ROUND THE WORLD

VOL. II

ROUND THE WORLD SERIES

VOLUME II

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

VOLUME II

American Cut Glass. Street Scenes in Different Lands. A Visit to Mammoth Cave. How Flax is Made. The Great Arizona Desert. Plowing in Many Lands. A Word About Turkey. The Grape and Raisin Industry in the United States. The Capitol at Washington. From Greece to Italy. Cadet Life at West Point. Grain, and How it is Handled

WITH 103 *ILLUSTRATIONS*

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CONTENTS.

American Cut Glass

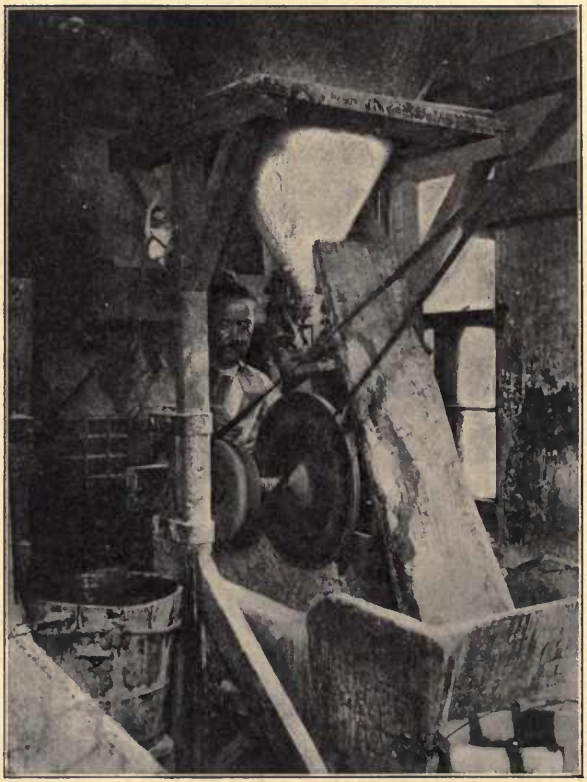
NOWHERE is the intelligence and adaptability of the American workman better illustrated than in the making of glass. It is but a few years since this was an infant industry; but so well has the industry thriven that to-day the infant has almost attained maturity, for, in many branches, the glass we manufacture excels that of all other countries.

An ancient art it is, and its history is so replete with interest that it has attracted many students. But few questions have been more discussed than the origin of glass. Phœnicia, Phrygia, Thebes, and Sidon, each has its champions, who claim for it the discovery of the process of vitrifaction.

Others still place its origin even further back, claiming that when man first discovered fire and subjected natural bodies to its action, he must have discovered the vitrifaction of certain substances.

If the last theory is to be accepted we must conclude that glass was discovered less than a hundred and fifty years after the birth of the world. In Genesis we are told that Tubalcain, son of Lamech

and Sella, who was born in the year of the world one hundred and thirty, "was a hammerer and artificer in every work of brass and iron."



Roughing.

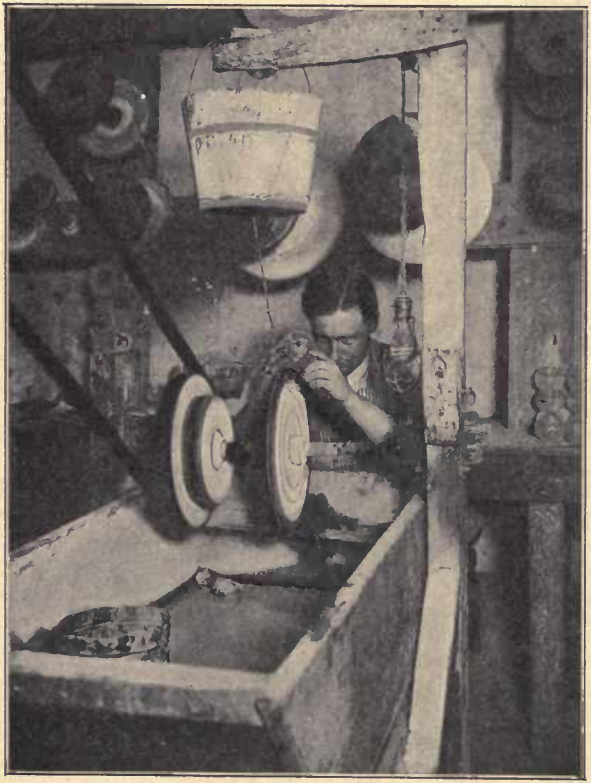
Pliny, the eminent Roman scientist who lost his life during the terrible eruption of Vesuvius, attributed the discovery of glass to the Phœnicians. According to his account, some of these ubiquitous traders landed upon the shore of the sea of Judea, near the mouth of the Belus river, and, unsuccessful in their search for stones upon which to place the pot for cooking a meal, used some pieces of niter instead. When the fire was applied it fused the niter and the sand upon the shore; and the result was the substance which we know as glass. Another account attributes the discovery to the children of Israel in practically the same manner. Neither of these claims seem worthy of credit, however, because it has never since been found possible to fuse the substances forming glass in the open air and without specially constructed furnaces.

More certain means of arriving at the proper conclusion are supplied by the tombs of Beni Hassan which are said upon good authority to date from about the year two thousand before Christ. Upon them are found paintings which unquestionably represent Theban glass blowers. Even more certain is the necklace bead found in Thebes, bearing the name of the queen for whom the ornament

was made. The first part of the legend, in sunken hieroglyphics, reads: "The good goddess Ramakà, loved of Athor, protectress of Thebes." Ramaka

Cutting Glass Letters.

was the wife of Thoutmes III., who is believed to have reigned in 1500 B. C. It seems to be indisputable, therefore, that, whoever discovered it



Smoothing a Puff Box.

or whenever it was invented, the art of glass making had reached an advanced state of perfection in Thebes nearly four thousand years ago.

Coming down to more modern times, we find Venice, the Queen of the Adriatic, the center of the glass making industry of the world at the end of the thirteenth century. In contradistinction to the work of all other nations, however, the Venetian tendency was toward beauty first and usefulness afterward. The workmanship of the Venetian artisans was of the highest order. The secrets known to them were many; and the means taken by the government to prevent the betrayal of these secrets to other nations were extreme. More than one assassination of glass blowers who had escaped from the island kingdom has been laid at the door of "The Ten," as the governing conclave was known.

It was for the purpose of keeping stricter watch upon the workmen that the glass factories were, in A. D. 1289, relegated to the island of Murano, separated from the city of Venice by a small strip of sea. It is thus that the terms "Venetian" and "Murano" glass became interchangeable.

While Pliny tells us that "sometimes glass was blown, sometimes fashioned on a wheel, and some-

Fitting a Stopper.

times chased like silver," the honor of inventing cut or incised glass, as we know it, belongs to Bohemia. In 1609 Gaspar Lehman, a Bohemian

glass blower, conceived the idea of making heavy "flint" or "lead" glass forms with thicker walls, thus securing a foundation for deeply cut or incised patterns. He was successful in accomplishing his object, and though the new decoration did not immediately become popular, the beauty and artistic merit of the articles produced eventually won for them the position they deserved.

It is of this branch of the American glass industry that we wish to treat particularly. In cut glass production such astonishing progress has been made by our manufacturers that to-day it is only in the most expensive grades that European makers surpass us. In the cheap and moderate priced grades our product is immeasurably superior, both in the material itself and the workmanship. Moreover, in recent years Europe has begun to purchase our "blanks," as the undecorated forms are known, and it is a safe prediction that at no very distant day America will stand, unchallenged, at the head of the cut glass industry.

"Lead glass," as used in the United States, is composed of very sharp, brilliant sand, procured by crushing quarried rocks, red lead, saltpeter, sodium carbonate, and white arsenic or manganese,

Glass Engraving.

in proportions fixed according to the nature of the finished product desired.

Within large oval or round ovens, with domes

or "crowns" at top, numbers of unbaked fire-clay pots are arranged. These pots, each of which can be used for about two months only, are placed in radial lines, each line leading to a door in the oven. Such an arrangement facilitates the introduction of the raw material and the collection of the molten glass when it is needed. About 1,600 pounds of the mixture, divided among the various pots, is placed in each oven and subjected to a heat of 2,500 degrees Fahrenheit, secured by a flame of gas and air deflected downward from the "crown."

When the gatherer receives an order for a specified article he studies the sample or drawing to fix the size and shape upon his mind. Thus prepared he inserts a blowing tube in one of the pots and secures the proper amount of molten glass. Dropping the loaded end upon a metal plate, he rolls it to and fro to produce a uniformity of distribution of the mass, which is afterward reheated in a furnace known to the workmen as the "glory hole." Then the glass blower takes the blowpipe—an iron tube from six to nine feet long and covered with wood—and blows the article to approximately the desired shape and size.

Not every youngster who delights his mother's

heart by the power of his lungs will become a glass blower, but that operative's lungs are a most important factor in the manufacture of all sorts of

Punch Bowl.

glass; in fact without them the art could not exist, for in all the centuries that have passed since its discovery no substitute for them has been found.

From the hands of the blower the article passes to an expert artisan who finishes its formation. The finished piece must next be annealed or tempered, in order to equalize the strain and prevent breakage. This is accomplished by a tempering furnace, where the article is subjected to diminishing degrees of heat until thoroughly cooled. With this operation the blank is completed and is ready for the cutter.

Let us suppose that the article in work is a bowl. In the first place the design is drawn upon it, then the piece is marked off in quarters, each of which will be finished separately. The cutting operation consists of three stages. The bowl is first held against the edge of a rapidly rotating steel wheel upon which a mixture of sand and water is continuously dropping from a cone shaped can suspended above it. Thus the principal and heavy lines of the pattern are deeply cut. The operator next holds the article against the edge of a stone wheel, similar in size and edge to the steel wheel, which smooths the heavy lines and cuts the finer lines of the design. Finally the polisher takes the bowl and with a wooden or cork-covered wheel, differing from the other wheels only in the material of which it is made, goes over the work al-

Claret Decanter.

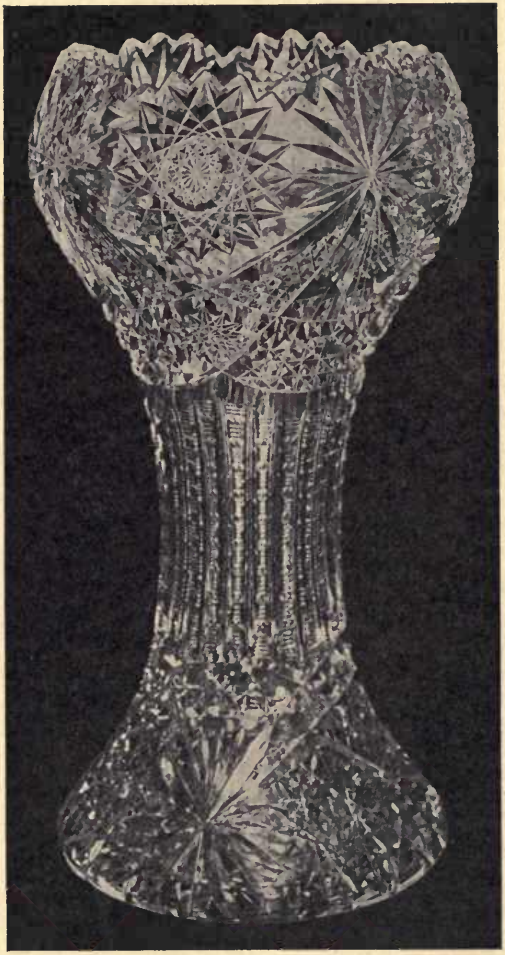
ready done, imparting to the glass a brilliant and lasting polish.

With the polishing of the last quarter the bowl, which by this time has lost about a third of its weight, is finished. Its value depends upon the

Champagne Jug.

intricacy of the pattern, that is to say, upon the time it has taken to cut.

The largest piece of cut glass in the world was manufactured in the United States and exhibited at the St. Louis Exposition. It is a twenty-five inch punch bowl, twenty-four inches in height with



Fourteen-inch Vase.

Large Oval Bowl.

the foot, and weighed before cutting one hundred and forty-three pounds. Of course no value can be placed upon it, because it is unique.

The uses to which cut glass is put are innumerable. Every year sees an increase in the importance of the industry—and, strangely enough, the least amount is purchased in the country where the art had its birth and probably the most in the last country to become interested in cut glass manufacture.

Street Scenes in Different Lands

From stereographs, by Underwood & Underwood, New York.

THE observant traveler, in whatever city he may be, can find a wealth of interest in selecting some point of vantage and watching the passing throng.

Perhaps one could not choose a better country with which to make a beginning than the little kingdom of Portugal. To a number of our readers the name "Portuguese" carries with it a suggestion of dirt and slipshod manners; yet in truth there is not upon the globe a land that can boast of cleaner cities. In this home of the flowers, where the roses bloom the whole year round, the traveler will find wide, well-paved streets, bordered by trees and by large, two and three story houses of stone or brick, ornamented with stucco, many of them painted in delicate tints of red, blue and yellow.

In his stroll about a town he will pass, every few moments, one of its many fountains; and around each he will find an interesting assemblage

of men, women and children, busily engaged in filling great jars with the sparkling water and carrying them away upon their heads. It is thus, too, that the peddlers who hurry to and fro, crying their wares, transport the goods they have to sell. Meantime, should one chance to be traversing a main thoroughfare, one can not fail to notice the little donkeys laden with merchandise of every description, or with great piles of hay that so completely hide the animals as to give the impression of walking haystacks. The description is characteristic of Lisbon, Oporto, Coimbra—in fact, of any city of importance in the country. In every one of them the traveler will be chiefly impressed by the orderliness and cleanliness that greet him on all sides.

Passing over to Spain, let us walk through the Porta del Sol, in Madrid. We have selected a busy scene, for this, the chief square of the city, is one of the liveliest places in all Europe. It is the center of activity, and the starting-point of all the street cars as well as the stages or "carettes." Let us try to single out some of the component parts of this human beehive. Here are numbers of the religious of this Catholic country, each wearing the distinctive garb of his Order;

men in costumes of wondrous variety, many of them extremely picturesque, and fair women in handsome gowns, some of whom wear the romantic

Cartagena.—The Usual Crowd Around the Spanish Patent Medicine Fakir, Spain.

mantilla that has not yet passed entirely out of fashion. Perhaps a regiment of soldiers, in passing, still for a moment the noisy shouts of the

newsboys and the peddlers; in one of the side streets there is, most likely, a patent medicine fakir, or a peddler of lottery tickets—dear to the heart of the Spaniard—who has found no difficulty in gathering about him a heterogeneous crowd. Possibly he may catch a glimpse of an itinerant cobbler plying his trade. All is life, all is activity.

Changing the description in degree only, we might apply it to the city of Mexico, for the ancient capital of the Aztecs has gradually become a typical city of its conquerors.

Here we find the same square, low houses with ample courts that abound in Spain, the same customs, the same itinerant peddlers, though not quite the same vivacity of manner. Should the traveler time his visit to the Mexican capital so as to be there during Christmas week, however, he would find vivacity galore. Of course, Christmas in Mexico is not the same as the one we know, for in place of snow and ice there are green lawns and blooming flowers, while overhead there is warm sunshine and a deep blue, cloudless sky. During the gala week just preceding Christmas day, the streets are covered with arches that extend from sidewalk to sidewalk, festooned with flowers

of the national colors; and under these arches are booths displaying for sale the many toys that are manufactured in the little southern repub-

Holland.—From Four to Four-score.

lic. All this is in preparation for the "Pinata." At all other times the pinata, known as an "olla," fills a very commonplace position in the household, for it is the ordinary earthenware jug with which

all of us are familiar; but on Christmas day its position is one of great importance. During the holiday season the jugs are sold upon the streets, and in every Mexican house there is sure to be a pinata, large or small, according to the purse of the family. Its preparation is unique. First the vessel is filled with candies, cakes and sweetmeats, then around it there is built the figure of a man or woman, some of the figures being most artistically and realistically fashioned. The figure completed, it is carried in state to the main room, the floor of which is usually brick, and hung from the ceiling. On Christmas day the family gathers in this room, the children are supplied with canes, each one of them blindfolded in turn, whirled about and permitted to strike at the pinata with the stick. Often it is long before a lucky strike brings the figure down—but when the jug does fall upon the floor there is a wild scramble for the good things that pour from the broken receptacle.

In the Philippines, too, the Spanish influence predominates. Manila is not a fledgling city by any means, for it was founded in 1571, and the Escolta, the main street, upon which there are many European stores, is well worth the study

of a visitor. Business is carried on here very much as it is in other parts of the Orient; the shops are owned principally by the Chinese, of

A Usual Street Scene in Coimbra, Portugal, Showing Types.

whom there are forty thousand in the city, but notwithstanding the predominance of Asiatics in its population, the street scenes of Manila are still typically Spanish.

Just one more city in the East, a glance at one in the north of Europe. Whoever has an eye for the picturesque will never tire wandering through Damascus and its bazars. The latter, in a way, form a city in themselves, displaying in their fulness all the customs and the gorgeousness of the Orient. Occupying whole series of streets, or rather arcades, for the narrow paths are, as a rule, covered, the booths spread over a broad area, one shop touching another. Here is a saddler's stall displaying the leather work for which the city is noted; there a coppersmith embossing his plates; further on an armorer, seeking the custom of some tourist, descants volubly upon the merits of a "Damascus blade" that was probably made in Germany; close at hand is an open-air kitchen where cooks are baking cakes similar to the ash cake of the Southern negro, or roasting before an open fire a queer combination of meat and fat arranged in alternate layers upon a spit; while up and down the streets a nondescript army, venders of cooling drinks, vegetables, bouquets, and what not, ebbs and flows, the medley of cries creating a din that is indescribable. The scene is kaleidoscopic, unique.

What a contrast to this turmoil is offered by

the streets of the cities of Holland! In Rotterdam, as in Lisbon, the first thing that impresses the visitor is the cleanliness that is evident every-

Mending Shoes on the Street Corner at Agnescolenties, Mexico.

where; in fact, should the day be Saturday, this cleanliness might make itself rather disagreeably felt, for on Saturday the walks and house en-

trances are always thoroughly scrubbed—and what a splattering there is! The signs over the shop doors will also interest. "Water and fire for sale," one will announce, indicating that the shopkeeper is prepared to supply hot water and burning peat for a price. The poor take frequent advantage of this offer, for they secure hot water for their tea or coffee, and sufficient peat to keep the beverage warm for less money than it would cost to light a fire. Mayhap the visitor's attention will next be attracted by a Turk's head with mouth agape; this informs the public that drugs are dispensed beneath. A brass dish indicates a barber shop—in fact, almost all the signs differ from those to which we are accustomed. Most of them have some connection, remote though it may be, with the business carried on in the shop beneath, but some of them are arbitrary.

European garb is the vogue in Rotterdam, but one sometimes sees upon the streets some quaint costume and, more frequently, the kappies that the older Dutch women are loath to part with. The city is essentially commercial; many of the streets are narrow, and it would seem as if more attention is paid to traffic than to pedestrians. Even upon the main streets the small notice taken

Dogs of Damascus, the Sultan's Scavengers, Syria.

of social status is evident, for, in contrast to other European cities, the mingling of high and low is decidedly democratic—the rich burgher and the laborer jostle each other, the servant does not make way for the lady of high degree. As it is in Rotterdam so it is in the other cities over which the beloved Wilhelmina rules, and no one can visit this land of the dikes without bringing away with him pleasant memories of the scenes that greeted him.

We have taken a hurried glance at many cities in different parts of the world, but the seeker for varied and interesting street scenes need not wander so far afield—the cities of our own country offer far more than those of any nation in the world. In New York, for instance, one might stand for hours at the City Hall, where the subway, the elevated road, the "original" Brooklyn Bridge, and many surface railroads converge, without tiring of the interesting occurrences taking place momentarily before his eyes. The work of the mounted police in guiding the traffic, in clearing the way for the clanging fire engines dashing to answer an alarm, or for the racing ambulance rushing recklessly through the maze of wagons; the seemingly endless army of workers that disappears with surprising suddenness about six in the evening, the waking up of Newspaper Row an hour or so later—all these and more must needs hold the attention and interest of the least observant.

Another day could be spent at the famous curve at Fourteenth Street and Broadway, where twelve hours rarely pass without witnessing heroic deeds on the part of the member of the Broadway Squad on duty there. And when the day is over, when

the visitor has dined, has watched the theater crowds along the great "White Way," he may take his stand at Thirteenth Street and Broadway and watch the formation of the "bread line"—that pathetic gathering of human derelicts, failures and unfortunates, each waiting patiently for the loaf a worthy charity bestows upon him. Thus

A Motley Group Beside Paranaque Road, Island of Luzon, Philippine Islands.

the list might be continued indefinitely. However long, it would be incomplete did it not include the various "quarters," in which are the homes of the various peoples who seek our shores, and that wonderful section of the great "east side" where one can see upon a single block—the count has actually been made—representatives of twenty-nine different nations! Whether you seek for scenes of joy or grief, pleasure or pain, romance, comedy or tragedy, you can find them on the streets of New York.

A Visit to Mammoth Cave

SEVERAL hundred feet below the hills of Edmonton, Kentucky, there are nearly one hundred and fifty miles of caves. The "Mammoth," discovered a century ago, is the best explored, yet it has a lasting fascination for visitors.

A steep, winding path, flanked by huge forest trees, leads to the entrance. A guide unlocks the iron door, and then closes it securely behind the visitor. The darkness seems impenetrable, broken only by the flickering ray of the guide's torch—it suggests the place of doom, where many will enter never to return. But gloomy thoughts give way to those of awe as the visitor is led into the "Rotunda," fifty feet high. This is illuminated by the guide, who throws artificial fire into the hidden recesses. Here are the remnants of a large gunpowder industry, which was carried on in the years 1812 to 1814. The two pipe lines made out of tree trunks, and well preserved, lead to the vats where saltpeter was filtered from the soil.

Proceeding along "Audubon Avenue" one

reaches "Olive's Bower," a cave containing many fine specimens of stalactites and stalagmites—formed by drippings saturated with mineral substances, that, in the course of years, built the beautiful cones and pillars. One passes the "Mushroom Beds," which have yielded fair crops, and the aquarium of blind fish, that was not so successful. The only vegetation is a moss or fungus—and a few species of bugs and spiders, the blind fish and innumerable bats at the entrance represent the animal kingdom.

Along the path of the "Main Cave" there are many monuments of broken stones, erected to almost every State in the Union by patriotic citizens, and others dedicated to clubs, lodges, and organizations by their members.

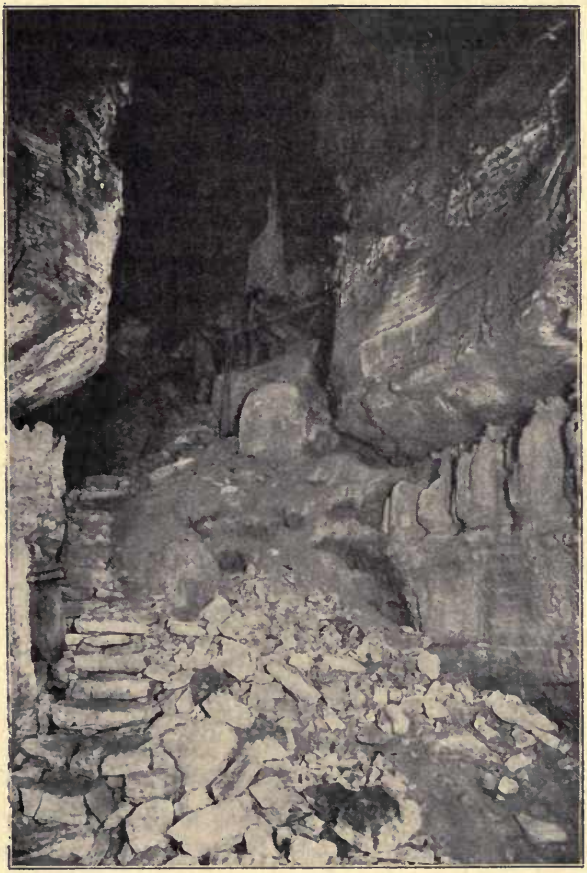
Although the trip is tiresome, one does not easily wear out. The ever-changing scene, the even temperature, the slight current of air keep the visitor fresh. Many of the stalagmites are wonderful in design, the "Methodist Chapel" and "Booth's Theater" being among the best. There are others, also, which, by a little imagination, easily assume the names which have been bestowed upon them: "Bunker Hill," the "Hen and Chickens," the "Old Arm Chair," the "Ele-

The Acute Angle.

phant's Head," while the "Oak Pillow," the Pillars of Hercules," the "Gothic Chapel," and the "Bridal Altar," are solid stalagmites—showing crimson through their clearness where the rays of the torch strike them.

It is said that thirteen couples have been married at the "Bridal Altar," and sensational stories are connected with some of these weddings. Strange to say, next to this the ceiling shows a stalactite growth which is a perfect copy of a hornet's nest—a quiet comment, perhaps, or a discourteous insinuation after viewing the "Bridal Altar"! An immense limestone that was shifted probably in the glacier period, and was thrown aside in a later period of nature's process of excavation, is aptly called the "Giant's Coffin."

Moving around the "Acute Angle," which stands forth like a sharp promontory, one reaches the small stone dwellings that were built to harbor consumptives. It was thought that the dryness, and especially the even temperature of the cave, might at least prolong their lives; but now the homes are deserted. A brighter home seems indicated by the "Star Chamber." Looking up on entering, there appears to be a large



Colossal Dome.

opening in the earth's surface leading the eye to the heavens above. The clouds and the constellations seem to be in their usual form. The direction of the Milky Way is in evidence—yet all is but a picture in the ceiling, caused by the bright flash of gypsum crystals. The guide now requests the visitors to remain seated, and to extinguish their lamps. He then leaves, to reappear at some distance, where, by the skilful manipulation of lights, he transforms the scene into the dawn of day, showing the gradual rising of the sun.

With difficulty one enters "Dante's Gateway" —almost every one dislikes to cross the "Bridge of Sighs"—and stands riveted to the spot at the brink of the "Bottomless Pit." A firebrand thrown into this crevice descends until it grows dimmer and dimmer. Only a small speck of light remains, and yet it is still falling—until one is too awed to watch it further. The visitor then enters "Vibration Hall," where a loud rumbling responds to the slightest knock of his heel on the apparently thin crust. In another portion of the cave is situated the "Valley of Humility." This is a classical name for a narrow and low-decked passageway, that forces one to double up,

and at times to almost move on hands and feet. Then comes the "Scotchman's Trap," an opening roofed over partially by a large, slanting rock, its weight resting on a few inches of the edge that forms the yawning gap. At "Grecian Bend Avenue," which follows, although not a difficult pass—yet bending so sharply—an opportunity is given to inconveniently lose the guide, or humorously to leave the dilatory straggler in the rear.

Now comes the ordeal to test the corpulent men, for all the past crawling was mere play compared with the contortions and the other athletic performances that they undergo in passing "Fat Man's Misery." It has brought many a one to the verge of surrender, when another determined effort freed him from his struggles, and happiness dawned upon his astonished visage, as he dropped quietly into a large room, called the "Hall of Relief."

"River Hall," which is next to be viewed, is rather muddy, and indicates on all sides how high its mysterious waters have risen, owing to the recent rains above the surface. This hall, in connection with the "River Styx" and the "Dead Sea" and the "Natural Bridge" present a picture uncanny indeed, but on its face grand

touches of Dame Nature's cave life are effectively shown.

Passing through "Bacon Chamber," a department which reminds one of an abattoir, one enters "Shakespeare's Gallery"—where a good picture of him has been drawn by nature, and where, tier upon tier, there seems to rise a multitude applauding him. Here "Echo River" is reached by a difficult climb over rocks, thrown about and piled up in every direction. The tired visitor agrees with the explorer of this section in naming it "Purgatory."

There is a small boat on "Echo River" at the foot of the hill, and the guide steers it by grasping the projecting points of the rock whenever practicable. He hums a chord in an almost inaudible strain, and its echo responds with the full octave, grander than a cathedral organ. Music has charms, two hundred and eighty feet or more beneath the surface of the earth, and brightens somewhat the general gloom. The trip awakens a feeling of awe, and recalls the mythological scene of old Charon, who ferried the departing souls over the river Styx to the night of Hades. It conjures up the spirit of Dante in his description of Inferno, as illuminated by the

Standing Rock.

brush of Doré. The shady prospect, the phantom surroundings, and the cold sense of danger in floating over uncertain depths, the keen suspicion of accident from the rock-ribbed ceiling—rising and lowering at irregular intervals—gradually became things of familiarity and actually pleasant, when an improvised quartet among the party restored confidence, and laughed away fear.

The journey over "Echo River" is safely accomplished, and feeling tired and thirsty, the travelers follow a treacherous path over the "Hill of Fatigue," and the "Infernal Regions," near "Pluto's Dome," and through "Serpent Hall" (the serpents are sculptured in the ceiling). There are other interesting spots such as "Minnehaha Island" and the "Wellington Galleries." A thing of beauty is "Cascade Hall," with its clear flow of water, whose mimic game of "hide and seek" keeps up its ripples in fairy nooks and over ideal miniature falls—to which the travelers listened, while "Dripping Spring" supplied them with a refreshing draft.

The next point of interest is the "Stern of the Great Eastern," a protruding rock resembling the ship as closely as if it had been lifted out of the waves to be petrified in the cave. The "Valley

The Bridal Altar.

of Flowers," a gypsum deposit, is invitingly beautiful, while the "Pass of El Ghore" and the "Hanging Rocks" are sublime. Not one in the party but felt a slight palpitation at the sight of this wild heap of immense rocks, threatening to crush the bold intruder into atoms at every move. The guide avowed "that this display of impending death and destruction was a bluff, and that in his judgment it must have been such for ages." Notwithstanding the gentleman's assurances, such evidences as large gaps on either side—deep, long rents above, protruding zigzag layers without visible support ahead, and heaps of débris below, would lead one to expect a catastrophe at any moment.

In "Martha's Vineyard" there are a few vine-stocks sculptured on the wall, as true to reality as if their stems had actually grown into branches bearing an abundant foliage and clusters of grapes. "Snowball Room" and "Flora's Garden" are enchanting places, exhibiting a profusion of the purest white creations, that delightfully compare with the delicate forms chiseled in marble by a master hand. If God's power in some apartments strikes one with awe, here it moves to love. Thus, in reverential mood, one takes a final glimpse at

The Bottomless Pit.

the "Last Rose of Summer," when, from a little niche there appears a cross about a foot long, and accordingly well proportioned. A closer inspection shows it to be a real crucifix of nature's work, with the dying Saviour's image carved as if by the touch of genius. Some visiting nuns had laid the foundation of the "Catholic Monument" near by and the travelers helped it along by adding their stones. They then view "St. Cecilia Grotto" and the "Postoffice."

Retracing their course, then, over "Echo River" they finally land on the "Blarney Stone" for a rest. One of the prize-exercises of the day is to pass what might be called a four-foot tunnel twisted into every conceivable shape for half a mile. To get through one has to walk in stooping fashion and pass through all the evolutions of the triangle; but these efforts are amply rewarded, for the way leads to a magnificent dome, over two hundred and fifty feet high, an astonishing example of underground architecture, and a model of beauty and grandeur for imitation in the builders art. One enters the cave through a fissure, nicely arched and wide enough to admit two at a time, and when the guide illumines the environs, wonderful walls rising in clean-cut layers

of rock from a depth of about seventy-five feet are to be seen. They form a circle forty feet in diameter or more, and as the enchanted vision grows brighter in the colored light, the structure piles its massive rocks into Roman columns and Corinthian capitals, upon which rests the arched ceiling, one hundred and fifty feet above. The design is executed with almost mathematical precision, as if the spirit of a Michael-Angelo were still at work. One can not help but adore the Maker of this temple, and while the solemn hush of these subterraneous precincts, broken only by the water gently dripping like music, stifles all speculation, it sways the heart to spheres where God's glory dwells.

In the constant glare of burning chemicals, one follows now a narrow path along the wall leading to a stratum of rocks which answers for the gallery. The way is partly slippery and dangerous. A solid iron gas-pipe railing, and a few artificial steps are the only reliable hold.

Next comes the "Corkscrew," on the homeward stretch. It takes about twenty minutes to accomplish the feat, and thereby gain nearly three miles. At first one moves carefully over an indiscriminate pile of rocks. Then one ascends a ladder, at the

top of which one squeezes through a crooked flue about fifteen feet high, just wide enough to admit the body of an average-sized man. There were still a few miles to go before reaching the distant entrance, that looked like a piece of skylight as large as a silver dollar. Soon, however, the last rod was covered, and the visitors, while glad to have seen the wonders of the Mammoth Cave, were gladder still to bask in the bright sunshine.

How Flax Is Made

THE book of Exodus tells us that when Moses, carrying out the edict of God, was afflicting the Egyptians with plagues of various kinds, in order that Pharao might be moved to permit the persecuted Hebrews to leave their land of exile, one of his most effective punishments was the ruin of the crops. At the time when the devastating hail fell upon the fields of the Egyptians the visitation was considered the more fearful because "the flax was in the boll."

Then, and in all probability for many centuries before that time, flax was one of the most important products of the earth. As proof positive that its various uses were known in the earliest days, it has been found that the wrappings of the Egyptian mummies are in reality linen cloth.

Scattered throughout the globe there are a hundred or more varieties of this herb. The common flax familiar to commerce is indigenous to the regions of Europe near and around the Mediterranean; but its growth to-day is well distributed over

the world. This species has a slender stalk, stands erect and at the top bears flowers of delicate blue or pure white. When in flower a field of flax is exceeded in beauty only by the famous lily fields of Bermuda. The seeds are flat, deep brown in color, their outer covering glistening and their edges sharp. The fibers are long, solid and supple.

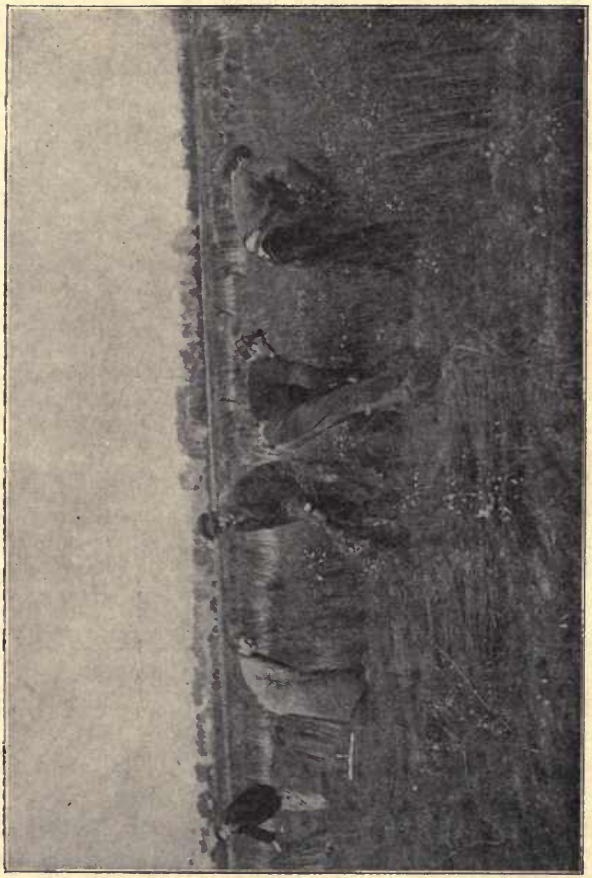
Both the seeds and fibers are valuable; indeed there are no plants, if we except those used for food, that in any way approach the importance of flax to mankind.

The seeds are used medicinally, and from them we get, by expression, the linseed oil that enters so largely into the manufacture of paint and varnish. Even after the oil is secured, the "oil-cake" that remains is esteemed for feeding cattle, while if ground it yields linseed meal.

From the fibers we secure linen thread—used for the production of the finest and the coarsest fabrics, from the most delicate lace to the heaviest of canvas.

Thus this unusually valuable plant furnishes employment not only to the agriculturist, but to the manufacturer as well.

In Belgium the crop is one of the most important, and the product is used to a very large extent



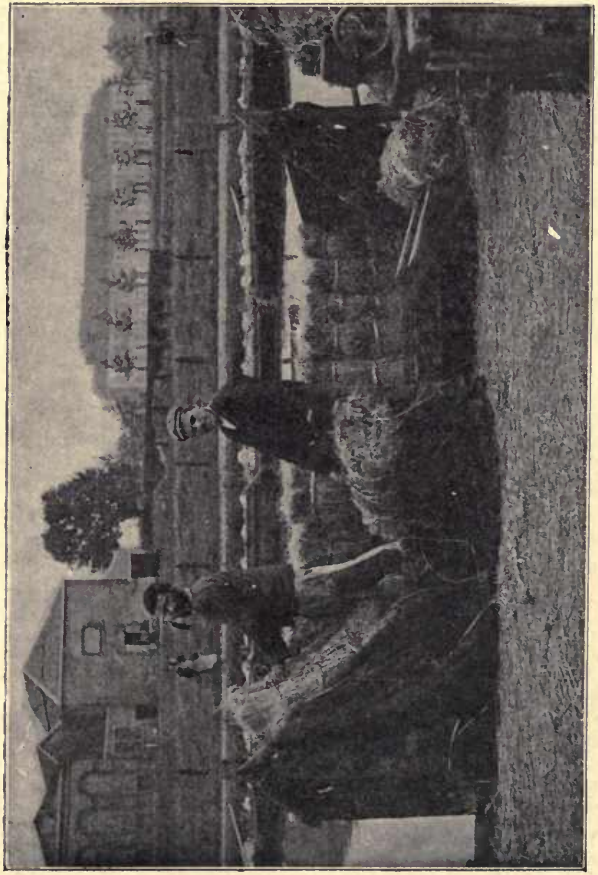
Pulling Flax.

in the manufacture of Brussels lace, which deservedly enjoys such popularity on account of its beauty and fineness. On this account the Belgians bestow the greatest care upon their flax plants. This need for care, however, is characteristic, for unless watchfulness and persevering attention are given to them the results will hardly repay the sower.

For different purposes, either for the seed or the fiber, flax is grown in almost every country, although Russia, Belgium, and Ireland probably head the list of flax-producing countries.

So important has this plant been considered at all times that in Continental Europe and in Great Britain there has been legislation in regard to it—sometimes ordering certain amounts to be grown by each farmer, and at others allowing a bounty to producers. Ever since the first colonies were settled flax has been grown and manufactured in America.

In 1639 it was enacted in Plymouth, "that every householder within the government shall sowe one rodd of ground square at least with hemp of flax yearely . . . . ." and from time to time, different States have offered bounties to the growers.



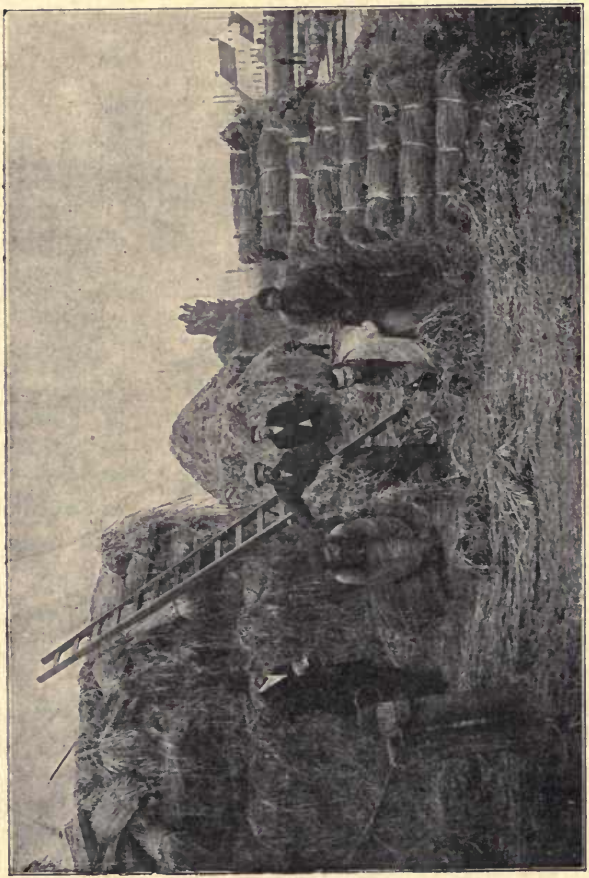
Preparing Stooks of Flax or Submersion.

Before the invention of the cotton gin, with its cheapening effect upon the production of cotton fabrics, flax spinning and weaving was a common household industry, and there are people living who remember the days when the spinning wheel with its distaff wound with flax was a regular article of furniture in the farmer's kitchen. In the year 1810, 21,211,262,000 yards of linen were made by families in New York, Pennsylvania, Connecticut and New Hampshire; and in most cases the flax itself was grown by these same families.

Ohio has been the leading State in the production of flax, but New York also held a prominent place. Even to-day "North-river" flax, grown principally in Rensselaer county, is a well-known product.

In the early days American flax was grown chiefly for the fiber, but at the present time the fiber is relegated to a position of little importance, and although flax is grown, to some degree, for the fiber, in Michigan, Wisconsin, Minnesota and Washington, the oil has more interest for the American grower; with the result that it is cultivated much more extensively and in a greater number of States for the seeds.

There is scarcely any part of the United States

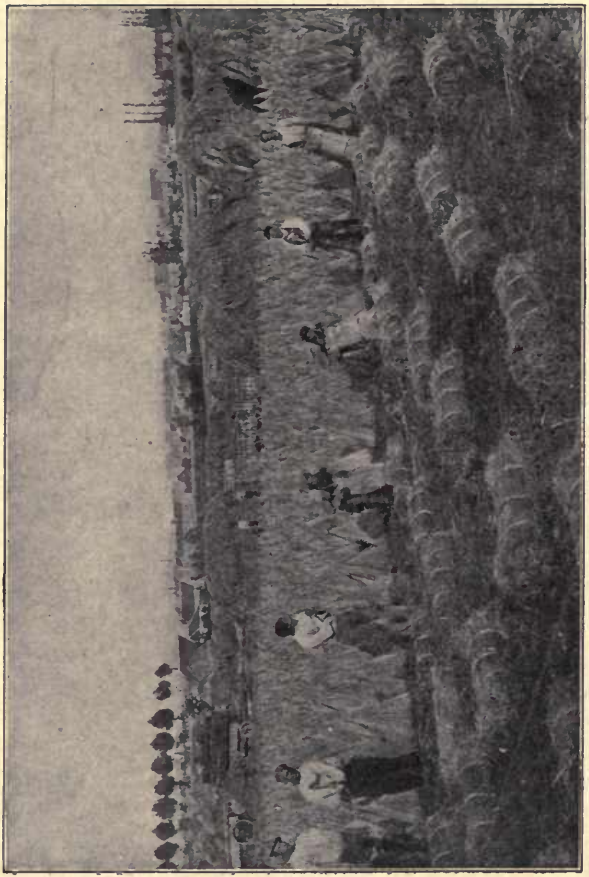


Stacking Stooks of Flax.

where it can not be successfully grown. A rich strong soil is the first requisite, and after that the most careful manipulation at every stage of its growth and manufacture. While the heavier soil, if well drained and of proper fertility, is better than sandy loam, wet ground is not at all adapted to the production of flax, and the grower who chooses the last for his sowing will have little but trouble for his pains.

Weeds are the greatest enemies of the plant—these smothering and entangling growths must be avoided above all things and, so far as possible, rooted out from the soil before it is given over to flax.

The crop is considered an exhaustive one, yet, while it is wise to rest the land occasionally by planting other seeds, it would seem that where proper care is used flax does not impoverish the land as much as many other crops. The custom followed in Belgium and other countries where it has been grown for centuries is to fertilize in the winter in the natural method and in the spring, before sowing time, to treat the ground heavily with artificial fertilizers. It demands a greater amount of labor, however, than any other crop, and unless this care is bestowed upon it the planter will suf-



Binding Flax in the Field.

fer serious loss. With proper attention, though, he will find his land returning him an incomparably better profit than he could secure in any other way.

The thickness of the sowing governs the resulting crop to a very great extent. If a fine fiber is sought the flax must be sown thickly and pulled before it has reached full ripeness; if a coarse fiber or seed is desired it may be given more room and permitted to practically ripen before being pulled. At one time it was thought that good coarse fiber and seed could not be produced by the same plant, but this has been disproven, and as a consequence it is becoming quite a general practice to plant for both. Those best able to advise, however, maintain that in this event the crop should be cultivated with a view to the production of the best fiber rather than the securing the best and most abundant seed—the resulting profit being greater under these circumstances.

As a rule the plant is pulled, roots and all, by hand; and some of the older works on the subject give the minutest details as to the method, even advising that the dirt be knocked off "against the boot." There are occasions, however, for instance when the land is very level and where seed alone is sought, when a mower may be used to advantage.

Flax Crate.

Pulling is followed by "rippling" or pulling through a flax-comb. The ripple resembles the head of a rake and is fastened upon a block of wood or upon a long plank bench. Astride the plank, at some distance from the contrivance, the teeth of which are about 18 inches high and a half inch apart, the operators take their seats. Beneath them there is a winnowing sheet to catch the bolls. In rippling a man takes a number of stalks in one hand, near the roots, spreads out the tops fanwise with the other, then draws the whole through the ripple, the bolls falling into the sheet. The stalks are laid beside him and gathered up by others who tie them into sheaves. At times the bolls and stems are separated by a threshing machine or by hammering with hand mallets, but either of these methods is bad, because the fiber is likely to be broken.

The woody core of the stalk is known as the "boon," and the operation is the separating of the fiber from this core.

This process begins with what is technically called "retting." There are three recognized methods of retting—dew-retting, pool-retting and retting in running water.

In dew-retting the stalks are spread out in rows

on a wet meadow, a ton to an acre. This procedure, while it gives excellent, probably the best results, is slow, and, especially in a country where land is valuable, somewhat expensive.

In pool-retting or retting in running streams, the softest water obtainable gives the best results, and with the exception of that in the river Lys in Belgium, none can be found better for the purpose than that in the bog-holes of Ireland.

The flax should be placed loosely in the pools in regular rows, roots downwards; that is, sloping a little towards the roots; a layer of rushes placed above them, these topped by thin, tough sods, fitting closely together, and on top of all a few stones strewn, the object being to keep the stalks wholly submerged, yet not touching the bottom. Much care must be exercised, for if the stalks are permitted to remain too long in the water, decomposition, which is the object sought, will be too great, while if they are taken out too soon it will be difficult to separate the fibers from the core. As a rule the proper decomposition is accomplished in the course of five or ten days. After a certain period tests must be made frequently, for with flax retting, as with most other things, there is a "psychological moment"—if the term is permissible.

The only difference between pool-retting and running water retting lies in the fact that stagnant water is considered better—the method of procedure is the same. The only exception to this is the one already mentioned—the river Lys in Belgium possesses some peculiar properties which render flax retted there 25 per cent, more valuable than that retted elsewhere.

It might be remarked here that the odor around the place where retting is going on is not that of "Araby the Blest," for fermentation is the secret of the process—and fermentation does not carry pleasant sensations to the nostrils. In this regard dew-retting is the least offensive.

The removal of the flax should be done by men standing in the water and handling the stalks very carefully. It has been found that running off the water has a tendency to stain the flax, to which particles of foreign decayed matter adhere.

In addition to the methods mentioned, there is also a mixed method, and this, for various reasons, is the most general one to-day.

Either of the two last mentioned is followed until a certain stage of decomposition is reached, when the process is finished on the grass. The "grassing occupies a period of from a week to a

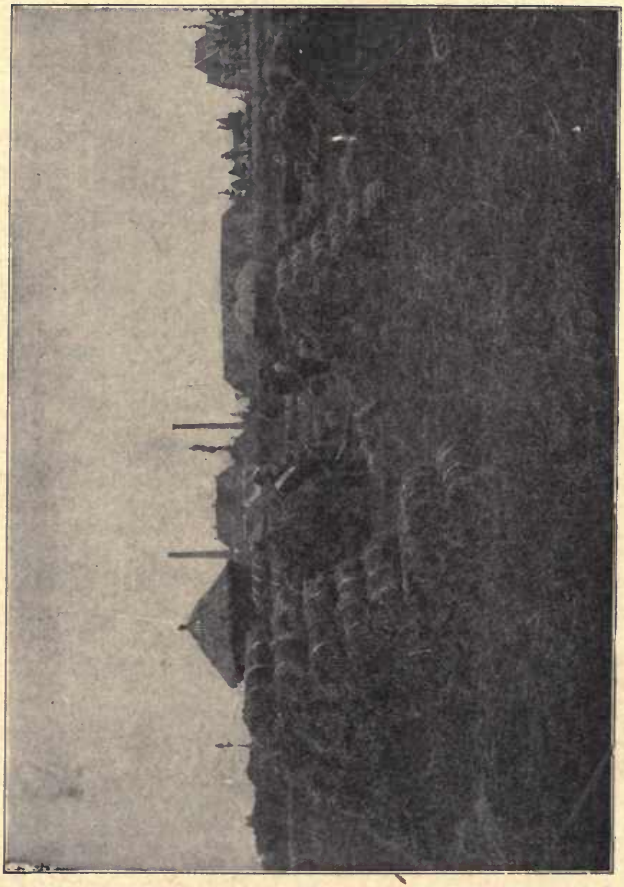
Hand Scutching Flax Threshing with Wooden Mallets.

fortnight. During this time the flax must be occasionally turned with a light rod, so that it will dry evenly.

From time to time efforts have been made to separate the fiber by machinery and without steeping, but the results have not been satisfactory—and the bulk of the flax grown the world over is hand-retted to-day, just as it was hundreds of years ago. There have also been efforts to hasten decomposition—by regulating the temperature of water in the vats; through the introduction of steam; by the introduction of diluted sulphuric acid and various foreign matter into the water; and some of these have been comparatively successful; when all is said, however, the natural method of retting is the one that gives the best results.

When the flax has been grassed it is "lifted," tied in small bundles and stacked like grain.

"Scutching" is next in order. This consists in separating the fiber from the core. Sometimes the stalks are passed through a "brake"—two hinged boards, the upper one with a fluted surface, the flutes corresponding to grooves in the lower one, but not quite filling them, into which the stems are placed; at other times grooved mallets



How the Flax is Stacked

are used. The object in each case is the same—to break the woody portions so that when the scutching knives are called into play their slashes will remove the core and leave the fiber. This slashing may be done by hand or by machinery. It is claimed that hand scutching throughout is better than machine scutching. The machine method is more expeditious, but it tends to break the fiber.

The next treatment undergone by flax is "heckling" or combing, for the purpose of separating the fiber from the chaff and short tow. In theory it is the same as rippling—the fiber being pulled through teeth, to which the tow adheres. Whether done by hand or machine the flax is eventually divided into two kinds—the "line" and the "tow."

Its appearance is now much changed. The line, consisting of long, fine, soft, glistening fibers, has a bright silver gray or yellow color, and viewed from a short distance bears a strong resemblance to silk.

The "stricks" (bunches) of flax are afterwards "sorted" according to degrees of fineness. This is a delicate operation and in selecting, the sorter judges by the eyes and touch.

Flax as it Appears when Placed in the Bale for Shipment.

The sorted flax is subjected finally to a "spreading" or "drawing" operation. Each of the stricks is divided into two or three portions, arranged longitudinally on the "creeping sheet" or "feeding cloth" of a spreading machine, the ends of the successive portions overlapping each other about three-quarters of their length. It is then drawn forward through the part of the spreader known as the gill frame, and deposited in the form of ribbons, in a tall can holding 1,000 yards.

The gill frame consists of a set of "holding rollers" which deliver the flax to another set called "drawing rollers," the second set moving at a greater speed than the others, increasing the length and diminishing the thickness of the flax. Between the two sets there is a contrivance made up of a series of separate bars or rods, called "fallers," upon which there are closely ranged ranks of steel needles. The action of these needles is a spiral one and they serve to create friction in the flax and prevent it from becoming lumpy and irregular. From the drawing rollers the flax passes to the "delivering rollers" which deposit the "sliver," as the ribbon is called, in the can, the ribbon being guided on its way by an arrangement known as the "doubling bars."

The can is now taken to the "drawing frame," where the slivers are combined and drawn out into one length equal to the sum of their total lengths. Generally there are three of these drawing frames, through which the flax is drawn in succession. The effect is to combine the short lengths in one long one, equalize the fibers and correct defects.

The next and last operation is now in order. The sliver is taken to the "roving frame." This is similar to the last, except that a "flyer," an attachment for twisting the sliver into a rove or loose thread is added, and also a bobbin for winding the rove.

No attempt has been made to introduce many details of machinery, the effort merely being to give a brief outline of the history and cultivation of flax, and a short description sufficient to impart to the reader a general idea of the method employed in preparing this most important product for the market—and having reached the bobbin we have arrived at the point for which we set out—the flax wound on the bobbin is ready to start on its further journey—toward the delicate piece of lace that will adorn my lady, or the stout sail that will carry a ship over the seas.

The Great Arizona Desert

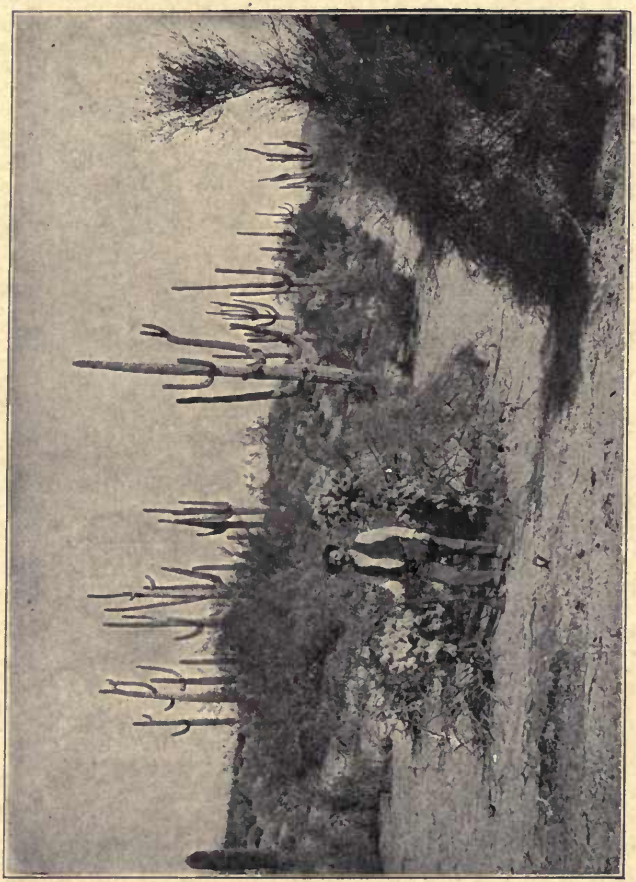
In the above title it is intended to include all those arid lands that spread, as inconsequently as an immense blot of ink upon a pad, over the Western portion of Arizona, extending into Nevada, Utah, California and Mexico, for, slight though it may be, there is a certain continuity that links these sections in one grand whole.

However we may name it, there is no region upon the face of the earth that offers such attraction to the traveler, such great variety and so many natural wonders; nowhere that death stalks abroad with such smiling face, nowhere that life walks so closely hand in hand with death, no land more sterile yet more capable of prolific production than these sunbaked wastes whereon the unfamiliar traveler lies down, gasping, to die, while a thousand living things watch his dying agony and await their prey.

In our school-days we were taught that the desert of Sahara was a vast waste of sand containing absolutely no life; but in the light of later

years we know that there are within it wells, towns, and ranges of mountains. So it is with the desert region of Arizona; some of it is in depressions, some below, some many hundreds of feet above, the level of the sea; some of it rock, some sand, some mud, some alkali. Parts of this arid stretch are divided from others by strips of fertile country; in places its surface is torn and rent by great canyons, and into it from many directions flow sluggish rivers—to dwindle away in swamps and quagmires. All this desolation is due to that most fearful of afflictions known to mankind, which is just as terrible, just as deadly to the earth—thirst.

Yes, the desert regions are athirst, and once this craving is satisfied they will blossom like the rose. This is not a mere assertion, but a proven fact, for irrigation has shown that once its thirst is slaked the soil responds immediately with luxuriant growth. So clearly has this fact been demonstrated that there is being constructed under government supervision, some sixty miles northeast of Phoenix, the largest storage reservoir in the world, known as the Tonto Basin, which will reclaim thousands and thousands of acres of land that is now useless. The cost of this work is ex-



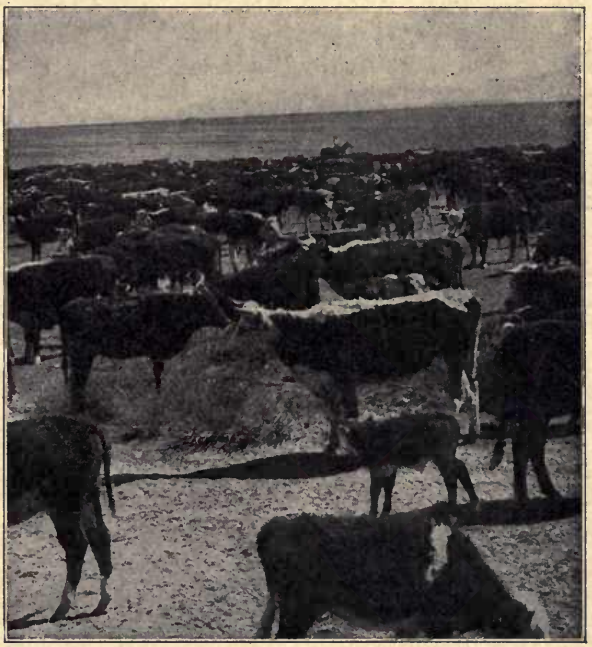
In the Land of the Great Cactus.

Cowboys Examining a Yearling's Brand to Settle a Dispute.

pected to approximate three million dollars, the government advancing the necessary amount under the agreement that it shall be gradually repaid by those who derive benefit from the supply of water.

In other sections, where it was found impossible to draw from the rivers near by, electric pumps are used to supply water to the irrigating canals. At first the effort in these latter regions was to

secure the supply from artesian wells, but it was found that although the whole section was rich with streams flowing beneath the surface, the water was so far beneath that it could not be brought to the proper level without mechanical aid. This was out of the question until electricity made feasible the plan of using the power of dis-



The Spring Round-up at the Greatest Cattle Ranch in Arizona.

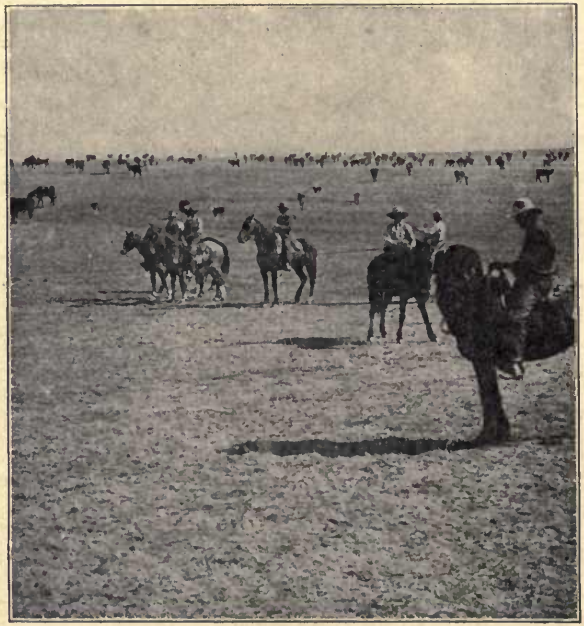
tant streams and transferring this, by means of wires, to the desired points. Now, however, that electricity has been harnessed, that reservoirs are being built, we may look forward confidently to the time when this immense waste will blossom as it must have blossomed when the world was young.

Traveling over this parched country one comes across relics of ancient cities that flourished in that long ago with which there are in our modern minds so many romantic associations, when prehistoric mammoths roamed the earth, and giant trees gave to the land beneath them their genial shade.

In the center of the region, a few hours' journey by rail from that wonder of the world, the Grand Canyon, the awe-inspiring gorge wrought by the erratic Colorado River, and upon whose wondrous beauty volumes have been written, there is a magnificent petrified forest, but lately created a national park by the government in order that it may be preserved. These remains of some vast forest of trees, now extinct, lie upon what is evidently the bed of some old-world sea; for ages they must have rested where they sank to the bottom, while the sand hardened above them and the waters

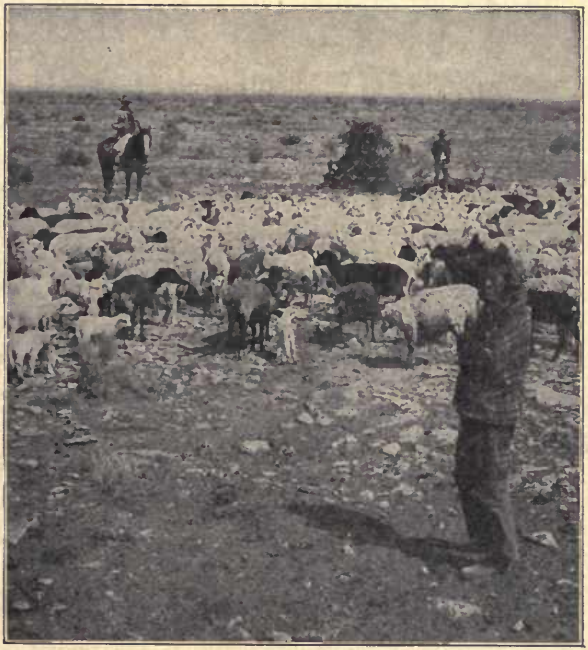
Prospecting in the Arizona Desert.

slowly sank into the core of the earth or were lapped up by the sun, until they finally disappeared and the great sea was no more; for countless centuries afterwards they lay hidden—to be eventually uncovered by the action of the elements, but transformed by that great chemist, Nature, into stone, many of them approaching the



Lassoing a Yearling Among the 30,000 Cattle of Sierra Bonita Ranch.

condition of jaspar and onyx. One of the most celebrated objects in this forest is the Natural Bridge, consisting of a great petrified trunk lying across an abysmal canyon and forming a natural footbridge. Over this one may safely pass on foot, but it would mean certain death to imitate the foolhardy cowboy who recently guided his pony



Sheep Raising, an Extensive Industry in Northern Arizona.

across the yawning chasm. The canyon spanned by the fallen tree is about forty-five feet wide, but fully fifty feet more of the trunk is exposed, so that it must originally have towered at least a hundred feet into the air.

On a broad sloping plain beginning at the confluence of the Gila and Salt rivers, forty-two miles from Phoenix, are the greatest ruins of prehistoric towns. Some men of science say that these cities were built in the stone age, while some say that they were in existence seven thousand years ago. There are among the wastes of sand the outline of two towns that must have had populations of from forty to fifty thousand each, and there are a half-dozen other towns buried there which must have supported populations of at least twenty thousand each. The largest city is that which was partially unearthed by the Cushing expedition in 1889. It is known as Los Animos. The streets may be traced by the crumbling walls still projecting above the sand. Here skeletons have been dug up; and from their posture and the fact that the walls of the buildings opened outward when falling, there is reason to believe that an earthquake killed thousands of the inhabitants of Los Animos, while those who survived fled for their lives, never to

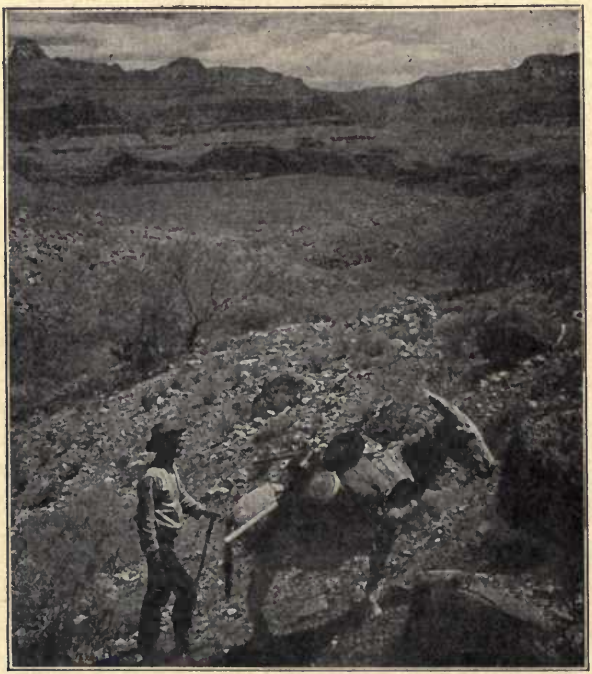
An Arizona Farmer.

return to their homes. Household utensils have been found undisturbed, and children's skeletons have been discovered there in heaps, showing that they were cowering in corners when death overtook them. It is evident that at one time this section of the desert was peopled by a race of advanced civilization and possessing no mean skill in the mechanical arts. The skulls indicate that they bore some relationship to the ancient Peruvians, a belief that would seem to be borne out by the fact that in the rock inscriptions uncovered and the terra cotta statuary, there are representations of a beast of burden closely resembling the llama.

And there is life even to-day in the deserts. Flowers bloom there; the gorgeous blossoms of the eccentric cactus; the grisly sage covers many an acre, the greasewood and the mesquite flourish, and in the river bottoms the willow and the cottonwood are found. Wild life is well represented, too —prairie dogs, wolves, coyotes, jack rabbits, small owls, rattlesnakes, and various crawling things. Of men, the Indians alone go hither and thither upon the deserts, familiar and unafraid. There are many tribes of them: Apaches, Navajos, Supis, Walpis, Hopis, and others. The places wherein

"Goat Camp" near Cave Creek.

they dwell are interesting and picturesque; mud towns with old Spanish mission houses in the center, many of them accessible only through holes in the roof; and volumes could be written upon



Prospecting for Gold, Bright Angel Creek, Grand Canyon of Arizona.

their lives and customs, their dances and their beliefs.

In the villages that are near the railroads the inhabitants gather about the trains to sell their pottery, beadwork and baskets or to exhibit their

Descending Grand View Trail, Grand Canyon of Arizona.

papooses, for the red men have learned that their white brothers willingly pay in coin of the realm to gaze upon these strange, patient little creatures.

The march of modern science is fast wiping out these arid wastes where so many have met death, where, as the ages have gone by, so many tragedies have been enacted; but the change will not occur without an accompanying loss to mankind, for in spite of its tragedies the desert possesses an indefinable charm. Whether below the level of the sea or on a plateau a mile and more above it; whether the sun is blazing in a cloudless sky or lowering clouds descend upon you; whether you are shut in by crags and terraces fashioned into the semblance of castles fit only for such a Titan race as history tells us must at one period have dwelt here; whether you are wandering over vast stretches of level sand toward ever-receding mountains; there is a magnetism about your surroundings, an attraction that none can understand who has not experienced it; and while you know that the desert is an abode of death, you are not shocked, you are not horrified, for your imagination can not evoke the terrors with which men are wont to surround the coming of that dread certainty.

Ready for Shearing.

Plowing in Many Lands

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

It is a far cry from the instrument used in ancient times to prepare the earth for the reception of seed to the modern gang plow drawn by a traction engine, and turning seven furrows on each of its trips across the field; yet the former and all the varieties marking the gradual steps toward the latter can be found at the present time—not stowed away in forgotten corners to be brought to light by diligent search, but in actual use.

Egypt has her colleges and her scientific schools, but farming there is still carried on in practically the same manner that was in vogue when the Pharaos sat upon the throne, and Moses led the children of Israel out of bondage. This condition is the result of a freely-admitted policy of the government. Because the population consists very largely of a class of men unfit for anything save farming, the government, fearing that the introduction of labor saving devices would result in the pauperizing of a large number of workmen, de-

North Carolina Plowman.

liberately discountenances the use of modern farming implements. Hence it is that the visitor to the Nile valley to-day will see plows little better than sharpened sticks, drawn by teams of bullocks or camels, and guided by self-contained, lack-luster Orientals, literally "scratching the earth." And this is the land made fertile through the exercise

Up-to-Date Plowing in America.

of the wonderful engineering skill displayed in its irrigation! In Palestine conditions are no better, for were one of the personages of biblical times to revisit his old home he would find similar plows—those with which he was familiar—turning over the soil for the present generation,

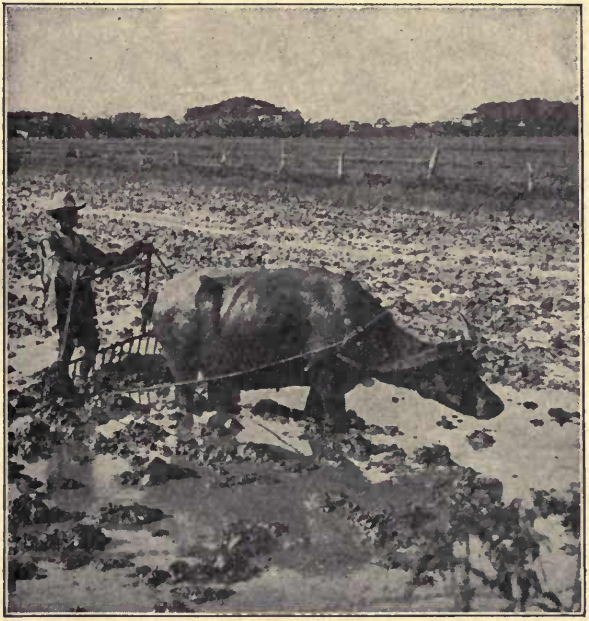
In India, where the British government frowns upon improved farm machinery for the same reason that it is discountenanced in Egypt, it appears ludicrous to see a great elephant, the animal that is the right hand and marvelously intelligent aid of the native, drawing a primitive, flimsy-looking plow formed of three or four sticks fastened together.

Some one has said: "The heart of the Filipino is like his fertile soil, and will as surely repay cultivation;" and no one will deny that the soil must indeed be fertile that responds to the tillage of the implement—call it rake, harrow, or plow, as you will—which is generally used in preparing it. The illustration is a veritable story without words, a suggestion of the immense task our government will have in bringing these dependents of ours to a higher level of civilization.

Familiar as we are with the lack of progressiveness in the Southern races, it is not surprising to find the Mexican peasant farmer hitching his burros to a type of plow now almost forgotten in our own country, and his Cuban cousin guiding the same style of implement behind a team of slow-going oxen. Neither does it astonish us to see the farmer of the land that is living in the past—poor,

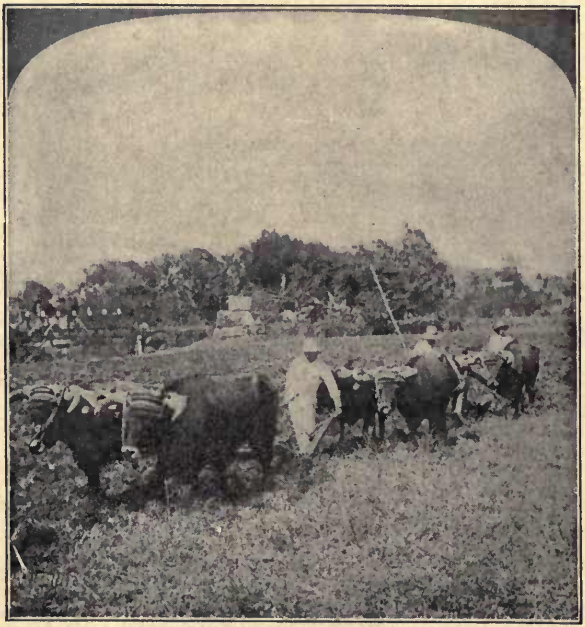
decadent, worn-out Greece—clinging to a plow old-fashioned enough to merit a place in a museum of antiquities.

In our own Southern States one occasionally happens upon some lazy negro, satisfied if he can raise the bale or two of cotton that will secure him sufficient credit at the general store to buy his



Plowing in the Philippines.

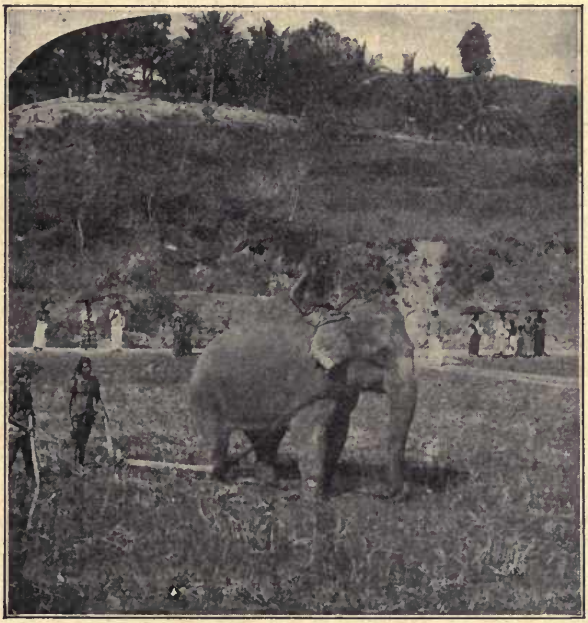
"nickel's worth of flour, nickel's worth of sugar, nickel's worth of candy," when his larder is depleted. But to see one plowing with his son in



Cuban Farmers with their "Stick" Plows and Oxen.

harness was a surprise. Yet this is not unusual, for the plows are little more than toys—not the heavy instruments to which Dutchwomen are similarly harnessed.

Of course these incidents are referred to merely because of their oddity; the farmers of the United States are progressive, and growing more so, year by year. Notwithstanding the claim made by some



Native Plowing in Tropical Ceylon.

European experts that they do not know how to farm, the fact remains that they grow rich, that

Mexican, Farming with Mule Team.

their sons are sent to college, where they prepare themselves for positions of importance in commercial as well as agricultural spheres; and it is well known that, great commercial nation as the United States may be, the farmers are its backbone.

With us, while there are, of course, many "one mule" farms in the country, the day of the small

Plowing with an Automobile.

farm is passing—the modern farmer is concerned with large areas. He is extending his crops through the West, Northwest and South, in places where the land never before was productive, eagerly buying in zones affected by the irrigation systems, and willingly paying for the water that will aid him in reaping a profit. If he is to keep pace with his fellows he must have system, must know his soil, his climate, and his markets; and in order that his crops may be matured in time to secure the best markets he must take advantage of every improvement in farming machinery.

In the Dakotas, in Oklahoma, where the farmers are the aristocrats, where thousand acre farms are small, we find no makeshift plows, no hand plows. Sometimes the plow is drawn by great teams of horses or mules, though the traction engine is rapidly taking the place of the draft animals, but always it is of the most approved pattern, supplied with from five to seven plow-shares. The farmer's "hands" are legion, and his crops are uniformly successful because they are intelligently planted, and because he takes advantage of every aid offered him by the Agricultural Department in the way of experimental seeds and preparations for preserving the soil.

When the harvest time comes, his broad acres are alive with hordes of workers and numerous, puffing machines. Here is a giant harvester, its sickles buzzing, its great canvas arms that sweep the grain into sheaves for binding whirling rapidly; behind it, as it makes its way over the field, the sheaves are dropping four at a time—to be set up in shocks by the harvesting hands that follow it; over there, in the north field, the haymakers are at work, not with old-fashioned pitchforks, not with antiquated farm wagons, but with wagons specially built to receive and hold the great loads of hay piled upon them by the mechanical "stacker" that does the work of ten men.

Here is no Chinese harvesting, the men squatting at their work and cutting the crops with hand sickles; here are no women harvesters—this is a man's domain, and machinery lending its aid to man. Here is the spirit of progress, the modern farmer in his element, the farmer who makes the United States the food market of the world.

A Word About Turkey

A TURK, a Greek, and a Jew were crossing the Bosphorus one day, when it was suggested that each give expression to his fondest wish. The Turk was the first to speak: "Would that I might see as many Christians massacred as there are sheep slain at Bairam!" he exclaimed with deepest earnestness.

"Would that I might see as many dead Turks as there are red eggs eaten at Easter!" said the Greek with equal fervor.

"And I pray," ejaculated the Jew, "that God will grant you both your wishes!"

The anecdote may not be true, but it has the redeeming quality of expressing very tersely the condition of affairs in the land of the wily Sultan who is such a source of trouble in the diplomatic world.

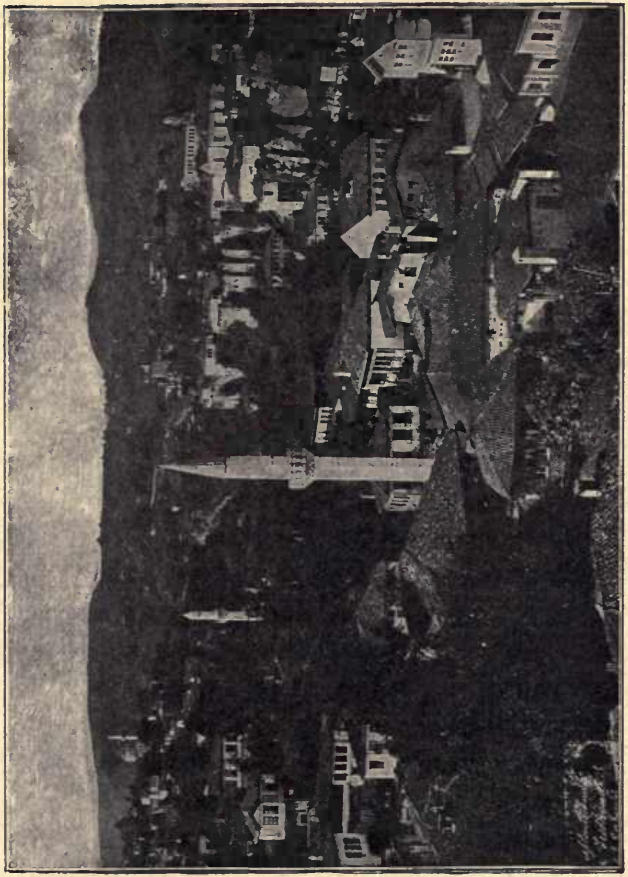
It would be difficult to find a more heterogeneous population than that of the cities in the Ottoman empire.

Living side by side, though not in brotherly love,

there are a dozen different races—Kurds, Circassians, Albanians, Bulgarians, Greeks, Armenians, and others—yet in their home life there is no commingling. Transacting business together during the day, they repair at nightfall to different worlds, wherein they live their own lives and follow their own peculiar customs.

Smyrna, the chief city of Asiatic Turkey, for instance, is divided into Quarters, chief among them being the Armenian, Jewish, Turkish, and European or Frank districts.

In general it is similar to other Oriental cities: its streets are narrow and tortuous, dotted with the familiar bazaars; the prevailing color that meets the eye is white; and porters, small horses and camels are used in place of conveyances of every description. The porters, with the aid of the queer saddles they wear, carry packages weighing as much as three and four hundred pounds at a rate that nets them about fifty cents for a day's work. Instead of hiring a cab one hires a horse; and camels, whose weight-carrying capacity is almost unlimited, serve all the purposes of our express wagons. Smyrna is the fig market of the world, and in mid-summer there is a continuous stream of these patient animals, laden with bags



Trébizonde.

of the fruit, passing through the ill-paved streets, each caravan led by a diminutive negro, the contrast being exceedingly ludicrous.

The Turks are neither active nor intelligent business men. Scions of the important families are usually employed in government positions, of which there seem to be no end. It is true that their salaries are rarely paid, but "the unspeakable Turk" has found a means to overcome this difficulty by insisting upon *baksheesh,* which in plain language spells "bribery," and by this means he secures as good an income as though he were regularly paid.

Armenians and Jews are the merchants and manufacturers, and are hated by the governing race. Although contemned by the Turks, the Jews, for some reason, are seldom molested, but the Armenians, because of their Catholicity, are the victims of periodical persecutions so terrible that they are indescribable. Even within recent years these barbarous massacres have taken place, and, although the newspapers have been filled with tales of the frightful outrages, the so-called Christian nations, to their shame be it said, have made only the most perfunctory efforts to put a stop to them.

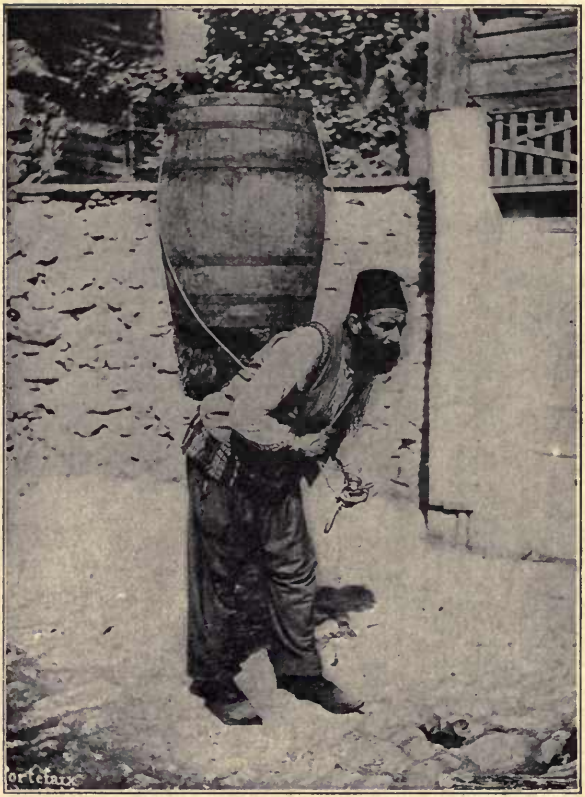
The world had scarcely recovered from the shock

Stephanos Gregorios, Leader of the Greek and Armenian Revolutionists in Turkey, and His Six Sons.

Poultry Dealers.

of the terrible treatment of the Greeks, when the news of the persecution of the Armenians became generally known.

In 1880 we were startled by the reports of the



Street Porter in Constantinople.

fearful destitution and starvation in the province of Van. The people there were overburdened with taxes of every description, and were in addition suffering from repeated attacks on the part of the

Kurds. The Turkish Government did nothing to stop these outrages.

Of course a protest was made by the Powers. The Sultan apparently heeded this admonition and divided the Armenian possessions into the number of sections suggested, this division having been proposed as a means for keeping a tighter rein on those who attacked the Armenians. As a matter of fact, however, the divisions were so arranged that Moslems were in every case in great majority—with the result that conditions were not in any way bettered. The massacres, at all events, continued.

In 1889 another general protest was made—with no beneficial results.

In 1894 twenty-five villages were laid waste and several thousand Christians were massacred by Turkish Government troops, sent into Armenian provinces because of the failure of the Armenians to pay the impossible taxes with which they had been burdened. There was another protest when this was made known to the world.

In 1896 when the Armenians, driven to desperation, seized the Ottoman bank, refusing to surrender it unless permitted to leave the country, Constantinople and its surroundings was made a veri-

Lashing a Camel's Pack.

table shambles, and over 6000 people were put to death.

Almost every year sees new atrocities, new massacres indulged in on one pretext or another, yet the Powers stand supinely by and content themselves with protests.

If the question was a commercial one, if the Turks owed money to some association of merchants, we should have seen displays of power—and even its use—that would have brought the Sultan to terms.

Much praise has been accorded the nations of the world for the freedom of Greece from Turkish rule, but in these days we know that this was an accident pure and simple, occurring because something went wrong in the plans of protest.

When Admiral Codrington sailed into Navarino harbor on October 20th, 1827, he had no more idea of a fight than he had of invading Turkey. He was doubtless tied hand and foot by foolish orders. However, when the Turks, in their ignorance, fired upon the allied fleet and continued to fire without waiting for the explanations that were sent to the Turkish commanders, the bluff fighting men who led the fleet believed that they were justified in disregarding their orders—and

Dancing Dervishes and Musician.

the world knows the result. Had it not been for this accident, it is safe to say that Greece would still be under the Turkish yoke, and the nations of the world would still be addressing "joint notes," "protests," and other diplomatic absurdities to the Sultan.

War is seldom ever justifiable, yet here is a condition which calls for radical action on the part of the great Powers, the crimes committed being so heinous and so general that perhaps war is the only solution of the difficulty; but there is no money involved—only the lives of some thousands of Armenians each year, so protests are considered amply sufficient to take care of the situation. Surely, surely, if Cervantes laughed Spain's chivalry away, the Turkish sultans have laughed away the diplomacy of the world. How laughable, after all, is this much-vaunted diplomacy that strains at a gnat and swallows a camel!

The people of Turkey are not to be blamed for this state of things—they are simply creatures of condition and of their government. Their lives in general are simple, orderly, and much the same as those of the people of other nations.

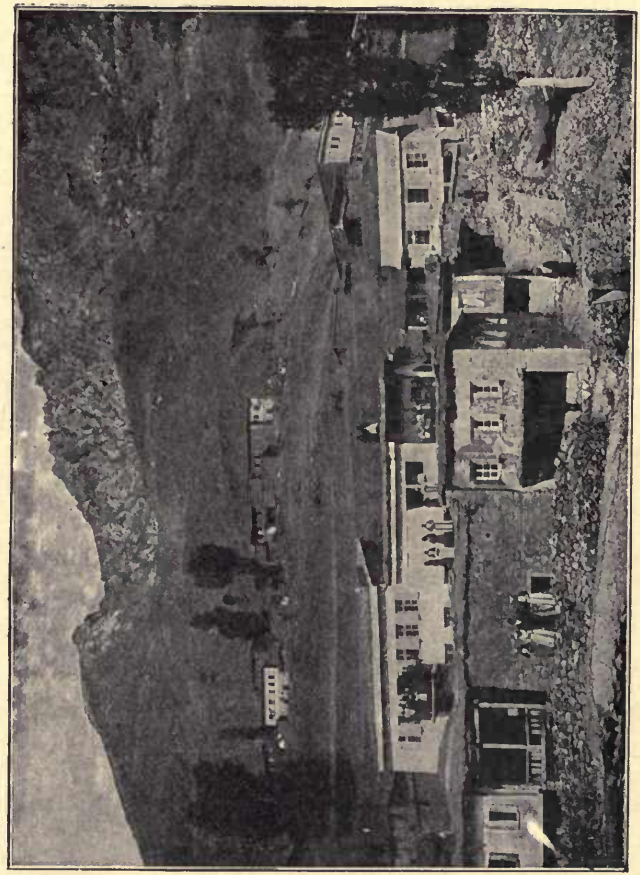
Near all Turkish towns there are a number of picnic grounds where the people congregate upon

Funeral of an Armenian Roman Catholic Bishop.

their holidays, watch the national games or sip coffee and mastique in the shabby "khans," as the inns are called. One of the most picturesque of these pleasure grounds is located a short distance from Smyrna. Our illustration shows the locality known as "the prophet Elias district," so called because of the church of that name. This edifice, which is not at all pretentious, may be seen on the left of the picture, close to the upper road, its tower half-hidden by a tall cypress tree. Had the camera been focused a little to the right, the picture would include the ruins of a castle supposed to have been built by Alexander the Great, upon the heights; and behind the artist there spread one of the largest olive groves in the Orient. The view from the inn (the long, low building in the center) is a magnificent one, surpassed by no other in Asia.

Before leaving Smyrna the traveler should not fail to visit the monastery of the Dervishes. The members of these sects, notwithstanding their strange practises, are really good men, earnest and devout. While they perform religious services every day, it would be well to select Friday, the Moslem Sunday, for a visit.

The two most noted sects are the Whirling and



On the Heights at Smyrna.

the Howling Dervishes. The former are the more numerous, and the characteristic feature of their services consists in whirling around to the accompaniment of discordant music until they fall, exhausted, upon the polished floor of the platform on which they dance. Perhaps the best explanation of this dance is that it is the expression of religious ecstasy, but as a performance and an exhibition of endurance it is little less than marvelous.

The villages throughout Turkey are merely collections of mud huts. In the province of Armenia, which is composed mostly of highlands, the houses are, wholly or in part, hollowed out of the hillsides. The flat roofs are frequently fenced, and within the inclosures graze the few domestic animals belonging to the residents.

Mt. Ararat, the supposed resting-place of Noe's ark after the deluge, is in this province, and here, too, according to the Armenian traditions, is the site of the Garden of Eden.

When Turkey was at the height of its glory, during the reign of Suleiman the Magnificent (1520-1566) the Ottoman empire included a part of Austria, Bulgaria, Hungary, the entire Balkan peninsula, Greece, Crete, Syria, Egypt, and Arabia.

but one by one its dependencies have been lost, owing to the leadership of men whose names belong to history, such heroes as Hunyadi, Iskander Beg, and John Sobieski, and to-day its light is dying out. The "sick man of the East" still lingers on, thanks to the jealousies of other nations, but the partition so often threatened is sure to come before long; the Turkish empire will inevitably be disintegrated, for "the house divided against itself must fall." As the Turk would say, "It is kismet."

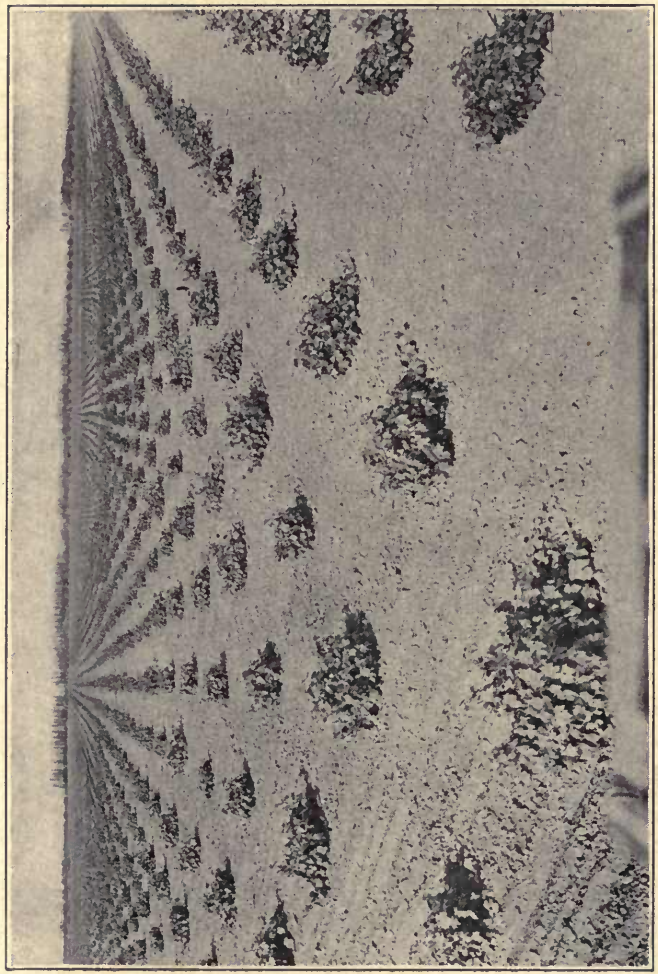
The Grape and Raisin Industry in the United States

When the pious missionaries penetrated the wilds of the Pacific coast, they brought with them, also, civilizing influences, striving to teach the savages how to till their lands and to give them some industrial ideas. One of the benefits for which California may thank these holy and self-sacrificing men is the introduction of grape culture. The first type they planted is grown and is known at the present time as the "Mission" grape.

Since the days when the revered Junipero Serra labored and prayed there, the development of grape culture and the industries arising from it has been so great as to challenge belief.

California, with an output of from twenty to thirty million gallons of wine annually, stands at the head of the wine-grape industry of America. New York State comes next, and Ohio third. Nearly every one is familiar with these facts, but

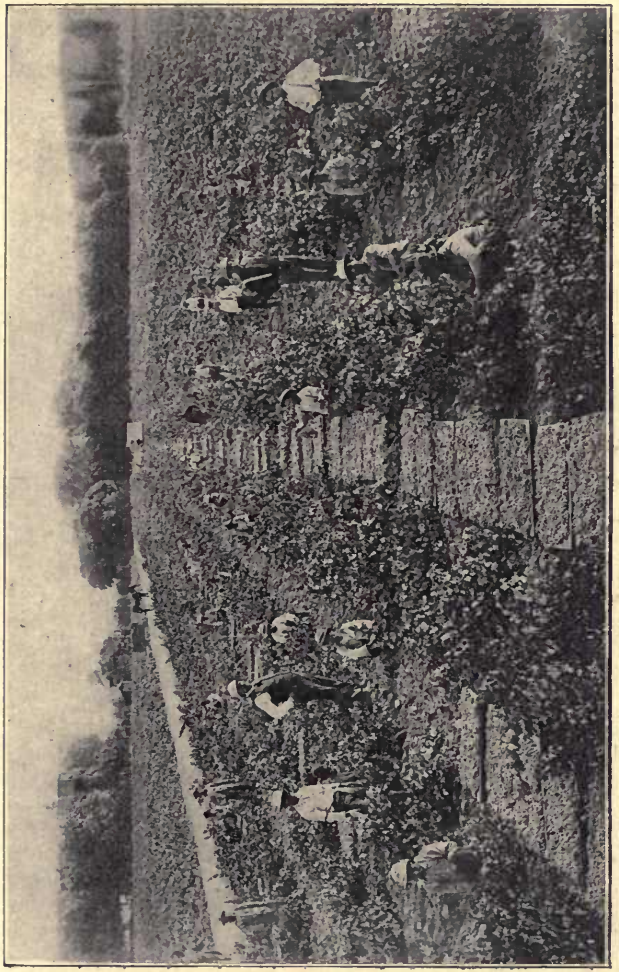
Big Grape Vine near Santa Barbara.



A Young Vineyard.

it is not so generally known that in some respects the wine industry of New York is the most important in the United States. California's output is greater in quantity and in value than that of its Eastern competitor, but the proportionate values of the two crops differ to a wonderful degree. The value of California's annual output of wine is about five million dollars, while that of the seven million gallons produced annually in the Empire State is approximately three million dollars. The explanation lies in the fact that clarets, sherries, and sauternes predominate among the wines of the Western State, while champagne is the chief production of New York—and the difference in the prices of these wines accounts for the disparity between quantity and value in the two places.

In New York we have the largest champagne plant in the United States. In this particular establishment one million five hundred thousand bottles of the sparkling beverage are regularly carried, and two hundred and fifty thousand bottles are placed upon the market each year. The grapes are grown in vineyards located in the neighborhood of the plant. There are about fifty thousand acres of land devoted to grape



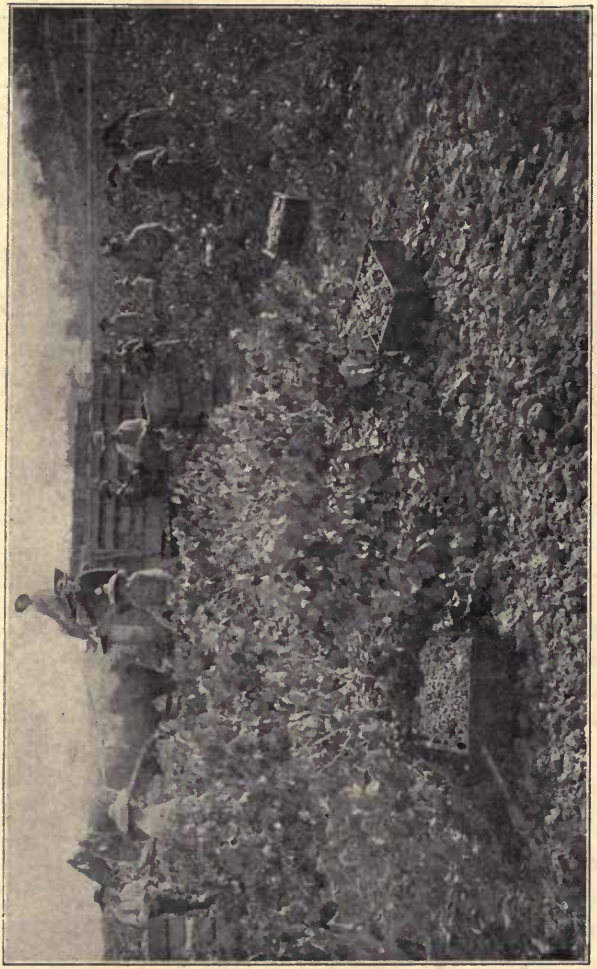
Picking and Drying Grapes in the Field.

growing in the State, and ten thousand of these are in the Hudson River valley.

Champagne is a blend of the juices of several kinds of grapes. These juices vary from year to year, and as a consequence the proportions of the various sorts must be determined each season by chemical analysis. The Elvira and White Diamond, both white; the Dutchess, which is black; the red Delaware and the dark colored Eumelon are the grapes used in New York State.

Making champagne is not a simple process by any means, but calls for expert knowledge, and the exercise of great skill. In the fall the juices are expressed from the grapes, and these juices, stored in separate casks, are permitted to remain untouched until the following spring, in order that they may ferment naturally. In this state they are known as champagne wines. With the coming of spring the analysis is made, the proper proportions determined, the blend effected, and the wine is bottled. Sometimes, if the grapes are lacking in natural sugar, it is necessary to add a small quantity of pure cane sirup even in manufacturing dry or natural champagne, and for sweet wines the sirup is always added.

The process of fermentation in the bottles,



Grape Picking.

which is essential for the production of true champagne, now begins; and it will not be completed until three years have passed. The bottles are tightly corked, and piled away in a moderately warm cellar until such time as the master chemist, nature, has done her work. Their arrival at the proper stage of fermentation is determined in a peculiar and rather expensive way —by the breakage of bottles occasioned by excessive pressure of gas. When it is evident from the number of bottles that are broken that the wine has reached the desired state of fermentation, the bottles are carried to a cool vault, where they are arranged, necks downward, on a table provided with slots for that purpose. This is done so that the sediment may settle on the corks; and to assist in its accomplishment each bottle must be shaken twice every twenty-four hours for a period that ranges from fourteen to thirty days. The process of clearing, as this is called, completed, the corks are removed, the bottles recorked, labeled, packed and the wine is ready for the market.

For ordinary wines the process is completed with the natural fermentation; and each year thereafter that they remain in the bottles they

Sorting Raisins.

improve in quality. This is not true of champagne, which begins to deteriorate when it has been stored for three years. Clarets, sherries, tokay, and sauterne wines are also made in New York, but the quantity produced does not compare with the output of California.

In the production of the raisin grape California stands supreme. Fresno County alone ships from twenty-five hundred to three thousand carloads of the dried fruit each season, and large quantities are also sent from Madeira, King, Tulare, Los Angeles and San Diego Counties.

Climatic conditions are of the utmost importance for the growth of raisins, and Fresno County is peculiarly well adapted for the prosecution of the industry. The soil and climate are admirably suitable for the production of the native grape. During three-quarters of the year there is no rain, and the sun beating down upon the soil for this long period impregnates it with the warmth that is necessary to give the fruit the essential saccharine quality. In addition to this the climate permits the drying and curing of the grapes upon the field. All fear of drought on the part of the vineyardist is dispelled by the existence of a perfect system of irrigation.

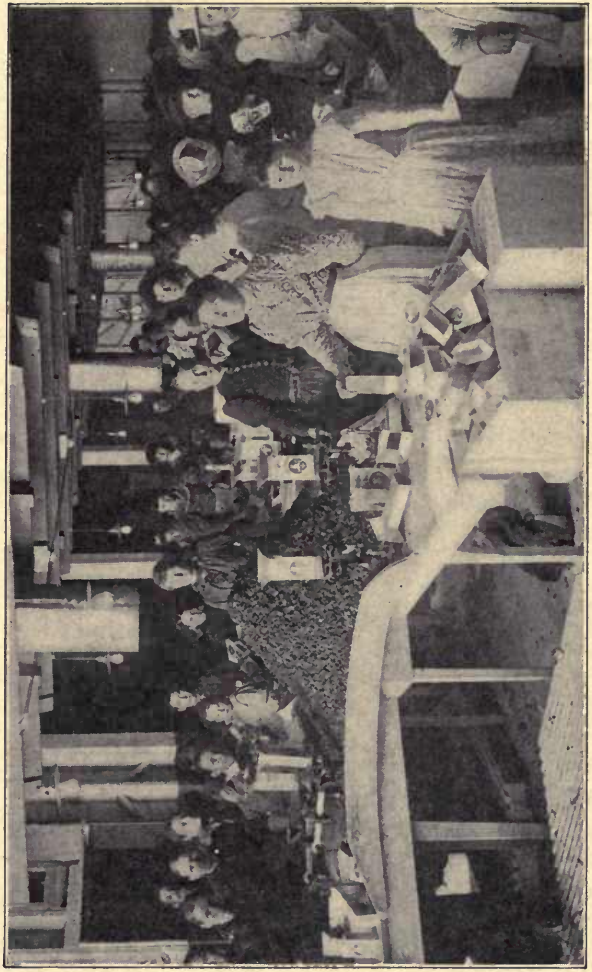
Packing High Grade Raisins.

Within the brief period of twenty-five years the raisin industry of California has developed to such proportions that the monopoly once enjoyed by Southern Europe in this field of endeavor is now a thing of the past. To-day the center of raisin cultivation has been transplanted to our own country.

The cultivation of the raisin grape is, in all essentials, the same as the culture of the wine grape—eternal vigilance and ceaseless energy are the watchwords of the successful grower. Early in the winter the vines are pruned close to the ground, and from that time until the clusters are plucked the plants and soil must receive careful, constant and intelligent attention. Insects and rust must be combated, and the maturing fruit must receive the greatest possible nourishment from the soil.

The most popular types of grapes among the raisin growers of California are the muscatel de Gordo, Blanco, muscatel of Alexandria, sultana, and Thompson's seedless.

Each acre, if properly cultivated, should yield five tons of grapes, and this quantity will furnish about a ton and a quarter of the dried fruit. Unless the soil is particularly rich, the vines are



Packing Raisi[illegible]

set eight or ten inches apart; and one could not wish a prettier sight than the long, even hedges extending as far as the eye can reach.

In Fresno there are about fifty thousand acres devoted to the growth of grapes, and in the latter part of August, when gathering begins, the countryside presents a busy scene. In the employment of hands one man an acre is the rule, so that an immense army of people is engaged in the gathering of the grape crop of Fresno alone. In plucking the grapes the stems only are handled, so that the appearance of the fruit itself may not be marred. As rapidly as the clusters are picked, they are dropped into trays two feet wide, three feet long, and holding about twenty pounds each. These are set out in rows, one end slightly raised so that they will slope toward the sun, and thus they are left for six or eight days. At the end of this period the trays, or rather the grapes within them, are reversed, and the bottom fruit is exposed to the sun. In all, this sun curing extends over ten or twelve days; and then the grapes are taken to the packing house, where they are put through the "sweating" process.

The "sweat boxes" are larger than the trays,

and about eight inches deep. The grapes are packed in them by women and girls, the fruit being arranged in layers, a sheet of paper between each layer. The filled boxes are then brought to the "equalizing" room—a dark, tight, but well ventilated apartment—piled in tiers, and left for fifteen or twenty days. This results in the even diffusion of the moisture in the fruit. When they are taken from this room the raisins are ready to be packed in twenty pound boxes, and shipped.

Loose raisins, that is, those that fall off in the course of preparation, are passed through a "stemmer," which not only removes the portions of stems adhering to them, but automatically sorts them into the four grades into which they are divided for sale.

Several years ago a new departure was made in preparing the California fruit; and to-day there is a great and increasing demand for seedless raisins. The fruit is first subjected to a temperature of 140 degrees for five hours, then it is transferred to a cooling room. While here it is put through a cleaning machine, which thoroughly cleanses it and also removes the cap stems After this it is spread out in trays in an apartment kept at 130 degrees. The alternate heat-

ing and cooling renders the fruit impervious to climatic influences and capable of preservation for an indefinite period.

The raisins are now ready for the seeder. This machine can remove the seed from twelve tons in the course of a working day. The operation is a simple one. The raisins are passed between two rubber covered rollers which flatten them and, at the same time, press the seeds to the surface, when they are seized by a contrivance of needles and teeth, attached to another roller, and removed without damage to the fruit. The seedless raisins are now packed in one pound cartons, thirty-six of these are placed in a wooden box, and the toothsome fruit is ready to start on its journey. No matter in which direction this journey leads, and it is often a journey of many miles, it will in all probability end upon some well-spread table.

The Capitol at Washington

THE site of the Capitol was selected by a group of officials and citizens, of whom General Washington was one. Their choice fell on "Jenkins Hill," and the date of the selection was June 29, 1791.

The original sketch for the building was made by Doctor Thornton, a West Indian who was then Commissioner of Patents, and so pleased Washington that it was selected. The plan was redrawn by Hallett, and suggestions were added by Hoban and others; but the Capitol, as it stands, is the outgrowth of the plans of Latrobe and Bulfinch, who took charge of the restoration of the building after the British burned it in 1814, and the additions made after the fire of 1851, which destroyed the Library.

The cornerstone of the main building was laid by Washington, September 18, 1793 (the cornerstones of the House and Senate wings were laid by Fillmore, on July 4, 1851); the work proceeded until 1795, when the funds gave out, and it was

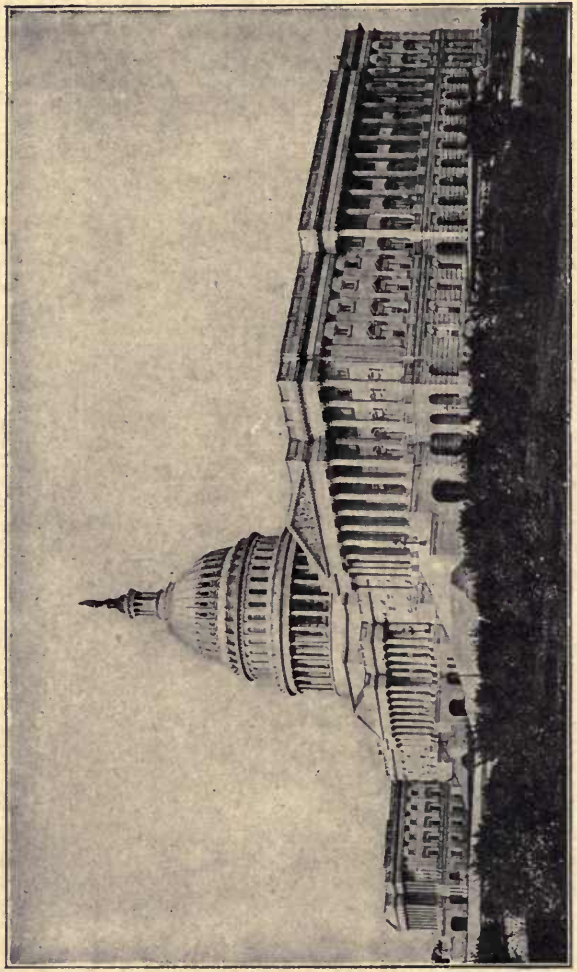
not resumed until Maryland and Virginia, at the personal request of Washington, in December of 1796, supplied the money which Congress declined to give.

Walker's dome (of nine million pounds weight) was added in 1856, and Crawford's statue of Freedom was set in place in the December of 1863.

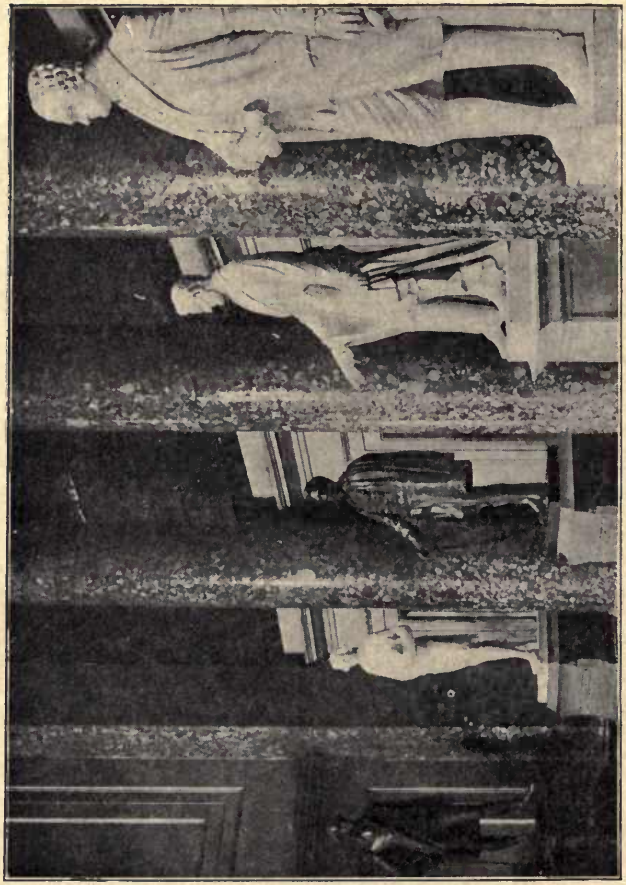
Maryland, Virginia, Massachusetts, Vermont and Tennessee supplied the material and the whole country, with Italy and France, contributed its talent to adorn it.

The groups and statues on the east front are Persico's "Discovery of America," and Greenough's "Settlement of America," and Persico's "Genius of America," and Crawford's "American Progress." The first two are on the portico of the rotunda, the others on the pediments of the rotunda and the Senate wing.

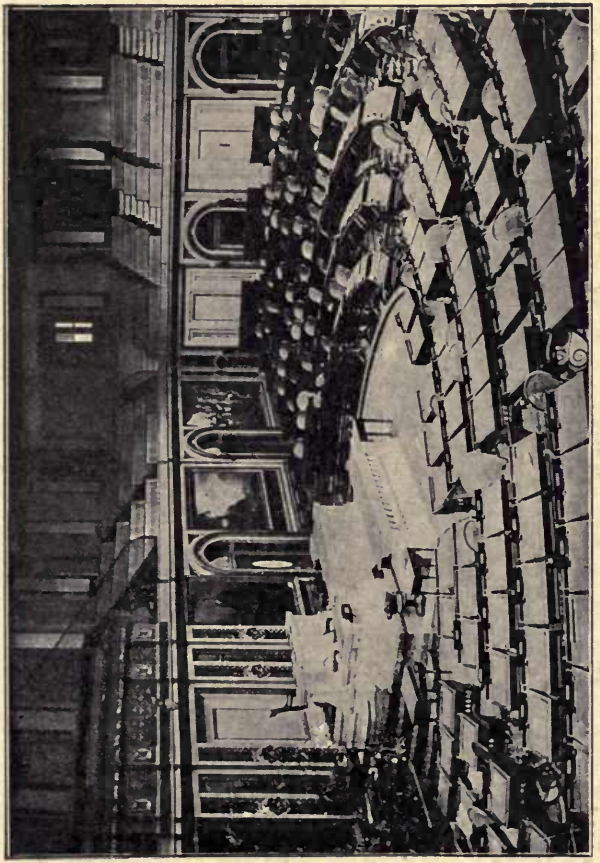
The rotunda is entered on the east by the Rogers bronze doors, which set forth the history of Columbus as a discoverer, and introduce Pizarro. It is a handsome circular hall, one hundred feet across, whose walls rise one hundred and fifty feet to the eye of the dome, through which, thirty feet higher, is seen Brumidi's "Apotheosis of Washington."



The Capitol, Washington, D. C.



Washington Statuary in the Capitol.—Hamilton, Lincoln, Kearney.



House of Representatives.

The paintings, marble panels, and medallions in the rotunda all bear on the Colonial and Revolutionary history of the country, those of the former period being the work of Vanderlyn, Powell, Chapman and Weir; the latter of Trumbull, the son of that Governor whose nickname "Brother Jonathan," given by Washington, has become our national *nom de guerre*. The panels are: two by Causici (who was a pupil of Canova), one by Gevelot, and one by Capellano; and the medallions are portraits of Columbus, Raleigh, Cabot and La Salle.

D'Angier's bronze of Jefferson is also there; it is the one that long stood before the White House.

In the floor of the rotunda a star marks the exact center of the building. It was originally intended to cut away this pavement and to put in the crypt thus opened Greenough's statue of Washington, which is now set in the plaza of the east front; for they hoped to lay Washington's body in the undercroft—the tomb beneath the crypt which was prepared for the purpose. The rotunda portico is always the scene of the inauguration of the Presidents, and has been since General Jackson's time.

The three other doors of the rotunda lead, respectively, to the west entrance, to the Senate on

President's Room in the Capitol.

the north, past the Supreme Court, and by the south to the House of Representatives, through the old Hall of Representatives, now Statuary Hall.

In this last are statues of Fulton, Muhlenberg, Trumbull, Roger Sherman, Winthrop, Stark, Stockton, Livingstone, Greene, Roger Williams, Cass Shields and other soldiers and statesmen, with busts of the two foreigners, Kosciusko and Pulaski, who did so much for the land of their adoption with the sword; the third, who won his

victories by the cross, is represented in the much discussed statue, Marquette. A plaster cast of Houdon's statue of Washington is also there—interesting as a study from life by the artist who spent some weeks at Mount Vernon. Another of the features of this Hall is the Franzoni clock.

A star set in the floor marks the place where John Quincy Adams fell stricken with paralysis while on duty.

The galleries of the House of Representatives are reached by the Tennessee marble staircase, unless the prosaic elevator is preferred. Hiram Powers' statue of Jefferson faces the eastern stairway, and above the landing is Carpenter's "First Reading of the Emancipation Proclamation Before the Cabinet, September 22, 1862." Vincente's bust of Be-Sheke, taken from life, is at the foot of the western stair with Leutze's "Westward, Ho!" above the landing, and Bierstadt's "Golden Gate" under that.

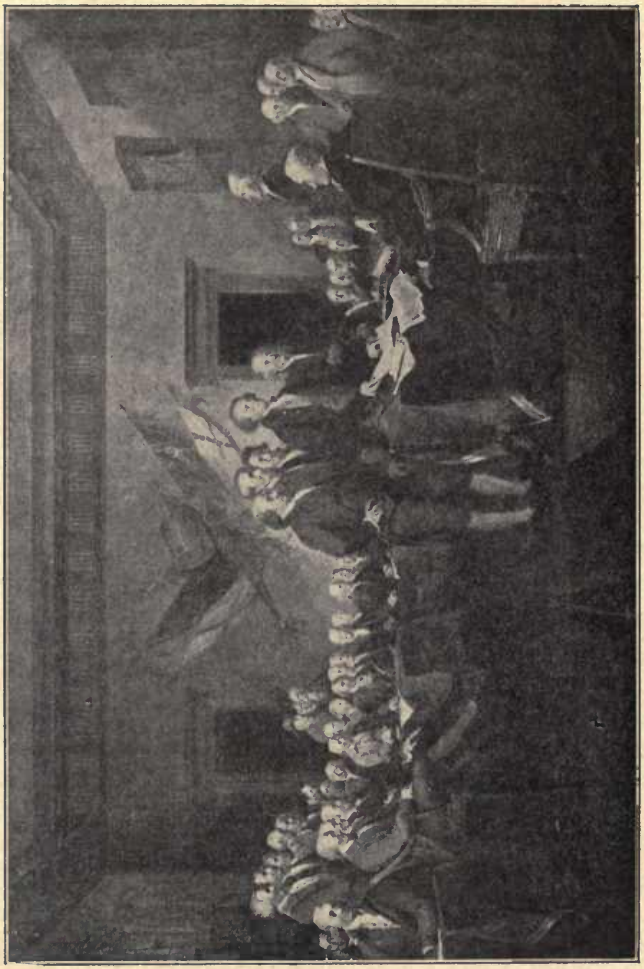
In the House, the Speaker's desk, which is of white marble, is on the south side on a raised platform. On his right sits the sergeant-at-arms of the House, at his left the assistant doorkeeper, while below are the marble desks of the clerks and the official stenographers. Before him swung in

Statue Erected by the State of Wisconsin in Honor of Pere Marquette.

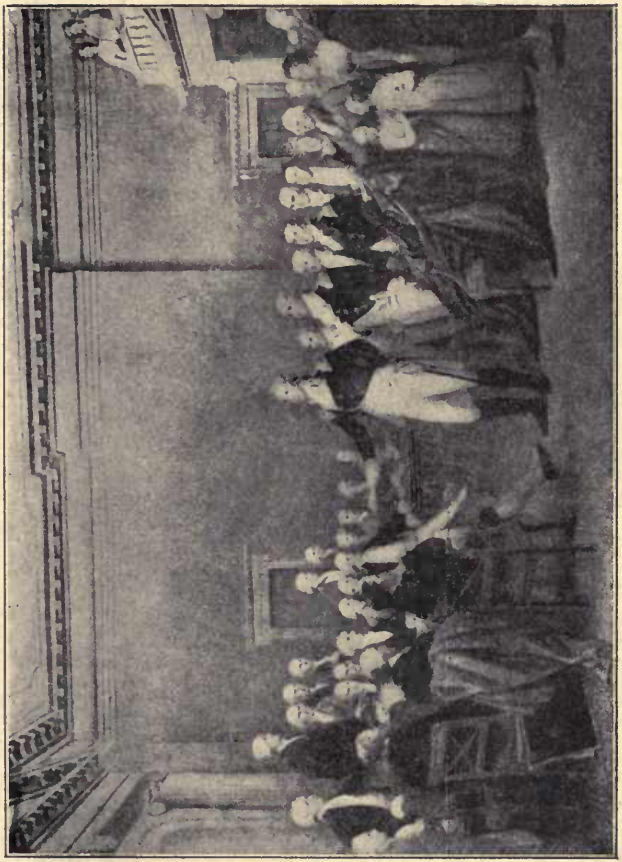
bold semi-circles row on row, are the seats of the members, the Republicans to the left, the Democrats to the right. The desks are of plain mahogany, with a silver name plate, and the chairs are equally simple. The members face the portraits of Washington and Lafayette which flank the Speaker. The ceiling, which is made of opaque glass set in panels, each bearing in its own colors the coat of arms of a State, and the mace, are the only two picturesque features. The latter is a bundle of ebony rods bound together with silver, and surmounted by the globe, on which perches the eagle with outstretched wings. When the House is in session it is set upon its pedestal of Vermont marble; when the House is in Committee of the Whole it is set upon the floor, and when borne aloft by the sergeant-at-arms it is the symbol of summons or discipline.

The Senate Galleries are reached by staircases of Tennessee marble like those in the House wing. The eastern stairway is fronted by the statue of Franklin, and the picture above the landing is Powell's "Battle of Lake Erie." Hancock guards the foot of the west stairway, while facing the foot thereof is a portrait of Las Casas, the apostle of the North American Indian. Above the landing is

"Perry's Victory."— *Painting in the Capitol.*



"The Declaration of Independence."—Painting in the Capitol.



"The Resignation of General Washington."—Painting in the Capitol.

the "Storming of Chapultepec," and at the head of the stairway is Charles Wilson Peale's portrait of Washington.

The Senate Chamber is smaller than the House, but is arranged on the same general plan. The walls are of marble, paneled, and the carvings and the gildings are rich and harmonious. The presiding officer's seat is of mahogany, and the panels of the glass ceiling contain symbols of the Army, the Navy, Science, Fine Arts, Literature, the Industrial Arts, etc.

The rooms of the President of the United States and the Vice-President, who is the President of the Senate, and the Senator's reception room, are north of this. The latter is called the Marble Room, for its walls are of Tennessee marble, with mirrors inset, its columns are of Italian marble, and its ceiling of Vermont marble. The anteroom of this hall is the most brilliantly decorated in the Capitol. The walls are of white and gold, and the designs in gilded stucco; the frescos are of vivid richness, and a notable group represents Washington consulting with Hamilton and Jefferson, then his Secretaries of Treasury and State.

The Committee Rooms are deservedly famous for their frescos, and those in the quarters of the

"Surrender of Lord Cornwallis."—Painting in the Capitol.

Committee of Agriculture, made by Brumidi in 1854, are said to be the first in the United States. They include the Calling of Cincinnatus, and of Putnam, the Seasons, and portraits of Washington and Jefferson, the practical farmer Presidents.

The doors leading to the Senate portico are the Crawford bronzes, whose six panels contain scenes from the Revolutionary War, the first inauguration, and the laying of the cornerstone of the Capitol.

The Supreme Court sits in the Senate Chamber of the old Capitol, under which it held its sessions before the north wing was built. It is one of Latrobe's designs, and its columns of Potomac marble, with white capitals, are modeled after the beautiful columns in the Temple of Minerva.

The Chief Justice sits under the arch in the midst of the Associate Justices, four to the right, four to the left. Above his chair is an eagle with outstretched wings, below on the dais sits the Attorney General with the counsel and official reporters and stenographers. The Clerk of the Court and the Marshal sit to the right and left of the "bench." Facing the latter are the busts of former Chief Justices and Associate Justices.

"Westward the Course of Empire Takes its Way."—Painting in the Capitol.

The Court opens at twelve o'clock and they enter in procession, clad in silk robes, and they sit in the order of seniority of appointment. In the robing room are portraits of John Jay, by Gilbert Stuart, John Marshall, by Rembrandt Peale, and Roger Taney, by Healy.

The original cornerstone of the Capitol can be seen by descending a flight of steps between the Supreme Court room and the rotunda. A bronze tablet affixed tells the story of the celebration of its one hundredth anniversary, and how signalized by President Cleveland and the "grateful people of the District of Columbia."

ELLA LORAINE DORSEY.

From Greece to Italy

Some Impressions of a Trip on the Mediterranean

(Illustrated from stereographs, copyright, by H. C. White Co., N. Y.)

We had come through the Hellespont, between the Sporades and Cyclades, passing Sunium, the southernmost point of Attica, and now, as morning broke, found themselves in the Piræus, gazing towards Athens!

It was a day that many of us had looked forward to for years, a day that we expected would live forever in our memories—the day when first we should see the cradle of ancient civilization! What romantic pictures we had painted in our imaginations, as we saw ourselves treading the same ground that Themistocles had fought for, that Alcibiades had graced, that Homer had sung!

And what was the reality? A dirty, dusty town, some beggars and a number of petty thieves ready to prey upon the stranger!

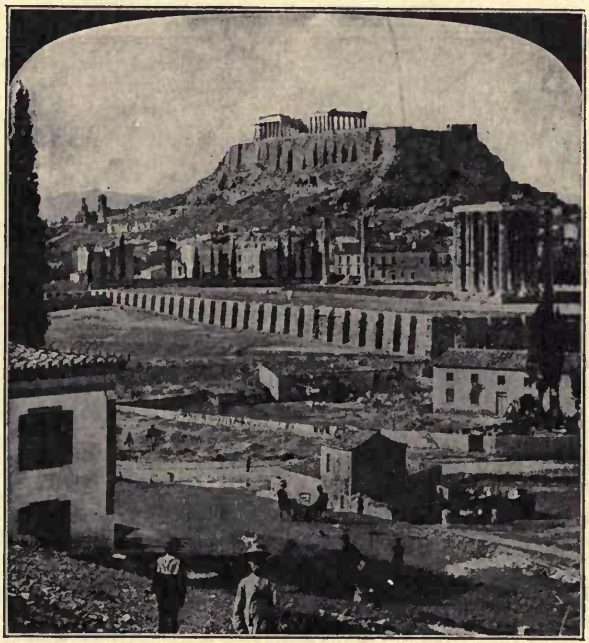
The carriage ride from Piræus to the capital was a desolate one, dust and debris were the landmarks that we passed, the lack of vegetation mak-

ing the emptiness more oppressive. Of the old Greek costumes we saw nothing save here and there some slight suggestion of former days in the garb of a bent and hoary peasant.

Athens, looking East from the Acropolis, Greece.

Athens itself made a somewhat better impression. The modern city, capital of the country since 1834, has a population of more than one

hundred thousand, well paved streets and a number of public buildings, its museums especially, built in old Hellenic style, worthy of their home.



The Temple of the Olympian Jupiter and the Acropolis.

Our interest, however, was but mildly aroused until we joined the crowds that were passing out of the gates and wending their way toward the ruins

of the ancient city. It was Sunday, and the people, in gala attire, were thronging toward the Acropolis to revel in the glory of their ancestors.

Despoiled, not so much by the Romans as by the Venetians, who in 1687 bombarded the citadel, and by the English who robbed it to enrich their museums, the Acropolis still presents many worthy examples of the magnificent works of those great Greeks whose fame has rung down through the ages.

Around them, to-day, the Athenians assemble watching the old-time dances.

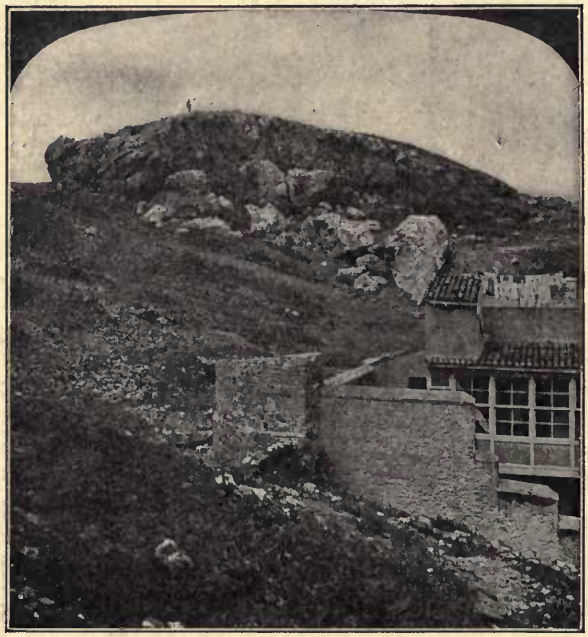
In connection with the national dances there is a peculiar practice. It is usual for young men interested in the ancient customs and their preservations to display Drachma bills inserted beneath their hats and hanging down upon their foreheads like decorations. The denomination of the bill thus exhibited shows how much the young man is willing to distribute among those who join him in the dance, and according to its value the ring that surrounds him is large or small.

It is due to King Otho that the Acropolis has been partially restored; and even if he was weak and inefficient as a ruler, the world owes a debt of gratitude to the Belgian for putting a stop to

the vandalism that bade fair to make its restoration impossible.

To Aderof, a wealthy Greek, great praise is also due for the patriotism that led him to rebuild with exceeding care the splendid Stadium wherein the Pan-Athenian games were held, which afforded seating capacity for fifty thousand people.

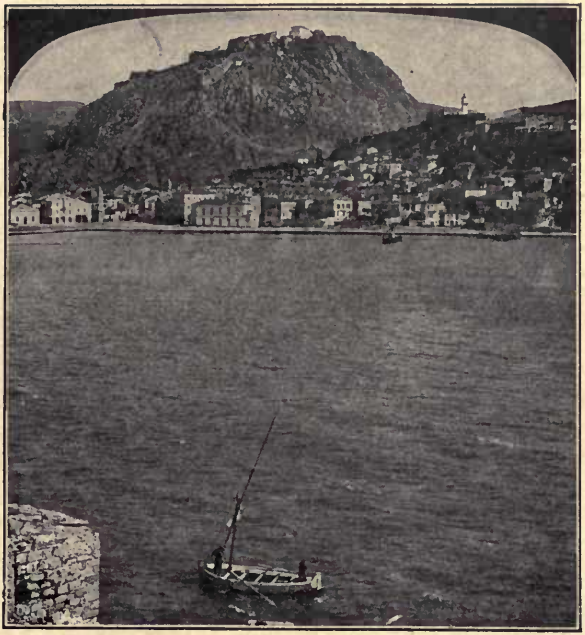
Acolos Street and the Stoa of Hadrian at Athens.



The Areopagus at Athens (Mars Hill), from which St. Paul is said to have Preached.

It is true that the new marble used has not the golden tinge of the older stone, but the restoration is exact and is a noble monument to Aderof's love for the traditions of his country.

As we stood upon the high plateau that has witnessed such stirring scenes, we gazed upon a mot-



Nauplia and the Lofty Fortress of Polamidhi, Greece.

ley assemblage—soldiers in kilts and velvet jackets, nursemaids in national costume, dancers, merchants and their families; and we felt that we had, perhaps been too harsh in our first judgment, for we could not but admire the respect for their ancestors that brought them to this historic spot.

Our admiration for the people was to receive an-

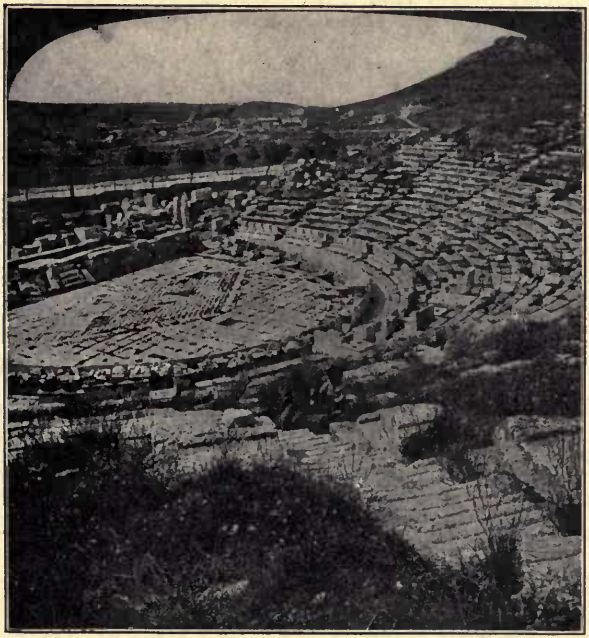
other set-back, however. When we had visited the various monuments of early days to be found in the vicinity of the ancient city, the most important of which are the temple of Victory and Erectheum, the Parthenon, the Theater of Bacchus, the Temple of Minerva Archegitis, the Porch of Adrian, the Temple of Theseus and Mars Hill, we returned to the vessel—to find that printed slips had been circulated on board announcing the fact that "Medea" would be presented at the theater that evening, in its original form, for our benefit.

Here was a pleasant surprise. Most of us could understand old Greek, and how romantic it would be, we thought, to attend a performance of the ancient play upon the very spot where first it was presented!

Vain hope! If the entrance fee was small, the performance was in accordance with the charge, the setting and the acting were equally bad, and the lines were sing-songed with a Neo-Greek accent and pronunciation that made them absolutely unintelligible even to those best versed in the tongue —a travesty, in fact, that approached very nearly to the ridiculous!

The view presented to us as we sailed out of

the Piræus compensated us fully, however, for our second disappointment; the glorious Acropolis, its golden-hued marble ruins lit up by the afternoon



Theater of Dionysus, at Athens, where Famous Greek Plays were Acted.

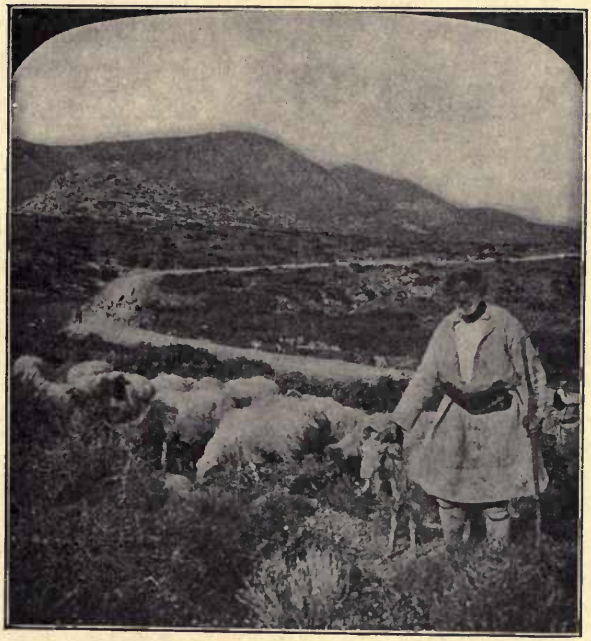
sun was the center of a magnificent panorama that held us spellbound to the deck until the picture was hidden by the island of Salamis, around

which we sailed on our way to Kalamaky on the gulf of Egina, whither we were to board a train for Nauplia, the former capital of Greece. Old Kalamaky, the station on the Athens-Pyrgos Railroad, is almost entirely in ruins, offering nothing of interest to the tourist, and we were glad that we were able to make a close connection with the train. To

Greek Peasant Woman Spinning Yarn by Hand.

our surprise we read in Greek letters upon the side of the engine the word Miltiades, and upon inquiry we found that all the locomotives in Greece are given names, as a rule those of famous men of ancient times!

There was but one redeeming feature in the landscape as we sped along—the mount of Parnas-



A Shepherd and his Flock.

sus dimly visible in the distance. For the rest, the country was arid and uninteresting until we reached the environs of Corinth, where irrigation has restored the land to its original fertility, lost through the destruction of forests, and we passed through green fields, orchards, and vineyards,

Modern Corinth, which is only about fifty years old, is a cleanly city, with well-built houses of gray stone, many of them prettily decorated with cypress, and makes an agreeable impression upon the visitor. Ancient Corinth, the once flourishing commercial city to whose citizens St. Paul wrote his epistle, has, of course more interest for the tourist, though there are no famous ruins to be found there to-day.

From Corinth we rode on high wheeled carts to Mycenæ to visit the home of Agamemnon and the vault which some scientists say was the treasure chamber of Atreus, while others claim that the cave is the grave of the great Greek commander. Whatever it is, it is one of the most imposing monuments of antiquity known to the modern world.

With admirable skill the great chamber has been built into the mountain. The blocks of which it is formed are so immense that one marvels at the

ability of the builders to move them without the aid of machinery. Within view of the palace of Agamemnon, restored with such skill that one can

Primitive Greece—Old Solid Wheel Carts Still Used on the Plains of Thessaly.

readily imagine it in its original state, is the spot where Schliemann, in 1867, discovered the collection of gold and silver ornaments which is num-

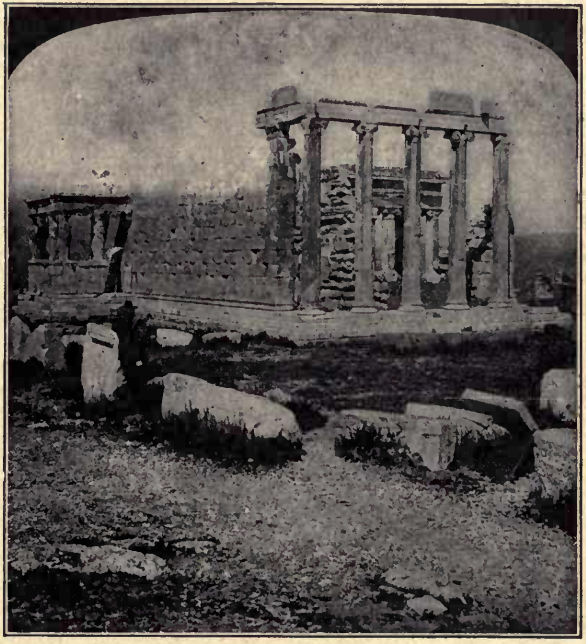
bered among the greatest treasures of the Athenian Museum.

From Mycenæ a half hour's ride by train

The Stadium, Scene of the Pan-Athenian Games at Athens.

brought us to Nauplia, one time capital of Greece, a flourishing, clean little town picturesquely situated, surrounded by clearly-cut mountain peaks,

one of which is crowned by the battlements of Polamidhi castle, now used as a prison. In the harbor there is the ruin of an ancient and romantic water



The Erechtheum, Most Sacred Temple of the Greeks at Athens.

tower upon a rocky islet caressed by the peaceful waters. The view from the bay of magnificent mountain chains disposed like scenery upon a stage, is entrancingly beautiful.

At Nauplia we found our vessel awaiting us, and boarding it we were borne away from the shores, waving a farewell to Greece—which had, after all, proved more interesting than we had anticipated when first we entered the Piræus.

As Attica faded from our view we turned our eyes seaward, toward Sicily and Syracuse.

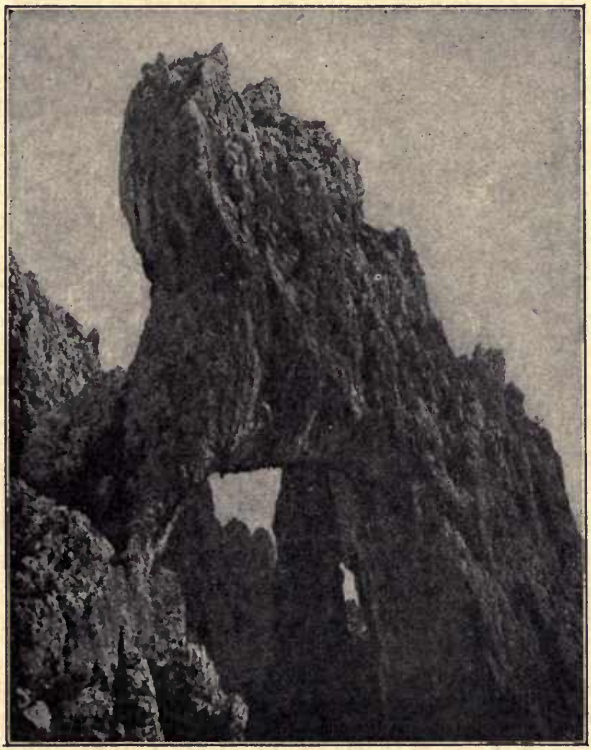
Syracuse! What memories were evoked by that name, and what pleasant anticipations were ours of a visit to that city for the possession of which the Greeks, the Romans, and the Carthagenians had fought so many bloody battles!

And every pleasant anticipation was realized! The very approach to the land, lit up by the morning sun, entranced us.

In the background of the magnificent picture presented to our view, Mount Etna, infinitely varied in coloring and shading, rose majestically toward the sky, the smoke that hung over its crater giving evidence that the fires within it are not yet dead.

The importance and the magnificence of Syracuse have passed away, but reminders of the days of her greatness remain.

One still can see portions of that immense wall against which the Grecian forces were shattered



Natural Arch on Capri.

when the city, numbering more than a million inhabitants, was in the zenith of its glory, the ruins of three Doric temples, of the celebrated Necropolis, of the Roman amphitheater of the time of Augustus, of the great catacombs, not filled, like those of Palermo, with mummies, but forming a complete subterranean city with streets and squares, the various houses of which are hewn into the living rock; and, most wonderful of all, the Latomiæ, those Titanic quarries which in the days of old supplied the material for the building of the mighty city.

In the Latomia del Paradiso the astonished visitor still can see the celebrated "ear of Dionysius," an extensive walk, the windings of which imitate with remarkable exactness the formation of the human ear. At first one is apt to listen with some scepticism to the tale that the tyrant by standing at a certain point within these convolutions, was able to hear the conversation of the prisoners immured in the quarries without himself being seen, but the truth of the statement was proven to us. Within the box-like opening pointed out to us we found that we could not only hear the words of members of our party a great distance away, but could actually distinguish the sound

caused by the scraping of a nail over a piece of paper.

Although we remained as long as we could, we

Bird's-Eye View of Naples and Vesuvius, Italy.

felt that our stay at Syracuse had been all too short when we were finally forced to bid adieu to this interesting spot with so many romantic associations, and travel on to Naples.

Our route led us through the straits of Messina, within view of the famous castle that harbored Richard Cœur de Lion on his journey to Acre and near the whirlpools Scylla and Charybdis so famous in ancient legends. As our good ship sped along we caught a glimpse of the magnificent volcano Stromboli in full eruption, skirted the island of Capri with its wonderful grotto wherein everything seems tinged with a cerulean hue, finally approaching that incomparable bay dominated by the lofty, purple-garbed Vesuvius, around which so many fearful memories cling.

It was evening when we entered the bay of Naples, and the orange-tinted scene upon which we gazed was so bewitching that we were no longer at a loss to understand the admiration that gave birth to the expression, "See Naples and die."

Cadet Life at West Point

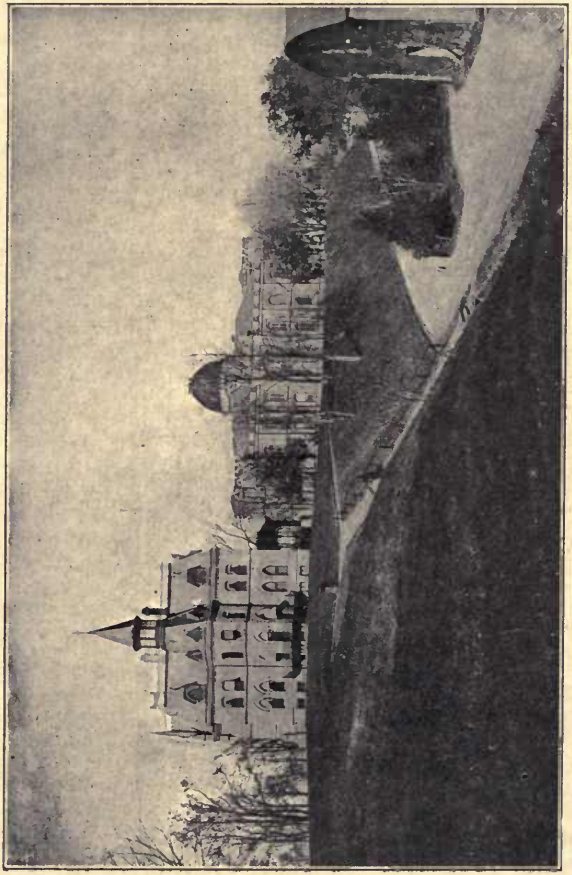
THERE is probably not a more democratic institution in the world than the United States Military Academy at West Point, New York. Each representative in Congress is empowered to appoint a cadet from his congressional district, and these, being most often chosen by competitive examination, are from all walks of life. One has only to see them drawn up in line, when they report for their entrance examination, to unhesitatingly pronounce them the most heterogeneous lot imaginable. The well-dressed city-youth is alongside the boy from the farm, and both look as awkward as possible in their attempts to assume an erect and military carriage, to which they have not been trained, and to which their clothing was decidedly not cut. Their crudeness is exaggerated by contrast with the trim and graceful bearing of those who have preceded them into the ranks of the cadet battalion, and who now look down upon the newcomers. This vision of these cadets in immaculate white trousers and

gloves, the gray coat covered with spherical bell buttons, and with such impressive, though diminutive tails, the jaunty forage cap, and above all, the undoubted air of superiority that carries him along without even a glance toward the abject newcomer, creates but one impression in the new arrival's heart, and that is overwhelming: "I might as well give it up right here, for I can never become like that."

The first few days or even weeks and months do not go far to alter such an impression, except perhaps to make the homesick youth wish he had never been born, or in some equally effective way had been prevented from coming to such a dreadful place. It is said that misery loves company; but there is a possibility of overdoing this as well as everything else, and the concentrated mass of utter wretchedness and low spirits among the newcomers would make a "vale of tears" seem almost cheerful.

Having passed their entrance examination, they are promoted to "plebes," which designation they bear during their first year.

The battalion having gone into camp across the parade, the "plebes" are left during about three weeks in barracks under several cadet officers and

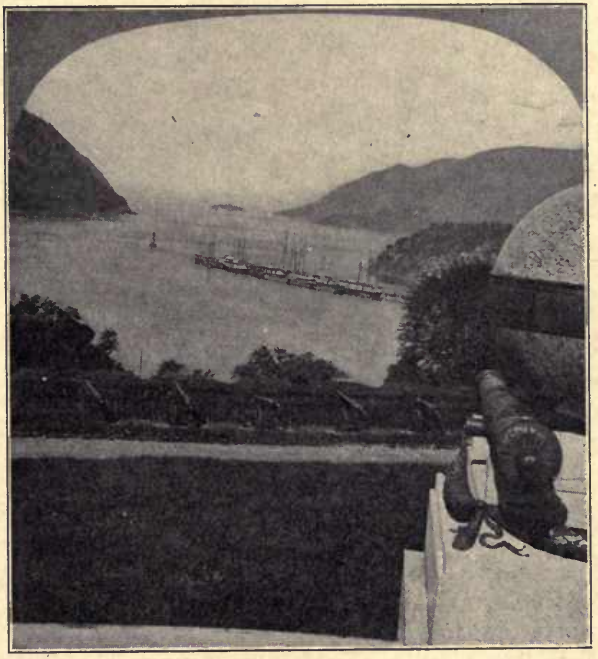


Headquarters at West Point.

corporals, whose entire time is occupied in imparting much-needed military information to their charges, keeping them constantly aware that they are personally of no importance whatever, and as machines they must, in the soonest possible time, get to running smoothly. Their rooms are inspected frequently, every article having its place strictly prescribed; and the cadet inspector does not hesitate to require an entire rearrangement if his eye is offended by one or two misplaced articles. Three drills a day, each lasting an hour to an hour and a half, leave just enough time to be busily occupied in going to the quartermaster's to try on clothing, in arranging the room for inspection, in marching to meals, and in falling in ranks at retreat for a careful inspection of dress and carriage, so that the sound of "taps" is most welcome; and so tired are the poor fellows, and so soundly do they sleep, that reveille at half-past five seems to come almost before their heads have touched the pillow.

But when they join the battalion in camp it is even worse, for here are a hundred and fifty upper-class men ready to be amused, and ingenious in devising plans to that end. The most of the "hazing," as it is called, is done by the third class,

their immediate seniors. A plebe is never touched, except perhaps some dark night on his first guard tour when he chances to be on the lonely post along Fort Clinton ditch, when he is apt to be visited by



Looking up the Hudson River from West Point.

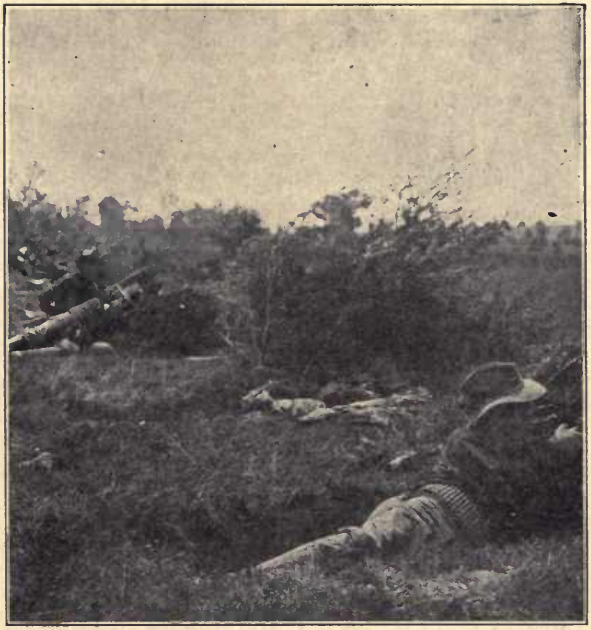
bands of ghosts, who ultimately cause him and his rifle to land together in the bottom of the ditch,

which is fortunately dry. But if physical hazing is proscribed from the cadet code, there is no restriction upon ingenious forms of annoyance. A wealthy boy came to the academy in his yacht,

Cadets Building Summer Houses.

and, after entertaining his friends at a farewell dinner, came ashore and reported as a candidate. It is impossible to say how much extra hazing

that yacht and dinner cost him, but one of his constant duties was to keep the company street free from sparrows, which were very numerous;

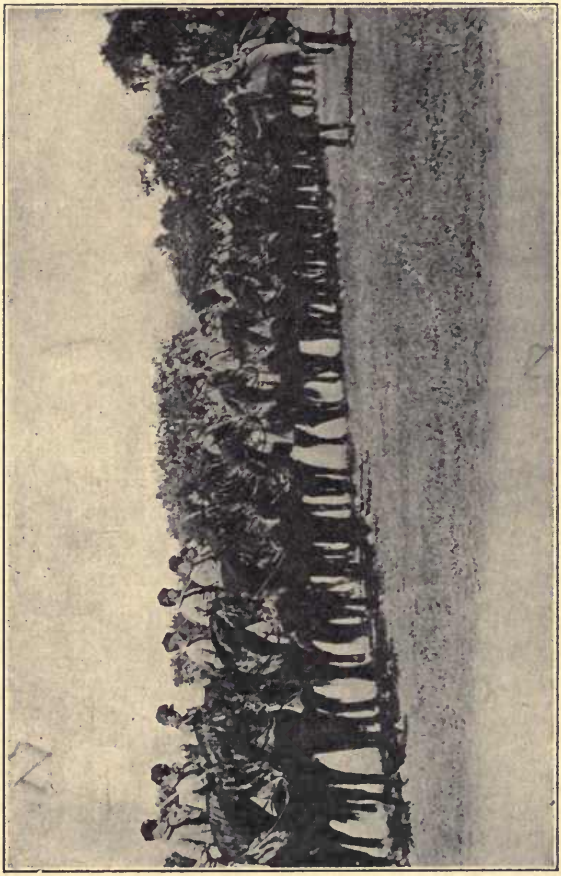


Cadets on Skirmish Line.

and all day long, first from one and then from the other end of the company street, came the cry of a "yearling" or third-class man, "Mr. ——, don't

you see the chickens in the dooryard?" and Mr. —— trotted up and down that company street saying "shoo" to the sparrows, under the assumption that they were chickens, till his tongue was almost hanging out. Another sufferer was given a milliner's catalogue, from which he was required to cut out the illustrations and "play doll" with them, arranging them around the available places in his tent, and calling them by their names as little girls do. All this is under the direction of a yearling lying in the next tent, who listens to the performance with a serious face and occasional suggestions. Of course there is an alternative, and that is to fight. A plebe who will fight is highly thought of, and promptly accommodated. The matter is at once arranged by the upper class concerned, and a man from that class of the same weight as the plebe is turned out to fight him. Seconds, a time-keeper, and a referee, complete the party; and avoiding the sentinels, they adjourn to some secluded spot and have it out. It is needless to say that should the plebe win he will be further accommodated in a similar manner if he should express such a desire, but not otherwise.

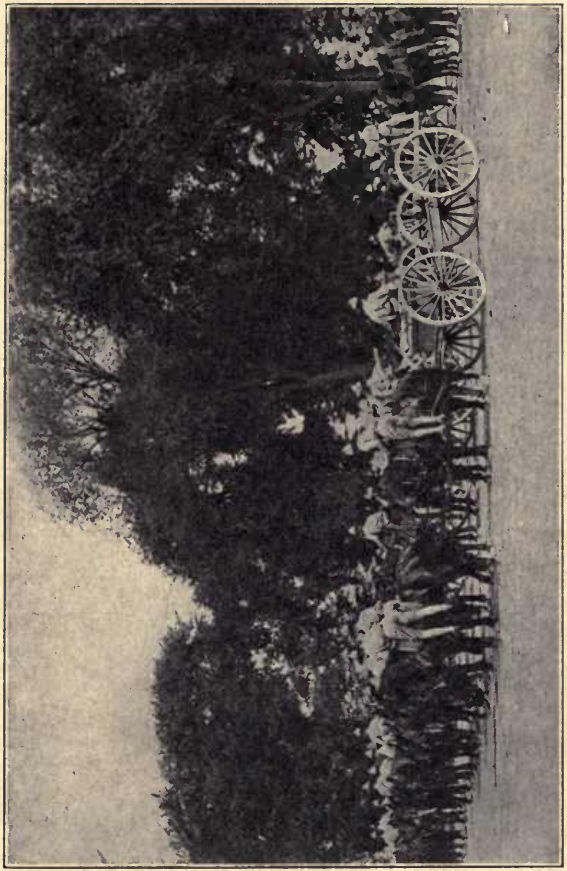
The breaking up of camp stops this, and from that time on the plebes are left severely alone,



Cavalry Review.

being specially designated by the prefix "Mr." when addressed by upper-class men, until the first candidate of the next class appears, and then even the "Mr." is dropped and their time of social servitude is ended.

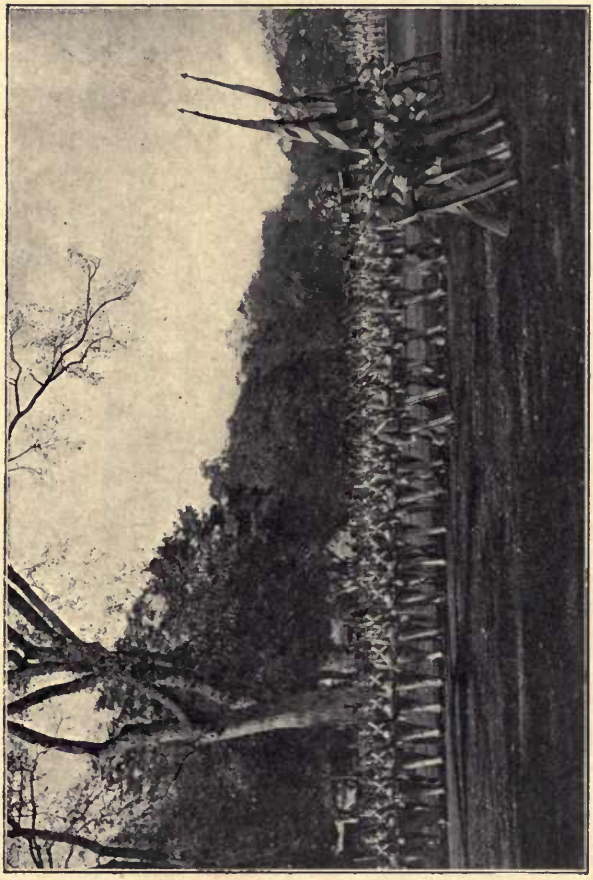
During the year their studies have kept them more than busy, for while these are elementary in name they are as severe as possible in fact, and cause many vacancies in the class ranks. The studies during the first year are English, French, algebra, geometry, trigonometry, surveying, and analytical geometry. These are so arranged that only two are recited daily, all recitations being compulsory except in case of sickness, when an excuse must be obtained from the surgeon. The classes are divided into sections of about ten men, and each section is heard by a separate instructor, who listens to a recitation by each cadet daily and marks him. Transfers from one section to another are made weekly, based upon the total of marks, and semi-annually a large number at the foot of the class, or "the immortals" as they are called, give up their military aspirations and return to civil life. This is rarely due to laziness or lack of application, but usually to mental inability to meet the severe requirements, and perhaps often



Light Artillery Drill.—Horse Battery.

on account of lack of previous mental training. Sometimes a nervous cadet who is worried about his chances fails on that account, and such cases have occasionally resulted in the boy's fainting in the examination hall when under fire of questions before that august body, the Academic Board.

But the end of the Academic year comes with the first of June, and in a few days the examinations are passed and the strain is ended. At the same time, the plebe has blossomed out into a yearling and has become eligible socially. The social phase of cadet life is ideal, for June is an ideal month at West Point, in every respect. The quartermaster has caused every spot capable of improvement to be improved and made most presentable for the annual inspection by the official Board of Visitors. The parade is like velvet, and the cadets in their gray coats and white duck trousers stand out in bright relief as they go through their evolutions. During the first ten days of June one of each of the exercises of the entire year is performed before the Board of Visitors; and frequent reviews, and escorts of visiting dignitaries, such as the Secretary of War, General of the Army, and occasionally the President, tend to produce an almost constant military



On Parade.

show. But there are intervals between exercises. The evenings are generally given over to small hops, until, on the night before graduation, comes the big hop, when all the admiring relatives of the graduates have arrived, and fond mothers watch their boys even more carefully than the chaperons watch their girls.

As soon as graduation is over the battalion moves into camp, when drills and other exercises with two parades a day keep the extra time so cut up into short fragments that a cadet accustoms himself to do everything promptly and nothing in a hurry. If he has thirty minutes between drills, he can walk at least twenty-nine of them with some girl, however, and he in some way manages to drop into ranks as the signal ceases for the next drill. For if he is late it means possible confinement to his tent, and he can not afford that.

Yearling camp passes quickly, and soon the last of August arrives, and the battalion returns to barracks and settles down to studies again. The studies for the second year are French, Spanish, descriptive geometry, calculus, and drawing. During this year riding is taken up, the athletic training in the first year having been carried on in the gymnasium, comprising fencing and

Siege Battery Drill.

swimming as well as a thorough gymnastic course. The riding is a serious affair for many of the boys, who have never practised it before. The horses are not well-trained; and if tradition can be relied upon, they smile and seem pleased when an especially frightened yearling falls to their lot. The riding continues through three years of the course, and occupies an hour on alternate days.

With the end of the second year comes "furlough," when the cadets get leave of absence during the entire summer. This is their only indulgence of this kind during the course, except two or three days at Christmas, if they are so fortunate as to have no demerit against them on the conduct report.

On return from furlough a homesick lot of boys take up drill regulations, mechanics, chemistry, mineralogy, geology, electricity, physics, astronomy, and drawing for their next year's work; and surviving this, they become "first-class men," the oracles of the corps, and presumably very dignified. First-class camp is always looked back upon with real pleasure and genuine regret. A first-class man has the privilege of leaving camp at any time when not on duty, while a yearling can go only by special permission, except, of

course, to the hops. Then the yearlings have not all progressed far enough with the dancing-master to be desirable partners, for though they have an

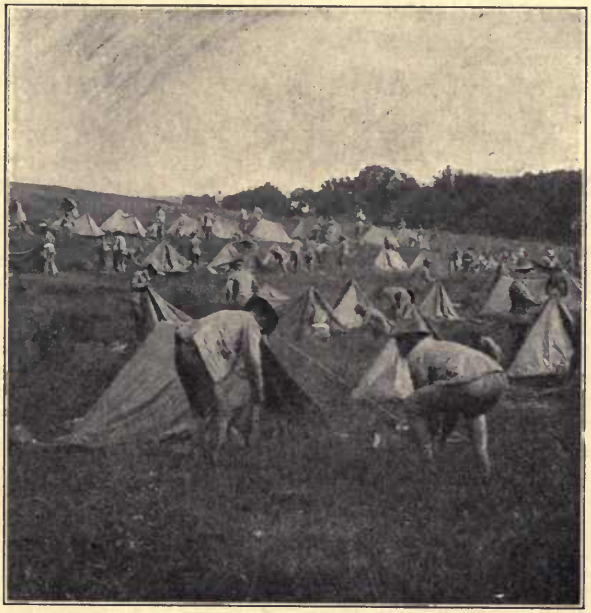
The Cadet Barber.

hour a day during their plebe camp and also during their yearling camp under his instruction, there are so many of them that it takes him a long time to perfect them all.

First-class camp is ended all too quickly, and the grind of study begins again. This time it includes civil and military engineering, international, constitutional, and military law, ordnance and gunnery, and a short course in world's history. In addition to this a course in practical military engineering, such as bridge-building of various kinds, construction of trenches and making gabions and fascines. These drills come during October and April, and are daily for those members of the class not required as officers at the various batteries. The second-class men are gunners at the sea-coast battery of heavy guns, the third-class at light battery, and the fourth-class at mortar and foot batteries. During May and September infantry drills take place daily from 4:15 to 5:30 o'clock, and are followed shortly by parade. Cavalry drills occur at other portions of the day, and signalling and practical military engineering occupy also a large part of the summer drill hours during camp.

It was formerly the intention of the authorities to have enough drills to suffice for the physical training of the corps, and little time was given for athletic training other than that mentioned as occurring in the gymnasium during the first year.

But of recent years athletic sports and games have been inaugurated and encouraged by an association among the officers, who subscribe liberally in



Cadets Erecting Tents.

funds, and otherwise assist the cadets in managing their sports. The cadet teams are not permitted to leave the academy to play other teams; but

nevertheless engagements are made with the best college teams of the country in baseball and football, and the games have created and maintained a lively interest in such sports. The football season is particularly exciting, and a good run or other clever work is made a just cause for pride. In addition to the games with other college teams there is held a competition in field events in June and one indoors in March; so that while a few years ago almost no interest was taken in field or athletic sports, now nearly the entire corps can be seen on Wednesday and Saturday afternoons, as well as at other spare moments, either playing tennis, polo, baseball, football, and golf, or practising the starts and other incidents to athletic sports preparatory to field day, while a majority of them turn out regularly for a mile run before breakfast daily.

In all of their games, as in all of their other training, the fact is kept before them that they must be men and gentlemen above everything else; and they feel, as a prominent officer expressed it to them, that "Cadets can afford to be beaten, but they can not afford to play unfairly." The highest standard of honor is maintained throughout their course, and its violation is visited with the

severest penalties. On outcropping ledges of rock about the post are cut the names of battles in which the American army has participated, while in the chapel are imbedded in the walls captured cannon and tablets to departed heroes, and in glass cases captured flags are displayed. An equally praiseworthy effort has been made to place before the cadets in their mess-hall, topics of elevating military conversation in the portraits of officers of distinction.

It is in the mess-hall that the oracles flourish. Cadets of all four classes sit at each table, and naturally a first-class man is a person of great

Cadets Sighting a Gun.

learning and experience in the eyes of those of the lower classes, and especially of the plebes. Affairs of the nation and other mighty matters are discussed, and the admiring plebe conceives a respect for the first-class man which makes his sayings truly words of wisdom, remembered and quoted years afterward. Should that first-class man chance the next year after his graduation to have a brush with Indians somewhere in the western country, as he is likely to do, then are his sayings and doings gone over, discovering new wisdom and infallible signs of coming greatness.

Grain, and How it is Handled

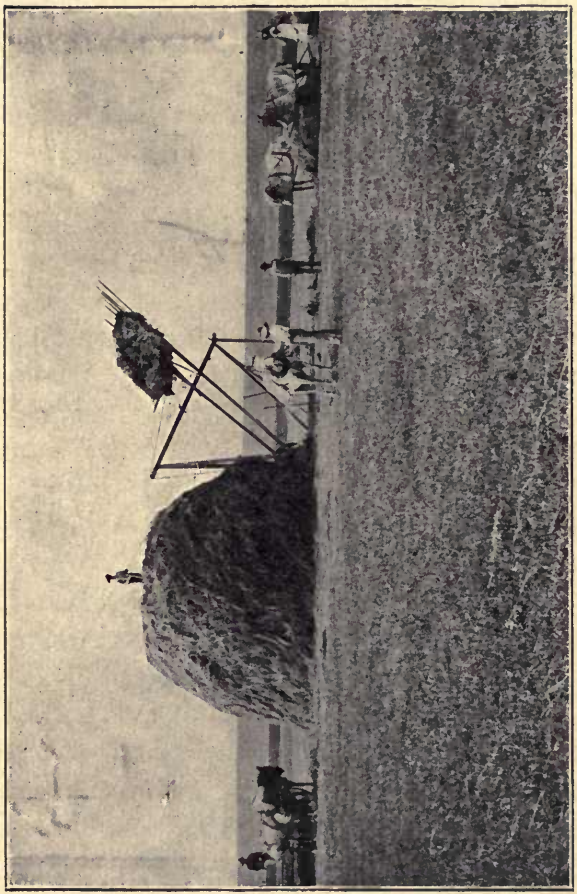
THE United States is the grain market of the world. In entering upon the consideration of the subject, however, many old time notions must be set aside. The wheat farm of the west and the northwest is not a patch of ground, but a province; and the manager of a plantation covering seven thousand acres must be possessed of as much skill, ability, and brains as the head of a great corporation. A man possessing the necessary qualifications commands a salary as large as a railroad president, and his responsibilities, from a business standpoint, are just as great.

We are accustomed to picture to ourselves the bands of lusty farm-hands hurrying across the fields in answer to the tooting horn or clanging bell, but these men do not have to travel miles in order to reach the farm-house kitchen. On an extensive wheat farm it is no unusual thing for the workers to find themselves two or three miles

away from their headquarters when the noon hour comes. Under these circumstances, the loss to their employer would be an appreciable one were they to follow the usual custom; and this loss is saved by serving the noonday meal at whatever point the gangs are working. Generally the food is carried from the house, but sometimes kitchens on wheels are sent out with the laborers, and the food is prepared on the spot. Upon such a plantation it frequently happens that the workers on one end do not see those on the other during the whole season.

Bearing these points in mind, the reader will approach the consideration of the methods employed in the handling of grain in the proper frame of mind.

A seven thousand acre farm, which should produce about 140,000 bushels of wheat each year, is usually divided into three sections, each with a superintendent. Upon each of the divisions there is a large, plain, but substantial building for the men, and this is provided with a dining-hall, a dormitory, kitchen, and lounging-room. Near by are a stable, an implement barn, and, sometimes, a machine shed. In the stables there are about a hundred horses. The machine shed, if the owner



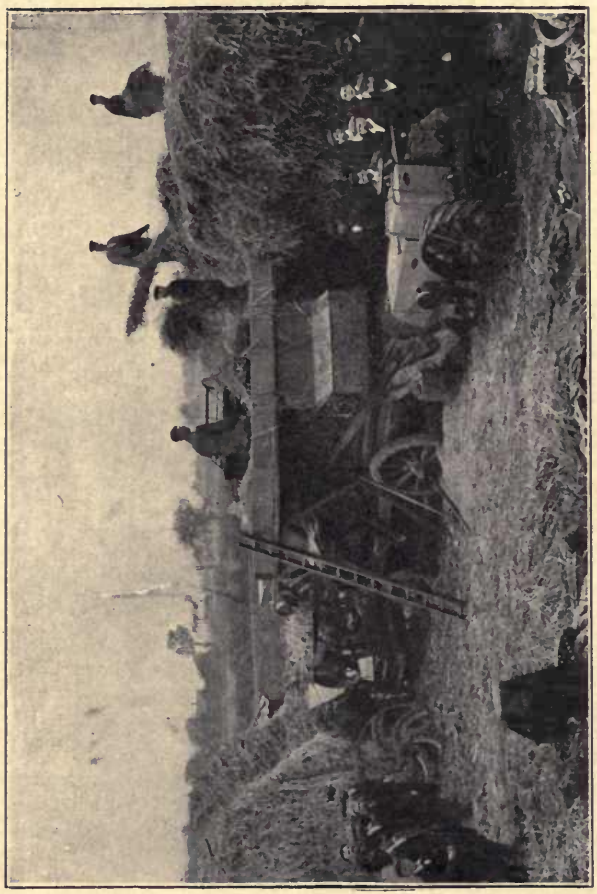
Haying on the Riverside Farm at Huron, S. D.

is keeping abreast with the times, shelters ten four-horse plows, eight four-horse drills, probably six harrows, and several binders or reapers. The three steam motor threshing machines, used, of course, during harvest time only, are kept in one place until needed.

In addition to the furnishings enumerated, there are numerous wagons, barrows, carts, and miscellaneous farm tools, while somewhere upon the place there are blacksmith and wood-working shops.

As a general rule the land touches the railroad track somewhere and at points convenient to the different divisions, upon sidings of the track a couple of grain elevators are located, the two having a capacity of possibly 100,000 bushels.

The office of the manager is centrally located, and is connected with all parts of the establishment as well as with the outside world, by telephone. Generally it is provided with the familiar "stock ticker," for the manager must combine financiering with his other accomplishments, and know just when to sell his product. Not far from the main building will be found storage rooms, containing immense quantities of machinery parts and repairs, others with harness and horse furnish-

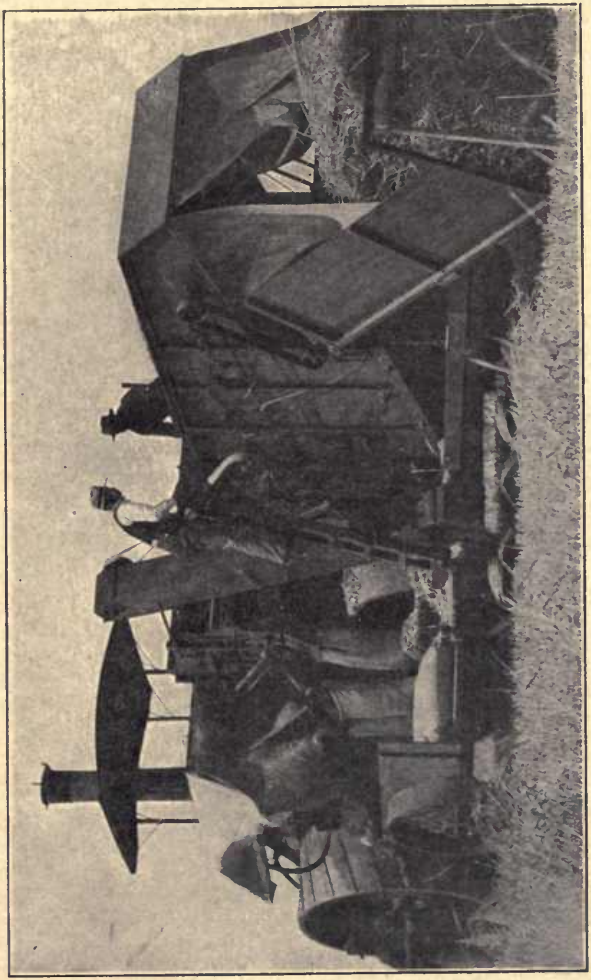


Gathering Hay.

ings, and others still with ample supplies of staple groceries.

In the early fall the old straw from the former year's crop is burned off, and the plowing begins. The great plows, turning two furrows at a time, are drawn by five horses—unless the farm is supplied with a traction engine, which tows a large and sometimes varied number of machines as shown in one of our illustrations. Each plow is expected to cover about three hundred acres in the season. The plowmen work in gangs, and the machines themselves are so placed that several of them cross a field together in parallel lines, but following each other in such order that to the onlooker from a distance they present the appearance of a flight of steps. On the average, fifty men are employed in plowing the seven thousand acres. Perhaps forty of these are transient workers, hired as occasion demands, the other ten belonging to the regular force.

Sometimes in March, sometimes as late as May, the fields are ready for the harrow. Again new hands are engaged, and one man, with a twenty-five foot harrow, is expected to pulverize sixty-five to seventy-five acres a day. Harrowing usually lasts for from four to six weeks, according to the weather, and then the seeding begins.

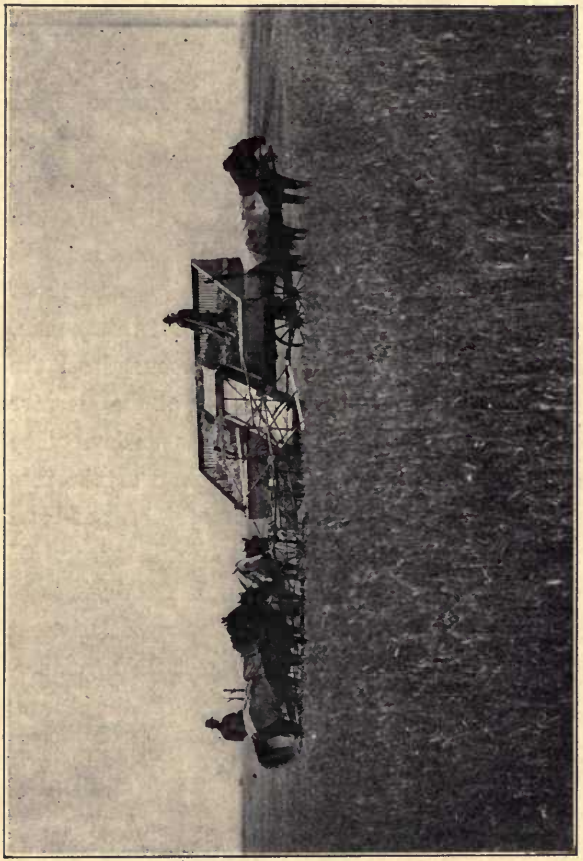


Threshing Wheat.

To plant an acre properly, a bushel and a peck of seed is required. This seed is generally that preserved from the former year's crop, but at times the farmers in different sections exchange seed, because it is considered beneficial to change the stock from time to time. The drills used for planting are drawn by three or four horses, according to the nature of the land and are provided with a driver and a man to walk behind managing the levers. They travel from twenty to twenty-five miles a day. The planting season over, the extra men are discharged, and the regular force attends to the putting in of corn, oats, and the grass that is to be used as fodder.

With harvesting time come the migratory harvest hands. These men are accustomed to the work, and travel from place to place, beginning far in the south and working northward as the crops ripen. They are familiar with the management of the immense reapers that cut the grain, gather it in sheaves, bind, and toss it upon the fields for the men to collect in shocks.

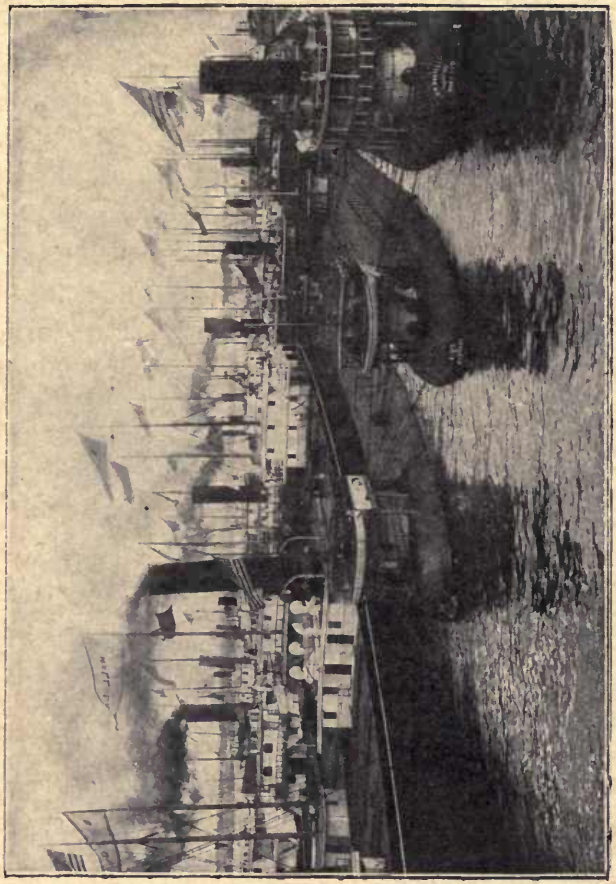
On the last day of the harvest threshing begins. The steam threshing-machine is a marvel of simplicity and effectiveness. It is fed from two wagons, one on each side, from which the men



Harvesting with "Header."

toss the sheaves into the hopper as fast as they can lift them. The machine cuts the binding twine, separates the wheat from the straw, and throws the latter out through the blower. Part of this refuse is saved and used for fuel for the thresher. Usually three threshers are in use at the same time, in different parts of the farm, although under great pressure two could thresh seven thousand acres in a sufficiently short time. The working force of each consists of thirty men, who gather the shocks in the wagons, haul the loads to the thresher, and deliver at the elevator about twenty-five hundred bushels a day. The threshed grain is discharged through a tube into tanks standing beside the machine, and immediately drawn to the elevator, where it is weighed, examined and stored. When the grain is to be stored in sacks there is an ingenious attachment on the threshing machine which fills the bags automatically. All the work from the time the sheaves are tossed into the hopper of the thresher until it reaches the cook, is done by machinery, and no hand need touch it.

When the crop is sold, either in sacks or in bulk, it is loaded into cars from a chute—and a period of rest ensues for the farmer—a period that is



A Fleet of Grain "Whalebacks."

usually occupied in healthful and well earned amusement.

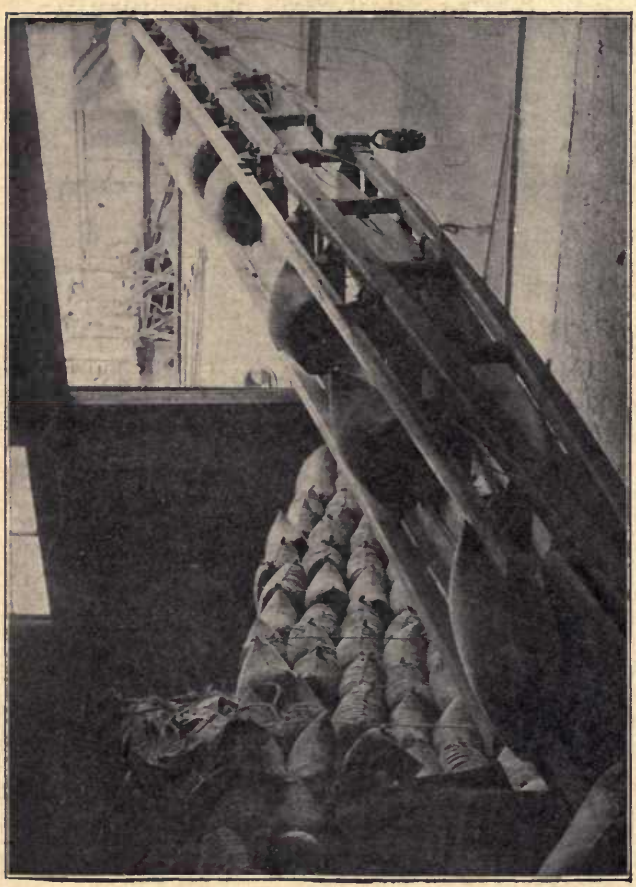
In hauling the wheat to market the lake steamers are employed wherever it is possible to do so, on account of the reduced cost of delivery thus secured. The great waterway at this season is literally thronged with vessels of every description; and Duluth, Milwaukee, and other lake port water fronts present a busy scene—trains puffing under the elevators on the one side, and on the other whalebacks and other vessels receiving their loads of grain from the chutes that lead to their hatches.

Chicago, the breezy mart of the West, is the chief distributing point and, in a way, the center of the wheat trade of the world. Here are more than twenty elevators, most of them located on the lake front, to take care, on an average, of 130,000,000 bushels of wheat each year. Some of the elevators are the largest in the world. For the benefit of those of our readers who do not dwell in the wheat belt or near the chief cities of the trunk lines, it may be of interest to describe one of these unique storehouses. We shall select one of ordinary proportions and importance.

The building is perhaps 150 feet long by 75

Unloading Wheat into Elevators.—Buffalo.

feet wide. Like all of its class it rises about eighty feet to the eaves, and above this there is a narrow upper part, which adds forty or fifty feet to the height. It is built of wood, sheathed with corrugated iron a little way up, and slated the rest of the way. Entering at one end where two railway tracks run into the building, we find a narrow wooden stairway. The flights are short, but there are eighteen of them, so it is well to ascend with dignified slowness. This course is advisable, also, because of the things there are to see as we pass upward. Alongside of us whirls the great belt, 250 feet long, which conveys the power from the massive engines in the basement to the attic, and within the sort of chimney, called a "leg," extending from the bottom to the top, we can hear the rattle of chains. When the grain arrives at an elevator the train is backed into the building itself, and when it stops, each car door is opposite a receiver, a kind of vat or hopper, in the platform. By means of steam shovels operated almost automatically, two men in each car can empty the whole train in ten minutes or less. As fast as the grain is dumped the receiver delivers it to iron buckets, each holding about a peck. These buckets are attached to endless chains, and, passing up to



How the Grain is Loaded on Boats.

the roof chamber through the "leg" just referred to, hoist 6,000 bushels an hour when running at ordinary speed.

Reaching the top the visitor's ears are assailed by all sorts of noises, and in a few minutes he is covered from head to foot by the dust created by the fans which winnow the wheat as it comes up in the buckets. All about him there is a maze of belts and wheels, for this is the real work-shop of the elevator.

When it has been winnowed the grain is dropped into hoppers ten feet wide and about twenty deep that open every few feet in the center of the floor upon which he stands. Caution is necessary in moving about, for the lofty structure is quivering and shaking like a living thing.

Three stories below the visitor has seen that these hoppers are suspended on iron stirrups—to avoid rigidity, which would be dangerous on account of the weight they carry. At the bottom of each there is a tubular opening controlled by an iron gate that is opened and shut by steam. In this elevator there are twelve of these hoppers, and beneath each one are twelve openings, the spouts of twelve chutes, each of which leads to a different bin. The men at the top know the hopper into

which each particular consignment of grain is to be emptied, and upon this floor, between the bottoms of the bins and the twelve openings beneath, there are movable conductors which guide the downpour into its proper chute.

From the top of the main building the bins themselves can be seen. Some are larger than others, but the depth of all is the same—sixty-five feet to the spouts at the bottom. If the bins are all full at one time they hold about nine hundred thousand bushels, weighing fifty million pounds—wheat enough for two hundred thousand barrels of flour.

The loading and unloading, weighing, and assorting according to grade, are all done automatically, or practically so, and the speed with which everything is accomplished is marvelous.

In the same degree that our fields exceed others in the production of this chief of all foods, our method of handling the grain, from the moment the seed is in the ground until the flour is delivered to the merchants, excels the methods employed in other countries. None can gainsay us when we proclaim that in the growing and the handling of grain, "we lead and others follow."

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