumstances, chief among which are the slope of the land and the character of the soil as regards drainage. Fields range in size from sixty to eighty acres on the level prairies of southwestern Louisiana, down to one or two acres along the banks of the Mississippi River.



Canal for flooding Rice.

In Oriental countries fields seldom contain more than half an acre. The entire surface of each field is nearly always at the same level, the planter desiring that the irrigation water will stand at about the same depth. Fields are also laid off so as to admit of effective drainage. In coast-marsh and river-bottom culture, a canal is generally excavated on the outer rim of the tract selected, completely enclosing it; the canal is of sufficient capacity for irrigation and drainage. When practicable the rice lands are flooded from the river, and find drainage by a canal or subsidiary stream that enters the river at a lower level. In Texas and Louisiana, to provide a reliable stream of water, pumping plants similar to those shown in our illustrations were put in. At first only farms along the streams and lakes were irrigated; gradually, however, large surface canals were constructed, and these canals have proven entirely successful when well managed, and make the rice crop a practical certainty over the entire country. Deep wells, too, have been bored for irrigation.

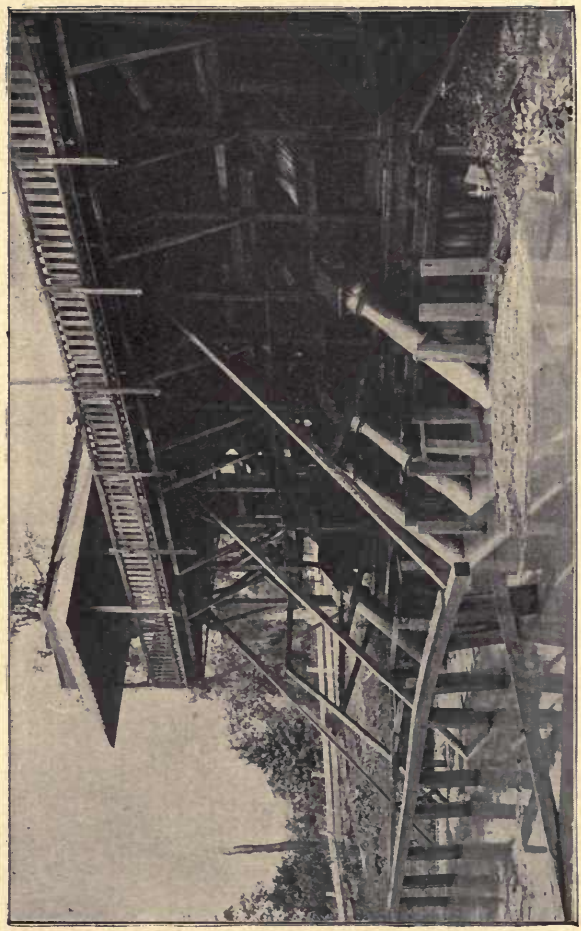
Flooding is the most important distinctive feature of rice culture as compared with the culture of cereals generally. Rice can be grown



Pumping Plant.

successfully without any irrigation whatever or with continuous irrigation from the time of sowing until nearly ripe — one can see, therefore, the the wide scope there is for variation in the practice. In South Carolina the water is let on as soon as the seed is covered, and remains on four to six days, till the grain is well-sprouted. It is then drawn off. As soon as the blades are up a few inches, the water is sometimes put on for a few days, and again withdrawn. The first water is locally called the "sprout water." After the rice has two leaves the so-called "stretch-water," or "long point flow," is put on. At first it is allowed to be deep enough to cover the rice completely—generally from ten to twelve inches—then it is gradually drawn down to about six inches, where it is held twenty to thirty days. It is then withdrawn, and the field allowed to dry. When sufficiently dry the rice is hoed thoroughly, all grass and "volunteer" rice being carefully removed. During the time the water is on the rice it is changed every week to prevent it from becoming stagnant.

One of the great difficulties in rice-growing has been the increase of injurious grasses, intensified along the Mississippi by the variety of grass seed

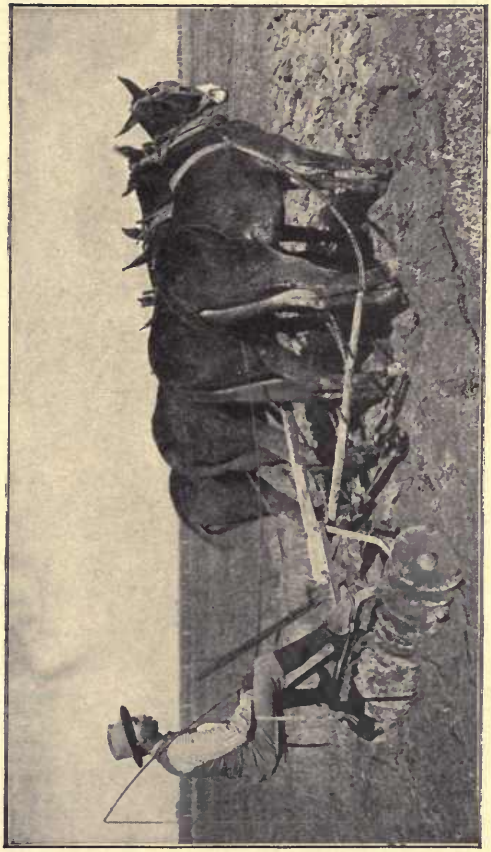


Rear View of Pumping Plant, showing Pumps as they go into the Room.

in the river water. Hand weeding, mowing, and burning the grasses, winter flooding, etc., have been resorted to. Shallow plowing and harrowing, or thorough disking immediately after the harvest, has proved quite effective against weeds. One of our illustrations shows the planter employing the disking method.

Reaping machines are used in the prairie district of Louisiana and Texas, but in the other sections such machines can only be employed to a limited extent. The sickle here is the common instrument. The rice is cut from six to twelve inches from the ground, and the cut grain is laid upon the stubble to keep it off the wet soil, and allow the air to circulate about it. After a day's curing the grain is removed from the field. It must be dried in the shade. If dried in the sun, cracked and chalky kernels will be the result, and these will mean a deterioration of the product in the milling processes.

Coming from the thrasher, the rice is known as "paddy" or "rough." It consists of the grain proper, with its close-fitting cuticle roughly enclosed by the stiff, hard husk. The object of milling is to remove the husk and cuticle, and polish

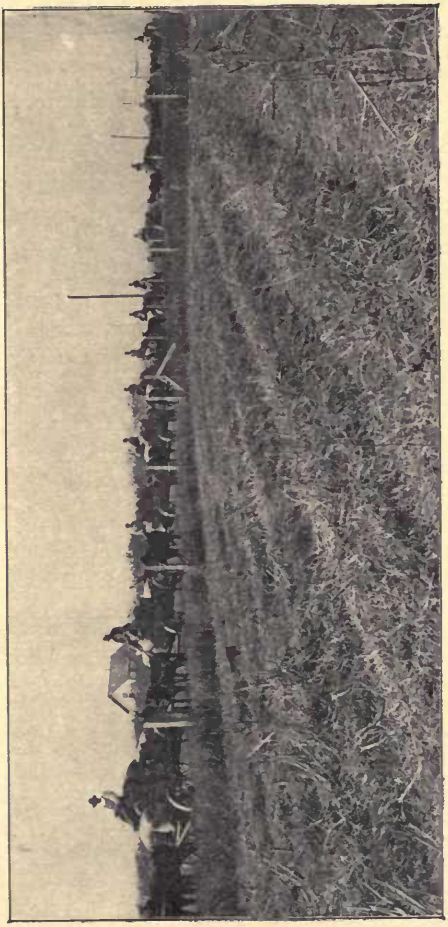


Disking Sod Grounds for Rice.

the surface of the grain. The improved methods of milling rice are quite complicated. The "paddy" is first screened to remove trash and foreign particles. The product goes over horizontal screens and blowers, which separate the light chaff and the whole and broken kernels. The grain is now of a mixed yellow and white color. To remove the outer skin the grain is put into huge mortars holding from four to six bushels each, and pounded with pestles weighing three hundred and fifty to four hundred pounds. Strangely enough, the heavy weight of the pestles breaks very little grain.

The contents of the mortars, now consisting of flour, fine chaff, and clean rice of a dull, filmy, creamy color, are removed to the flour screens, where the flour is sifted out; and then to the fine chaff fan, where the fine chaff is blown away. On account of the heat generated by these processes, the rice is then sent to the cooling bins, where it remains for eight or nine hours, and after that goes to the brush screens, where the smallest rice and what little flour is left pass down on one side and the larger rice on the other.

The grain is now clean and ready for polishing, which is necessary to give the rice its pearly luster,



Hauling the Rice to Market.

and makes all the difference one can imagine in its appearance. The polishing is effected by friction against the rice of pieces of moose hide or sheepskin, tanned and worked to a wonderful degree of softness, loosely tacked around a revolving double cylinder of wood and wire gauze. From the polishers the rice goes to the separating screens composed of different sizes of gauze, where it is divided into its appropriate grades. It is then barreled, and is ready for the market.

Where Rubies are Found

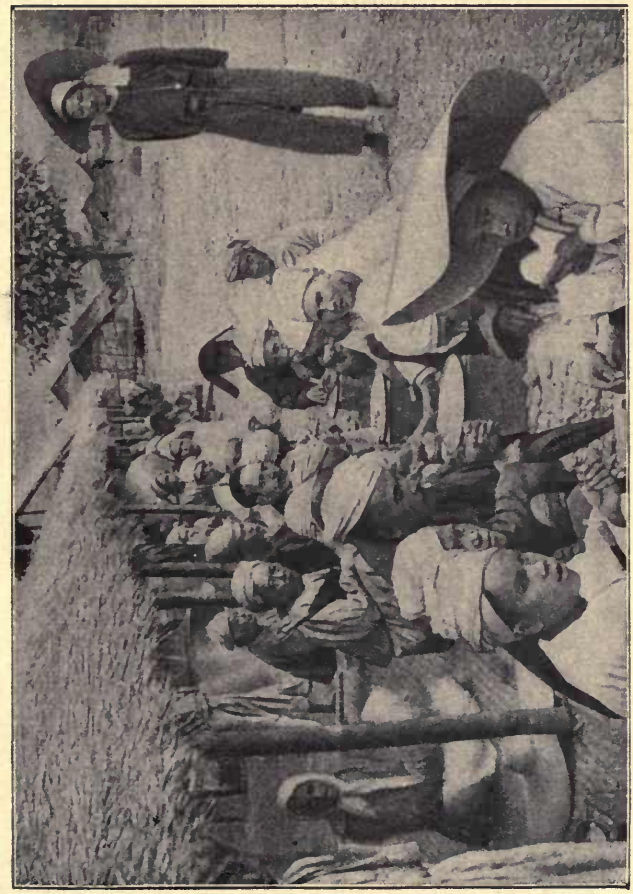
Illustrated with stereographs, copyright by Underwood & Underwood, N. Y.

RAREST of all the precious stones and more valuable even than the diamond, the ruby has been from time immemorial one of the gems most eagerly sought, and at the same time most cleverly imitated. Nature herself counterfeits her own masterpiece in the spinel and the balas ruby, which are sometimes found in close association with the genuine one, and are not always easily distinguished from it. Curiously enough, too, although rubies, like diamonds, can be manufactured on a small scale and at great expense, there frequently occur among the by-products of the process artificial spinels and balas, showing how closely the methods of nature are now followed in the laboratory.

When exposed to a very high temperature rubies change their color to green, but regain the original red on cooling. The Burmese have an idea that the ruby ripens like fruit, that in its

crudest state in the ground it is colorless and as it matures it changes, first to yellow, then to green, blue, and finally to a brilliant red, when it is ripe for the hand of the collector. Many are the superstitions connected with the ruby, the natives of Burma believing that it has the power to discover poison and that it insures the wearer from all evils resulting from the unkindness of friends. As an astrological symbol, the ruby stands for Aries among the signs of the zodiac. In China, bags of small rubies are placed under foundations of new houses to bring good luck to the inhabitants. In the early centuries rubies were thought to ward off evil spirits and to keep their wearers in a cheerful temper. When rubbed, the ruby becomes electric like amber and will cause little pieces of paper to adhere to it or stand up on end.

Rubies are perhaps the most limited in their distribution of all precious stones. They come from China, India, and Burma, are found in Ceylon, in the mountains of Capelan, in Pegu, at Cambaja and at Lahore. Those from China are procured in the mountains of the Province of Ya-Nan. Some rubies have been found here and there in the United States and some in Australia.



The Ruby Market in Mogok.

The real home of the ruby, however, is a very circumscribed area in Burma, the king of which in olden times numbered among his titles that of "Lord of the Rubies." One district in Burma, Mogok, produces more rubies than all the rest of the world, and the right to mine them has been leased to a single British company, the Burma Ruby Mines Company, Limited, combining state ownership with private operation. Persons working independently by native methods must pay a royalty to the company. The lease was first granted in 1889 and was renewed in 1896 for fourteen years at a heavy rental and twenty per cent. of the profits. Two years later the rental was reduced by one-third, but the Government's share of the profits was raised to thirty per cent. The company first began paying dividends in 1898, the rate being five per cent.

Mogok lies on the edge of the Shan plateau in the district of Mandalay in upper Burma. Twenty years ago it was a village of a few hundred inhabitants; to-day it is a city of 40,000 persons, including Americans, English, Germans, Armenians, Jews, and natives. It lies far out of the path of travelers and few find their way there who are not attracted by the trade in rubies. After

Natives searching the Ground for Rubies.

going by train from Rangoon to Mandalay, one takes a small river steamboat up the Irrawaddy, a day's journey, to Thabeitkyan, whence he must proceed overland, native ponies being the only means of transportation over a difficult and dangerous road winding along the edges of steep precipices. It is only ninety miles, in a straight line from Mandalay to Mogok, but the trip takes three days. It is, however, very picturesque, the river flowing between luxuriantly wooded heights, where the white roofs of temples and pagodas peep out through the green foliage, the river station thronged with pretty native maidens selling fruit, and the mountain road lined with unexplored forests which are full of savage beasts such as tigers, leopards, and wild elephants.

Like a fairy town Mogok appears at first, surrounded by an amphitheater of pretty hills. On a nearer view it becomes plain that the city occupies what was once the bed of a river. The stream has been diverted through a deep canal, leaving high and dry a crystalline limestone soil which is traversed by numerous quartz veins bearing precious stones. The whole town, in fact, is built on a ruby field. In the open places, working with old shovels or even ruder instru-

A primitive Ruby Mine.

ments, one comes across natives almost completely buried under their big straw hats. These hats serve not only as a protection from the fierce heat of the sun, but, when the day's work is done, as a receptacle for tools or for any upturned gravel which has the appearance of being profitable. Old tin cans, baskets, and hollow bamboo sticks are also part of the ruby seeker's outfit.

When the rich ruby-bearing earth has been removed, it is taken to a water course to be washed. The natives divert a little of the current, skilfully keeping back with their shovels the water that would flow off too rapidly. Sometimes the water is conducted miles away through pipes of bamboo. In a round pocket a foot or so in diameter and about as deep, the gravel and mud supposed to contain rubies is placed, water is allowed to enter, and the mixture is stirred round and round, the lighter soil flowing off at the top, until only clear sand and stones remain. From the latter, experienced eyes pick out the valuable gems.

Although the Burma Ruby Mines Company has a monopoly, the natives are protected by a clause in the concession requiring the company to grant licenses to any Burmese who may wish to

dig for rubies. In consequence one meets many rich natives carrying on operations in a primitive way in competition with the British company. The latter has a staff of about thirty Europeans

A Ruby King with his Family; the Daughter wears Jewels valued at $20,000.

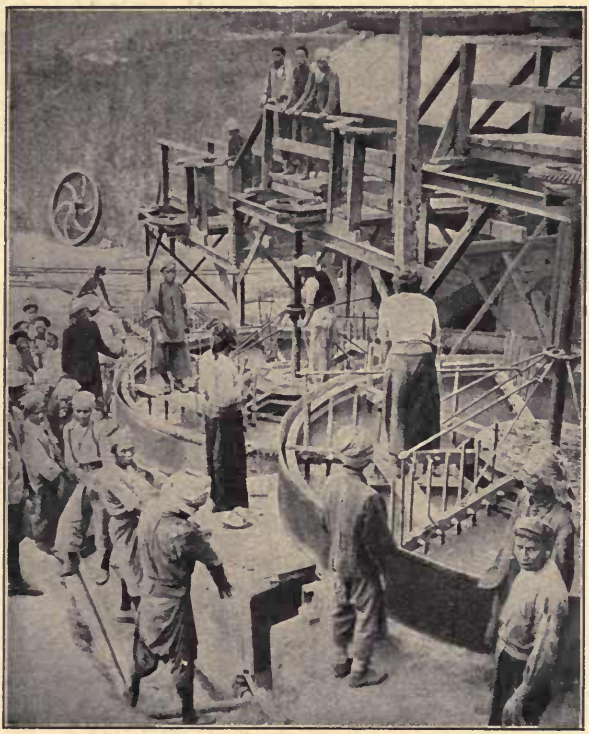
engaged in excavations on a large scale and big mills which first separate the larger stones from the slime and then, through an ingenious mechanical contrivance, again pick out the smaller and

lighter gems, leaving the heavier ones, such as rubies, garnets, and sapphires to pass into special rooms, where only Europeans are employed.

There the more valuable ones are picked out and locked up in the company's safes. The stones from the first segregation are examined by native employees. After the best have thus been picked out, the residue is sold to speculators, who go through it again on the chance of something valuable having been overlooked. They leave the carefully sifted earth piled up near the mill. Scores of natives are usually seen going over this thrice-sorted refuse to get the little pin-head rubies and other hard stones which they sell for fifty cents a hundred for the use of watchmakers.

As a rule the natives are very mild and peaceful, and, when searching for rubies on their own account, leave their collected stones quite unguarded. No one ever interferes in the spot selected by another for working, and a stranger may even pick up their cans and examine the stones without a protest or unfriendly word from the owner. He may, perhaps, offer to sell the results of his search, but that is all. Once a week there are public

auction sales of rubies, at which every nationality is represented among the buyers, and the demand



European Mill for washing Sand containing Rubies.

always exceeds the supply. There is also a daily market, at which hundreds of stones change hands.

Other ruby mines exist at Sagyin in the Mandalay district and at Nanyaseik in the Myitkyina district, where licenses are sold at $1.50 to $3.50 a month, and to the south of the capital in the district of Pegu, but the results bear no comparison with those at Mogok. Formerly all rubies above a certain weight were the property of the King of Burma, and whenever any very valuable stone was found, a gorgeous procession of nobles on elephants was sent to bear it to the royal treasury.

Rubies are said to have been found in India near Madras and Mysore, and also in Ceylon in association with sapphires, but their tint is not good. The best rubies are neither too light nor too dark, but of the color commercially known as "pigeon's blood." When such a ruby weighs five carats it is worth twice as much as a diamond of the same size; if ten carats, it has three times the value of the diamond.

Inferior rubies have been found at Gandamak in Afghanistan and in Macon county, North Carolina. According to Mr. G. F. Kunz they have been occasionally picked

up at Vernon, N. J., near Helena, Mont., in Southern Colorado, New Mexico, and Arizona. It is also said that some true rubies have been found in Australia. All results of such discoveries, however, should be carefully tested before the stone is purchased, for in appearance the spinel so closely resembles the true ruby that one may easily be deceived. In fact, the great historic gem set in the Maltese cross in front of the imperial British crown, which for centuries was thought to be a ruby, is now admitted to be a spinel. In general the spinels are a little deeper red and the balas rubies of a violet rose, vinegar red or lighter tint than the genuine ruby.

Spinels and balas are not as heavy, their specific gravity being 3.4 to 3.8, while that of the ruby, generally above 4, is never less than 3.9. They are softer, and can be scratched by a corundum crystal, owing to the fact that they contain twenty-six per cent. of magnesia, and their crystals are cubic like the diamond, instead of rhomboidal. This test can be made certain by the dichroiscope, which resolves the color of the ruby into a carmine and

a red inclining to orange, while spinels and balas exhibit only one tint. Although scientifically the same as the spinels, the balas are less valuable. Their color is poorer and their specific gravity less. They come from Badakhshan in northeastern Afghanistan.

Spinels are very widely distributed in Asia, Europe, and North and South America, but are most common in Ceylon. Commercially they are far less valuable than real rubies, but frequently their color is quite as good, and for purposes of ornament they are almost as serviceable.

Iron Famine

BY PROF. J. C. MONAGHAN,
Chief of Division of Consular Reports, Bureau of Manufactures, Department of Commerce and Labor, Washington, D. C.

INDUSTRIAL captains are being confronted by a new peril, before which the so-called Yellow Peril of the East or the Black Peril of our own people pale into colorless chimeras. Not only is the coal of certain countries nearing its end, but the iron supply of the world is astonishingly small compared with the world's wants. England will exhaust her coal in three hundred years. The best of her investigators, Wallace, has set that as the latest possible period in which she can count upon her supply continuing. Long before that time she will have begun to pay a much higher price per ton than she is paying now; and, of course, much higher than she has ever had to pay. The coal that once cost her two or three shillings at the mouth of the pit, is costing six, eight, and ten shillings to-day.

But it is not coal that is the object of this discussion; it is iron. A peril of tremendous portent is upon us. The world's available iron supply has been found to be about 10,000,000,000 tons—the annual output 100,000,000 per annum.* If this is true, and there is little reason to doubt, some say, that the figures are fairly within the truth, the world will have to economize its iron, or look about for another metal to take its place. Of the world's available deposits, Germany has the largest amount of any nation at her disposal; she has 2,200,000,000 tons, France has 1,500,000,000, Russia and Finland 1,500,000,000, Austria-Hungary and certain other countries—those not otherwise named—have 1,200,000,000. The United States has 1,100,000,000, Great Britain 1,000,000,000, Sweden 1,000,000,000, Spain 500,000,000 tons.

The annual output in the United States is 35,000,000 tons, all of which is consumed in the

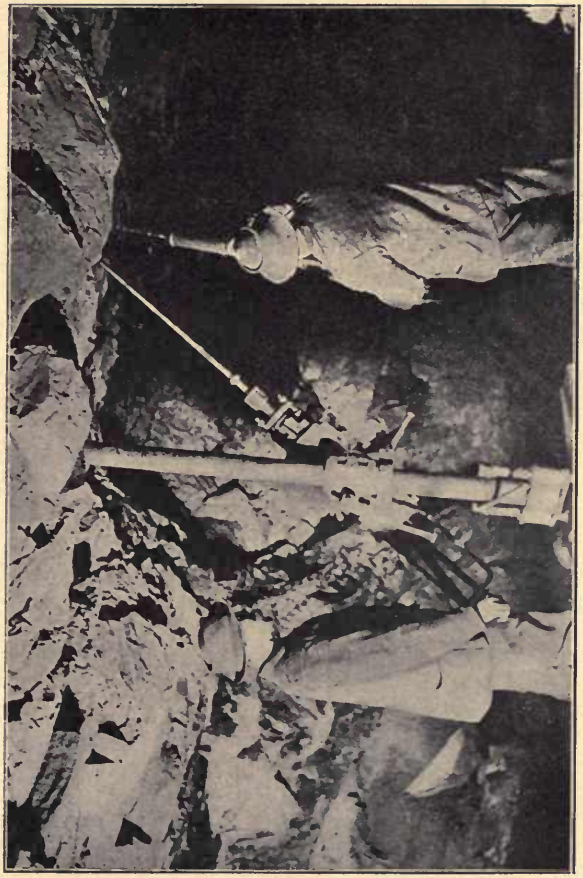
* The figures furnished by the Swedish scientists, while intensely interesting and good as far as they go, do not go far enough. It is hard to say just what the unsearched parts of the world will reveal. Estimates of the world's probable gold supply were found to be wide of the truth within a few weeks after they were made. Our probable supply is as large, or nearly as large, as that of Germany, or 2,000,000,000 tons.

Casting Pig-iron in the Iroquois Smelter at Chicago.

United States. Germany produces 21,000 000, and consumes 24,000,000, getting 3,000,000 tons from Spain and Sweden. Great Britain produces 14,000,000, but consumes 20,000,000, like Germany, buying in Spain and Sweden. Spain produces 8,000,000 tons and consumes 1,000,000; Russia and Finland produce 4,000,000 and consume 6,000,000; France produces 6,000,000 and consumes 8,000,000; Sweden produces 4,000,000, and consumes 1,000,000; Austria-Hungary produces 3,000,000, and consumes 4,000,000; all other nations of the world, combined, produce 5,000,000 and consume 1,000,000.

Of course there are vast possibilities in China, Greenland, Iceland, Australia, Africa, South and Central America and Canada. Even if the 5 per cent. marginal allowances for inaccuracies is not enough, the question is, how much must be allowed? Is it possible that the world contains twice 10,000,000,000 tons? If it does it only adds a hundred years to the possible age of iron; and two hundred years is not a long period of time in the life of a people. It is only three hundred since England's greatest era, founded on her coal and iron, began.

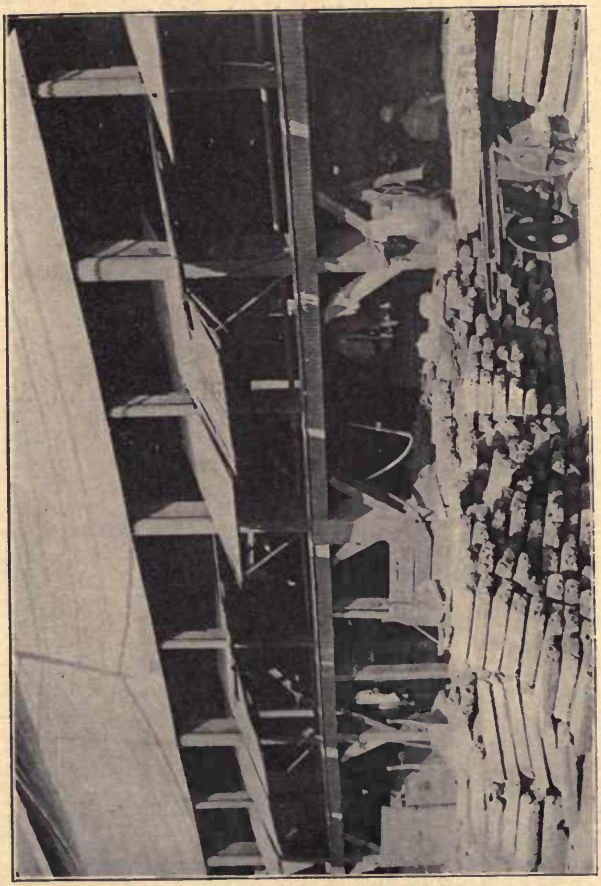
The most interesting feature in these figures



Men at work in the Iron Mines.

is the place we occupy and the part we play. We have only half as much as the German Empire, while we consume nearly twice as much. In fifty years, at the present rate of production, which is commensurate with consumption, the world will be face to face with an iron famine. By that time it will have begun to have its heaviest effects here.

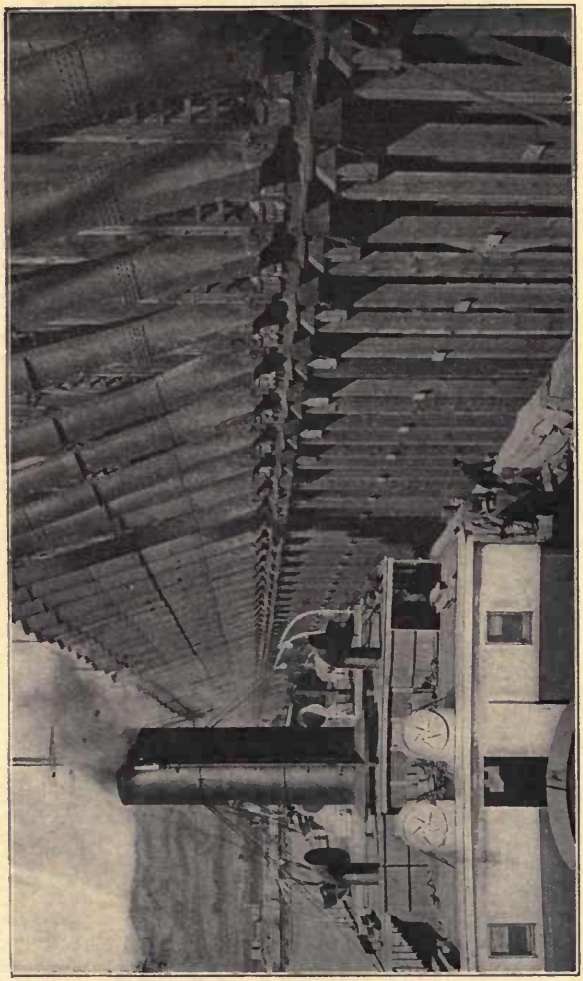
There is something solemnly suggestive in this situation. Are we rushing along too fast? Or will another metal be found to take the place long held by iron? In less than fifty years the marvelous supplies of the Mesaba, Gogebic and Vermillion ranges will have run out. Indeed, I have seen the statement somewhere that the Mesaba deposits, at the present rate of production, 12,000,000 tons per annum, will not last above twenty-five years. The recent discoveries in Texas, Tennessee, Alabama, and Georgia, can hardly be hoped to do more than add a few hundred millions of tons to the 1,100,000,000 to our credit in the world's table. Perhaps I had better add here that the figures above given are from the experts of the Swedish Geological Survey Bureau. Here, if anywhere, at any time, the question often suggested but so seldom asked, or



Iron made by Puddlers for Iron Piping.

if asked, so seldom heeded: "what are you going to do about it?" is in place. Here we are with only a ninth of the world's iron ore deposits, using annually more than one-third of the world's total output—35/10,000 of the world's supply. If we owned all the available iron in the world, at the present rate of production and consumption it would last only two hundred and eighty-five years. At the present rate of increase as recorded in recent years, a little more than two hundred years would see the last ton of iron taken from the earth; for we will soon reach the point where 50,000,000 tons will have to be the measure of our product rather than 35,000,000. As if to mock the iron maker and monger, the world's inventors, even before it began to dawn upon them that there was a measurably limited supply, had begun to build trolleys for trackless roads. If the foregoing is all founded upon facts, it is time to take the matter up seriously, with a view to meeting it intelligently.

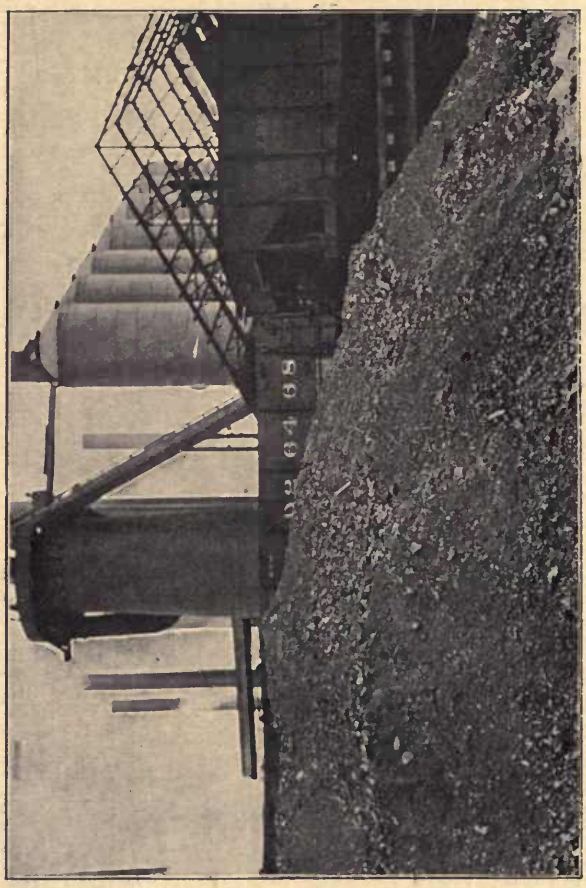
As I said above, coal plays an important part in the industrial, economic, and commercial history of England. She will exhaust her coal mines in a few hundred years; the coal mines of Europe are rapidly moving toward exhaustion.



Loading Iron Ore at the Ore Docks in Duluth, Minn.

At the same time our coal production at present is more than 300,000,000 tons a year and we will not exhaust our supply in 6,000 years. Here, if anywhere, the advocates of reciprocal trade will find a footing for their arguments. Our coal supply can and should be made to help out in the iron problem. If a way can be found by which we can prevail on England to take our coal in exchange for iron, the dangers of to-morrow, due to our limited deposits of iron, can be postponed for a day or two later; in other words, coal can be exchanged for if not converted into iron, and the two grand divisions that lead the world's industries continue to do so—at least as far as such leadership is dependent upon coal.

The coal supply of this country, anthracite and bituminous, has gone beyond 225,000 square miles. The only country on earth that can compare with us is China. Richtshofen, the great German geologist and geographer, gives the Celestial Empire 225,000 square miles, with seams running from fifteen to forty-five feet in thickness. Now the coal supply of this country is sufficient, at the present rate of production, over 300,000,000 tons per annum, to last 6,000 years. By that time the mind of man will have hit upon a way



Iron Ore at McKeesport, Pa.

of getting along without coal. Europe's supply, never very large, only 14,500 square miles, including the British Islands, is rapidly nearing exhaustion. Jevons gave England one hundred and fifty years, Wallace extended these to two hundred and fifty years; but two hundred and fifty years is a short time in a nation's life. It is only three hundred years since Elizabeth, and men talk of the times as if they were yesterday. Pessimistic experts put Britain's period of possible coal-mining at less than a hundred years. Germany's possibilities are a bit better, but not much. The situation has been so alarming for a long time that the German Government has moved seriously toward State ownership of the mines or toward State control. Objection has been seriously and successfully made to sales of German coal to French manufacturers and railroads. French mines can hardly hold out for fifty years; indeed, there are those who put their possible workable period at twenty-five years. The prices paid for coal in France indicate its importance and the danger to the world by its combined depletion. Luckily water power is doing what coal was wont to do in the past; but a great many countries have little or no

Steel Billets at McKeesport, Pa.

water power. Wind may be won over to the work of water some day. There is no good cause for lamentation, but there is cause for careful consideration and observation of these gigantic problems. The wholesale prices of coal in Paris confirm the contention that it was the prices of coal that handicapped the Latin countries in the modern struggle for industrial and commercial supremacy.

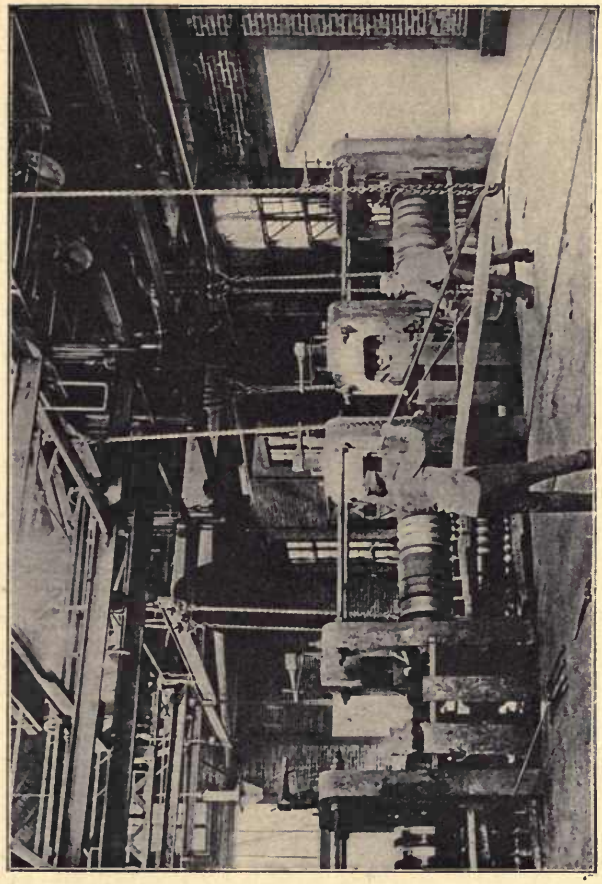
Bituminous coal sold for a little more than $10 per ton, including the city or octroi tax of $1.40 per ton. Anthracite sold for $12—with the octroi, for $13.40. These, remember, are the wholesale, not the retail prices. These latter were always $1.50 more than the wholesale prices, or $11.58 to $12 for bituminous and as high as $13 for anthracite. If these are the prices in a Latin land that has had, and has now a fairly large supply, what must be the fate of a country that has no coal? Luckily, competition has put it within the power of Italy to get certain kinds of coal as cheaply as they are imported by France. I refer to Welsh and English coals.

Still, Italy has and had no coal to speak of. British coal is carried to the leading French and

The Rolling Mill at McKeesport, Pa.

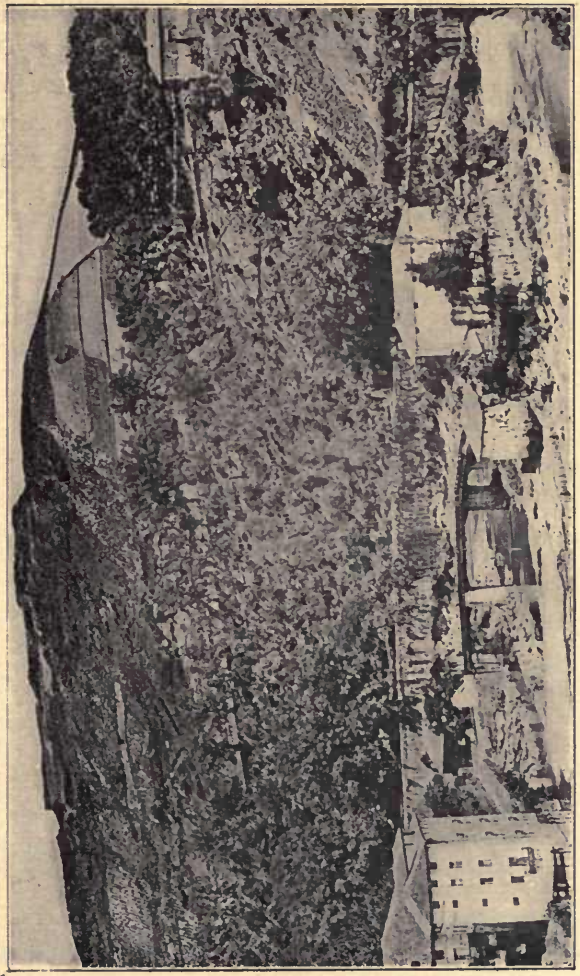
Italian seaports and sold there for prices running from $4.63 to $5.21. It is the freight traffic to the inland cities that act as the heaviest handicap for Italy and France. The problem presented to the United States just now is not Italy's past, or present for that matter, but the problem of getting European iron for American coal. It is a phase of the old economic problem that has had its day in ten thousand discussions. As it comes down to us, it is not less difficult than it has been to others. If England, Germany, and France are rapidly nearing the time when they, too, will have to buy coal outside, the United States would seem to have nothing to do but wait. The statesman who studies his problems with a map of the world before him is never limited by the narrow lines of longitude and latitude that bind in his own country, however large that land may be. The world is one.

Among the twentieth century problems none is more fascinating than is this one of the world's supply of iron and coal. Now if coal costs ten, eleven, twelve and thirteen dollars a ton at Paris, it is because the freight rate added to $4.63 and $5.21, plus the dealer's profits put it there. As



The Interior of the Rolling Mill.

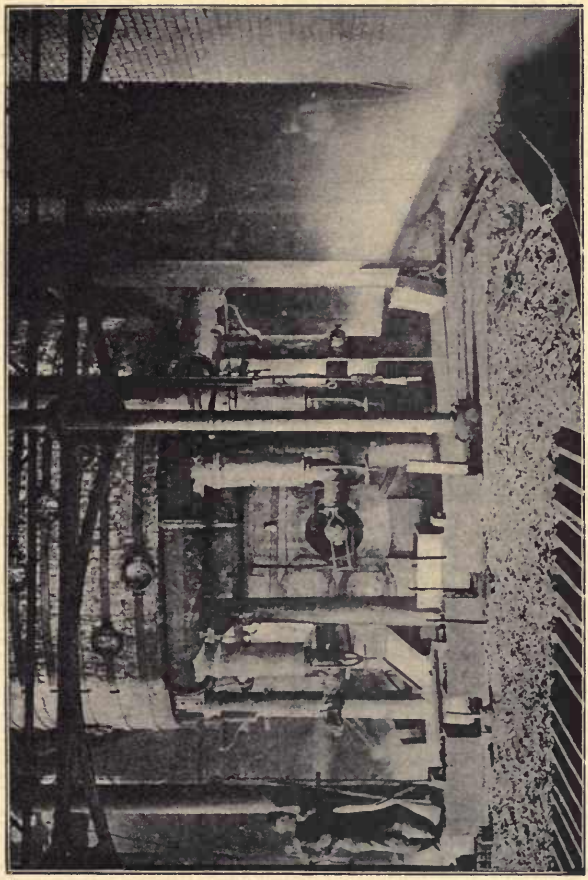
a matter of fact, the present freight rate for ten tons of coal from Havre to Paris—one hundred and forty-three miles—is $1.35, or less than a cent per ton a mile. The river rates are about $1.05 to $1.10 per ton, or much less than a cent per ton a mile. The import duty of twenty-six cents added to this brings the price of coal in the docks of Paris—outside active limits—at $6.35 to $6.50. Thus a difference of $3.50 to $3.64 is found between this price and and that paid to wholesalers by the local Parisian dealers. Is there enough in this to justify an effort to enter European markets with American coal? During the strikes in English, Welsh, and German coal mines a few shipments were made. The real problem is connected with permanent sales. It seems to me that the engineers of great railroads that own mines might be able to sell coal at a profit sufficient to justify the effort and to carry back cargoes of European goods destined for American markets, profiting on these also, thus justifying the entire movement. If coal can continue to be mined cheaply in the United States and will continue to be dearer and dearer in Europe, there can be little danger or doubt as to the probable result. The problem presented,



A Mountain of solid Ore.

however, has larger lines than those connected with coal and iron. It involves the return cargo. That could not be confined to iron—although iron ought to form a large part of the tonnage from time to time. Every day in the last decade or two has seen European coal go up in prices.

What formerly was landed at the pit's mouth for a few francs or shillings costs now as many dollars; what we once paid eight, ten and twelve shillings a ton for at the mouth of the pit costs now only two, three or four shillings. Improved methods have helped us; exhausted veins or deeper diggings have injured Europe. If the coal of our Cumberland country can be mined for a dollar, or even for a dollar and ten, twenty, or thirty cents per ton, and can be carried to the docks of the "Chesapeake" for another dollar, making a little more than two for the ton, it does seem as if it might be put down in Paris, after paying the twenty-six cents import duty so as to be sold at a profit. The problem presented is one for our mechanics and engineers; it involves a boat big enough and safe enough to carry the coal and to handle miscellaneous freights for the return trip. Such boats, it is hardly necessary to say, will need to be strong, safe, well-equipped



The Blast Furnace.

with modern methods of handling freight, and fast enough to meet the needs of the markets, taking up the merchandise brought back. If boats can be constructed at a price that will permit of transportation rates of a dollar and twenty-five cents to a dollar and fifty cents per ton per trip, net—that is for coal and a fair rate on the merchandise returned, the exportation of coal will be an accomplished fact; and the danger from a dearth of iron here and a coal famine in Europe put farther and farther away. Success or non-success in the engineering and mechanical efforts can never obscure the fact that the world, after all is one.

The nations are no longer divided by great rivers, high mountains and broad oceans, for we have bridged the one, tunnelled the second, and conquered the seas. Mutual dread, deplored in the days of Cicero and Horace, we still have. It is to batter that down that the statesman, the student, and the man who loves men must work.

Afloat with the Seagoers

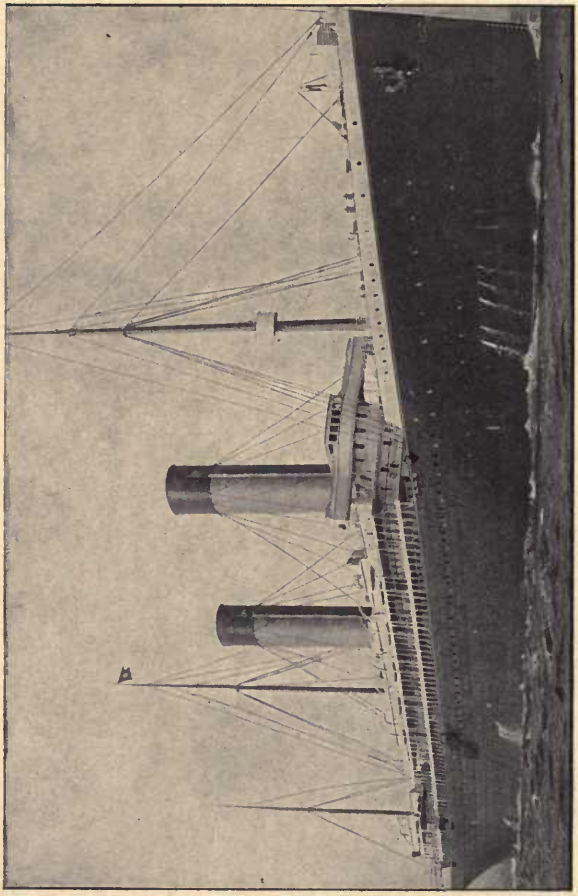
TRAVELING by water has grown into one of the greatest of luxuries, the extent of comfort depending upon the purse of the traveler. How vast the volume of travel afloat is appears from the fact that more than one billion persons take annual journeys over the oceans and the innumerable waterways of the various nations of the world. Half of these tourists are ocean-goers. How great a part travel by water plays in the business world is evidenced by the fact that two-thirds of the passengers who patronize the craft devoted to passenger service are on missions strictly of business in their nature. The tourist for pleasure is found almost everywhere, but his numbers are less than one would think.

It is said of America that hotel comfort has here reached its highest point. The reason given is that the American knows how to be comfortable better than any one else. However that may be, it is certain that the American

business man and pleasure tourist are largely responsible for the great degree of comfort that the modern passenger vessel affords.

Nearly all the passenger steamers of the Atlantic and Pacific may aptly be compared to hotels. They are, indeed, the inns of the sea. One registers at a sailing-port of one of these floating hostelries, is given a room, lives there from five or six days to such a length of time as the chosen voyage occupies, enjoying all the comforts of a first-class hotel ashore, and is then landed at his destination. He has been rocked across the sea in a modern cradle of the deep.

Many of these steamships are larger, more costly, and accommodate more guests than an up-to-date hotel in any country. A hotel ashore can be built and equipped for a million dollars. The cost of an ocean hotel is from $2,500,000 to $4,000,000. A hotel of the sea consumes more food in six days than a great metropolitan hotel in six weeks. In a single voyage between New York and Southampton a liner with a fair complement of passengers serves 36,000 meals for individuals. This is on the basis that the total number of persons aboard is fifteen hundred, each of these being lodged, fed, and served an



One of our "Floating Hotels."

average of four meals a day. When this total is swelled to five thousand persons, as in the case of the largest and most modern of ocean-going vessels, the task becomes so great as to bewilder the one who tries to figure out just how it is accomplished.

As the guest of an ocean hotel, one can have an ordinary room for ten dollars a day, or a suite of apartments with a private bath for one hundred dollars a day. In either room or suite of rooms the bed is just as comfortable—in the room a berth, in the suite a brass bedstead and a little extra fresh air, that is all the difference. The ten-dollar-a-day man may push the electric button summoning the room steward as often as he chooses, and receives practically the same degree of attention as the hundred-dollar-a-day man on the deck above.

The same condition of affairs holds good at the dining-table, on deck, and in the smoking-room. All the usual accompaniments of hotel life, such as the barber shop, bootblacking stand, and cigar counter, are at hand. If the guest cares for an out-of-door stroll, he can walk for nearly an eighth of a mile without turning, just as he can on the veranda of a great hotel at a watering-

Curling, as played on an Ocean Liner.

place. There is a well-selected library, two pianos, a full-sized church organ, and all sorts of games, deck sports, and other forms of amusement. An orchestra plays during the dinner hour, a concert is enjoyed every evening, and in fine weather the captain causes the promenade deck to be enclosed with canvas and bunting, lights it with any number of glittering lanterns, and gives a ball for the passengers.

Hungry passengers think the steward quite as important a personage aboard ship as the captain. He can estimate almost to an egg just how many eggs his passengers will eat in a day, and hence can make ample provision for the voyage. Long experience has taught him that he will use eggs at the rate of two a minute for every twenty-four hours. Thus no passenger vessel of any size goes to sea with less than seventeen thousand eggs aboard. The steward estimates with almost the same degree of accuracy the needs of the passengers as regards meat, poultry, fish, and fruit. The cold-storage rooms of an ocean liner are amazing in their extent and contents.

While in port the chief steward makes out his order for supplies, and more than one caterer is

A Game of Quoits.

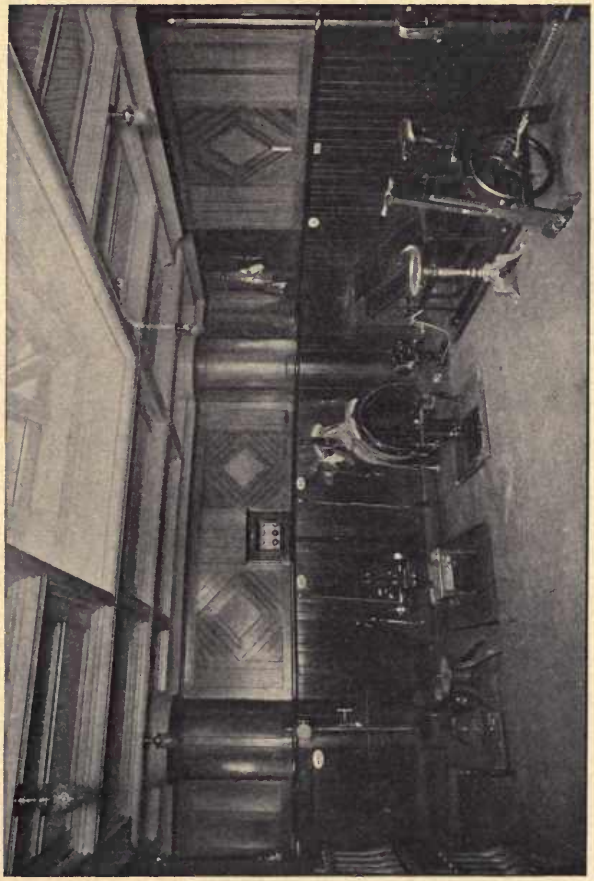
necessary to fill it. Supposing he is provisioning the ship for fifteen hundred persons for three weeks—plans are always made to meet an emergency. He requires from twenty to thirty thousand pounds of meat, fifty to one hundred barrels of flour, five tons of potatoes, one thousand quarts of cream for icing, and a host of other features of a well-ordered larder. The steward is, too, in charge of the vessel's silver, crockery, and glassware. That this is no sinecure may be judged from the fact that aboard a transatlantic liner on the run from New York to Southampton, the average breakage of a voyage includes one thousand plates, two hundred and eighty cups, four hundred and thirty-eight saucers, one thousand two hundred and thirteen tumblers, two hundred wine-glasses, twenty-seven decanters and sixty-three bottles, the total resultant loss being $600.

At sea, regardless of wind and weather, the steward is at all times a housekeeper in what to him is a rolling, pitching, tossing hotel. His duties do not end with seeing that food and drink are properly served the guests. He must look after the comfort of every passenger, even to the steerage complement. If a pas-

The Dining-room of a new Boat.

senger finds the hair mattress of his berth too hard and asks for an air mattress the steward must supply it. Fourteen thousand napkins and twice that many towels must be ready for every voyage. First-cabin guests in many instances pay as much as twenty dollars a day for room and board, and most of them try to obtain value received, unless seasickness prevents. To meet the requirements of his position the steward divides his hotel into departments. He has a laundry, where the towels, sheets, napkins, etc., are washed and dried by machinery, and ironed in a big machine that looks like a printing-press. He has a printing office, where are printed bills of fare as well as the concert programs. Sometimes one of these printing offices afloat prints a daily newspaper, to which the passengers contribute, supposed to be an epitome of the day's doings aboard ship, as well as a record of any interesting facts that have come to the captain via the wireless telegraph apparatus, with which most seagoing vessels are now equipped.

The most important department in the steward's charge, in many respects, is that consisting of the kitchens. Besides the main kitchen in



The Gymnasium.

the first and second cabins and in the steerage, there are separate distributing kitchens for the smoking-room, the ladies' café, and for meals served in staterooms or on deck. The *chef*, who is directly responsible to the steward, has under him from twenty to fifty cooks, besides the bakers, dishwashers, and the men who prepare vegetables, open oysters, and look after other details.

The majority of an ocean liner's population is housed in the steerage, the least inviting of the quarters devoted to passengers. Several stories below the lowest staterooms of the second cabin passengers, the occupants of the steerage find their environment, of the plainest sort. Paying for his passage only a fraction of the sum charged for first and second cabin accommodations, the steerage passenger sleeps on one of a tier of iron frames or bunks, and furnishes his own covering. His food is of the plainest sort. Served in huge receptacles, although clean, it does not invite appetite if one is accustomed to better surroundings. A knife, fork, and spoon are furnished, and the heaviest crockery or tin dishes used. The steerage passenger is helped directly from the steaming kettles or great basins in

which the food is brought from the ship's galley, as the kitchen is known.

Even in these days of steam one occasionally

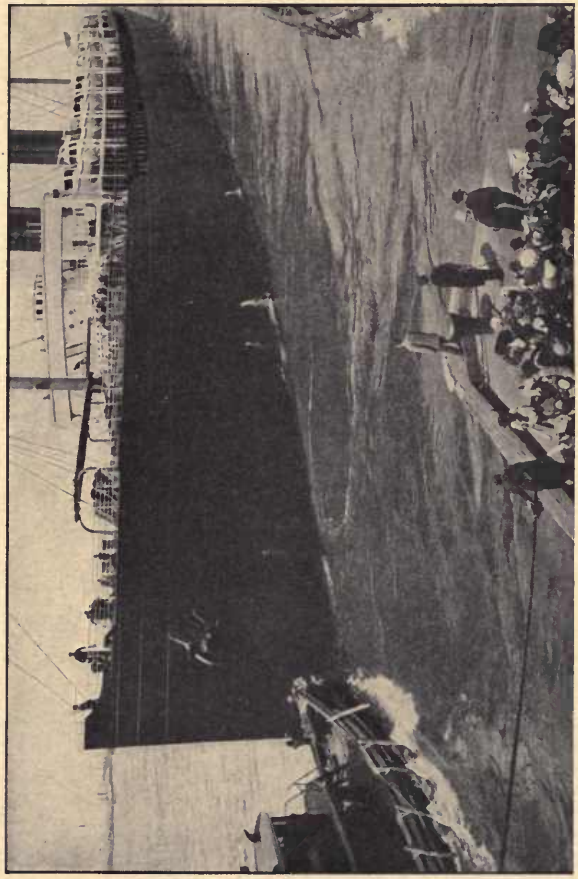
From stereograph, copyright, 1905, by H. C. White Co.

Sport on Shipboard—The Morning Dip in the Swimming Tank.

finds an old-time clipper ship that holds a passenger license, and the number of persons who travel on these deep water vessels is surprising. The clipper is by no means a thing of the past,

as one often reads, but plies between Orient and Occident in considerable numbers. The accommodations given passengers are not to be despised, and there is a home atmosphere about the cabins of a clipper never encountered aboard a steamship. The galley is small, but neat and well equipped. There is, too, a joy about traveling on a sailing-craft that is a great aid to health. The novelty of watching the men going aloft, making or reefing sail, going through the maneuvers of lowering and raising the anchor, etc., adds much to the pleasure of a voyage.

Traveling by river steamer is a wholly different proposition. In the United States the class distinction so noticeable on all ocean-going craft is practically unknown. In European countries this is, however, even more pronounced. The most comfortable and largest steamers of the inland waterways of the United States traverse the Great Lakes. They are miniature ocean liners, and lack none of the comforts of the latter. The largest river steamers in this country ply the Hudson, between New York and Albany, so long as ice does not impede navigation. Some of these vessels tower story after story, their gleaming white sides resembling



"Outward Bound!"

more a forest of doors than anything else. The day-boats, in particular, are models of luxury and splendor. One of these is known as the "plate glass steamer," because of the enormous quantity of plate glass utilized in constructing her, in such a fashion that her passengers at all times may view the beauties of the river. The night-boats are equipped with powerful search-lights, which, when their rays are thrown upon the river's banks, bring town and country into bold relief.

The dull season in ocean travel is the winter time. Tourists are few, and the passenger lists of some of the big liners occasionally look like the roster of a skeletonized regiment. Not many years ago one of the largest ocean liners sailed into New York harbor with but a single passenger in the first cabin. Had he been a dignitary of the highest degree, instead of a plain business man, he could hardly have received more attention.

Folklore of Italy

ITALIAN folklore differs materially from the lore of other European nations, in that it has no great epic upon which to base the tales, legends, and superstitions which prevail among the people. Germany has her Nibelungen Lied; Scandinavia, the Sagas; England, the Arthurian cycle; France, Charlemagne and his paladins; Spain, the chronicles of *El Cid*, her doughty hero; but Italy shows a great paucity in this direction of epic. A diligent search into the causes of this lack reveals interesting bits of Italian history and character. The old Roman days would seem to have been full enough of incident to encourage epical folklore, and some of the Roman legends are spirited and interesting.

The story of Romulus and Remus, twin brothers, nourished by a wolf, is a fact entwined with fancy, and the thrilling tale of the aid rendered the Republic in its early days by the twin gods, Castor and Pollux, is used by Macaulay in his stirring poem, "The Battle of Lake Regillus." The two celestial visitants appeared on the

field just as the tide of battle was turning, and saved the day for Rome, so Romans sang:

"Unto the great Twin Brethren,
We keep a solemn feast.
Swift, swift, the great Twin Brethren
Came spurring from the east,
They came o'er wild Parthenius,
Tossing in waves of pine
O'er Sirrha's dome, o'er Adria's foam,
O'er purple Apennine,
From where with flutes and dances
Their ancient mansion rings,
In lordly Lacedæmon,
The city of Two Kings,
To where, by Lake Regillus
Under the Porcean height,
All in the lands of Tusculum,
Was fought the glorious fight."

The ruins of the splendid temple erected to the Two Brothers in honor of their aid are still standing, and until the Eternal City became Christian Rome they were worshiped there.

"For when the months returning
Bring back the day of fight,
The proud ides of Quintilles,
Marked evermore with white,
Unto the Great Twin Brethren
Let all the people throng,
With chaplets and with offerings,
With music and with song,
And let them pass in order,
Before the sacred dome,
Where dwell the Great Twin Brethren
Who fought so well for Rome."

After the Roman days came chaos. Perhaps the decimated state of Italy in medieval times, and the intense nature of Italian political life in those early days of a nation when folklore is made, had considerable to do with the paucity of epic. When every man of any intellectual caliber was straining every nerve to keep his roof-tree above his head, and was unable, half the time, to do so, when each lord and noble was constantly at war with some other in a deadly feud, and every city, no matter how powerful, was likely to be sacked and burned by the next neighbor, it is not strange that there was little time for writing great epics.

The nearest approach in Italian folklore to the genuine epical lore of the more northern nations is in "*I Reali di Francia*," which is the libretto used by the Sicilian *fantoccini*, or puppet shows, and contains a history, distorted, it is true, of King Pepin, Charlemagne, Orlando, and other paladins. This, while interesting, can scarcely be called genuine folklore, and indeed one captiously inclined might treat the subject of Italian folklore in three words, "There is none."

This, however, would only be the purist for

definitions, for much quaint and curious lore abounds, not only among the peasantry, but devoutly believed in by the upper classes as well. Superstitions, charms, legends, and proverbs are abundant, and many are such a curious mixture of history and legend, fact and fancy, as to be worth tracing to their sources. Some of these are religious and reach back to the Roman days. Italians to-day regard the amethyst as endowed with power to ward off intoxication, and a Roman dandy of Cæsar's time clasped his embroidered toga with an amethyst pin that he might the more freely entertain Bacchus. He also wore a diamond on the left arm to baffle nocturnal fears, for even sober Pliny wrote, "The diamond baffles poison." These superstitions clung to Italians for hundreds of years.

Strings of amber beads are very common in Italy and are worn by all classes of people, especially little children. The beads were supposed by the Romans, to be the tears Electrides shed at the death of her brother Rhæthon, and were worn as amulets to cure ague and ward off insanity.

Every visitor to Italy has noticed the bits of

Neapolitan Beggars.

coral worn even by the humblest peasant boys and girls, and this gem, oftenest found in the shape of a branch or frequently as a tiny hand, is worn to ward off the "evil eye," so dreaded by every Italian. Giovanni, typical child of the South, with his ebon curls, his apricot cheeks, his sweet, dimpled chin and roguish lips, will distend his liquid eyes wide in horror and beg you to purchase a coral hand lest the *jettatura* be turned upon you; the most professional of Neapolitan beggars flees from the sign of the evil eye as from a pestilence. This sign is given with the second and third fingers closed, the index and little fingers being extended, and is called "making the horns."

Other bits of lore are equally firmly seated in the breasts of the people, and a Venetian gondolier, dreaming on the piazza in the sun, no matter how much he wishes to enter your service, and he has not a *lire* to his name, will tell you,

"I dì di Venere e di Marte
Non si sposa e non si parte,"

by which he means that no one ever begins anything on Tuesday or Friday. Wretched little gamins, as full of superstition as an egg is full of

meat, will assure you happily that you are fortunate of heaven and your glance will bless them,

A typical Child of the South.

because, forsooth, you have seen a white horse, a priest, and a load of hay, in the morning when you were crossing a bridge, and the church bells

were ringing. This is the best luck in the world, as to enter a room where the foot of the bed stands toward the door is the worst luck, meaning that you will be carried out dead.

The most superstitious Italians are the Tuscans and the Neapolitans, the least so the Piedmontese and Umbrians, while the Romans occupy a middle ground. Many of their fancies are about womankind, and quaint bits of lore abound anent the fair sex. "Women always speak the truth, but not the whole truth," says one spicy bit, and the idea of masculine government is tersely expressed by the proverb, "Women, apes, and nuts require strong hands." "Tell a woman she is beautiful and the devil will repeat it to her ten times," is a Tuscan saying, to which a Roman goodwife responds, "Ugly women handsomely dressed are but uglier for it," or "Choose not a jewel, a woman, or linen by candle light."

For good women the Italians have great reverence, and in choosing a wife a young man is warned to "Take a vine of a good soil and a daughter of a good mother," while another saying is "In buying horses and taking a wife, shut your eyes and commend yourself to God." It

"Little Gamins as full of Superstition as an Egg is of Meat."

would seem, however, as if they feared to commend themselves to divine protection too often in this regard, for another current saying is "The first wife is matrimony, the second, company, the third, heresy." Perhaps these caustic bits of folklore in regard to marriage may arise from another Roman proverb, "The smiles of a woman are the tears of the purse," or as the Tuscan version is, "When a woman laughs the purse complains."

Flower fancies are particularly rife in Italy. Every maiden believes implicitly in flower lore and will tell you the meanings of her flowers with perfect gravity. The fair-haired Venetian beauty of the lagoons, weaving folklore fancies about each flower she sells, will hunt for vervain when she wishes to make sure of her lover's affections, for it is well known among the fair sex that this plant secures the love of those who accept it. Another plant particularly prized in Italy is cummin, and the country maids persuade their sweethearts to swallow it to insure their constancy. When a gay *Bersiglieri* or cavalryman is about to be sent into active service, his inamorata takes him a loaf with cummin-seed in it, or begs him to pledge her health

Weaving Folklore Fancies about each Flower she sells.

in *chianti* into which she has slyly powdered some of the seed.

In Italy, the land of flowers, the fair blossoms would naturally play a large part in the lives of the people. Like air and sunshine and cerulean skies, they were free to all, and many were the flower festas which the Italian of the Middle Ages celebrated. One of the daintiest of these was the Florentine May festival, in which, garlanded with flowers, the Tuscan city was a vision of beauty. The fairest girls were chosen for the processions, and, attired in snowy robes as brides and crowned with wreaths, walked to the court of beauty, where the queen of the year was chosen and presented with her scepter, a staff of lilies, the Florentine emblem. Not the least symbolic of the Italian feeling anent women was the fact that no one could be chosen queen of the May fiesta and carry the staff of the Blessed Virgin unless she was pure of life and spotless as to fame, as was the Lily Maid of Nazareth.

Another interesting festival of the Middle Ages, historical yet blended with folklore, was the emblematic marriage of the Adriatic, at Venice, a mystic ceremony which took place

A Florentine May Festival.

with all the brilliance of medieval pageants, The huge, golden galley surrounded by gondolas glided down the lagoons garlanded in medieval splendor, and the whole pageant was a scene of marvelous beauty. Every old Italian city has some favorite bit of lore or legend, famous or infamous. Verona boasts of Romeo and Juliet, synonym for fond lovers, that Romeo who was

> "A courtly gentleman,
> To tell the truth Verona brags of him
> To be a virtuous and well-governed youth,"

while Sienna has a fascinating tale of the fountain of *Gaia*. This fountain was surmounted with a famous statue of Joy, a heathen goddess which had been discovered in the excavation of some ruins, and which was so beautiful that the Siennese were inordinately proud of it. Alas! Misfortunes overtook the city, and these were laid to the statue. Our Lady, it was claimed, was displeased that a heathen goddess should be placed where she should reign, so with solemn procession the Siennese removed *Gaia*, and placed a statue of Our Lady in her place; then, desiring to make the most of their opportunities, they interred the offending goddess in soil belonging to their sworn enemies, the Florentines,

The Marriage of the Adriatic.

that there she might work out her evil destiny.

All travelers to Rome have seen the Monkey's

Tower, a medieval watch-tower looming up in the narrow street leading from the bridge of San Angelo. This tower is better known as "Hilda's Tower," immortalized by Hawthorne in the "Marble Faun," but the name of the Monkey's Tower came from a curious legend in regard to it.

A monkey brought from the East by some adventurous Roman once snatched up a child in his arms and climbed with it to the very summit of the tower. The parents, in anguish, vowed a shrine to the Blessed Virgin if the child should be saved, when the sportive ape climbed gingerly down and deposited his burden at their feet. Even to-day one may see the little shrine upon the face of the tower, where burns each night from twilight until dawn a tiny lamp to the Virgin, the same one daily tended by the gentle Hilda, while her doves fluttered about her, cooing in the soft Roman air.

Many are the legends which group themselves about Carnival time, that mad and merry season from Epiphany to Ash Wednesday. Sugar plums and *confetti* pelt the passers from balcony and window where Roman or Venetian beauties gaze down at the motley crowds below, and wild

Tower of the Monkey.

is the fun when the *moccoletti* are flashing through the streets, fifty thousand flitting from Corso to Pincian, extinguished and relighted as gay revelers blow out one another's candles or have their own extinguished.

One of the quaintest of customs is that certain things positively must be eaten on certain days. For the vigil of Christmas there are huge suppers of fish and lentils, and on the day itself every one must have *torroni*, which is a kind of nougat. On New Year's day, Italians eat lentils with the idea that each grain they swallow will bring a piece of gold during the coming year, and they invariably devour a slightly sweet bread with raisins, called *pannetone*. Another variety of this, not made with sugar, but with oil and as full as it can be of raisins and English walnuts, is made at Sienna for All Saints' day and is called "*pani dei Santi*." The Siennese have also charming little Christmas cakes made with pounded almonds, called *Ricciorelli Cavallucci*,* and a magnificent cake made with oil, chocolate, nuts, raisins, almonds, and all manner of goodies called *panforte*. *Biqué*, fritters, for St. Joseph's day, junket, which the milkman is supposed to bring gratis, for Ascension, and at Easter a dry sponge cake called *Piazza*, these and other dainties are relegated to their especial feast and all have some specific symbolism.

As folklore with the Italians is largely religious,

* Nice little ponies.

The Queen of Heaven, crowned by Earthly Affection.

it is almost impossible to separate legend from history, in their lore of saints and angels, miracles and fancies. Every Italian peasant will tell you that the famous crown of Lombardy, first used at the coronation of Agilulf, King of Normandy, in 591, was made from the nails used at the Crucifixion and given by the Empress Helena to Constantine, as a miraculous protection against the dangers of battle. He will be equally sure, in his sturdy faith, that the Madonna of his own little village, whether authenticated by the Church or not, is a miraculous winking Madonna and the only true one in all Italy.

In Bocca di Rio in the Apennines, in a lonely little church, is a miraculous Madonna which has a dainty bit of lore connected with it. Three hundred years ago two hungry little children were watching their goats in the chestnut woods of the mountain, and wishing they could live on the grass which the goats nibbled so happily. Suddenly a lovely lady appeared and told them to go home and eat. "Alas!" they said, "*la madre* has no bread!" But the lady insisted that there was bread and to spare, and bade them go and look in the meal-chest and she would watch the goats. Wondering, the children obeyed,

and lo! there was a chest full of crisp, new, fragrant loaves.

The story flew the rounds of the village, and all rushed to the pasture to see the wonderful lady. No trace of her was to be found, but there was instead a rare work of art, a Della Robbia Madonna in purest blue and white. When they endeavored to remove it and build a shrine for its preservation, the relief returned twice to its original resting-place, thus indicating that there it desired to remain. Accordingly, they began to build a chapel to the Blessed Virgin, and next day found it miraculously completed, and in it the lovely Della Robbia has rested until this very day, a favorite spot for pilgrimage on the feast of the Assumption each year, when thousands throng there to pay their tribute of faith.

Saint tales seem, even with the babies, to quite take the place of fairy tales, and the picturesque shepherd lad of the Abruzzi lies dreaming, not of gnome or kelpie, but of Our Lady or his name saint, albeit his fancies are quite as quaint as any fairy lore of Saxon child. Dreams and visions form a large part of these tales, and wonderful are the stories related of noble families

as well as peasants, and the credence they put in visions.

In the lovely church of Santa Maria Novella, in Florence, in the chapel with Cimabue's Madonna, is an exquisite monument, the work of Desiderio da Settiguano, raised by her grandson in honor of Donna Beata Villana. Daughter of a rich Florentine merchant, she was devout and prayed and fasted and wore a hairshirt next her tender skin. Married by her parents to Bemintendi, a gay young noble, she, alas, forgot her piety, and became ensnared of the world, the gayest of a gay coterie.

One day while being attired by her maid for a grand fiesta, she gazed with complacence into her mirror, when beneath the jewelled headdress she saw a demon's face staring at her. Struck with remorse she rushed to confession, and from that day devoted her life to acts of charity. She died at the age of twenty-eight, adored by all. Thus the story runs, with varying embellishments, according to the humor of the *raconteur*.

Another tale told and retold with zest is the legend of Boscolungo. A peasant had a son and two daughters, one daughter becoming a nun,

A little Shepherd of the Abruzzi, dreaming, not of Fairies, but of Saints and Angels.

while the son was a priest. The younger daughter remained at home, engaged in simple household duties, until, in accordance with the will of her father, she married a poor man of her own station. Years passed by, and the priest returned to his home to visit his sister, concerned for the soul's salvation of one who must of necessity be engrossed with the world. He finds his sister a busy housewife, mother of six lively youngsters, and he grieves at her apparent lack of piety. To be sure she always hears Mass on Sundays, her children know their prayers, and are growing up good Catholics, but she herself is somewhat lax, owning that she can not go to confession often or say many prayers. Her brother offers to remain with the children for a day while she goes to confession, but soon repents his bargain.

The children show scant respect for his habit. They play all manner of harmless pranks, using his hood as a scrap bag, his girdle as a horse's reins. Accustomed to his quiet life of prayer, the poor Father is worn to a thread when his sister returns with penitential calm upon her brow, and he assures her that she has done her penance every day, when rearing her children in patience and sweetness.

One of the Brothers of Pity.

A grewsome legend accounts for the presence in the Florentine streets of the Misericordia, or Brothers of Pity. According to the story, a bravo, returning late one night from a meeting

at his inamorata's casement, notices, with a quick spasm of jealousy, a man apparently approaching her window. He fought with him and slew him. Stooping quickly to see the face of his supposed rival, he found, some say, her brother, others, his own, come to warn him of danger. Struck with remorse he desired to bear the body to a place of safety, yet feared to be seen so doing. Quickly he turned to a monastery close by and borrowed a cowl, attired in which he carried the murdered man home. But remorse for the deed lingered. He had scant vocation for the priesthood, yet wishing to atone for his sin, he abandoned his gay life and founded the Confraternity of the Brothers of Pity, to which belong even yet the gilded youth of Florence, men who are vowed to assist any one in an accident, care for the dead and wounded. One often has to stand aside in narrow Florentine streets to allow a little procession to pass, two cowled figures carrying a stretcher upon which lies some still form which the Misericordia bear away to safety. Only by glancing at the feet of the Brother can one tell if he be knight or peasant, for the cowls completely cover all but

St. Julia.

the wooden shoes of the one or the patent leathers of the other.

Further back into early Christian times reaches the legend of St. Julia, a lovely maiden who was

made slave to a Greek merchant. Voyaging with him she landed in Corsica and the son of the heathen governor of the place became enamored of her. He secured her from her master, to whom she was so valuable in her Christian integrity, that he parted from her only when made intoxicated by the governor. Julia, refusing to yield to the advances of the governor's son, was put to death by his enraged father, suffering the death of the cross, always reserved for the worst malefactors. Her torments she bore with wonderful patience. Her lover had been absent at the games and returned crowned with the laurel wreath of victory as her pure spirit fled. He knelt at her feet, awed by the sight, and impressed with the thought of a God who could make heroines of weak women.

"The victor knelt and laid
His laurels at her feet.
'Julia,' he cried, 'thou hast displayed
Valor and courage meet.
Oh, beg thy God to grant to me
The wondrous faith so dear to thee!'"

His subsequent conversion and suffering for the Faith are matters of history, but this legend of St. Julia is one of the most beautiful bits of mingled folklore and history, so dear to the hearts of the religious Italians.

The Cliff Dwellers

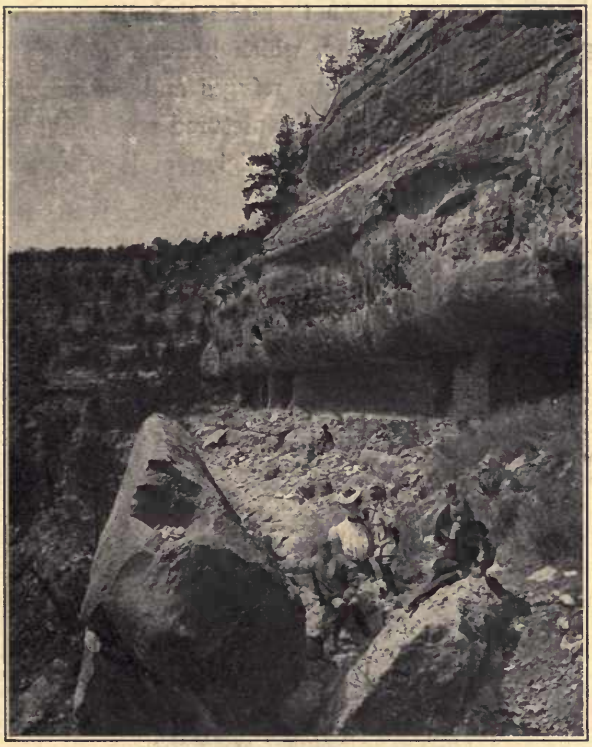
(Illustrated with stereographs, copyright by Underwood & Underwood, N. Y.)

THERE is a wonderful but comparatively unknown region of our Continent occupying a narrow stretch of western New Mexico, part of southern Wyoming, and a large portion of Utah and Arizona. It is the land of mesas and terraces, of cliffs and canyons—the home of the ancient cliff-dwellers, whose descendants, albeit in reduced numbers, still abide in what is left of the strange, weird, almost inaccessible homes of their forefathers. Striking in form and size, replete with strange and wondrous coloring, grand and bizarre in its effects, these wonderful cliffs, so closely resembling the natural carving of human architecture, vary in hue with every shade of light and atmosphere.

The landscape is never the same from day to day, even from hour to hour. Calm and reposeful in the early morning, the full mid-day light, banishing the shadows, brings out

the glaring sides of the high scarfed walls, and the haze of the desert gives them a fierce metallic sheen. But with the decline of the sun all is changed once more. The shadows mass, the rocks recede, stand out, recede again, that peculiar hazy atmosphere which is seen nowhere else envelops the landscape, and with clouds above and clouds below the effect is that of a dreamland ocean, swift to form and soon to fade.

Tolerably familiar as we are with the people who now dwell in these mysterious regions, what do we know of those who lived here before them, centuries ago? Comparatively little—all is a matter of conjecture. At what period was this region first inhabited? What were the channels by which they reached it? It must be confessed that in spite of the many theories that have been advanced on the subject, their history is unknown to us save through the medium of their works and their relics. The date of their advent as well as that of their disappearance is involved in mystery. It is probable that at some distant period of time they came among these mesas and deep canyons to make their homes, feeding upon the wild animals,

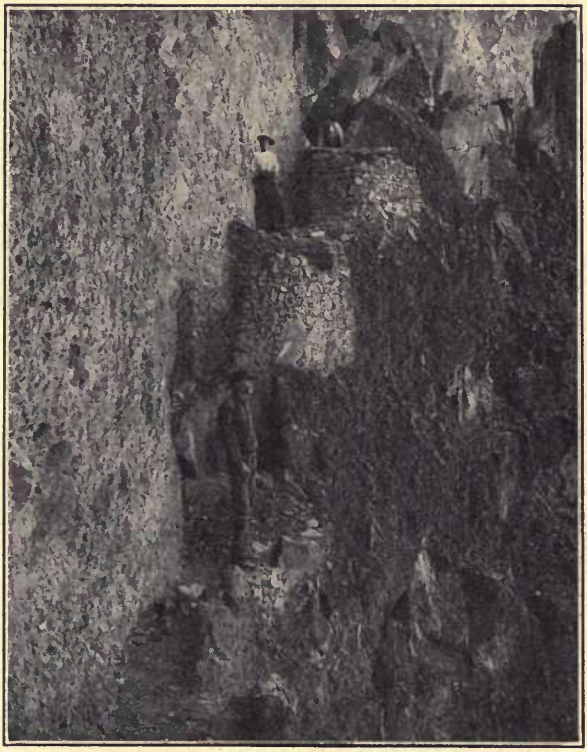


Cliff Dwelling Ruins in Northern Arizona.

and, being a sedentary people, also engaging largely in agriculture. We know, from the evidences which remain, that they cultivated the soil by means of irrigation. Very likely they were a peaceful people, and being surrounded

by wild tribes, began to make their homes on the sides of the cliffs, which became for them not only dwellings, but refuges and fortresses. Their only records are the pictured rocks, which give some hint of their religion and customs; they have left but few traditions among their descendants. They adopted a form of architecture rendered necessary by the character and situation of their dwellings. Nowhere else on the globe is this peculiar style to be found, being altogether different from and superior to that of the cave-dwellers of Europe, with whom they are sometimes erroneously compared. This style has come to be called the Pueblo, but there is a distinction. The Pueblos belong to the valleys or mesas; the cliff-dwellings are unique, if not in general characteristics, at least in their isolation. There was, moreover, a certain diversity of style among them, regulated by the several districts. The homes of the central portions on the Zuni and Chaco Rivers were erected in terraces around a court, with the apartments close together; on the Rio Gila the buildings were separate; while on the Rio San Juan all three styles may be found.

The village of Laquna, which still exists, is



Ruins of Cliff Dwellings in the sheer Walls of Bonito Canyon, Arizona.

thus described by the Spanish Castaneda in 1540, and it will give an idea of both past and present architecture of the Pueblos:

"The houses have four stories, with terraced

roofs, all of the same height, on which one may make the whole circuit of the village without finding a street to bar one's progress. On the first two stories there are corridors, like balconies, on which you may walk around the village, and under which you may find shelter. The houses have no doors in the basement; the balconies, which are on the inside of the village, are reached by ladders, which may be drawn up. It is on these balconies, which take the place of streets, that all the doors open by which entrance is gained to the houses."

The stove, or *estufa*, is a particular feature of these houses. As to them Castaneda says:

"They lie underground in the courtyards of the village; some of them are square and some of them round; the roof is supported by pillars made of pine trunks. I have seen *estufas* of twelve pillars each, of two fathoms in circumference, but usually there are only four. They are paved with large, polished stones, like baths in Europe. In the center is a hearth on which a fire burns, and a handful of thyme is now and then thrown on the fire; this is enough to keep up the warmth, so that one feels as if in a bath; the roof is on a level with the ground. The

Typical Hopi Indian Home.

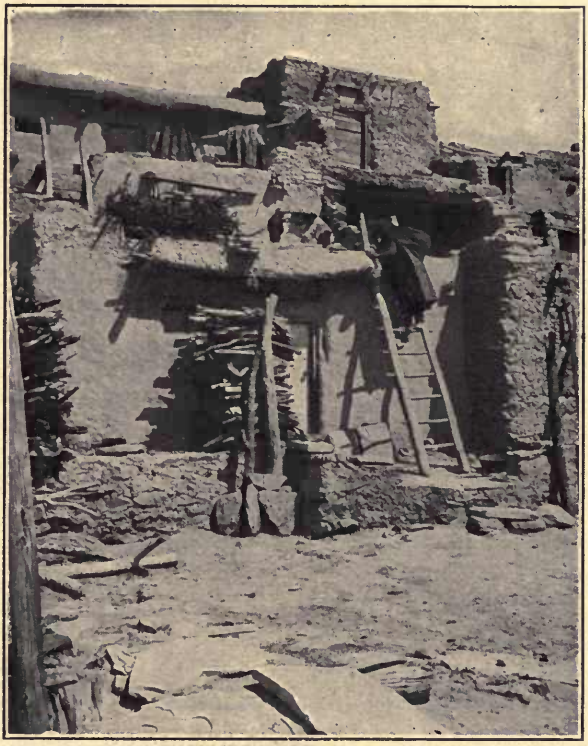
houses belong to the women, the *estufas* to the men."

It is a well-established fact that in the Pueblo life the men lived apart from the women. They also had assembly-places or towers, which were

placed in the valley below. The store-houses were separate from, but always close to the domestic apartments, being either at the side, or in the lower story, excavated far into the cliff, very dark, and reached by trap-doors from the upper story.

From investigations which have been made it appears that the ancient cliff-dwellers were a religious people. Since the introduction of Christianity among their descendants they have responded to the efforts of the Catholic missionaries more satisfactorily, perhaps, than any of the Indian tribes, though still retaining many of their ancient superstitious customs, which it seems impossible to eradicate, for there are no aborigines more tenacious of their past than those of Arizona and New Mexico. These people were first instructed in the truths of the Christian religion by the Spanish Franciscans who everywhere accompanied the Spanish explorers.

Of all the cliff cities, many of which are ruined and abandoned, that of Acoma, still peopled by six or seven hundred Indians, is by far the most interesting; a description of it and its inhabitants, incomplete as, from the limited space of a magazine article, it must necessarily be, de-

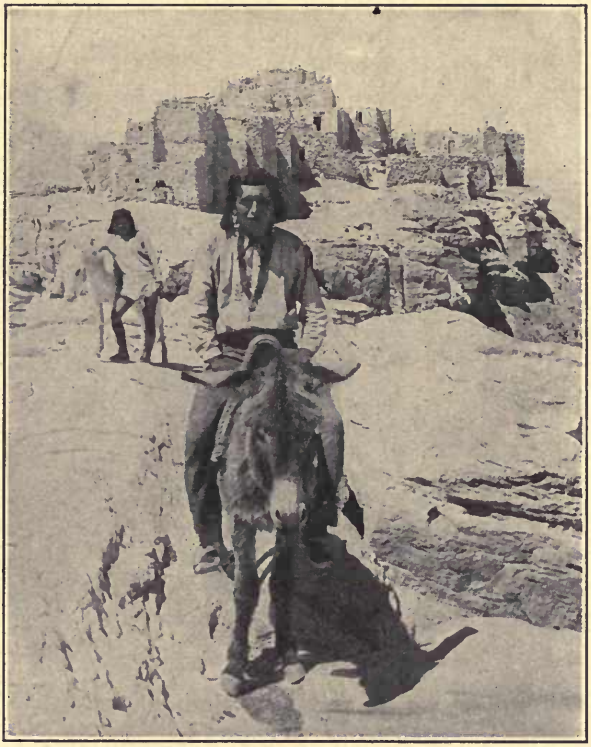


A Moqui Squaw reaching Home with precious Water carried two Miles from the Government Well.

scribes the main characteristics of the others.

The mesa on which Acoma stands is like an island in the desert, an island of towering sandstone, craggy and many-hued, whose contour is

an endless enchantment to the eye. One can fancy anything one pleases when gazing on this vision of beauty. Bridges, towers, minarets and castles, as though sculptured by some giant hand, transfix and almost paralyze the eye. Upon the very top of this stone table-land of the desert, seven thousand feet above the level of the sea, is the mysterious city of the cliff-dwellers, which, hundreds of years ago, stood still higher on the dizzy level of the *Mesa Encantada*, or Enchanted Mesa. But some powerful convulsion of nature toppled it over, and the vast rock, whereon was carved one by one the stone steps which led to the home of the Pueblos, was crushed to atoms. From a distance the three buildings which comprise the houses of six hundred persons look like giant blocks of stone. They are a thousand feet broad and forty feet high, reached from the ground far, far below by such narrow, steep paths as would frighten the average eye only to look upon. And yet up these paths the patient Indians have carried everything necessary for the construction of their cyrie homes. Each of these buildings is made of *adobe* and wood, three stories in height, cut by innumerable cross-walls into little dwellings which are entirely discon-



Six Hundred Feet above Desert, Hopi Indian Reservation.

nected from each other. These dwellings are reached by ladders.

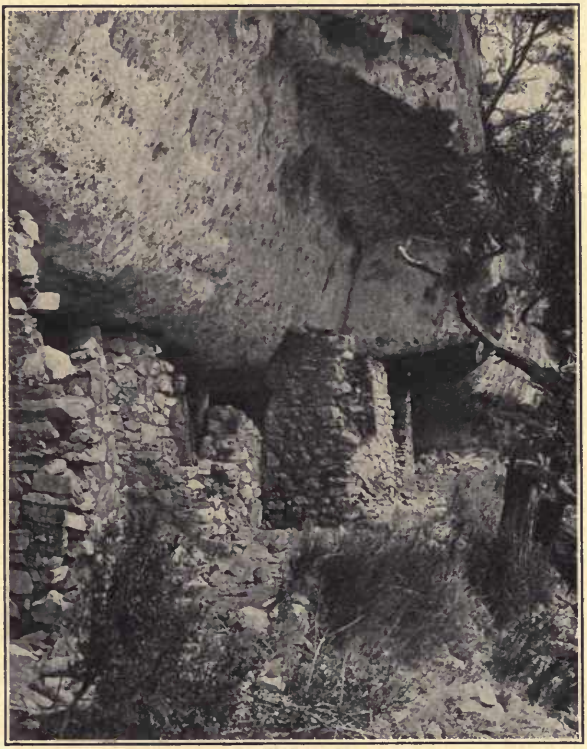
There is a great reservoir, an immense hollow in the rock, and many smaller ones, which hold the rain-water of the wintry season. Every drop of it is carried on the heads of the women

up the steep ladders to their dwellings. Within, these houses are clean and comfortable.

Their lands consist of nearly twenty thousand acres, available principally for grazing, but in their summer Pueblo of Acomita, in the well-watered valley of the San José, twelve miles to the northwest, vegetables and melons grow profusely. This valley is cut into networks of irrigating ditches, which accounts for its great fertility.

It was, no doubt, because these dwellings were used for fortresses in time of war that there were no doors to the lower floors, which were entered by a ladder placed near a trap-door in the first story, which was also reached from the outside in the same manner.

In recent years some few doors have been inserted, as the danger from attack no longer exists, and this modern mode of egress is more convenient. Upon the walls of these curious homes hang ornaments of solid silver, the work of the Indians, together with fine skins and woven *mantas*, the outer dress of the women, resembling a scarf or shawl. The mattresses, clean and soft, on which they repose at night, are rolled up by day and laid on broad benches



Cliff Dwellings in Walnut Canyon, Arizona.

built into the walls. They are covered with rare and costly so-called Navajo blankets, made at Acoma looms, and which are not to be purchased, so highly are they prized by their makers.

There is a corner fireplace in every house, the chimney made of earthen jars, from which the bottoms have been left out, while in another corner may always be found a row of handsome *tinajas*, or water-jars, painted in curious patterns.

The costumes of the people are appropriate and strikingly picturesque, besides being costly. The every-day garb of a Pueblo woman is worth at least twenty-five dollars, and her festival attire many times that sum. Silver, coral, and turquoise ornaments abound. They have quantities of silver rosaries, bracelets and rings, made by their own smiths. In appearance, also, they are a striking people. Of medium stature, but well proportioned, noble and erect carriage, and fine features, they seem to have originated from a race far superior to that of the average North American Indian.

We have alluded to the acceptation of Christianity by these people. To its profession and practice may be attributed the purity of their lives, but they have retained many of their former customs—the sacred fire, which has never been quenched, as well as the solemn and mysterious dances, which stranger eyes may never look upon. Their burial ceremonies, too, partake

Terrace Homes of Hopi Indians—Street Scene in Oraibi.

of their ancient belief. After the bell has tolled for the repose of the departed soul, and the still form has been laid in the earth, and the priest has departed, if one could penetrate unseen the house of mourning, "one would see," writes he,

who of all travelers, perhaps, knows best the history and habits of the sons of the cliff-dwellers,* "the shamans blinding the eyes of the ghosts that they may not find the trail of the vanished soul. There is mystery in all they do. When old men meet and part, you may see that each takes the other's hand to his mouth and breathes upon it, and that when they smoke they blow the first six puffs in different directions. Every man wears a little pouch which money will not unlock. Each knows words which he will not utter in any finite presence. Each has goings-out and comings-in which none may spy upon."

Past and present, their history, their homes, and their environment are weird, picturesque, unique, bewildering, but unguessed and unfathomable. But once seen, once traversed, once entered, once met face to face, the mysterious pueblos, the wonderful, craggy, steep pathways, the strange, dark dwellings, and the silent, inscrutable people they shelter must ever remain a singular and haunting picture in the memory of him whose good fortune it has been to visit them, if only for a day.

*Charles E. Lummis.

Some Unknown Surgeons

THE surgeons of whom the writer is going to speak are not, as the reader may suppose, those eminent men, leaders in their profession, who, clothed in robes of spotless white and with gloved hands, do such astounding operations as removing the stomach, exploring the delicate folds of the brain, and the like. No, the subjects of this sketch are not human in form, though almost human in act. They never learned their art of surgery in any school at the hands of experienced and learned instructors, but they came into this world endowed with the gift through the Creator. These singular surgeons are none other than the solitary wasps, near relatives of the abhorred hornet. Solitary wasps they are called, because they live alone and not in communities as do the hornets—of whom more later, for their habits of life are quite interesting, too.

Lest the reader think it a waste of time to look into the life-history of such tiny creatures as

wasps, let it be said for their help and edification that men in all walks of life, public characters, scholars, and men of leisure have deigned to stoop to the study of them, despite the fact that persons of small minds have sometimes sneered. No less a distinguished scholar than Lord John Lubbock Avebury found his recreation in the study of wasps, with the result that he gave to the scientific world valuable information in regard to their ways, while medical men have reached conclusions of value to mankind in general while studying the beings of the insect world.

The general characteristics of wasps are known to all. They are not more than an inch in length, with four wings, which, when at rest, are folded over a slender body that often is gorgeously colored, especially in tropical countries. Within this delicately waisted body the female carries a concealed weapon, irrespective of all laws made by man to the contrary. This weapon is her sting and the chief instrument used by the surgeon in the precise and delicate operations performed.

Strange as it may seem, in the insect world the professions are filled by the female contin-

gent, the male members of the family being of little practical service in the struggles for bed and board. The solitary wasps, the women-folk again, make their houses out of mud, sometimes in a hole scooped out in the ground or in tunnels in the stalks of certain plants, availing

The Wasp and Fruit.

themselves of the easily excavated pith, while others bore the solid wood.

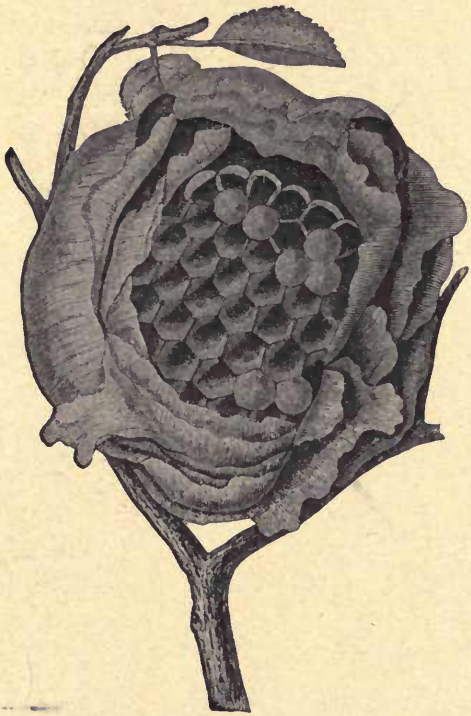
On almost any warm July or August day, the blue-colored mud-dauber wasp, *Pelopœus* as she is called, may be seen gathering mortar at the margin of a stream, pool, or puddle. If you continue to watch her, she may be seen filling her mandibles, which serve as spade and hod,

after which she bears the load to some rough surface, rock, or wall, where she fashions her mud dwelling, which varies in shape, position, and construction according to the species building it.

From the illustrations one can see the remarkable diversity in their methods of building, some constructing their domiciles straight up and down, others horizontally; sometimes singly, at other times in groups; some gracefully executed, and still others done in a lump.

"Briskly and gayly they fly back and forth, pausing at the nest long enough to pat the soft building material into shape. A single load makes half a ring at the larger part of the nest, or a whole one at the bottom; and since one dries before the next is put on, the contour of each ring is visible when the tube is done, giving a very artistic effect. This is only accident, however; the wasp cares nothing about the beauty of the structure, for her next step is to daub the whole with lumps of mud, the walls being thus thickened and strengthened. About forty loads are necessary for each cell, and to build and provision one is a good day's work."

Once the nest is ready for occupancy, the



The Wasps' Nest.

mother wasp, with her huntress instincts aroused, begins her raid for spiders. Strange that she should know a spider from a fly; strange, too, she is careful to select a spider not too large for the nest; strange that she never chooses aught else but spiders! "A God-given instinct" is

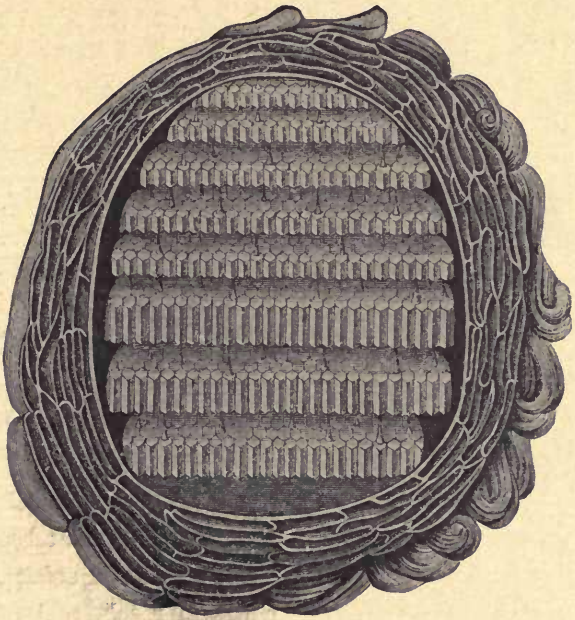
the only reply. The hunt begins. *Pelopœus* on wing and foot searches cobwebs, corners, crevices, and wheresoever spiders might secrete themselves. She knows. Soon she comes upon the web of an orb-weaving spider. "If the occupant, expectant of prey, sallies forth to seize the intruder, it finds itself a captive, not a captor. The wasp shakes the silken filament from wings and feet, turns upon the spider, seizes and stings it, bears it to her cell and thrusts it therein."

This process is kept up for some time, the wasp fluttering from flower to bush, from cranny to crevice, snatching away the spiders until the cell is filled and the opening sealed. If here the nest were to be opened there would be found, not dead, as you might suppose, but real live spiders, motionless, but living. In this, then, the wasp displayed her knowledge of surgery. At the moment of capture she bent her abdomen under and inflicted a sting, thereby sending to the vital ganglia or nerve cells of the spider the poisonous serum that dampens while not extinguishing the fire of life. The spiders in this state will respond to electrical stimuli, but seldom can move of themselves.

The Home of the Wasps.

Why did not the wasp kill the spiders outright? I did not tell you that before sealing the nest our surgeon wasp left an egg upon the body of one of the spiders, which, when hatched as a waspkin in the shape of a worm and feeling the pangs of hunger, it may find abundant fresh food for its sustenance. When its appetite is satisfied, following the instincts of its kind, the larval wasp enshrouds itself in a silken casing, out of which it emerges in due time complete in form like its parent, and begins anew the round of existence of solitary wasps as just described. An opening in the mud cells gives evidence of the escape of its hermit occupant, and within can be seen the skeletons of the unwilling patients of the surgeon wasp.

Another wasp with surgeon habits is *Ammophila*. A frail, black-bodied wasp with an orange band about the abdomen, one may see her on any bright day hunting through the garden patch for her prey, the inch worm. Falve, an authority on the habits of wasps, tells us that *Ammophila* is the most interesting of all to study because of the nicety they display in their surgical work of paralyzing their caterpillars.



Interior of Wasps' Nest.

Their favorite working hours are from eleven in the morning to three in the afternoon, just the time when most persons want to rest. *Ammophila* frequently is some time in finding her prey, having to go up and down the stems of plants examining every leaf until at last its efforts are rewarded. The method employed by *Ammophila* is more complex than that of *Pelo-*

pæus. The caterpillar with which she provisions her nest is made up of thirteen segments, each having its own nervous center. To reduce the caterpillar to a state of immobility a single sting would hardly be sufficient. One writer describes *Ammophila* and the capture of her prey thus:

"The wasp attacked at once, but was rudely repulsed, the caterpillar rolling and unrolling itself rapidly and with the most violent contortions of the whole body. Again and again its adversary descended, but failed to gain a hold. The caterpillar, in its struggles, flung itself here and there over the ground, and had there been any grass or other covering near by, it might have reached a place of partial safety; but there was no shelter within reach, and at the fifth attack the wasp succeeded in alighting over it, near the anterior end, and in grasping its body firmly in her mandibles. Standing high on her long legs and disregarding the continual struggles of her victim, she lifted it from the ground, curved the end of her abdomen under its body, and darted her sting between the third and fourth segments. From this instant there was a complete cessation of movement on the

part of the unfortunate caterpillar. For some moments the wasp remained motionless, and then, withdrawing her sting, she plunged it successively between the third and second, and between the second and first segments." Later on she "seized it again, further back this time, and with great deliberation and nicety of

The Ammophila.

action gave it four more stings, beginning between the ninth and tenth segments and progressing backwards." *Ammophila*, you see, is very thorough in her operation, stinging all the vital nervous centers save those of the middle segments. She is not satisfied, nevertheless, like most surgeon wasps, to merely use her sting, but proceeds in many cases to use a forceful form of producing anesthesia, called malaxation, which consists in repeatedly squeezing the neck

of the caterpillar between the mandibles, the subject of the treatment being turned around and around so that all sides may be equally affected.

Ammophila tunnels her nest out of the earth, and places therein the green paralyzed slugs, upon which she lays an egg, closes up the burrow, and leaves her embryonic offspring to fight life's battles alone.

Perhaps the most fearless of these surgeon wasps is the so-called "tarantula killer" of Texas. *Pepsis formosa*, for so the "tarantula killer" is named, attacks and stores its burrow with the great southwestern spider (*Eurypelma hentzi*), erroneously known as tarantula. "The tarantula killer is a bustling, unquiet creature. When running on the ground its wings vibrate continuously. When it sights its prey it flies in circles around it. The tarantula trembles violently; now runs and hides; now, rising rampant, shows signs of fight. The watchful huntress finds a favorable moment, darts upon its victim with curved body, and thrusts in its sting, if possible into the soft abdomen." The giant spider made powerless, it is dragged to the burrow previously dug to a depth of five inches,

Pelopæus and their Nests.

and is deposited therein. Only one spider and one egg are deposited in each nest. The wonderful effects of the sting of this surgeon wasp are shown by the fact that spiders on which the eggs failed to hatch were, after an evident lapse of years, still limber, and showed no signs of decomposition.

The facts cited give one a general view of the habits and methods of all solitary wasps, whom I have not hesitated to

call surgeon wasps. What is to be particularly noticed is that the baby wasp never knows its parents. The father wasp dies after a brief honeymoon, leaving the mother wasp to provide for their offspring. She, too, after her work of building and storing of a larder for the waspkin yet to be, disappears in death. Yet when her perfectly formed child appears the next season from out its mud nest or sand burrow, it at once begins a repetition of the life of its parent. It did not learn to build, to catch spiders and caterpillars, and sting them in order to make them motionless from its parents nor from any human agency; hence we must conclude that they come into this world with these gifts from the hands of God, with a view, no doubt, to humbling man at the sight of the labors and marvelous skill of these tiny, irrational beings, that he might come to say with the fulness of his heart, "Great and wonderful are Thy works, O Lord God Almighty."

F. O'B.

Handling Mail for Millions

EVERY business day New York City's post-office sends out more than two and one-half million letters and postal cards. More than two millions are daily received. Sunday the number, although large, fluctuates greatly according to the season and the weather. In addition, is the enormous newspaper and periodical, circular, package, and book mail. Letter-carriers attached to the New York office handle over one and one-half billion pieces of mail matter annually.

It is a gigantic task. The chief factors in its accomplishment are six thousand employees, with headquarters in a general post-office and forty-one branch post-offices, called stations, together with two hundred and twenty-seven sub-stations, located chiefly in drug-stores. Regular post-office business is transacted at the latter, but they are not centers for the collection and delivery of mail. New York's postmaster has jurisdiction over the Boroughs of Manhattan and the Bronx only. Post-offices in the other

three boroughs constituting the city are separate institutions.

The number of different operations constantly necessary to handle incoming and outgoing mail in a great post-office is legion. Beginning with the mail-boxes—the boxes of well-known form usually attached to lamp-posts—up to the final pouching for outgoing trains, the letter has a lively experience. Half hourly and hourly collections are the rule throughout the city, according to the volume of the mail deposited and the locality. Sometimes these collections are made by collectors carrying a leather sack, supported by a strap hanging from the shoulder. Where the boxes are most numerous and the deposits heaviest, the collections are made by wagon, accompanied by two collectors, one of whom drives the horse while the other empties the boxes.

Arriving at the post-office, the letters soon find their way to the sorting-table, where they are arranged in huge windrows, in readiness for the stamping and cancelling machine which, operated by electricity, handles the letters with such rapidity that it is difficult to note the swiftness of its progress. Arranging the letters

Sorting Crew working outgoing Mail.

is called "facing," and this is the task at which the new post-office clerk is set. The letters are all arranged one way, face front, so as to insure the cancellation of the stamps. Thus the man who fails to place the stamp upon the upper

right corner of his letter causes endless annoyance to the persons who handle that particular piece of mail-matter, because he is at odds with the established rule upon which the handling of the letters is based.

Once the letters are stamped, they are separated, or assorted. The unit is State or City. For the proper performance of this duty the clerk is required to study a scheme of distribution for a certain State or section of the United States. The whole system of the postal service is bent toward reducing the number of times each letter or piece of mail-matter must be handled. With this idea in view the sorting of mail-matter in a large post-office is as comprehensive as possible.

For instance, letters for Chicago, Philadelphia, Boston, New Orleans, San Francisco, St. Paul, that come into the New York post-office as separates are collected and tied in packages. These packages are never untied after the New York postal clerk ties them until they reach the destination to which they are addressed. This accounts for what seems an amazing circumstance that is occasionally noted—a letter written by one resident of New York to another reaches the

Postmarking Letters by Machinery.

addressee after some days' delay, stamped with the postmark of a distant city. Sometimes this is really no one's fault. Letters will occasionally stick together in an unaccountable manner, and so closely that unless handled slowly and with great care they will not be separated. So, if a New York letter sticks to a San Francisco letter in this fashion, and the San Francisco letter is uppermost, the chances are the New York letter will take a trip to the Pacific Coast before it reaches the addressee.

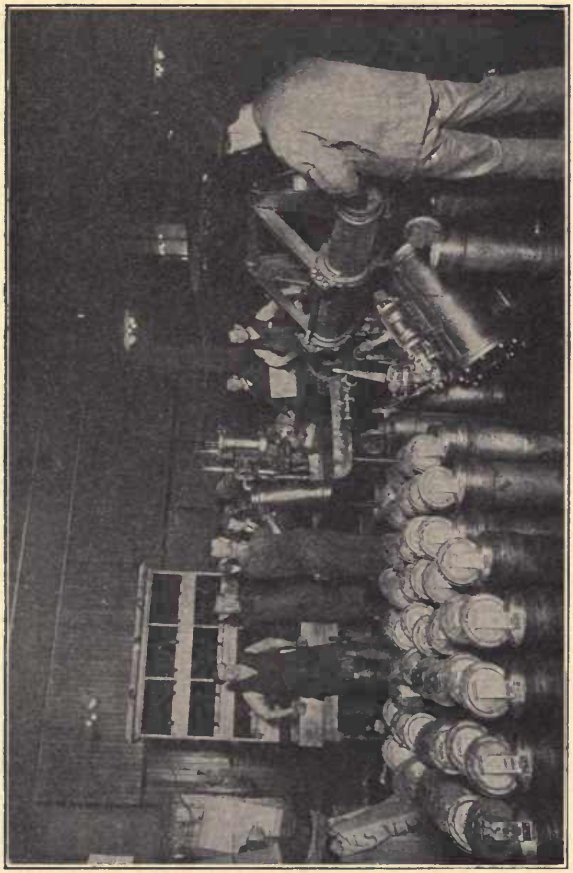
The tax on the minds of the sorters may be judged from these facts: The State of Pennsylvania has 5,297 post-offices, for which two hundred and thirty-seven separations are made at the New York post-office. The State of New York has 3,732 post-offices, assorted into four hundred and twenty-three separations. Clerks at the South and West letter case No. 1 must know the distributions for the States of Ohio, Indiana, Tennessee, and Virginia. Clerks assigned to South and West case No. 2 are required to distribute for the States of Kentucky, Maryland, West Virginia, North Carolina, and the City of Philadelphia, the latter distribution being in strict accordance with the territory of the

Letter-Carriers working Letter Mail of their Routes at the General Post-office, the busiest Post-office in the World.

Philadelphia branch post-offices, so that the letters need not be rehandled in detail at the general post-office of Philadelphia. Clerks at South and West case No. 3 must know the distribution for the States of Illinois, Texas, and California.

For some reason the idea has gained wide belief that the average post-office position is one which calls only for spineless, unambitious men of second rate ability. The truth is that the memorizing necessary for success as a letter-clerk is something so extraordinary that comparatively few of the critics of the post-office employees have mental power to perform the task successfully.

When the letters are sorted and tied, they are, if intended for dispatch via the New York Central or New York, New Haven, and Hartford lines, sent via the pneumatic tube system of the post-office to Station H, located alongside the railroad tracks. The packages of letters are placed in carriers two feet high and nine inches in diameter, each having a capacity of from five hundred to six hundred letters. Mail is also sent in this fashion to the Brooklyn post-office, and to Station P in the lower business district. A

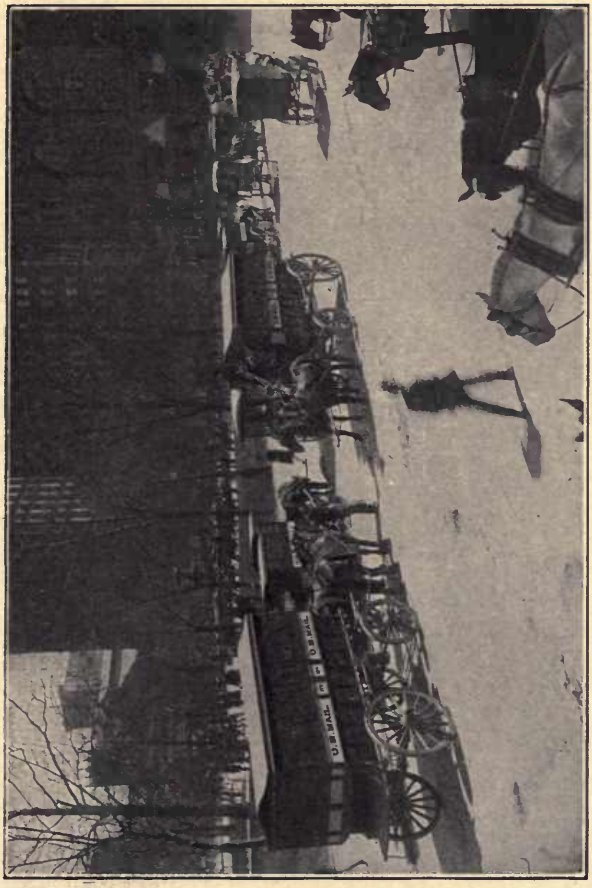


Receiving the Pneumatic Tube Carriers from Branch Post-offices.

gigantic wheel, moved something after the fashion of a cog, is the director of the tubes, the power being turned first this way and then that in accordance with the position of the wheel, or director.

Mail that is not sent out by pneumatic tubes and carriers is transported by a wagon service. The mail-wagon is a familiar sight in every large city, but nowhere is it to be seen in such numbers or with such frequency as upon Van Cott Place, the little block-long street that faces the south side of City Hall Park, New York. The north side of the post-office is practically one huge platform for the dispatch and receipt of mail-matter, and the wagons come and go from day-light to dawn, as well as during the night, with equal frequency and much greater haste than characterize the delivery service of a great department store.

Handling the mail for local delivery is an immense task at the New York office. A force of carriers that has never yet been adequate, handles, each working day, an amount of mail-matter so great that the total is not easily grasped, so far as its significance is concerned. There are from four to twelve deliveries daily,

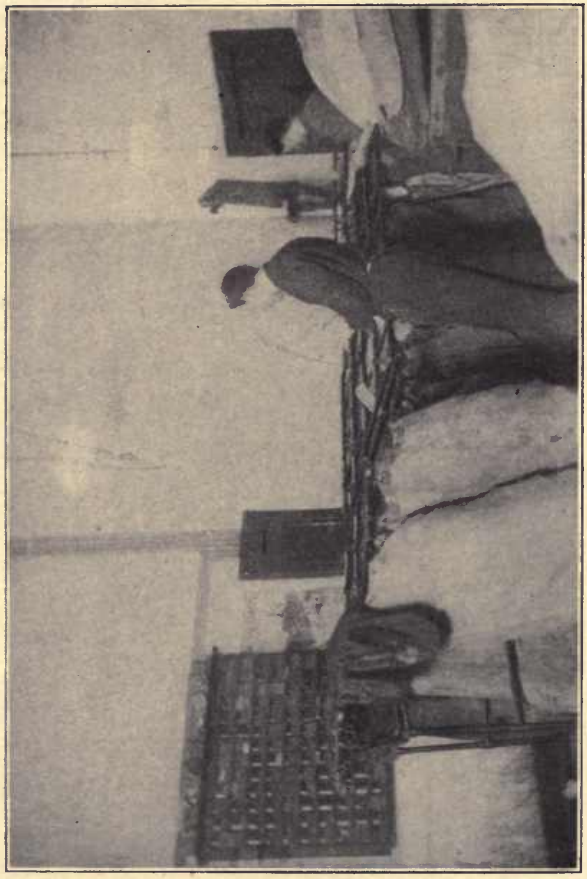


Mail Wagons awaiting their Turn for Loads of Outgoing Mail.

according to the section of the city where the delivery is made. It is against the law for a carrier to work more than eight hours a day, and if he does it he will certainly be suspended and possibly dismissed from the service.

Since the advent of the skyscraper in New York, the number of offices in a single building has reached such proportions that at times four and occasionally six carriers are kept busy handling the mail of a single structure. In such cases the carrier goes to the top of the building with his sack of mail, making the round of the corridors in each story, descending by way of the stairs. Several New York buildings are of such great height that in order to make deliveries on schedule time several carriers start delivering at the same time, each being assigned a given number of floors.

The bulk of the Canadian mail, both incoming and outgoing, passes through New York, and is handled in bags by clerks of the New York post-office. When Europeans write to Australasian points almost all their letters pass in bulk through New York and are dispatched via the transcontinental railroads through San Francisco to their destinations. Much of the European



"Dropping" Mail for the West.

mail for the Far East, for Mexico, and for South America finds that New York marks one stage of its journey.

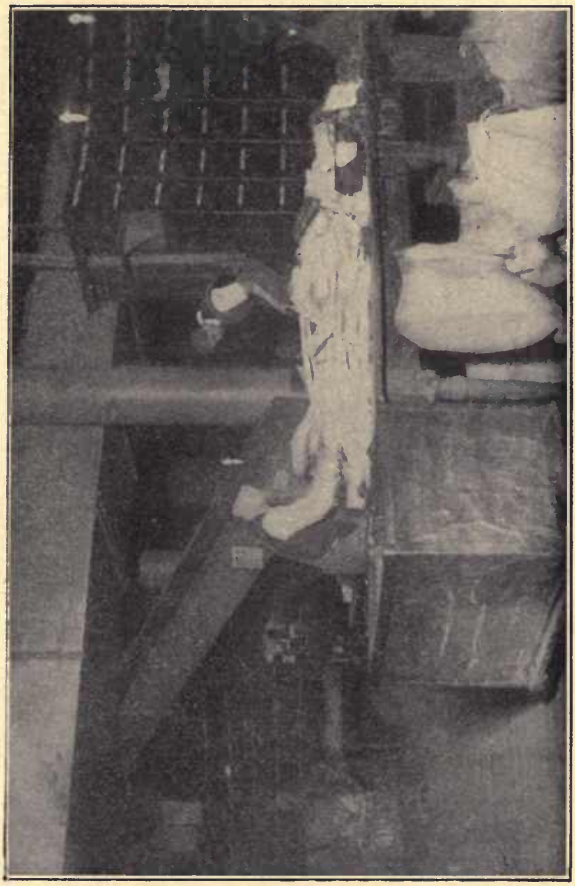
In order to save time in handling the European mails, mail-boats from abroad are met at or below the point in New York harbor where all vessels are required to halt and be inspected by the health officers of the port, by a little mail-steamer that represents the New York post-office. Each foreign mail-boat has two postal-clerks aboard, one representing the United States Government, and the other the Government of the nation supreme at the point from which the foreign mail-boat sails for New York. While the foreign mail is, through international agreement, partly sorted on the other side, it is the duty of the American postal-clerk to see that it is more specifically sorted and sacked on the way to New York. Thus by the time the ship comes up the harbor at New York, the mail for New York City and different sections of the United States, as well as the foreign mail in transit is carefully sacked, each sack being tagged as to its destination.

When the New York mail-boat runs alongside the liner, a line is thrown and the little boat

Newspaper and Package Mail waiting for the Wagons.

made fast to the big one. Then a canvas chute is rigged, and the waiting pile of mail on the liner's deck takes a quick journey into the hold of the New York mail-boat. An average mail consists of from two thousand to twenty-five hundred bags, each of which contains from five hundred to six hundred pieces of mail matter.

Aboard the New York boat is a force of clerks from the post-office. These seize the sacks as they drop into the hold and sort them into piles, one for the New York office, another for bags that are to journey by the trains leaving the Grand Central station, and a third for bags to go aboard trains leaving Jersey City. The little steamer parts company with the liner as soon as the mail transfer is complete, and heads for Jersey City. Here she leaves a part of her cargo, and then steams diagonally across the river to the pier at the foot of Cortlandt Street, where the mail for the general post-office is unloaded to be seized by the drivers of waiting vans and hurried to the office where the foreign mail is taken in hand. Then a final trip is made up the river to the foot of West Forty-second Street, where the remaining bags are turned over to the



Inside Terminus of Public Newspaper and Package Drop.

force of men waiting to transport them to the Grand Central Station.

In the registry and money order departments of the post-office the same degree of magnitude of transaction is found that exists throughout the whole establishment. In a single year the total number of registered packages handled exceeds fifteen millions, while money orders aggregating more than two million dollars are sent to foreign countries alone. The total of the domestic money order business is proportionately great.

Gem Lore

FROM the earliest times gems have been used as symbols of splendor, power, or excellence. The Prophet Ezechiel, prophesying the ruin of Tyre and Sidon, says of the regal splendors of Phœnicia: "Thou hast been in Eden the garden of God, every precious stone was in thy covering, the sardius, the topaz and the diamond, the beryl, the onyx and the jasper, the sapphire, the emerald and the carbuncle. Thou hast walked up and down in the midst of the stones of fire" (opals).

St. John, writing in his picturesque language of the glories of the heavenly city found nothing fitter to typify the splendor of heaven than the jewels of earth, and describes "the building of the wall of pure jasper and the city of pure gold like unto clear glass, the foundations garnished with all manner of precious stones, the first, jasper; the second, sapphire; the third, chalcedony the fourth, emerald, the fifth, sardonyx; the sixth, sardius; the seventh, chrysolite, the

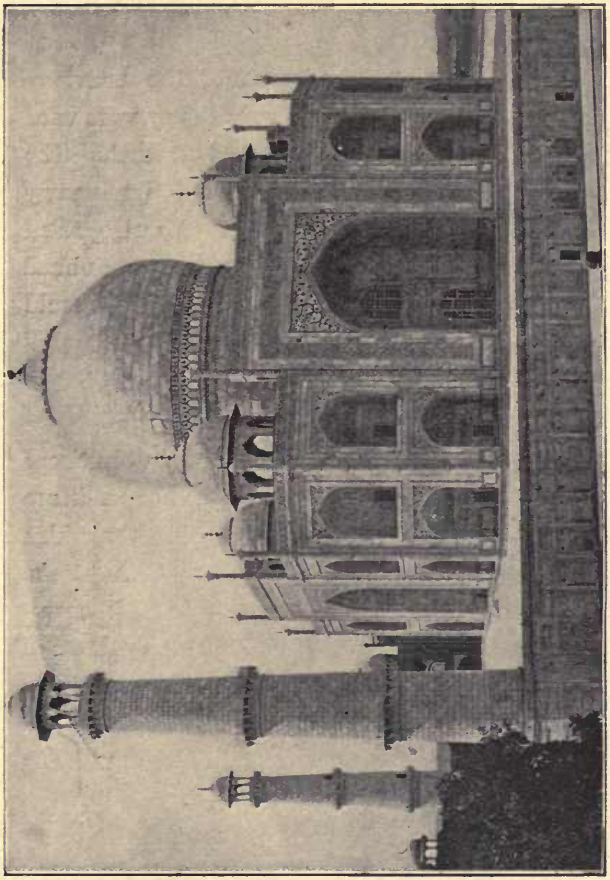
eighth, beryl; the ninth, topaz; the tenth, chrysoprasus; the eleventh, jacinth; the twelfth, amethyst."

A less inspired, but equally poetic writer, thus describes the glories of the City Beautiful, gazed upon by the sorrowing eyes of the lost angels:

"Most rich appeared
The work as of a kingly palace gate,
With frontispiece of diamond and gold
Embellished, thick with sparkling Orient gems,
The portal shone, inimitable on earth
By model or by shading pencil drawn."

The Mohammedan heaven, as described in the Koran, is resplendent with all the magnificence of Oriental gem-lore, truly dazzling with its "stores of pearl and jacinth, the walls of its buildings of gold and silver, and the very trunks of the trees of gold. The pebbles of the streams of paradise are sapphires and rubies, the fruits of the trees are pearls and emeralds; each true believer will have a tent of pearls, jacinth, and emeralds, and will be adorned with bracelets of gold and precious stones, and wear crowns set with pearls of incomparable luster."

The Chinese heaven is of yellow gold, and its gardens, groves, houses, and palaces are "elegantly adorned with seven orders of gems. In



The Taj-Mahal, Jeweled Wonder of Oriental Architecture.

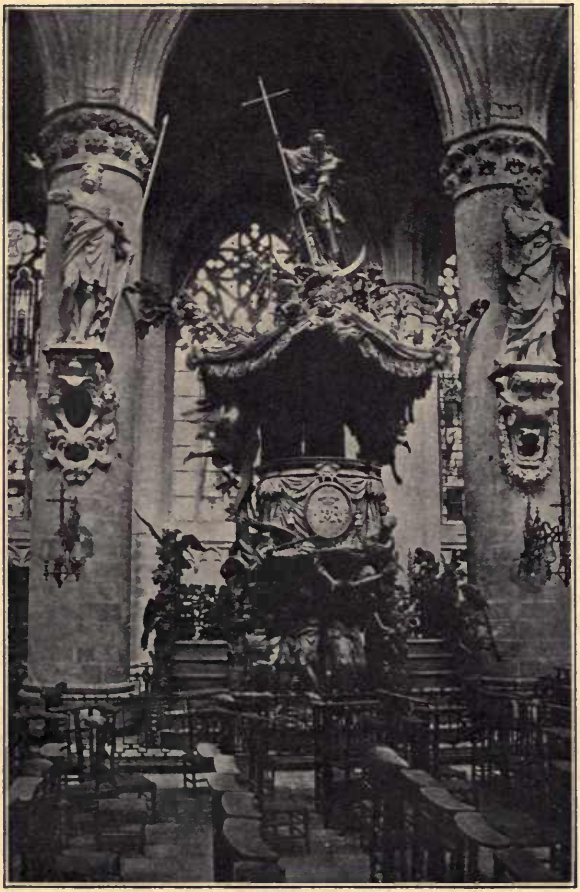
the midst rise seven towers of gems, seven flights of pearly stairs, seven emerald streams, and seven pearly bridges."

Not only the magnificence of the heavenly city was symbolized by gems, but they were used for an imagery of things beautiful on earth. The Orientals called Damascus, from its snowy roofs and verdant gardens, a "pearl girdled with emeralds," Cuba was long since dubbed "Pearl of the Antilles," Ireland is the "Emerald Isle," and Moore wrote of the Bermudas as

> "Those leafy isles upon the ocean thrown,
> Like studs of emerald o'er a silver zone."

The ancients used gold and gems to ornament temples and tombs with such lavish expenditure that it is not to be wondered at that their idea of heaven was a place resplendent with jewels. The chambers of the Egyptian pyramids, many of them, were half filled with gems; the palaces of China were studded with carbuncle and jade; the Taj-Mahal, most exquisite of Oriental temple-tombs, was inlaid with gems and mosaics wonderful in hue and marvelous in design.

The Fathers of the Church denounced jewelry in no measured tones, as "pagan," preferring those ornaments of a meek and quiet spirit so



St. Ghedule's Throne and Shrine.

earnestly recommended by St. Paul. St. Cyprian, A. D. 200, said it was a "crime for Christians to adorn with gold and gems, to whom fires, crosses, and the sword are jewels," and St. Gregory of Nazianzen extolled simplicity. As votive offerings, however, the Church has always approved of gems, and the medieval shrines fairly glittered with them. In England that of Edward the Confessor, in Belgium, the shrine of St. Ghedule, those of St. Denis of France, Santiago, and Our Lady del Pilar or of Montserrat in Spain, boasted far richer spoils than the royal treasuries. Love-lace in "Lucasta" writes of an Italian shrine:

> "At Loretta's shrine,
> Cæsar shovels in his mine,
> The empress spreads her carcanets,
> The lords submit their coronets,
> Knights their chased arms hang by,
> Maids, diamond-ruby fancies tie."

The favorite shrines of the Middle Ages were so rich in votive offerings as to offer rare inducement for plunder to those who were not afraid to add sacrilege to theft. The treasury of St. Mark's was filled to overflowing and many a Turkish galleon hovered about the sun-kissed lagoons, coveting Our Lady's gems, with which to deck

St. Ursula's Jeweled Crown.

some "gem of the harem" upon the sapphire Bosphorus.

Northern freebooters yearned to despoil the "three kings of Cologne," whose caskets of precious gems had first been laid at the feet of the jewel of heaven, set in earth's humble crown. St. Ursula's gem-studded crown, and the jewels of her eleven thousand virgins proved as tempting a bait for marauding infidel as do the crown jewels of England, guarded carefully behind bars in London's Tower; so carefully indeed, that, men say, the "Beef Eaters" with their halberds are watching only paste representations of the scepters and crowns, the originals of which lie safely in secret vaults, to be brought forth only upon important occasions, when the royalty of England must be resplendent in all the majesty of the State.

It is a strange fact that while the Oriental nations load their women with gems, Turks, Persians, Indians, Chinese, and Jews being profuse in their ornamentation, the Japanese, who adorn their temples with all manner of precious stones, the statues of Buddha being often nearly a mass of gold and jewels, do not care for feminine adornment in this guise. The

A Fair Italian with her String of Amber Beads.

dainty Madame Chrysanthemum or Butterfly, Miss Moonbeam or Plum-blossom, may have an embroidered kimono costing many hundred yen, or an obi which is a vision of hand-embroidered beauty, but she will not be decorated with gems like a jeweller's model. Her jewelry will scarcely go beyond a jade hairpin thrust through her ebon locks, and she regards our bedizened young women, school-girls not out of their teens, loaded with gems of all the hues of the spectrum, with scarcely less disapproval than Sir Thomas More displayed when his daughter-in-law begged him for a pearl necklace. That worthy knight had some very white peas set in a silver chain and the story goes that he produced this necklace, saying, "Ay, marry, daughter, I have not forgotten thee," and solemnly delivered it to her; when she, with great joy, looked, lo, her billiment was of peas, and wept for very grief; learning, however, a valuable lesson.

No matter how many salutary lessons man has endeavored to teach femininity, she has always loved gems, and many are the legends in regard to jewels. Some of these stories are quaint and beautiful, and to each gem has been given an appropriate attribute. To the pearl

Oriental Turquoise Merchant.

has been attributed more of the lover's lore than any other. This stone seems to have fascinated the world by its elusive whiteness. Combining

brilliancy and softness, it has been deemed the symbol of feminine purity, and was especially valued by the Orientals. An old legend of the Talmud says that Abraham going into Egypt and jealous of Sarah's beauty, locked her in a chest, lest the eye of the heathen should behold her. Upon arriving at the place for paying the custom, the officers accused him of having pearls in the chest, since he guarded it so carefully and he paid duty upon a chest of pearls, saying, "The most priceless pearl of all my gems lies within."

The poet Sadi, that most beautiful of Persian imagerists, thus relates the origin of the pearl. "A drop of water fell one day from a cloud into the sea. Confused at finding itself in such an immensity of water, it exclaimed, 'What am I in comparison to this vast ocean? My existence is less than nothing in this boundless abyss.' While it thus discoursed of itself, a pearl-shell received it into its bosom and fortune so favored it that it became a magnificent pearl, worthy of adorning the diadem of kings. Thus was its humility the cause of its elevation, and by annihilating itself it merited exaltation."

It is to this legend that Moore alludes in his melody,

> "And precious the tear as that rain from the sky,
> Which turns into pearls as it falls in the sea."

Pearls as tears have long been a favorite symbol with the poets, and Scott says in his "Bridal of Triermain,"

> "See these pearls that long have slept,
> These were tears by naiads wept."

Shakespeare, in Richard III., writes,

> "The liquid drops of tears that you have shed
> Shall come again transformed to Orient pearl,
> Advantaging their loan with interest
> Of ten times double gain of happiness,"

and dear, fanciful Herrick writes of his lady's tears as

> "Like to the summer's rain,
> Or as the pearls of morning dew
> Ne'er to be found again."

Strangely, perhaps, since many of the olden brides wore pearls on their wedding-day, pearls are the emblems of widowhood, and Queen Margaret, consort of James IV., of Scotland, dreamed, the night before the fatal Flodden Field, that as she looked at her coronet of diamonds, each sparkling gem turned to a pearl and she saw her husband unhorsed and slain.

Milton, in writing of the unhappy Marchioness of Winchester, says,

"And those pearls of dew she wears,
Prove to be presaging of tears."

Feminine charm and beauty have long been celebrated in song and story by the symbolism of gems, and pearls seem especially suited to the fair sex. Herrick melodiously sings:

"Some ask how pearls do grow and where
Then spake I to my girle,
To part her lips and show me there
The quarelets of pearl."

One of the most perfect passages in English poetry is that of Thomas Carew's elegiac where he describes the virtues of Lady S., wife of Sir William S.

"She was a cabinet
Where all the choicest stones of price were set,
Whose native color and purest luster lent
Her eye, cheek, lip, a dazzling ornament:
Whose rare and hidden virtues did express
Her inward beauties and mind's fairer dress:
The constant diamond, the wise chrysolite,
The devout sapphire, emerald apt to write
Records of memory, cheerful agate, grave
And serious onyx, topaz that doth save
The brain's calm temper, witty amethyst,
This precious quartie, or what else the list
On Aaron's ephod planted had, she wore;
One pearl was wanting to her store,
Which in her Saviour's book she found expressed,
To purchase that she sold death all the rest."

Next in popularity to pearls are perhaps diamonds, though opinions in regard to these

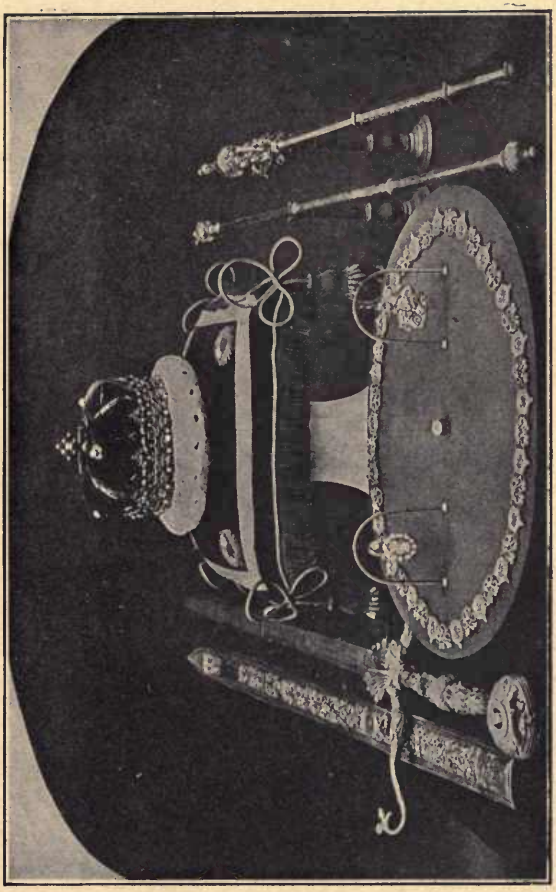
Jeweled Bracelet.

brilliant stones vary all the way from calling them "stars of the mine," to "blatant baubles of the mind unadorned!" Superstition is rife in regard to the diamond. It was regarded by the

ancients as an antidote to poison, and Mary Queen of Scots had a diamond ring presented to her by Ruthven as a talisman against the machinations of her disaffected subjects. One of the most famous diamonds in the world is the "Koh-i-noor," stateliest of all the state regalia of England. It is set in a brooch which is worn by the sovereign of England upon all State occasions, and its history is strange and wonderful. Obtained from the Rajah of Malwa by conquest, in 1304, the famous diamond belonged to the Sultan Ala-ed-din, but passed from his line as tribute to the Sultan Baber, when he conquered the Punjaub. Baber valued it grandiloquently at "half the daily expenditure of the whole world," and records its weight as "eight mishgals," which is one hundred and eighty-six carats. Descending from father to son, the Mogul line possessed the gem for many years, and in the sixteenth century we find it adorning that beauty of the harem, Nur Jehan, the "light of the world," who was celebrated for wisdom and beauty. For many years this gem shone above the brows of the turbaned empresses at Delhi, but eventually it was worn by the conqueror, Nadir Shah, who named it Mountain of Light, "Koh-i-noor."

It was presented as a reward for fidelity to an Afghanistan prince by a descendant of the Persian Shah, and passed from him in 1793, into the hands of Taimur Shah, King of Cambul. Traveling with a conquered prince again, this time back to India, the gem was in the possession of Dhuleep Singh, who abdicated the throne of Lahore, and as a token of submission presented the diamond to the Queen of England. Thus the "Koh-i-noor" became an addition to England's regalia. It was a distinctly Indian gem, and it is a thousand pities that the English should have had it recut. Its historic associations and its great antiquity should have preserved for it its original form, in which it was interesting and picturesque. Now it has only its size to recommend it to notice, for its shape is not perfect and its color is of a grayish tinge instead of the pure white so valued in a diamond. The "Koh-i-noor" is perhaps the most famous diamond of Europe, although the "Orloff" of Russia, the "Braganza" of Portugal and the "Regent" of France are scarcely less well-known, while the diamonds of poor Marie Antoinette's fatal diamond necklace have a world-wide fame.

Rubies are even more valuable and deemed by many more beautiful than diamonds. The ancients believed that the possession of a ruby insured the owner from eye trouble and disease of the liver, and also preserved from lightning, and the sentiments woven about the ruby are unusually dainty. The lover apostrophized his mistress' ruby lips, while her eyes are likened to the sapphire, emblem of truth, virtue, and constancy. Emerson's lines to the ruby are well-known and embody the old symbolism as to the gem. One of the most famous rubies of history is the superb "pigeon's blood" ruby given by Don Pedro of Castile to the Black Prince after the battle of Navareta, and which is still in England's possession. "The stone of wisdom," the ruby was long ago a reward for valor or faithfulness, as the sapphire, gem of constancy, was a *gage d'amour*. The Chevalier Bayard was awarded a ruby by the Queen of the Tournament, when the knightly Frenchman had to overcome all listed knights, and later the English Queen presented ruby rings to Essex and Suffolk as rewards of valor. The coronation ring of England contains a wonderful ruby, and it was the custom to send this ring with the

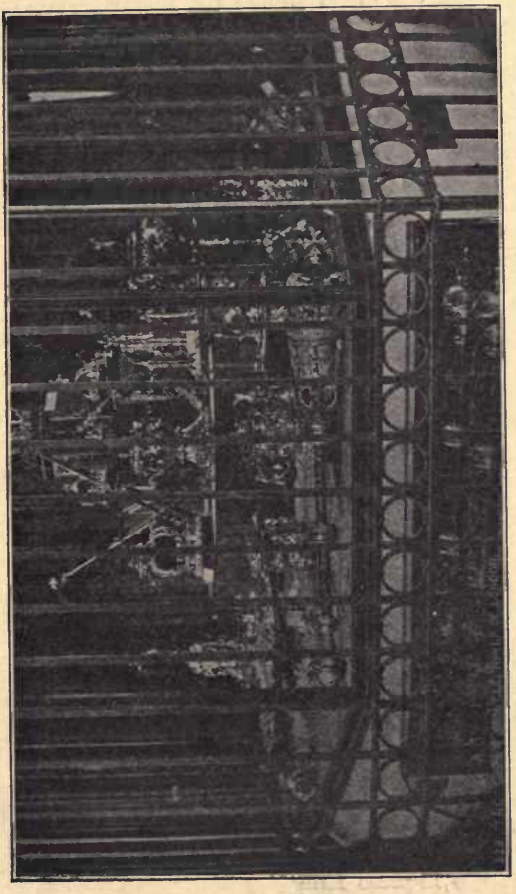


The Regalia of Scotland.

messenger who announced to a prince his accession to the crown. When James II. escaped from England he concealed the ruby ring about his person, and it narrowly escaped discovery, for the fishermen of Sheerness persisted in searching him, under the impression that he was an escaped Jesuit with a price on his head.

The ancients believed the ruby to change color at any danger or misfortune pending to its wearer, and the Chinese think that burying small bags of rubies under the foundations of their houses will ward off evil spirits. A choice example of modern goldsmith's work in these gems is found in a bracelet designed in the ateliers of Leon Mandel of Chicago. It is a revival of the rococo designs of the days of Louis XIV., very delicate in outline, the setting of diamonds and rubies, with fine traceries of golden filagree.

Many curious legends are bound up in the emerald, which was thought by the ancients to possess occult properties and the power of healing diseases of the eye. "If a serpent's eye should meet the gleam of an emerald, he would at once turn blind," is an old superstition alluded to by Moore, who says:



English Crown Jewels, behind Iron Bars.

"Blinded like serpents when they gaze
Upon the emerald's virgin blaze."

The stone devoted to May, those born in that month are peculiarly fortunate if they possess the green gem, for the old rhyme says:

"She who sees the light of day
In the flowery month of May,
And wears an emerald all her life,
Shall be a loved and happy wife."

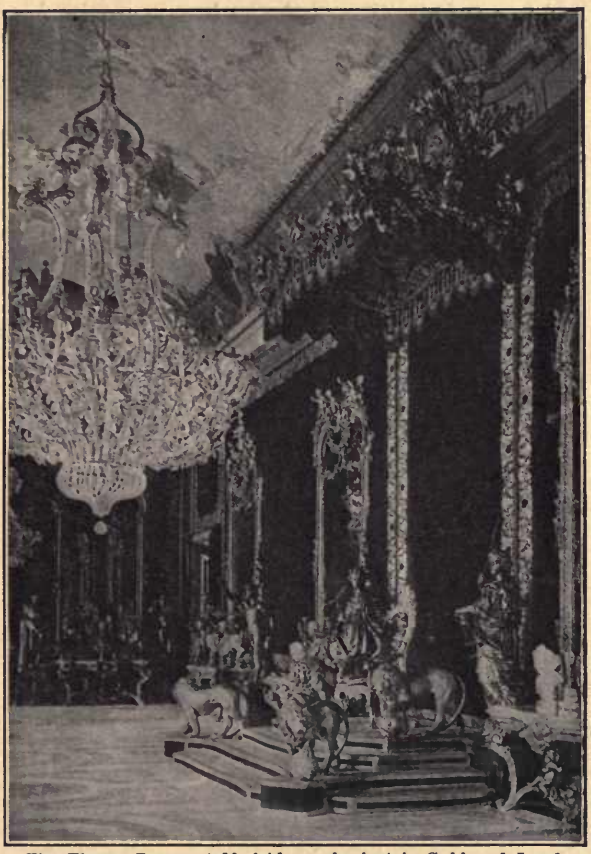
Emeralds are rarely found flawless, so seldom, in fact, that the expression, "an emerald without a flaw," has become a synonym for impossible perfection. One of the superstitions most popular as to the emerald is that it reveals the unfaithfulness of a plighted lover by changing color, and an old poem has it that the emerald

"Is a gem that hath the power to show
If plighted lovers keep their troth or no,
If faithful it is like the leaves of spring,
If faithless, like the leaves when withering."

Green, the color of the emerald, indicates desertion, and an old English rhyme says:

"Green's forsaken and yellow's forsworn,
But blue is the sweetest color that's worn."

It was with reference to this current belief that the hapless Empress Josephine spoke when she said to the artist Isabey, who, engaged in



The Throne Room at Madrid, resplendent in Gold and Jewels.

painting her portrait, asked what jewels she would wear: "I am about to change my state

and I have heard it said the custom in England is that when a true heart is severed from one it loves, the women wear green to denote that they are forsaken. Paint me in emeralds to represent the undying freshness of my grief, but let them be surrounded with diamonds to portray the purity of my love."

Isabey did not understand this sentiment, but shortly afterwards Napoleon announced his projected marriage with the Austrian archduchess, Maria Louise.

Uniting all the virtues supposed to be possessed by the gems its blending hues displayed, the opal, recently considered the acme of misfortune, was formerly esteemed a lucky stone. The bad fortune attending the opal's wearer in Scott's "Anne of Geierstein," is supposed to have begun the popular superstition that the opal brings bad fortune, and is only to be worn by those whose birthday is in October. This superstition is widespread. If a Russian sees an opal among the goods he is contemplating buying, all trading is over for the day, for, from his point of view, the evil eye has been cast upon him, the gem being the embodiment of the evil eye. Brides must never wear an opal

Jeweled Pendant designed by Magda Heuerman.

or even possess one, lest their happiness be short-lived.

Of the stones of lesser value, turquoise, coral, amethyst, garnet, sardonyx, crystal, jade, and amber, nearly all have their special symbols

and legends. The turquoise is supposed to bring great good fortune to the wearer, and the turquoise merchants of the Orient, picturesque figures in their flowing robes, realize large sums for their bags of cerulean gems, cut and uncut, like heaven's blue in hue.

The lovely violet of the amethyst, once highly valued and just recently coming into fashion again, was supposed by the ancients to be an antidote to intoxication. Amber is one of the oldest gems used for adornment, and the Phœnicians sailed to the Baltic to procure it. It was used as an amulet, and even to-day strings of amber beads are placed about the necks of young children to cure sore throat. The beads are especially prized in Southern Italy, and the beauties of Amalfi and Capri often wear eight or ten strings of magnificent beads about their shapely throats. The Persians grind up amber with honey and rose oil and take it to cure deafness, and wear the beads to prevent insanity. The Persians regard the beads as possessing soothsaying qualities, and think that gazing into their translucent depths, one can foretell coming events.

The amber most valued by the ancients was transparent and the color of deep Falernian wine,

but honey-colored, mellow tints are very popular to-day, though the popularity of this gem varies with fashion, as does that of all the lesser jewels, the present fad being for the translucent green of the aquamarine or the flashing yellow of the topaz. These two gems lend themselves readily to the reproduction of the antique styles so greatly in vogue in the arts and crafts work. Much of this work has genuine value from an artistic point of view, and to lovers of the gentle art of *cisellatura* it is more characteristic, and hence more attractive than the most brilliant cutting of the flashing diamond or the costly ruby.

A fine example of the delicacy of this artistic work is found in the design of Miss Magda Heuerman, a Chicago artist rapidly pushing to the front as a miniature painter and artificer. In a pendant designed by her as a setting for a miniature, the frame is of brilliants, surrounding which is a delicate leaf-work artistically disposed with baroque pearls. The whole forms a pendant of rarely artistic beauty, reminding *cisellatura* lovers of the quaint ornaments which long ago graced the snowy throats of Florentine beauties.

PRINTED BY BENZIGER BROTHERS, NEW YORK.

Benziger Brothers' New Plan for Disseminating Catholic Literature

A NEW PLAN FOR SECURING

Catholic Books on Easy Payments

Small Monthly Payments. Books Delivered Immediately. All New Copyright Works by the Foremost Writers

Printed from New Plates, on Good Paper, Substantially Bound in Cloth

A MOST LIBERAL OFFER!

The following pages contain a list of the books in our Catholic Circulating Library which can be had from us on the easy-payment plan.

Though the books are sold on easy payments, the prices are lower than the regular advertised prices.

Any library advertised in these pages will be sent to you immediately on receipt of $1.00.

CATHOLIC CIRCULATING LIBRARY

The Plan for Forming Reading Circles

Dues only 10 Cents a Month.

A New Book Every Month } Total Cost for
$12 Worth of Books to Read } a Year, **$1.20**

THIS EXPLAINS THE PLAN

You form a Reading Club, say of twelve members, and order one of the Libraries from us.

Each member pays you ten cents a month, and you remit us $1.00 a month, thus paying us for the books.

On receipt of the first dollar we will send you a complete library. You give each member a book. After a month all the members return their books to you and you give them another one. The books are exchanged in this way every month till the members have read the twelve volumes in the Library. After the twelfth month the books may be divided among the members (each getting one book to keep) or the books may be given to your Pastor for a parish library.

Then you can order from us a second Library on the same terms as above. In this way you can keep up your Reading Circle from year to year at a trifling cost.

On the following pages will be found a list of the books in the different Libraries. They are the best that can be had.

Mail a dollar bill to-day and any Library will be forwarded at once.

THE OTHER PLAN

Or if, instead of forming a Reading Circle, you wish to get a Library for yourself or your family, all you need do is to remit a dollar bill and any Library will be forwarded to you at once. Then you pay One Dollar a month.

BENZIGER BROTHERS

NEW YORK:	CINCINNATI:	CHICAGO:
36-38 Barclay St.	343 Main St.	211-213 Madison St.

CATHOLIC CIRCULATING LIBRARY

Dues, 10 cents a Month 2 New Books Every Month

JUVENILE BOOKS

20 Copyrighted Stories for the Young, by the Best Authors

Special Net Price, $10.00

You get the books at once, and have the use of them, while making easy payments. Read explanation on first page.

JUVENILE LIBRARY A

TOM PLAYFAIR; OR, MAKING A START. By Rev. F. J. Finn, S.J. "Best boy's book that ever came from the press."

THE CAVE BY THE BEECH FORK. By Rev. H. S. Spalding, S.J. "This is a story full of go and adventure."

HARRY RUSSELL, A ROCKLAND COLLEGE BOY. By Rev. J. E. Copus, S.J. "Father Copus takes the college hero where Father Finn has left him, through the years to graduation."

CHARLIE CHITTYWICK. By Rev. David Bearne, S.J. Father Bearne shows a wonderful knowledge and fine appreciation of boy character.

NAN NOBODY. By Mary T. Waggaman. "Keeps one fascinated till the last page is reached."

LOYAL BLUE AND ROYAL SCARLET. By Marion A. Taggart. "Will help keep awake the strain of hero worship."

THE GOLDEN LILY. By Katharine T. Hinkson. "Another proof of the author's wonderful genius."

THE MYSTERIOUS DOORWAY. By Anna T. Sadlier. "A bright, sparkling book."

OLD CHARLMONT'S SEED-BED. By Sara T. Smith. "A delightful story of Southern school life."

THE MADCAP SET AT ST. ANNE'S. By Marion J. Brunowe. "Plenty of fun, with high moral principle."

BUNT AND BILL. By Clara Mulholland. "There are passages of true pathos and humor in this pretty tale."

THE FLOWER OF THE FLOCK. By Maurice F. Egan. "They are by no means faultless young people and their hearts lie in the right places."

PICKLE AND PEPPER. By Ella L. Dorsey. "This story is clever and witty—there is not a dull page."

A HOSTAGE OF WAR. By Mary G. Bonesteel. "A wide-awake story, brimful of incident and easy humor."

AN EVERY DAY GIRL. By Mary T. Crowley. "One of the few tales that will appeal to the heart of every girl."

AS TRUE AS GOLD. By Mary E. Mannix. "This book will make a name for itself."

AN HEIR OF DREAMS. By S. M. O'Malley. "The book is destined to become a true friend of our boys."

THE MYSTERY OF HORNBY HALL. By Anna T. Sadlier. Sure to stir the blood of every real boy and to delight with its finer touches the heart of every true girl.

TWO LITTLE GIRLS. By Lillian Mack. A real child's tale.

RIDINGDALE FLOWER SHOW. By Rev. David Bearne, S.J. "His sympathy with boyhood is so evident and his understanding so perfect."

20 COPYRIGHTED STORIES FOR THE YOUNG

BY THE BEST CATHOLIC WRITERS

Special Net Price, $10.00

$1.00 down, $1.00 a month

Read explanation of our Circulating Library plan on first page

JUVENILE LIBRARY B

HIS FIRST AND LAST APPEARANCE. By Rev. F. J. Finn, S.J. Profusely illustrated. "A delightful story by Father Finn, which will be popular with the girls as well as with the boys."

THE SHERIFF OF THE BEECH FORK. By Rev. H. S. Spalding, S.J. "From the outset the reader's attention is captivated and never lags."

SAINT CUTHBERT'S. By Rev. J. E. Copus, S.J. "A truly inspiring tale, full of excitement."

THE TAMING OF POLLY. By Ella Loraine Dorsey. "Polly with her cool head, her pure heart and stern Western sense of justice."

STRONG-ARM OF AVALON. By Mary T. Waggaman. "Takes hold of the interest and of the heart and never lets go."

JACK HILDRETH ON THE NILE. By C. May. "Courage, truth, honest dealing with friend and foe."

A KLONDIKE PICNIC. By Eleanor C. Donnelly. "Alive with the charm that belongs to childhood."

A COLLEGE BOY. By Anthony Yorke. "Healthy, full of life, full of incident."

THE GREAT CAPTAIN. By Katharine T. Hinkson. "Makes the most interesting and delightful reading."

THE YOUNG COLOR GUARD. By Mary G. Bonesteel. "The attractiveness of the tale is enhanced by the realness that pervades it."

THE HALDEMAN CHILDREN. By Mary E. Mannix. "Full of people entertaining, refined, and witty."

PAULINE ARCHER. By Anna T. Sadlier. "Sure to captivate the hearts of all juvenile readers."

THE ARMORER OF SOLINGEN. By W. Herchenbach. "Cannot fail to inspire honest ambition."

THE INUNDATION. By Canon Schmid. "Sure to please the young readers for whom it is intended."

THE BLISSYLVANIA POST-OFFICE. By Marion A. Taggart. "Pleasing and captivating to young people."

DIMPLING'S SUCCESS. By Clara Mulholland. "Vivacious and natural and cannot fail to be a favorite."

BISTOURI. By A. Melandri. "How Bistouri traces out the plotters and foils them makes interesting reading."

FRED'S LITTLE DAUGHTER. By Sara T. Smith. "The heroine wins her way into the heart of every one."

THE SEA-GULL'S ROCK. By J. Sandeau. "The intrepidity of the little hero will appeal to every boy."

JUVENILE ROUND TABLE. First Series. A collection of twenty stories by the foremost writers, with illustrations.

20 COPYRIGHTED STORIES FOR THE YOUNG

BY THE BEST CATHOLIC WRITERS

Special Net Price, $10.00

$1.00 down, $1.00 a month

Read explanation of our Circulating Library plan on first page.

JUVENILE LIBRARY C

PERCY WYNN; OR, MAKING A BOY OF HIM. By Rev. F. J. Finn, S.J. "The most successful Catholic juvenile published."

THE RACE FOR COPPER ISLAND. By Rev. H. S. Spalding, S.J. "Father Spalding's descriptions equal those of Cooper."

SHADOWS LIFTED. By Rev. J. E. Copus, S.J. "We know of no books more delightful and interesting."

HOW THEY WORKED THEIR WAY, AND OTHER STORIES. By Maurice F. Egan. "A choice collection of stories by one of the most popular writers."

WINNETOU, THE APACHE KNIGHT. By C. May. "Chapters of breathless interest."

MILLY AVELING. By Sara Trainer Smith. "The best story Sara Trainer Smith has ever written."

THE TRANSPLANTING OF TESSIE. By Mary T. Waggaman. "An excellent girl's story."

THE PLAYWATER PLOT. By Mary T. Waggaman. "How the plotters are captured and the boy rescued makes a very interesting story."

AN ADVENTURE WITH THE APACHES. By Gabriel Ferry.

PANCHO AND PANCHITA. By Mary E. Mannix. "Full of color and warmth of life in old Mexico."

RECRUIT TOMMY COLLINS. By Mary G. Bonesteel. "Many a boyish heart will beat in envious admiration of little Tommy."

BY BRANSCOME RIVER. By Marion A. Taggart. "A creditable book in every way."

THE QUEEN'S PAGE. By Katharine Tynan Hinkson. "Will arouse the young to interest in historical matters and is a good story well told."

MARY TRACY'S FORTUNE. By Anna T. Sadlier. "Sprightly, interesting and well written."

BOB-O'LINK. By Mary T. Waggaman. "Every boy and girl will be delighted with Bob-o'Link."

THREE GIRLS AND ESPECIALLY ONE. By Marion A. Taggart. "There is an exquisite charm in the telling."

WRONGFULLY ACCUSED. By W. Herchenbach. "A simple tale, entertainingly told."

THE CANARY BIRD. By Canon Schmid. "The story is a fine one and will be enjoyed by boys and girls."

FIVE O'CLOCK STORIES. By S. H. C. J. "The children who are blessed with such stories have much to be thankful for."

JUVENILE ROUND TABLE. Second Series. A collection of twenty stories by the foremost writers, illustrated.

20 COPYRIGHTED STORIES FOR THE YOUNG

BY THE BEST CATHOLIC WRITERS

Special Net Price, $10.00

$1.00 down, $1.00 a month

Read explanation of our Circulating Library plan on first page.

JUVENILE LIBRARY D

THE WITCH OF RIDINGDALE. By Rev. David Bearne, S.J. "Here is a story for boys that bids fair to equal any of Father Finn's successes."

THE MYSTERY OF CLEVERLY. By George Barton. There is a peculiar charm about this novel that the discriminating reader will ascribe to the author's own personality.

HARMONY FLATS. By C. S. Whitmore. The characters are all drawn true to life, and the incidents are exciting.

WAYWARD WINIFRED. By Anna T. Sadlier. A story for girls. Its youthful readers will enjoy the vivid description, lively conversation, and the many striking incidents.

TOM LOSELY: BOY. By Rev. J. E. Copus, S.J. Illustrated. The writer knows boys and boy nature, and small-boy nature too.

MORE FIVE O'CLOCK STORIES. By S. H. C. J. "The children who are blessed with such stories have much to be thankful for."

JACK O'LANTERN. By Mary T. Waggaman. This book is alive with interest. It is full of life and incident.

THE BERKLEYS. By Emma Howard Wight. A truly inspiring tale, full of excitement. There is not a dull page.

LITTLE MISSY. By Mary T. Waggaman. A charming story for children which will be enjoyed by older folks as well.

TOM'S LUCK-POT. By Mary T. Waggaman. Full of fun and charming incidents—a book that every boy should read.

CHILDREN OF CUPA. By Mary E. Mannix. One of the most thoroughly unique and charming books that has found its way to the reviewing desk in many a day.

FOR THE WHITE ROSE. By Katharine T. Hinkson. This book is more than a story, and it is well written.

THE DOLLAR HUNT. From the French by E. G. Martin. Those who wish to get a *fascinating* tale should read this.

THE VIOLIN MAKER. From the original of Otto v. Schaching, by Sara Trainer Smith. There is much truth in this simple little story.

"JACK." By S. H. C. J. As loving and lovable a little fellow as there is in the world is "Jack."

A SUMMER AT WOODVILLE. By Anna T. Sadlier. This is a beautiful book, in full sympathy with and delicately expressive of the author's creations.

DADDY DAN. By Mary T. Waggaman. A fine boys' story.

THE BELL FOUNDRY. By Otto v. Schaching. So interesting that the reader will find it hard to tear himself away.

TOORALLADDY. By Julia C. Walsh. An exciting story of the varied fortunes of an orphan boy from abject poverty in a dismal cellar to success.

JUVENILE ROUND TABLE, Third Series. A collection of twenty stories by the foremost writers.

CATHOLIC CIRCULATING LIBRARY

Dues, 10 Cents a Month A New Book Every Month

NOVELS

12 Copyrighted Novels by the Best Authors
Special Price, $12.00

You get the books at once, and have the use of them while making easy payments

Read explanation of our Circulating Library plan on first page.

LIBRARY OF NOVELS No. I

THE RULER OF THE KINGDOM. By GRACE KEON. "Will charm any reader."

KIND HEARTS AND CORONETS. By J. HARRISON. "A real, true life history, the kind one could live through and never read it for romance. . . ."

IN THE DAYS OF KING HAL. By MARION A. TAGGART. Illustrated. "A tale of the time of Henry V. of England, full of adventure and excitement."

HEARTS OF GOLD. By I. EDHOR. "It is a tale that will leave its reader the better for knowing its heroine, her tenderness and her heart of gold."

THE HEIRESS OF CRONENSTEIN. By COUNTESS HAHN-HAHN. "An exquisite story of life and love, told in touchingly simple words."

THE PILKINGTON HEIR. By ANNA T. SADLIER. "Skill and strength are shown in this story. The plot is well constructed and the characters vividly differentiated."

THE OTHER MISS LISLE. A Catholic novel of South African life. By M. C. MARTIN. A powerful story by a writer of distinct ability.

IDOLS; OR, THE SECRET OF THE RUE CHAUSSEE D'ANTIN. By RAOUL DE NAVERY. "The story is a remarkably clever one; it is well constructed and evinces a master hand."

THE SOGGARTH AROON. By REV. JOSEPH GUINAN, C.C. A capital Irish story.

THE VOCATION OF EDWARD CONWAY. By MAURICE F. EGAN. "This is a novel of modern American life. The scene is laid in a pleasant colony of cultivated people on the banks of the Hudson, not far from West Point."

A WOMAN OF FORTUNE. By CHRISTIAN REID. "That great American Catholic novel for which so much inquiry is made, a story true in its picture of Americans at home and abroad."

PASSING SHADOWS. By ANTHONY YORKE. "A thoroughly charming story. It sparkles from first to last with interesting situations and dialogues that are full of sentiment. There is not a slow page."

12 Copyrighted Novels by the Best Authors

Special Net Price, $12.00

$1.00 down, $1.00 a month

Read explanation of our Circulating Library plan on first page.

LIBRARY OF NOVELS No. II

THE SENIOR LIEUTENANT'S WAGER, and Other Stories. 30 stories by 30 of the foremost Catholic writers.

A DAUGHTER OF KINGS. By KATHARINE TYNAN HINKSON. "The book is most enjoyable."

THE WAY THAT LED BEYOND. By J. HARRISON. "The story does not drag, the plot is well worked out, and the interest endures to the very last page."

CORINNE'S VOW. By MARY T. WAGGAMAN. With 16 full-page illustrations. "There is genuine artistic merit in its plot and life-story. It is full of vitality and action."

THE FATAL BEACON. By F. v. BRACKEL. "The story is told well and clearly, and has a certain charm that will be found interesting. The principle characters are simple, good-hearted people, and the heroine's high sense of courage impresses itself upon the reader as the tale proceeds."

THE MONK'S PARDON: An Historical Romance of the Time of Philip IV. of Spain. By RAOUL DE NAVERY. "A story full of stirring incidents and written in a lively, attractive style."

PERE MONNIER'S WARD. By WALTER LECKY. "The characters are life-like and there is a pathos in the checkered life of the heroine. Pere Monnier is a memory that will linger."

TRUE STORY OF MASTER GERARD. By ANNA T. SADLIER. "One of the most thoroughly original and delightful romances ever evolved from the pen of a Catholic writer."

THE UNRAVELING OF A TANGLE. By MARION A. TAGGART. With four full-page illustrations. "This story tells of the adventures of a young American girl, who, in order to get possession of a fortune left her by an uncle whom she had never seen, goes to France."

THAT MAN'S DAUGHTER. By HENRY M. ROSS. "A well-told story of American life, the scene laid in Boston, New York and California. It is very interesting."

FABIOLA'S SISTER. (A companion volume to Cardinal Wiseman's "Fabiola.") Adapted by A. C. CLARKE. "A book to read—a worthy sequel to that masterpiece, 'Fabiola.'"

THE OUTLAW OF CAMARGUE: A Novel. By A. DE LAMOTHE. "A capital novel with plenty of go in it."

12 Copyrighted Novels by the Best Authors

Special Net Price, $12.00

$1.00 down, $1.00 a month

Read explanation of our Circulating Library plan on first page.

LIBRARY OF NOVELS No. III

"NOT A JUDGMENT." By GRACE KEON. "Beyond doubt the best Catholic novel of the year."

THE RED INN OF ST. LYPHAR. By ANNA T. SADLIER. "A story of stirring times in France, when the sturdy Vendeans rose in defence of country and religion."

HER FATHER'S DAUGHTER. By KATHARINE TYNAN HINKSON. "So dramatic and so intensely interesting that the reader will find it difficult to tear himself away from the story."

OUT OF BONDAGE. By M. HOLT. "Once his book becomes known it will be read by a great many."

MARCELLA GRACE. By ROSA MULHOLLAND. Mr. Gladstone called this novel *a masterpiece.*

THE CIRCUS-RIDER'S DAUGHTER. By F. V. BRACKEL. This work has achieved a remarkable success for a Catholic novel, for in less than a year three editions were printed.

CARROLL DARE. By MARY T. WAGGAMAN. Illustrated. "A thrilling story, with the dash of horses and the clash of swords on every side."

DION AND THE SIBYLS. By MILES KEON. "Dion is as brilliantly, as accurately and as elegantly classical, as scholarly in style and diction, as fascinating in plot and as vivid in action as Ben Hur."

HER BLIND FOLLY. By H. M. Ross. A clever story with an interesting and well-managed plot and many striking situations.

MISS ERIN. By M. E. FRANCIS. "A captivating tale of Irish life, redolent of genuine Celtic wit, love and pathos."

MR. BILLY BUTTONS. By WALTER LECKY. "The figures who move in rugged grandeur through these pages are as fresh and unspoiled in their way as the good folk of Drumtochty."

CONNOR D'ARCY'S STRUGGLES. By MRS. W. M. BERTHOLDS. "A story of which the spirit is so fine and the Catholic characters so nobly conceived."

Continuation Library

YOU SUBSCRIBE FOR FOUR NEW NOVELS A YEAR, TO BE MAILED TO YOU AS PUBLISHED, AND RECEIVE BENZIGER'S MAGAZINE FREE.

Each year we publish *four new novels* by the best Catholic authors. These novels are interesting beyond the ordinary—not religious, but Catholic in tone and feeling. They are issued in the best modern style.

We ask you to give us a *standing order* for these novels. The price is $1.25, which will be charged as each volume is issued, and the volume sent postage paid.

As a special inducement for giving us a standing order for the novels, we shall include free a subscription to *Benziger's Magazine. Benziger's Magazine* is recognized as the best and handsomest Catholic periodical published, and we are sure will be welcomed in every library. The regular price of the Magazine is $2.00 a year.

Thus for $5.00 a year—paid $1.25 at a time—you will get four good books and receive in addition a year's subscription to *Benziger's Magazine.* The Magazine will be continued from year to year, as long as the standing order for the novels is in force, which will be till countermanded.

THE FAMOUS

ROUND TABLE SERIES

4 VOLUMES, $6.00

50 Cents Down; 50 Cents a Month

On payment of 50 cents you get the books and a free subscription to Benziger's Magazine

The Greatest Stories by the Foremost Catholic Writers in the World

With Portraits of the Authors, Sketches of their Lives, and a List of their Works. *Four exquisite volumes*, containing the masterpieces of 36 of the foremost writers of AMERICA, ENGLAND, IRELAND, GERMANY, AND FRANCE. Each story complete. Open any volume at random and you will find a great story to entertain you.

SPECIAL OFFER

In order to place this fine collection of stories in every home, we make the following special offer: *Send us* 50 *cents* and the four fine volumes will be sent to you immediately. Then you pay 50 cents each month until $6.00 has been paid.

LIBRARY OF SHORT STORIES

BY A BRILLIANT ARRAY OF CATHOLIC AUTHORS

ORIGINAL STORIES BY 33 WRITERS

Four handsome volumes and Benziger's Magazine for a year at the Special Price of $5.00

50 Cents Down; 50 Cents a Month

You get the books at once, and have the use of them while making easy payments. Send us only 50 cents, and we will forward the books at once; 50 cents entitles you to immediate possession. No further payment need be made for a month; afterwards you pay 50 cents a month.

STORIES BY

Anna T. Sadlier
Mary E. Mannix
Mary T. Waggaman
Jerome Harte
Mary G. Bonesteel
Magdalen Rock
Eugenie Uhlrich
Alice Richardson
Katharine Jenkins
Mary Boyle O'Reilly
Clara Mulholland
Grace Keon
Louisa Emily Dobrée
Theo. Gift
Margaret E. Jordan
Agnes M. Rowe
Julia C. Walsh
Madge Mannix
Leigh Gordon Giltner
Eleanor C. Donnelly
Teresa Stanton
H. J. Carroll
Rev. T. J. Livingstone, S.J.
Marion Ames Taggart
Maurice Francis Egan
Mary F. Nixon-Roulet
Mrs. Francis Chadwick
Catherine L. Meagher
Anna Blanche McGill
Mary Catherine Crowley
Katharine Tynan Hinkson
Sallie Margaret O'Malley
Emma Howard Wight

900 PAGES 500 ILLUSTRATIONS

A GREAT OFFER!

THE LIFE OF OUR LORD

AND

SAVIOUR JESUS CHRIST

And of His Virgin Mother Mary

FROM THE ORIGINAL OF

L. C. BUSINGER, LL.D.

BY

Rev. RICHARD BRENNAN, LL.D.

Quarto, half morocco, full gilt side, gilt edges, 900 pages, 500 illustrations in the text and 32 full-page illustrations by

M. FEUERSTEIN

PRICE . . . . . NET $10.00

EASY PAYMENT PLAN,

$1.00 DOWN, $1.00 A MONTH

Mail $1.00 to-day and the book will be shipped to you immediately. Then you pay $1.00 a month till $10.00 is paid.

This is not only a Life of Christ and of His Blessed Mother, but also a carefully condensed history of God's Church from Adam to the end of the world in type, prophecy, and fulfilment, it contains a popular dogmatic theology and a real catechism of perseverance, filled with spiritual food for the soul.