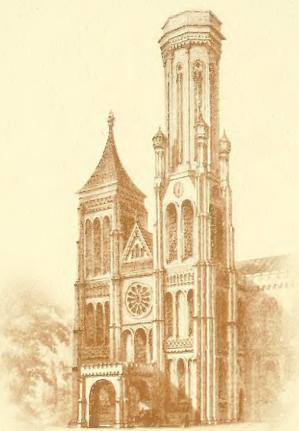


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THE  
**NATIONAL GEOGRAPHIC**  
**MAGAZINE**

AN ILLUSTRATED MONTHLY

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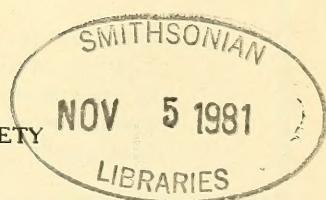
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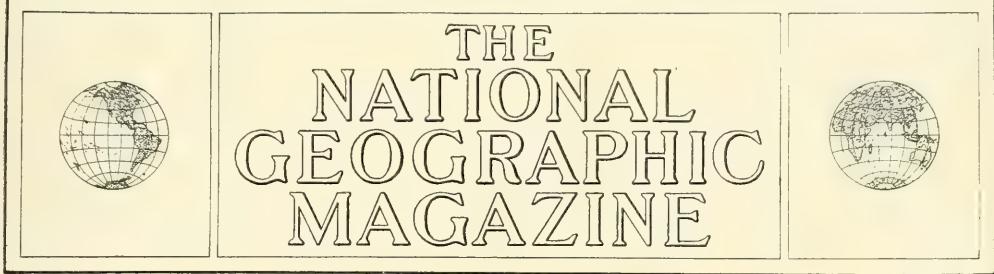
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# THE NATIONAL GEOGRAPHIC MAGAZINE

## THE LUSTER OF ANCIENT MEXICO

*The following article is abstracted from the celebrated classic, "History of the Conquest of Mexico," by William H. Prescott*

OF ALL that extensive empire which once acknowledged the authority of Spain in the New World, no portion, for interest and importance, can be compared with Mexico, and this equally, whether we consider the variety of its soil and climate; the inexhaustible stores of its mineral wealth; its scenery, grand and picturesque beyond example; the character of its ancient inhabitants, not only far surpassing in intelligence that of the other North American races, but reminding us, by their monuments, of the primitive civilization of Egypt and Hindostan; or, lastly, the peculiar circumstances of its conquest, adventurous and romantic as any legend devised by Norman or Italian bard of chivalry.

The country of the ancient Mexicans, or Aztecs, as they were called, formed but a very small part of the extensive territories comprehended in the modern Republic of Mexico. Its boundaries cannot be defined with certainty. They were much enlarged in the latter days of the empire, when they may be considered as reaching from about the eighteenth degree north to the twenty-first, on the Atlantic, and from the fourteenth to the nineteenth, including a very narrow strip, on the Pacific. In its greatest breadth it could not exceed five degrees and a half, dwindling, as it approached its southeastern limits, to less than two.

It covered probably less than 16,000 square leagues. Yet such is the remark-

able formation of this country that, though not more than twice as large as New England, it presented every variety of climate, and was capable of yielding nearly every fruit found between the Equator and the Arctic Circle.

All along the Atlantic the country is bordered by a broad tract, called the *tierra caliente*, or hot region, which has the usual high temperature of equinoctial lands. Parched and sandy plains are intermingled with others of exuberant fertility, almost impervious from thickets of aromatic shrubs and wild flowers, in the midst of which tower up trees of that magnificent growth which is found only within the tropics.

### SCENERY GRAND AND TERRIBLE

After passing some twenty leagues across this burning region, the traveler finds himself rising into a purer atmosphere. His limbs recover their elasticity. He breathes more freely, for his senses are not now oppressed by the sultry heat and intoxicating perfumes of the valley. The aspect of nature, too, has changed, and his eye no longer revels among the gay variety of colors with which the landscape was painted there. The vanilla, the indigo, and the flowering cacao groves disappear as he advances. The sugar-cane and the glossy-leaved banana still accompany him; and, when he has ascended about 4,000 feet, he sees in the unchanging verdure and the rich foliage of the liquid-amber tree that he has



COLIMA, ONE OF MEXICO'S ACTIVE VOLCANOES

On the sides of this great safety valve of the big earth furnace are numerous ice camps. Hail forms and falls so continuously here that the peons gather up the ice-stones, wrap them in straw, and carry them down to the towns on the plain for domestic purposes.

reached the height where clouds and mists settle in their passage from the Mexican Gulf.

He has entered the *tierra templada*, or temperate region, whose character resembles that of the temperate zone of the globe. The features of the scenery become grand and even terrible. His road sweeps along the base of mighty mountains, once gleaming with volcanic fires, and still resplendent in their mantles of snow, which serve as beacons to the mariner, for many a league at sea. All around he beholds traces of their ancient combustion, as his road passes along vast tracts of lava, bristling in the innumerable fantastic forms into which the fiery

torrent has been thrown by the obstacles in its career. Perhaps at the same moment as he casts his eye down some steep slope or almost unfathomable ravine on the margin of the road he sees their depths glowing with the rich blooms and enamelled vegetation of the tropics. Such are the singular contrasts presented, at the same time, to the senses in this picturesque region!

Still pressing upward, the traveler mounts into other climates, favorable to other kinds of cultivation. The yellow maize, or Indian corn, as we usually call it, has continued to follow him up from the lowest level; but he now first sees fields of wheat and the other European

grains brought into the country by the Conquerors. Mingled with them he views the plantations of the aloe or maguey (*agave Americana*), applied to such various and important uses by the Aztecs. The oaks now acquire a sturdier growth, and the dark forests of pine announce that he has entered the *tierra fria*, or cold region, the third and last of the great natural terraces into which the country is divided.

#### THE BROAD MEXICAN TABLE-LAND

When he has climbed to the height of between 7,000 and 8,000 feet, the weary traveler sets his foot on the summit of the Cordillera of the Andes—the colossal range that, after traversing South America and the Isthmus of Darien, spreads out as it enters Mexico into that vast sheet of table-land, which maintains an elevation of more than 6,000 feet, for the distance of nearly 200 leagues, until it gradually declines in the higher latitudes of the north.

The air is exceedingly dry; the soil, though naturally good, is rarely clothed with the luxuriant vegetation of the lower regions. It frequently, indeed, has a parched and barren aspect, owing partly to the greater evaporation which takes place on these lofty plains, through the diminished pressure of the atmosphere; and partly, no doubt, to the want of trees to shelter the soil from the fierce influence of the summer sun.

In the time of the Aztecs the table-land was thickly covered with larch, oak, cypress, and other forest trees, the extraordinary dimensions of some of which, remaining to the present day, show that the curse of barrenness in later times is chargeable more on man than on nature. Indeed, the early Spaniards made as indiscriminate war on the forest as did our Puritan ancestors, though with much less reason. After once conquering the country they had no lurking ambush to fear from the submissive, semi-civilized Indian, and were not, like our forefathers, obliged to keep watch and ward for a century. This spoliation of the ground, however, is said to have been pleasing to their imaginations, as it reminded them of the plains of their own Castile, where

the nakedness of the landscape forms the burden of every traveler's lament who visits that country.

#### THE WONDERFUL VALLEY OF MEXICO

Midway across the continent, somewhat nearer the Pacific than the Atlantic Ocean, at an elevation of nearly 7,500 feet, is the celebrated Valley of Mexico. It is of an oval form, about 67 leagues in circumference, and is encompassed by a towering rampart of porphyritic rock, which nature seems to have provided, though ineffectually, to protect it from invasion.

The soil, once carpeted with a beautiful verdure, and thickly sprinkled with stately trees, is often bare, and in many places, white with the incrustation of salts, caused by the draining of the waters. Five lakes are spread over the valley, occupying one-tenth of its surface. On the opposite borders of the largest of these basins, much shrunk in its dimensions since the days of the Aztecs, stood the cities of Mexico and Tezcoco, the capitals of the two most potent and flourishing States of Anahuac, whose history, with that of the mysterious races that preceded them in the country, exhibits some of the nearest approaches to civilization to be met with anciently on the North American continent.

Of these races the most conspicuous were the Toltecs. Advancing from a northerly direction, but from what region is uncertain, they entered the territory of Anahuac, probably before the close of the seventh century.

The Toltecs were well instructed in agriculture, and many of the most useful mechanic arts; were nice workers of metals; invented the complex arrangement of time adopted by the Aztecs; and, in short, were the true fountains of the civilization which distinguished this part of the continent in later times. They established their capital at Tula, north of the Mexican Valley, and the remains of extensive buildings were to be discerned there at the time of the Conquest. The noble ruins of religious and other edifices, still to be seen in various parts of New Spain, are referred to this people, whose name, *Toltec*, has passed into a synonym



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GATHERING PRICKLY PEAR FRUIT NEAR THE PYRAMID OF THE SUN: SAN JUAN  
TEOTIHUACAN, MEXICO

The nopal cactus bears the tuna of the Mexicans and the prickly pear of Americans. The tree is composed of series of oval pads. As one of these pads hardens, it becomes a part of the tree instead of remaining its foliage and fruit. The great pad produces a fruit about the size of a duck egg, covered with fine prickles, as full of seeds as the ordinary fig. It is always cool when plucked. The natives subsist almost entirely on it when they can get it. It means as much to the Mexican *niños* as Georgia watermelon to the American pickaninnies.



TARAHUMARE INDIANS IN CHIHUAHUA CITY, MEXICO

Not even Greece and Rome in the palmiest days of their athletic history produced a race of greater physical endurance than is to be found in the Tarahumare Indians of Mexico. Their favorite pastime is chasing a big ball, which they sometimes do from morning to night. Lumholtz, in his "Unknown Mexico," says they can run down and catch wild horses, and that the women are as good runners as the men.

for architect. Their shadowy history reminds us of those primitive races who preceded the ancient Egyptians in the march of civilization, fragments of whose monuments, as they are seen at this day, incorporated with the buildings of the Egyptians themselves, give to these latter the appearance of almost modern constructions.

#### DID THE TOLTECS BUILD MITLA AND PALENQUE

After a period of four centuries, the Toltecs, who had extended their sway over the remotest borders of Anahuac, having been greatly reduced, it is said, by famine, pestilence, and unsuccessful wars, disappeared from the land as silently and mysteriously as they had entered it. A few of them still lingered behind, but much the greater number, probably, spread over the region of Cen-

tral America and the neighboring isles; and the traveler now speculates on the majestic ruins of Mitla and Palenque, as possibly the work of this extraordinary people.

The Mexicans, with whom our history is principally concerned, came, also, from the remote regions of the north—the populous hive of nations in the New World, as it has been in the Old. They arrived on the borders of Anahuac, toward the beginning of the thirteenth century, some time after the occupation of the land by the kindred races. For a long time they did not establish themselves in any permanent residence, but continued shifting their quarters to different parts of the Mexican Valley, enduring all the casualties and hardships of a migratory life. On one occasion they were enslaved by a more powerful tribe, but their feroc-



FORTIFICATIONS AT ACAPULCO, MEXICO

Acapulco is one of the principal west coast cities of Mexico, with harbor accommodations for 100 ocean steamships and 200 lighter craft. Bret Harte, in his "Last Galleon," sings of the day in 1641 when the regular yearly galleon was due to arrive in Acapulco, while the limes were ripening in the sun for the sick on board.

ity soon made them formidable to their masters.

#### THE FOUNDING OF TENOCHTITLAN

After a series of wanderings and adventures, which need not shrink from comparison with the most extravagant legends of the heroic ages of antiquity, they at length halted on the southwestern borders of the principal lake in the year 1325. They there beheld, perched on the stem of a prickly pear, which shot out from the crevice of a rock that was washed by the waves, a royal eagle of extraordinary size and beauty, with a serpent in his talons, and his broad wings opened to the rising sun.

They hailed the auspicious omen, announced by the oracle as indicating the

site of their future city, and laid its foundations by sinking piles into the shallows, for the low marshes were half buried under water. On these they erected their light fabrics of reeds and rushes, and sought a precarious subsistence from fishing and from the wild fowl which frequented the waters, as well as from the cultivation of such simple vegetables as they could raise on their floating gardens. The place was called Tenochtitlan, in token of its miraculous origin, though only known to Europeans by its other name of Mexico, derived from their war-god, Mexitli. The legend of its foundation is still further commemorated by the device of the eagle and the cactus, which form the arms of the modern Mexican Republic.



HOUSE IN COUNTRY NEAR CORDOBA

Perhaps three-fourths of Mexico's population has no more of this world's goods than the family in the picture, whose all is contained in this thatched hut and the patch of ground that answers for a garden. Nor does the vast majority know any more than they of creature comforts. Some one has observed that it is no compliment to the well-fed, sleek ox on the Mexican hacienda to say that the half-starved peon drudge is a brother to him.

They gradually increased, however, in numbers, and strengthened themselves yet more by various improvements in their polity and military discipline, while they established a reputation for courage as well as cruelty in war, which made their name terrible throughout the Valley. In the early part of the fifteenth century, nearly a hundred years from the foundation of the city, an event took place which created an entire revolution in the circumstances and, to some extent, in the character of the Aztecs.

#### A REMARKABLE MILITARY ALLIANCE

Then was formed that remarkable league, which, indeed, has no parallel in history. It was agreed between the States of Mexico, Tezcoco, and the neighboring little kingdom of Tlacopan that they should mutually support each other in their wars, offensive and defensive, and

that in the distribution of the spoil one-fifth should be assigned to Tlacopan and the remainder be divided, in what proportions is uncertain, between the other powers.

What is more extraordinary than the treaty itself, however, is the fidelity with which it was maintained. During a century of uninterrupted warfare that ensued, no instance occurred where the parties quarreled over the division of the spoil, which so often makes shipwreck of similar confederacies among civilized States.

The allies for some time found sufficient occupation for their arms in their own valley; but they soon overleaped its rocky ramparts, and by the middle of the fifteenth century, under the first Montezuma, had spread down the sides of the table-land to the borders of the Gulf of Mexico. Tenochtitlan, the Aztec capital,

A SECTION OF THE WALLS OF THE RUINS OF XOCHICALCO, MEXICO

"The stones of the crown and surface are laid upon each other without cement and kept in place by their weight alone; and as the sculpture of a figure is seen to run over several of them, there can be no doubt that the work was cut after the pyramid was erected. Stones 7 feet in length by nearly 3 feet in breadth are seen here, and all the great blocks of porphyry which compose the building were brought from a distance and borne up a hill 300 feet high. The superstitious Indians believe that the subterranean rooms of these ruins are inhabited by the ghosts of their ancestors and they resist any attempt to explore them."



gave evidence of the public prosperity. Its frail tenements were supplanted by solid structures of stone and lime. Its population rapidly increased.

At the beginning of the sixteenth century, just before the arrival of the Spaniards, the Aztec dominion reached across the continent, from the Atlantic to the Pacific; and, under the bold and bloody Ahuitzotl, its arms had been carried far over the limits already noticed as defining its permanent territory into the farthest corners of Guatemala and Nicaragua. This extent of empire, however limited in comparison with that of many other States, is truly wonderful, considering it as the acquisition of a people whose whole population and resources had so recently been comprised within the walls of their own petty city; and considering, moreover, that the conquered territory was thickly settled by various races, bred to arms like the Mexicans, and little inferior to them in social organization.

#### THE LAWS OF THE AZTECS

The laws of the Aztecs were registered and exhibited to the people in their hieroglyphical paintings. Much the larger part of them, as in every nation imperfectly civilized, relates rather to the security of persons than of property. The great crimes against society were all made capital. Even the murder of a slave was punished with death. Adulterers, as among the Jews, were stoned to death.

Thieving, according to the degree of the offense, was punished by slavery or death. Yet the Mexicans could have been under no great apprehension of this crime, since the entrances to their dwellings were not secured by bolts or fastenings of any kind. It was a capital offense to remove the boundaries of another's lands; to alter the established measures, and for a guardian not to be able to give a good account of his ward's property. These regulations evince a regard for equity in dealings and for private rights, which argues a considerable progress in civilization. Prodigals who squandered their patrimony were punished in like manner—a severe sentence, since the crime brought its adequate punishment along with it.

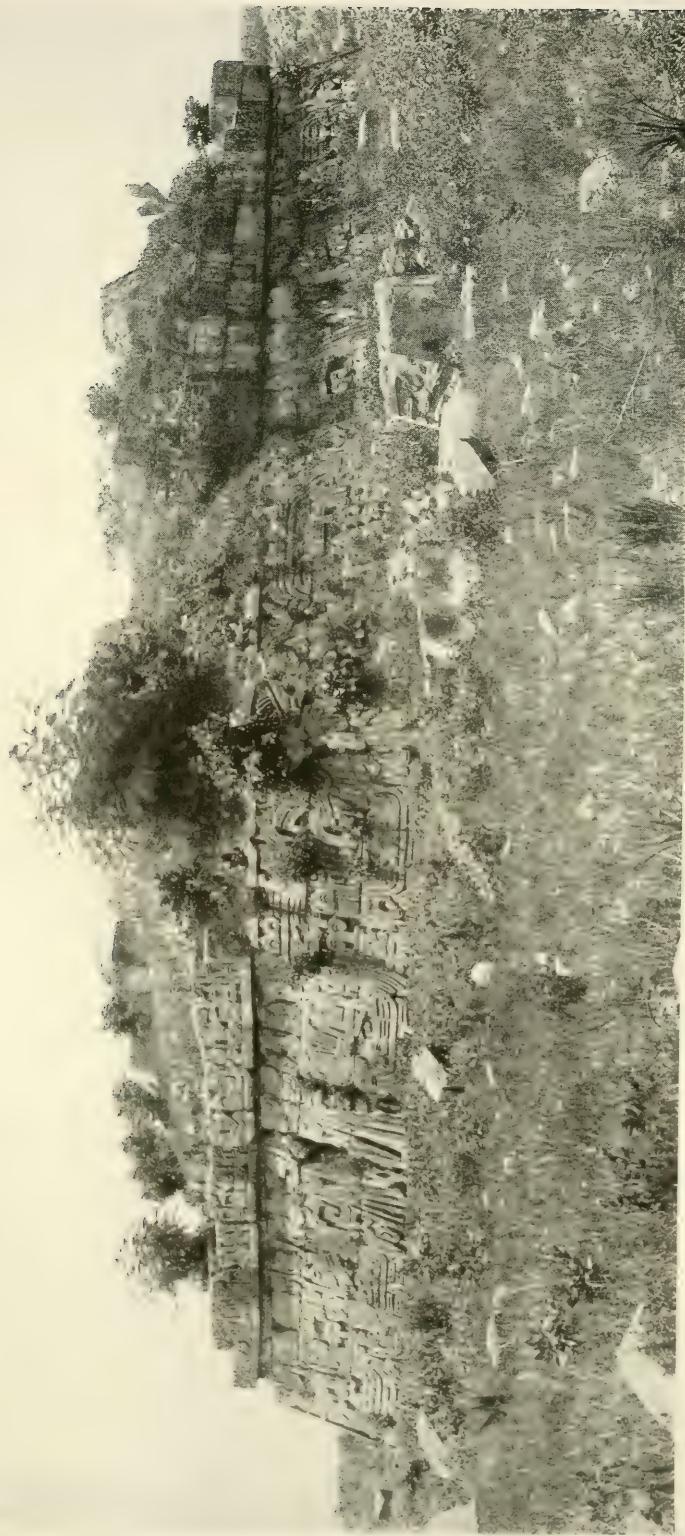
Intemperance, which was the burden, moreover, of their religious homilies, was visited with the severest penalties, as if they had foreseen in it the consuming canker of their own, as well as of the other Indian races in later times. It was punished in the young with death, and in older persons with loss of rank and confiscation of property. Yet a decent conviviality was not meant to be proscribed at their festivals, and they possessed the means of indulging it, in a mild fermented liquor called *pulque*, which is still popular not only with the Indian, but the European population of the country.

#### STRICT DIVORCE LAWS

The rites of marriage were celebrated with as much formality as in any Christian country, and the institution was held in such reverence that a tribunal was instituted for the sole purpose of determining questions relating to it. Divorces could not be obtained until authorized by a sentence of this court, after a patient hearing of the parties.

But the most remarkable part of the Aztec code was that relating to slavery. There were several descriptions of slaves: prisoners taken in war, who were almost always reserved for the dreadful doom of sacrifice; criminals, public debtors, persons who, from extreme poverty, voluntarily resigned their freedom, and children who were sold by their own parents. In the last instance, usually occasioned also by poverty, it was common for the parents, with the master's consent, to substitute others of their children successively as they grew up, thus distributing the burden as equally as possible among the different members of the family. The willingness of freedom to incur the penalties of this condition is explained by the mild form in which it existed. The contract of sale was executed in the presence of at least four witnesses. The services to be exacted were limited with great precision.

The slave was allowed to have his own family, to hold property, and even other slaves. His children were free. No one could be born to slavery in Mexico; an honorable distinction not known, I believe, in any civilized community where



ANOTHER VIEW OF THE XOCHICALCO RUINS: CUERNAVACA, MEXICO

Many of the neighboring hacienda houses were built of stone taken from these ruins. The carvings are of warriors, serpents, birds, animals, and plants. At the foot of the hill which these stones surmount are several caves, one known as the Grotto of the Sun.



GIANT CYPRESS AT TULE, NEAR CITY OF OAXACA, MEXICO

This great tree, 154 feet high and its trunk so large that 28 men with outstretched arms can barely encircle it, is one of the largest in the world. Humboldt inscribed his name upon it, and, history says, Cortez rested his men under its branches while en route to Honduras.

slavery has been sanctioned. Slaves were not sold by their masters, unless when these were driven to it by poverty. They were often liberated by them at their death, and sometimes, as there was no natural repugnance founded on difference of blood and race, were married to them. Yet a refractory or vicious slave

might be led into the market, with a collar round his neck, which intimated his bad character, and there be publicly sold, and, on a second sale, reserved for sacrifice.

Communication was maintained with the remotest parts of the country by means of couriers. Post-houses were es-



STREET OF THE DEAD: SAN JUAN TEOTIHUACAN, MEXICO

The sacred pyramids of San Juan Teotihuacan, situated 27 miles northeast of Mexico City, are reputed to be the largest artificial mounds in the New World. It is believed that they were built at least 900 years before Columbus discovered America.

tablished on the great roads, about two leagues distant from each other. The courier, bearing his dispatches in the form of a hieroglyphical painting, ran with them to the first station, where they were taken by another messenger and carried forward to the next, and so on till they reached the capital. These couriers, trained from childhood, traveled with incredible swiftness; not four or five leagues an hour, as an old chronicler would make us believe, but with such speed that despatches were carried from 100 to 200 miles a day.

Fresh fish was frequently served at Montezuma's table in 24 hours from the time it had been taken in the Gulf of Mexico, 200 miles from the capital. In this way intelligence of the movements of the royal armies was rapidly brought to court; and the dress of the courier, denoting by its color that of his tidings, spreading joy or consternation in the towns through which he passed.

But the great aim of the Aztec institutions, to which private discipline and public honors were alike directed, was the profession of arms. In Mexico, as in Egypt, the soldier shared with the priest the highest consideration. The king, as we have seen, must be an experienced warrior. The tutelary deity of the Aztecs was the god of war. A great object of their military expeditions was to gather hecatombs of captives for his altars. The soldier who fell in battle was transported at once to the region of ineffable bliss in the bright mansions of the Sun.

#### THE AZTEC COUNTERPART OF CHRISTIAN CRUSADERS

Every war, therefore, became a crusade; and the warrior, animated by a religious enthusiasm, like that of the early Saracen, or the Christian crusader, was not only raised to contempt of danger, but courted it, for the imperishable crown of martyrdom. Thus we find the same



PULQUE GATHERERS NEAR TOLUCA, MEXICO

Toluca is nearly a thousand feet higher than Mexico City, which, in its turn, is a mile and a half higher than Washington or New York. It is too high for dogs, cats, and insects, which are scarcer here than in almost any other city in the country.

impulse acting in the most opposite quarters of the globe, and the Asiatic, the European, and the American, each earnestly invoking the holy name of religion in the perpetration of human butchery.

The dress of the higher warriors was picturesque and often magnificent. Their bodies were covered with a close vest of quilted cotton, so thick as to be impenetrable to the light missiles of Indian warfare. This garment was so light and serviceable that it was adopted by the Spaniards. The wealthier chiefs sometimes wore, instead of this cotton mail, a cuirass made of thin plates of gold or silver. Over it was thrown a surcoat of the gorgeous feather-work in which they excelled. Their helmets were sometimes of wood, fashioned like the heads of wild animals, and sometimes of silver, on the top of which waved a *panache* of variegated plumes, sprinkled with precious stones and ornaments of gold. They also

wore collars, bracelets, and ear-rings of the same rich material.

The national standard, which has been compared to the ancient Roman, displayed, in its embroidery of gold and feather-work, the armorial ensigns of the state. These were significant of its name, which, as the names of both persons and places were borrowed from some material object, was easily expressed by hieroglyphical symbols. The companies and the great chiefs had also their appropriate banners and devices, and the gaudy hues of their many-colored plumes gave a dazzling splendor to the spectacle.

#### MARCHED SINGING INTO BATTLE

Their tactics were such as belong to a nation with whom war, though a trade, is not elevated to the rank of a science. They advanced singing and shouting their war-cries, briskly charging the enemy, as rapidly retreating, and making use of am-

AN INDIAN KITCHEN IN HIGHLAND MEXICO

The kind of housekeeping whose story this picture tells is responsible in part for the high death rate in Mexico. If our sanitary conditions and our doctors were no better than those of Mexico, we would have a million deaths a year more than we have now, and not based upon the fortunes of war either.



buscades, sudden surprises, and the light skirmish of guerilla warfare. Yet their discipline was such as to draw forth the encomiums of the Spanish Conquerors. "A beautiful sight it was," says one of them, "to see them set out on their march, all moving forward so gayly and in so admirable order!" In battle they did not seek to kill their enemies so much as to take them prisoners, and they never scalped, like other North American tribes. The valor of a warrior was estimated by the number of his prisoners, and no ransom was large enough to save the devoted captive.

Their military code bore the same stern features as their other laws. Disobedience of orders was punished with death. It was death also for a soldier to leave his colors, to attack the enemy before the signal was given, or to plunder another's booty or prisoners. One of the last Tezcucan princes, in the spirit of an ancient Roman, put two sons to death, after having cured their wounds, for violating the last-mentioned law.

#### THEIR "HOUSES OF GOD"

The Mexican temples—*teocallis*, "houses of God," as they were called—were very numerous. They were solid masses of earth, cased with brick or stone, and in their form somewhat resemble the pyramidal structures of ancient Egypt. The bases of many of them were more than a hundred feet square, and they towered to a still greater height. They were distributed into four or five stories, each of smaller dimensions than that below. The ascent was by a flight of steps, at an angle of the pyramid, on the outside. This led to a sort of terrace, or gallery, at the base of the second story, which passed quite round the building to another flight of stairs, commencing also at the same angle as the preceding and directly over it, and leading to a similar terrace; so that one had to make the circuit of the temple several times before reaching the summit. In some instances the stairway led directly up the center of the western face of the building.

The top was a broad area, on which were erected one or two towers, 40 or 50 feet high, the sanctuaries in which

stood the sacred images of the presiding deities. Before these towers stood the dreadful stone of sacrifice and two lofty altars, on which fires were kept, as inextinguishable as those in the Temple of Vesta. There were said to be 600 of these altars on smaller buildings within the inclosure of the great temple of Mexico, which, with those in the sacred edifices in other parts of the city, shed a brilliant illumination over its streets through the darkest night.

#### CEREMONIALS OF PEACE

From the construction of their temples all religious services were public. The long processions of priests winding round their massive sides, as they rose higher and higher toward the summit, and the dismal rites of sacrifice performed there, were all visible from the remotest corners of the capital, impressing on the spectator's mind a superstitious veneration for the mysteries of his religion and for the dread ministers by whom they were interpreted.

This impression was kept in full force by their numerous festivals. Every month was consecrated to some protecting deity; and every week—nay, almost every day—was set down in their calendar for some appropriate celebration; so that it is difficult to understand how the ordinary business of life could have been compatible with the exactions of religion. Many of their ceremonies were of a light and cheerful complexion, consisting of the national songs and dances, in which both sexes joined. Processions were made of women and children crowned with garlands and bearing offerings of fruits, the ripened maize, or the sweet incense of copal and other odoriferous gums, while the altars of the deity were stained with no blood save that of animals.

These were the peaceful rites derived from their Toltec predecessors, on which the fierce Aztecs engrafted a superstition too loathsome to be exhibited in all its nakedness, and one over which I would gladly draw a veil altogether, but that it would leave the reader in ignorance of their most striking institution, and one that had the greatest influence in forming the national character.



A MAGUEY PLANT IN BLOOM: MEXICO

A maguey plant in bloom is a sight one seldom sees in Mexico, for the reason that the stem is cut at its base and hollowed out, and the sap that would have gone into the flowers is collected and converted into that evil-smelling, criminal-making concoction called *pulque*. When the sap gathers—at the rate of ten to fifteen pints a day—peons pass from plant to plant, and with their mouths to one end of a tube suck it up, and then discharge it into containers made of pigskins, flung, saddle-bags fashion, across the back of an uncurried donkey. The liquid is then carried to the central station, where it is “ripened” in vats of untanned cowhide.

Human sacrifices were adopted by the Aztecs early in the fourteenth century, about 200 years before the Conquest. Rare at first, they became more frequent with the wider extent of their empire, till at length almost every festival was closed with this cruel abomination. These religious ceremonials were generally arranged in such a manner as to afford a type of the most prominent circumstances in the character or history of the deity who was the object of them. A single example will suffice.

#### PRISONERS IN THE RÔLES OF GODS

One of their most important festivals was that in honor of the god Tezcatlipoca, whose rank was inferior only to that of the Supreme Being. He was called "the soul of the world," and supposed to have been its creator. He was depicted as a handsome man, endowed with perpetual youth. A year before the intended sacrifice a captive, distinguished for his personal beauty, and without a blemish on his body, was selected to represent this deity. Certain tutors took charge of him and instructed him how to perform his new part with becoming grace and dignity. He was arrayed in a splendid dress, regaled with incense and with a profusion of sweet-scented flowers, of which the ancient Mexicans were as fond as their descendants at the present day.

When he went abroad he was attended by a train of the royal pages, and as he halted in the streets to play some favorite melody the crowd prostrated themselves before him and did him homage as the representative of their good deity. In this way he led an easy, luxurious life, till within a month of his sacrifice. Four beautiful girls, bearing the names of the principal goddesses, were then selected to be his companions, and with them he continued to live in idle dalliance, feasted at the banquets of the principal nobles, who paid him all the honors of a divinity.

#### THE FATAL DAY OF SACRIFICE

At length the fatal day of sacrifice arrived. The term of his short-lived glories was at an end. He was stripped of his gaudy apparel and bade adieu to the

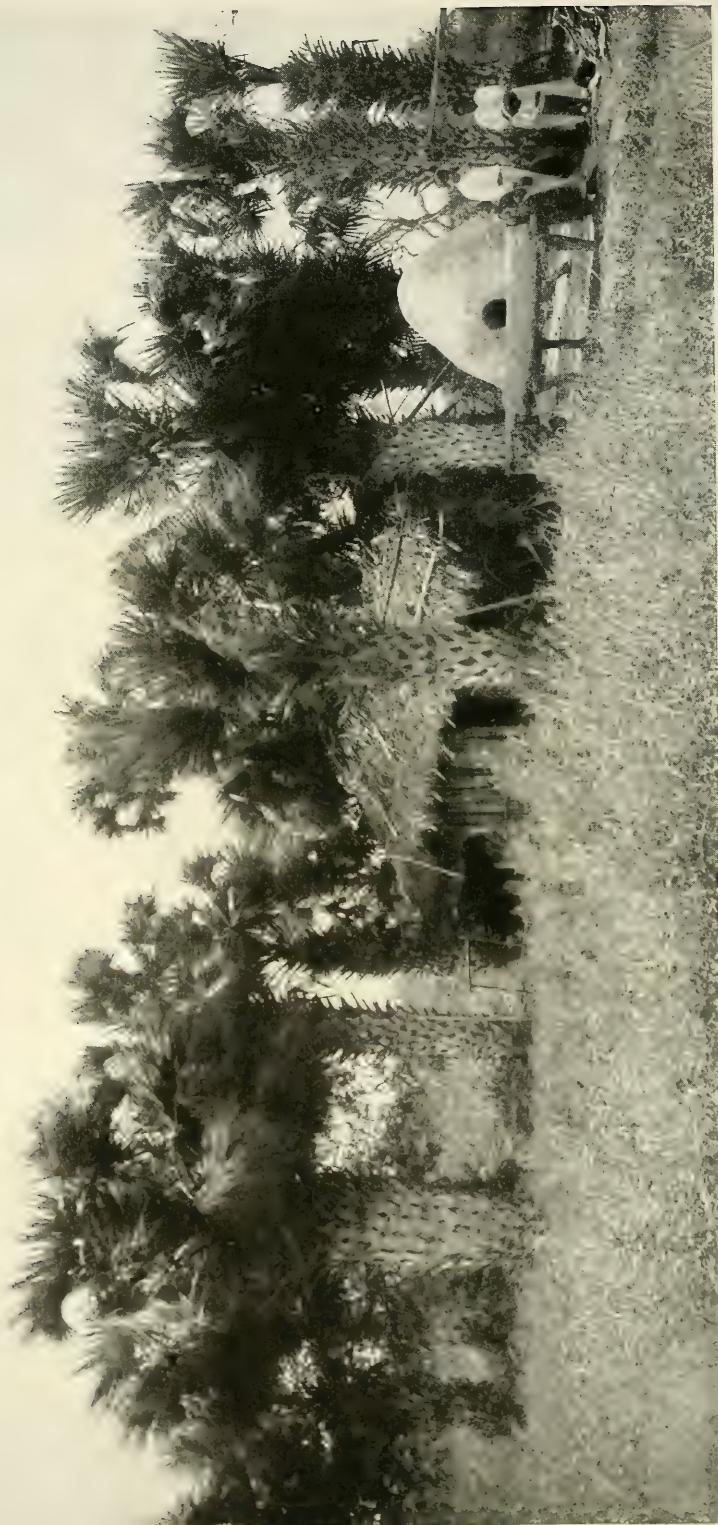
fair partners of his revelries. One of the royal barges transported him across the lake to a temple which rose on its margin, about a league from the city. Hither the inhabitants of the capital flocked to witness the consummation of the ceremony. As the sad procession wound up the sides of the pyramid, the unhappy victim threw away his gay chaplets of flowers and broke in pieces the musical instruments with which he had solaced the hours of captivity.

On the summit he was received by six priests, whose long and matted locks flowed disorderly over their sable robes, covered with hieroglyphic scrolls of mystic import. They led him to the sacrificial stone, a huge block of jasper, with its upper surface somewhat convex. On this the prisoner was stretched.

Five priests secured his head and his limbs, while the sixth, clad in a scarlet mantle, emblematic of his bloody office, dexterously opened the breast of the wretched victim with a sharp razor of *itzili*—a volcanic substance, hard as flint—and, inserting his hand in the wound, tore out the palpitating heart. The minister of death, first holding this up toward the sun—an object of worship throughout Anahuac—cast it at the feet of the deity to whom the temple was devoted, while the multitudes below prostrated themselves in humble adoration. The tragic story of this prisoner was expounded by the priests as the type of human destiny which, brilliant in its commencement, too often closes in sorrow and disaster.

#### WOMEN AND CHILDREN OFFERED UP

Such was the form of human sacrifice usually practised by the Aztecs. It was the same that often met the indignant eyes of the Europeans in their progress through the country, and from the dreadful doom of which they themselves were not exempted. There were, indeed, some occasions when preliminary tortures, of the most exquisite kind—with which it is unnecessary to shock the reader—were inflicted, but they always terminated with the bloody ceremony above described. It should be remarked, however, that such tortures were not the spontaneous sug-



HIGH-WATER OVEN ON THE TAMESI RIVER, NEAR TAMPICO, MEXICO

The oven is elevated to avoid flooding from the periodic overflows of the river. On the Atlantic slope of Mexico the rainfall is very heavy—from 8 to 12 feet a year—and it often comes in such a downpour as to threaten to wash everything away.



THE VOLCANO POPOCATEPETL, FROM THE VALLEY OF MEXICO

In the geography classes in school we are taught to pronounce the name of this beautiful mountain Popo-cat-epetl, putting the emphasis on "cat." The correct way is Popo-ca-tepetl. The Aztec Indians joined the modifying adjective to its noun with a preposition just as we join two nouns or two parts of a compound sentence with a conjunction. The "ca" in the word Popocatepetl is the conjunction which joins "popo," meaning smoking, to "tepetl," meaning hill.

gestions of cruelty, as with the North American Indians, but were all rigorously prescribed in the Aztec ritual, and doubtless were often inflicted with the same compunctionous visitings which a devout familiar of the Holy Office might at times experience in executing its stern decrees.

Women as well as the other sex were sometimes reserved for sacrifice. On some occasions, particularly in seasons of drought, at the festival of the insatiable

Tlaloc, the god of rain, children, for the most part infants, were offered up. As they were borne along in open litters, dressed in their festal robes and decked with the fresh blossoms of spring, they moved the hardest heart to pity, though their cries were drowned in the wild chant of the priests, who read in their tears a favorable augury for their petition. These innocent victims were generally bought by the priests of parents



WRECKS ON THE BEACH NEAR VERA CRUZ, MEXICO

And eloquent they are of a form of civilization that spends its energies on interneccine war rather than upon the improvement of the lanes of the near-by sea

who were poor, but who stifled the voice of nature, probably less at the suggestions of poverty than of a wretched superstition.

#### CANNIBALS WITH REFINED TASTES

The most loathsome part of the story—the manner in which the body of the sacrificed captive was disposed of—remains yet to be told. It was delivered to the warrior who had taken him in battle, and by him, after being dressed, was served up in an entertainment to his friends. This was not the coarse repast of famished cannibals, but a banquet teeming with delicious beverages and delicate viands, prepared with art and attended by both sexes, who conducted themselves with all the decorum of civilized life. Surely never were refinement and the extreme of barbarism brought so closely in contact with each other!

Human sacrifices have been practised by many nations, not excepting the most polished nations of antiquity, but never by any on a scale to be compared with those in Anahuac.

Agriculture in Mexico was in the same advanced state as the other arts of social

life. In few countries, indeed, has it been more respected. It was closely interwoven with the civil and religious institutions of the nation. There were peculiar deities to preside over it; the names of the months and of the religious festivals had more or less reference to it.

Among the most important articles of husbandry we may notice the banana. Another celebrated plant was the cacao, the fruit of which furnished the chocolate—from the Mexican *chocolatl*—now so common a beverage throughout Europe. The vanilla, confined to a small district of the seacoast, was used for the same purposes, of flavoring their food and drink, as with us.

#### MEAL AND SUGAR FROM MAIZE

The great staple of the country, as, indeed, of the American continent, was maize, or Indian corn, which grew freely along the valleys and up the steep sides of the Cordilleras to the high level of the table-land. The Aztecs were as curious in its preparation and as well instructed in its manifold uses as the most expert New England housewife. Its gigantic stalks, in these equinoctial regions, af-



WEAVING A BLANKET IN INDIAN MEXICO

The hand-woven blankets made by the Indian girls, to whom a dime a day is a good wage, although they begin work at sunrise and labor until sunset, are the admiration and despair of all who appreciate fine handiwork or value perfect color combinations. A small blanket bought in Mexico City five years ago, although it has been used as a wall tapestry ever since, seems as bright in every one of its rainbow colors as on the day it was bought. The weaving is so perfect that it has no right or wrong side.

ford a saccharine matter not found to the same extent in northern latitudes, and supplied the natives with sugar little inferior to that of the cane itself, which was not introduced among them till after the Conquest.

#### THE MAGUEY'S VERSATILITY

But the miracle of nature was the great Mexican aloe, or *maguey*, whose clustering pyramids of flowers, towering above their dark coronals of leaves, were seen sprinkled over many a broad acre of the table-land. As we have already noticed, its bruised leaves afforded a paste from which paper was manufactured; its juice

was fermented into an intoxicating beverage, *pulque*, of which the natives to this day are excessively fond; its leaves further supplied an impenetrable thatch for the more humble dwellings; thread, of which coarse stuffs were made, and strong cords, were drawn from its tough and twisted fibers; pins and needles were made of the thorns at the extremity of its leaves, and the root, when properly cooked, was converted into a palatable and nutritious food. The *agave*, in short, was meat, drink, clothing, and writing materials for the Aztec!

The Mexicans were as well acquainted with the mineral as with the vegetable



MOUNTAIN ROAD: SAN MIGUEL DE ALLENDE, MEXICO

Good roads in Mexico are about as rare as good men in a den of thieves, and this is one of the exceptions. Under the Diaz regime railroad building was the principal activity of the country. Since then its energies have been too absorbed with revolutions and counter-revolutions to leave any time for highway improvement.

treasures of their kingdom. Silver, lead, and tin they drew from the mines of Tasco; copper from the mountains of Zacotellan. These were taken not only from the crude masses on the surface, but from veins wrought in the solid rock, into which they opened extensive galleries. In fact, the traces of their labors furnished the best indications for the early Spanish miners. Gold, found on the surface or gleaned from the beds of rivers, was cast into bars or, in the form of dust, made part of the regular tribute of the southern provinces of the empire. The use of iron, with which the soil was impregnated, was unknown to them. Notwithstanding its abundance, it demands so many processes to prepare it for use that it has commonly been one of the last metals pressed into the service of man.

They found a substitute in an alloy of tin and copper, and with tools made of this bronze could cut not only metals, but, with the aid of a silicious dust, the hardest substances, as basalt, porphyry, amethysts, and emeralds. They fashioned these last, which were found very large, into many curious and fantastic forms. They cast, also, vessels of gold and silver, carving them with their metallic chisels in a very delicate manner. Some of the silver vases were so large that a man could not encircle them with his arms. They imitated very nicely the figures of animals, and, what was extraordinary, could mix the metals in such a manner that the feathers of a bird or the scales of a fish should be alternately of gold and silver. The Spanish goldsmiths admitted their superiority over themselves in these ingenious works.

#### SHAVING WITH STONE RAZORS

They employed another tool, made of *itztli*, or obsidian, a dark transparent mineral, exceedingly hard, found in abundance in their hills. They made it into knives, razors, and their serrated swords. It took a keen edge, though soon blunted. With this they wrought the various stones and alabasters employed in the construction of their public works and principal dwellings.

The most remarkable piece of sculpture yet disinterred is the great calendar-stone.

It consists of dark porphyry, and in its original dimensions as taken from the quarry is computed to have weighed nearly fifty tons. It was transported from the mountains beyond Lake Chalco, a distance of many leagues, over a broken country intersected by water-courses and canals. In crossing a bridge which traversed one of these latter in the capital the supports gave way, and the huge mass was precipitated into the water, whence it was with difficulty recovered. The fact that so enormous a fragment of porphyry could be thus safely carried for leagues, in the face of such obstacles and without the aid of cattle—for the Aztecs, as already mentioned, had no animals of draught—suggests to us no mean ideas of their mechanical skill and of their machinery, and implies a degree of cultivation little inferior to that demanded for the geometrical and astronomical science displayed in the inscriptions on this very stone.

#### WONDERFUL DYES

The ancient Mexicans made utensils of earthenware for the ordinary purposes of domestic life, numerous specimens of which still exist. They made cups and vases of a lacquered or painted wood, impervious to wet and gaudily colored. Their dyes were obtained from both mineral and vegetable substances. Among them was the rich crimson of the cochineal, the modern rival of the famed Tyrian purple. It was introduced into Europe from Mexico, where the curious little insect was nourished with great care on plantations of cactus, since fallen into neglect. The natives were thus enabled to give a brilliant coloring to the webs, which were manufactured of every degree of fineness from the cotton raised in abundance throughout the warmer regions of the country. They had the art, also, of interweaving with these the delicate hair of rabbits and other animals, which made a cloth of great warmth as well as beauty of a kind altogether original, and on this they often laid a rich embroidery of birds, flowers, or some other fanciful device.

But the art in which they most delighted was their *plumaje*, or feather-



COCK FIGHT: RANCH NEAR LEON, MEXICO

It is a customary sight to walk along the streets of a rural Mexican town and see game cocks tethered at every front door or to see a train stop at a station with fighting roosters perched in most of the windows of the peon coaches, each one held by his owner



FIGHTING COCKS: QUERÉTARO, MEXICO

The peon with Spanish blood in his veins is nearly always fond of the sight of gore. At a Mexican cockpit the betting is faster and more furious than the fun at a three-ring circus, and the enthusiasm is about as great when the steel-spurred cocks cut one another to pieces as when a mad bull gores a horse to death in the bull-ring. Moral sense, after all, it would seem, is largely a question of geography.

work. With this they could produce all the effect of a beautiful mosaic. The gorgeous plumage of the tropical birds, especially of the parrot tribe, afforded every variety of color; and the fine down of the humming-bird, which reveled in swarms among the honeysuckle bowers of Mexico, supplied them with soft aerial tints that gave an exquisite finish to the picture. The feathers, pasted on a fine cotton web, were wrought into dresses for the wealthy, hangings for apartments, and ornaments for the temples. No one

of the American fabrics excited such admiration in Europe, whither numerous specimens were sent by the Conquerors.

The ancient city of Mexico covered the same spot occupied by the modern capital. The great causeways touched it in the same points; the streets ran in much the same direction, nearly from north to south and from east to west; the cathedral in the *plaza mayor* stands on the same ground that was covered by the temple of the Aztec war-god, and the four principal quarters of the town are



Photograph by John H. Hall

#### A PUBLIC SCRIBE: MEXICO

For four centuries the Spaniards and their descendants have ruled Mexico, but the ratio of illiteracy to literacy is little changed since Cortez brought the Indians under the yoke of Castile and Aragon.

still known among the Indians by their ancient names.

Yet an Aztec of the days of Montezuma, could he behold the modern metropolis, which has risen with such phoenix-like splendor from the ashes of the old, would not recognize its site as that of his own Tenochtitlan; for the latter was encompassed by the salt floods of Tezcoco, which flowed in ample canals through every part of the city, while the Mexico of our day stands high and dry on the main land, nearly a league distant at its center from the water. The cause of this apparent change in its position is the diminution of the lake, which, from the rapidity of evaporation in these elevated regions, had become perceptible before the Conquest, but which has since been greatly accelerated by artificial causes.

#### THE CITY IMMACULATE

A careful police provided for the health and cleanliness of the city. A numerous retinue are said to have been daily em-

ployed in watering and sweeping the streets, so that a man—to borrow the language of an old Spaniard—"could walk through them with as little danger of soiling his feet as his hands." The water, in a city washed on all sides by the salt floods, was extremely brackish. A liberal supply of the pure element, however, was brought from Chapultepec, "the grasshopper's hill," less than a league distant. It was brought through an earthen pipe, along a dike constructed for the purpose. That there might be no failure in so essential an article when repairs were going on, a double course of pipes was laid. In this way a column of water of the size of a man's body was conducted into the heart of the capital, where it fed the fountains and reservoirs of the principal mansions. Openings were made in the aqueduct as it crossed the bridges, and thus a supply was furnished to the canoes below, by means of which it was transported to all parts of the city.

While Montezuma encouraged a taste

for architectural magnificence in his nobles, he contributed his own share toward the embellishment of the city. It was in his reign that the famous calendar-stone, weighing, probably, in its primitive state, nearly fifty tons, was transported from its native quarry, many leagues distant, to the capital, where it still forms one of the most curious monuments of Aztec science. Indeed, when we reflect on the difficulty of hewing such a stupendous mass from its hard basaltic bed without the aid of iron tools, and that of transporting it such a distance across land and water without the help of animals, we may well feel admiration at the mechanical ingenuity and enterprise of the people who accomplished it.

#### MONTEZUMA'S MAGNIFICENT MANSION

Not content with the spacious residence of his father, Montezuma erected another on a yet more magnificent scale. This building, or, as it might more correctly be styled, pile of buildings, spread over an extent of ground so vast that, as one of the Conquerors assures us, its terraced roof might have afforded ample room for thirty knights to run their courses in a regular tourney. Remarkable were its interior decorations, its fanciful draperies, its roofs inlaid with cedar and other odoriferous woods, held together without a nail and, probably, without a knowledge of the arch, its numerous and spacious apartments, which Cortés, with enthusiastic hyperbole, does not hesitate to declare superior to anything of the kind in Spain.

Adjoining the principal edifice were others devoted to various objects. One was an armory, filled with the weapons and military dresses worn by the Aztecs, all kept in the most perfect order, ready for instant use. The emperor was himself very expert in the management of the *maquahuitl*, or Indian sword, and took great delight in witnessing athletic exercises and the mimic representation of war by his young nobility. Another building was used as a granary, and others as warehouses for the different articles of food and apparel contributed by the districts charged with the maintenance of the royal household.

There were also edifices appropriated to objects of quite another kind. One of these was an immense aviary, in which birds of splendid plumage were assembled from all parts of the empire. Here was the scarlet cardinal, the golden pheasant, the endless parrot tribe, with their rainbow hues (the royal green predominant), and that miniature miracle of nature, the humming-bird, which delights to revel among the honeysuckle bowers of Mexico. Three hundred attendants had charge of this aviary, who made themselves acquainted with the appropriate food of its inmates, oftentimes procured at great cost, and in the moulting season were careful to collect the beautiful plumage, which, with its many-colored tints, furnished the materials for the Aztec painter.

A separate building was reserved for the fierce birds of prey; the voracious vulture tribes and eagles of enormous size, whose home was in the snowy solitudes of the Andes. No less than five hundred turkeys, the cheapest meat in Mexico, were allowed for the daily consumption of these tyrants of the feathered race.

#### THE AZTEC ZOO DESCRIBED

Adjoining this aviary was a menagerie of wild animals, gathered from the mountain forests, and even from the remote swamps of the *tierra caliente*.

The collection was still further swelled by a great number of reptiles and serpents remarkable for their size and venomous qualities, among which the Spaniards beheld the fiery little animal "with the castanets in his tail," the terror of the American wilderness. The serpents were confined in long cages lined with down or feathers or in troughs of mud and water.

The beasts and birds of prey were provided with apartments large enough to allow of their moving about, and secured by a strong lattice-work, through which light and air were freely admitted. The whole was placed under the charge of numerous keepers, who acquainted themselves with the habits of their prisoners and provided for their comfort and cleanliness.



POPOCATEPETL, FROM THE SUMMIT OF THE IXTACIHUATL

This graceful extinct volcano rises more than three miles above the level of the sea. According to Indian traditions, it came into being after a violent earthquake following terrific subterranean noises. It has been quiescent since 1802. Statisticians estimate that 100,000,000 pounds of sulfur have been removed from it since the Conquest.

With what deep interest would the enlightened naturalist of that day—an Oviedo, or a Martyr, for example—have surveyed this magnificent collection, in which the various tribes which roamed over the Western wilderness, the unknown races of an unknown world, were brought into one view! How would they have delighted to study the peculiarities of these new species, compared with those of their own hemisphere, and thus have risen to some comprehension of the general laws by which Nature acts in all her works! The rude followers of Cortés did not trouble themselves with such refined speculations. They gazed on the spectacle with a vague curiosity not unmixed with awe, and as they listened to the wild cries of the ferocious animals and the hissings of the serpents they almost fancied themselves in the infernal regions.

#### A ROYAL MUSEUM OF HUMAN FREAKS

I must not omit to notice a strange collection of human monsters, dwarfs, and other unfortunate persons, in whose organization Nature had capriciously deviated from her regular laws. Such hideous anomalies were regarded by the Aztecs as a suitable appendage of state. It is even said they were in some cases the result of artificial means, employed by unnatural parents desirous to secure a provision for their offspring by thus qualifying them for a place in the royal museum!

Extensive gardens were spread out around these buildings, filled with fragrant shrubs and flowers, and especially with medicinal plants. No country has afforded more numerous species of these last than New Spain, and their virtues were perfectly understood by the Aztecs, with whom medical botany may be said to have been studied as a science. Amidst this labyrinth of sweet-scented groves and shrubberies fountains of pure water might be seen throwing up their sparkling jets and scattering refreshing dews over the blossoms. Ten large tanks, well stocked with fish, afforded a retreat on their margins to various tribes of water-fowl, whose habits were so carefully consulted that some of these ponds were of

salt water, as that which they most loved to frequent. A tessellated pavement of marble inclosed the ample basins which were overhung by light and fanciful pavilions, that admitted the perfumed breezes of the gardens and offered a grateful shelter to the monarch in the sultry heats of summer.

#### FASHIONS IN ANCIENT AZTEC-LAND

The Spaniards were struck, on entering the capital, with the appearance of the inhabitants and their great superiority in the style and quality of their dress over the people of the lower countries. The *tilmatli* or cloak thrown over the shoulders and tied round the neck, made of cotton of different degrees of fineness, according to the condition of the wearer, and the ample sash around the loins, were often wrought in rich and elegant figures and edged with a deep fringe or tassel. As the weather was now growing cool, mantles of fur or of the gorgeous feather-work were sometimes substituted. The latter combined the advantage of great warmth with beauty. The Mexicans had also the art of spinning a fine thread of the hair of the rabbit and other animals, which they wove into a delicate web that took a permanent dye.

The women, as in other parts of the country, seemed to go about as freely as the men. They wore several skirts or petticoats of different lengths, with highly ornamented borders, and sometimes over them loose flowing robes, which reached to the ankles. These, also, were made of cotton, for the wealthier classes, of a fine texture, prettily embroidered. The Aztec women had their faces exposed, and their dark, raven tresses floated luxuriantly over their shoulders, revealing features which, although of a dusky or rather cinnamon hue, were not unfrequently pleasing.

#### A REMARKABLE MARKET-PLACE

On drawing near to the *tianquez*, or great market, the Spaniards were astonished at the throng of people pressing toward it, and, on entering the place, their surprise was still further heightened by the sight of the multitudes assembled there and the dimensions of the

inclosure, thrice as large as the celebrated square of Salamanca. Here were met together traders from all parts, with the products and manufactures peculiar to their countries—the goldsmiths of Azcapozalco, the potters and jewelers of Cholula, the painters of Tezcoco, the stone-cutters of Tenajocan, the hunters of Xilotepec, the fishermen of Cuitlahuac, the fruiterers of the warm countries, the mat and chair makers of Quauhtitlan, and the florists of Xochimilco—all busily engaged in recommending their respective wares and in chaffering with purchasers.

#### IN THE TOY SHOP

The market-place was surrounded by deep porticos, and the several articles had each its own quarter allotted to it. Here might be seen cotton piled up in bales, or manufactured into dresses and articles of domestic use, as tapestry, curtains, coverlets, and the like. The richly stained and nice fabrics reminded Cortés of the *alcacería*, or silk-market of Granada. There was the quarter assigned to the goldsmiths, where the purchaser might find various articles of ornament or use formed of the precious metals, or curious toys, made in imitation of birds and fishes, with scales and feathers alternately of gold and silver and with movable heads and bodies. These fantastic little trinkets were often garnished with precious stones, and showed a patient, puerile ingenuity in the manufacture, like that of the Chinese.

In an adjoining quarter were collected specimens of pottery, coarse and fine, vases of wood elaborately carved, varnished, or gilt, of curious and sometimes graceful forms. There were also hatchets made of copper alloyed with tin, the substitute, and, as it proved, not a bad one for iron. The soldier found here all the implements of his trade. The casque fashioned into the head of some wild animal, with its grinning defenses of teeth and bristling crest dyed with the rich tint of the cochineal; the *escaupil*, or quilted doublet of cotton, the rich surcoat of feather-mail, and weapons of all sorts, copper-headed lances and arrows, and the broad *maquahuitl*, the Mexican sword,

with its sharp blades of *itztli*. Here were razors and mirrors of this same hard and polished mineral which served so many of the purposes of steel with the Aztecs.

In the square were also to be found booths occupied by barbers, who used these same razors in their vocation; for the Mexicans, contrary to the popular and erroneous notions respecting the Aborigines of the New World, had beards, though scanty ones. Other shops or booths were tenanted by apothecaries, well provided with drugs, roots, and different medicinal preparations. In other places, again, blank books or maps for the hieroglyphical picture-writing were to be seen, folded together like fans and made of cotton, skins, or more commonly the fibers of the agave, the Aztec papyrus.

Under some of the porticos they saw hides, raw and dressed, and various articles for domestic or personal use made of the leather. Animals, both wild and tame, were offered for sale, and near them, perhaps, a gang of slaves, with collars round their necks, intimating they were likewise on sale—a spectacle, unhappily, not confined to the barbarian markets of Mexico, though the evils of their condition were aggravated there by the consciousness that a life of degradation might be consummated at any moment by the dreadful doom of sacrifice.

#### SAVORY DISHES READY TO SERVE

The heavier materials for building, as stone, lime, timber, were considered too bulky to be allowed a place in the square, and were deposited in the adjacent streets on the borders of the canals. It would be tedious to enumerate all the various articles, whether for luxury or daily use, which were collected from all quarters in this vast bazaar. I must not omit to mention, however, the display of provisions, one of the most attractive features of the *tiangues*; meats of all kinds, domestic poultry, game from the neighboring mountains, fish from the lakes and streams, fruits in all the delicious abundance of these temperate regions, green vegetables, and the unfailing maize. There was many a viand, too, ready dressed, which sent up its savory steams,



A NATURE'S BATH-TUB AT CUERNAVACA, MEXICO

There are probably fewer bath-tubs in all tropical America than there are in the single city of New York. "The old swimming-hole" must answer for many millions of Mexicans; and in Mexico swimming-holes are often many miles apart.

provoking the appetite of the idle passenger; pastry, bread of the Indian corn, cakes, and confectionery. Along with these were to be seen cooling or stimulating beverages, the spicy foaming *chocolatl*, with its delicate aroma of vanilla, and the inebriating *pulque*, the fermented juice of the aloe. All these commodities, and every stall and portico, were set out, or rather smothered, with flowers, showing, on a much greater scale, indeed, a taste similar to that displayed in the markets of modern Mexico.

The most perfect order reigned throughout this vast assembly.

The women partook equally with the men of social festivities and entertainments. These were often conducted on a large scale, both as regards the number of guests and the costliness of the preparations. Numerous attendants, of both sexes, waited at the banquet. The halls were scented with perfumes and the courts strewned with odoriferous herbs and flowers, which were distributed in profusion among the guests as they arrived. Cotton napkins and ewers of

water were placed before them as they took their seats at the board; for the venerable ceremony of ablution, before and after eating, was punctiliously observed by the Aztecs.

#### SNUFF USED IN TENOCHTITLÁN

Tobacco was then offered to the company, in pipes, mixed up with aromatic substances, or in the form of cigars, inserted in tubes of tortoise shell or silver. They compressed the nostrils with the fingers while they inhaled the smoke, which they frequently swallowed. Whether the women, who sat apart from the men at table, were allowed the indulgence of the fragrant weed, as in the most polished circles of modern Mexico, is not told us. It is a curious fact that the Aztecs also took the dried leaf in the pulverized form of snuff.

The table was well provided with substantial meats, especially game, among which the most conspicuous was the turkey, erroneously supposed, as its name imports, to have come originally from the East. These more solid dishes were

flanked by others of vegetables and fruits, of every delicious variety found on the North American continent. The different viands were prepared in various ways, with delicate sauces and seasoning, of which the Mexicans were very fond. Their palate was still further regaled by confections and pastry, for which their maize flour and sugar supplied ample materials.

The meats were kept warm by chafing-dishes. The table was ornamented with vases of silver, and sometimes gold, of delicate workmanship. The drinking cups and spoons were of the same costly materials, and likewise of tortoise shell. The favorite beverage was the *chocolatl*, flavored with vanilla and different spices. They had a way of preparing the froth of it so as to make it almost solid enough to be eaten and took it cold. The fermented juice of the maguey, with a mixture of sweets and acids, supplied also various agreeable drinks, of different degrees of strength, and formed the chief beverage of the elder part of the company.

#### CRITICISING THE HOST

As soon as they had finished their repast, the young people rose from the table, to close the festivities of the day with dancing. They danced gracefully to the sound of various instruments, accompanying their movements with chants of a pleasing, though somewhat plaintive, character. The older guests continued at table, sipping *pulque* and gossiping about other times, till the virtues of the exhilarating beverage put them in good humor with their own.

Intoxication was not rare in this part of the company, and, what is singular, was excused in them, though severely punished in the younger. The entertainment was concluded by a liberal distribution of rich dresses and ornaments among the guests, when they withdrew, after midnight, "some commanding the feast and others condemning the bad taste or

extravagance of their host; in the same manner," says an old Spanish writer, "as with us." Human nature is indeed much the same all the world over.

We shall be able to form a better idea of the actual refinement of the natives by penetrating into their domestic life. We have, fortunately, the means of doing so. We shall there find the ferocious Aztec frequently displaying all the sensibility of a cultivated nature, consoling his friends under affliction, or congratulating them on their good fortune, as on occasion of a marriage or of the birth or baptism of a child, when he was punctilious in his visits, bringing presents of costly dresses and ornaments, or the more simple offering of flowers, equally indicative of his sympathy. The visits at these times, though regulated with all the precision of Oriental courtesy, were accompanied by expressions of the most cordial and affectionate regard.

In this remarkable picture of manners, which I have copied faithfully from the records of earliest date after the Conquest, we find no resemblance to the other races of North American Indians. Some resemblance we may trace to the general style of Asiatic pomp and luxury. But in Asia woman, far from being admitted to unreserved intercourse with the other sex, is too often jealously immured within the walls of the harem.

The Aztec character was perfectly original and unique. It was made up of incongruities apparently irreconcilable. It blended into one the marked peculiarities of different nations, not only of the same phase of civilization, but as far removed from each other as the extremes of barbarism and refinement. It may find a fitting parallel in their own wonderful climate, capable of producing, on a few square leagues of surface, the boundless variety of vegetable forms, which belong to the frozen regions of the North, the temperate zone of Europe, and the burning skies of Arabia and Hindostan!



# THE TREASURE CHEST OF MERCURIAL MEXICO

BY FRANK H. PROBERT

**Q**UE ES?" How simple a question, and yet on its answer rested the future of the "treasure-house" of Mexico. "What is it?"

Eighty long years before the *Mayflower*, with its precious burden of 102 souls, hove to off Plymouth Rock; 23 years after the defeat of Montezuma and the Aztecs by Cortez and his cohorts, and early in the history of the dominance of Spain over Mexico, a weary peon rested by the roadside while journeying afoot from Zacatecas to Pachuca. His small camp-fire had died down and the ashes were being scattered by the winds, when he was attracted by bright shining globules of a white metal in the rock on which he had built his fire. "Que es?" was his question, and the fairy tale of Guanajuato was begun. This was in 1554 at La Luz. Rayas, a few years later, discovered the mine which still bears his name, and in 1557 the Rayas and Mellado workings led to the recognition of the Veta Madre, the mother lode of Guanajuato, which has yielded untold riches.

Baron von Humboldt, writing at the close of the eighteenth century, asserted that Guanajuato had yielded one-fifth of the total amount of silver then current in the world. Cecil Rhodes prophesied of Mexico that "from her hidden vaults, her subterranean treasure-houses, will come the gold, silver, copper, and precious stones that will build the empires of tomorrow and make future cities of this world veritable New Jerusalems." The actual mint and government records show a production of gold and silver from the Veta Madre in excess of one billion dollars. But we are traveling too fast; let us halt to get our bearings and locate this Eldorado on the map, then rest awhile and enjoy that which it has to offer.

The State of Guanajuato is in the south-central part of the Republic of Mexico. The estimated population is 1,100,000. It is the most important mercantile center in the country, the total

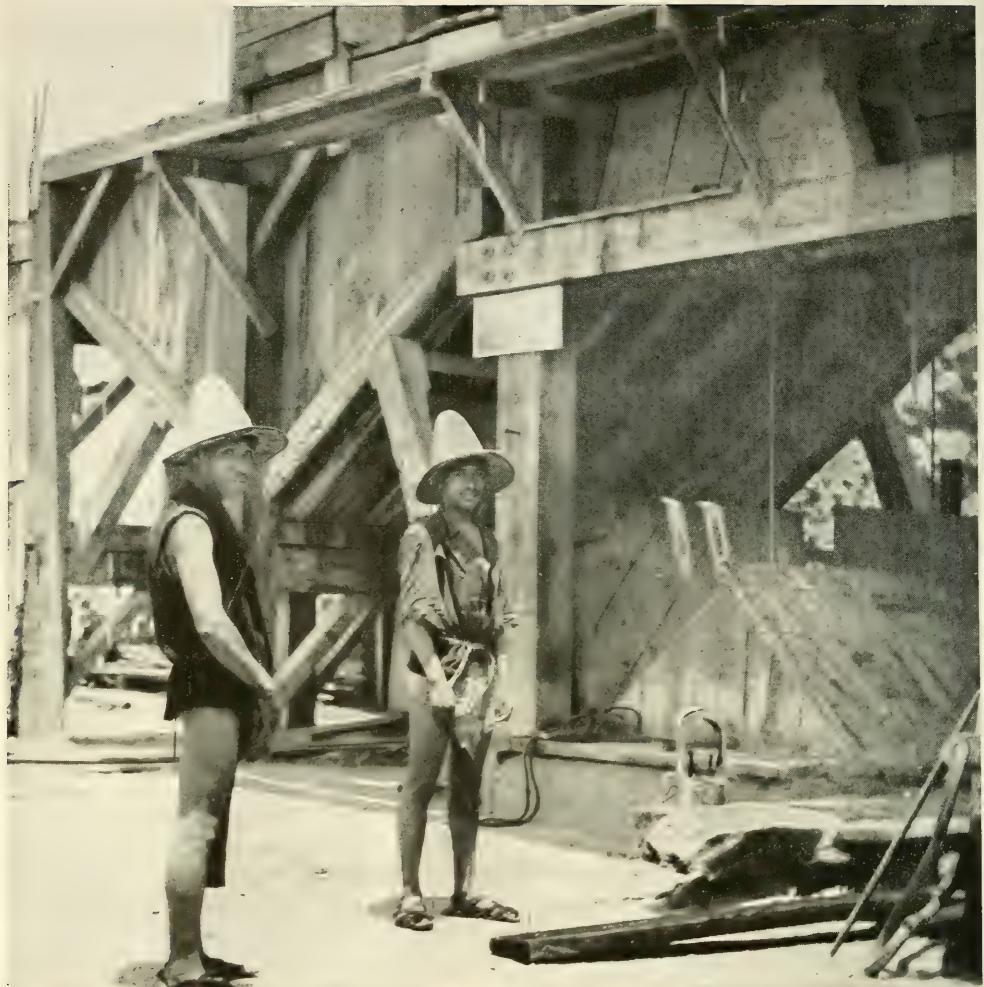
trade being valued at \$67,000,000 per annum. The leading industries are mining, agriculture, and cattle raising.

The city of Guanajuato, capital of the State, is picturesquely situated, nestling in a small basin, surrounded on all sides by the Sierra de Guanajuato (see picture, page 37). The Cañada de Marfil affords a pass to the city through the cordon of hills from the fertile valley lands of Silao, a station on the line of the Mexican Central Railroad, 14 miles to the west. The railroad grade from Silao rises rapidly, following the tortuous course of the Rio de Guanajuato to an elevation of 7,000 feet, where, poised high in the Cordilleran plateau, is this historic city of 40,000 people—during these days of unending revolt and brigandage a wasted shadow of its former greatness.

## THE CROWD THAT MEETS THE TRAIN

A motley crowd greets the train—the halt and blind, old and young, somberly and gayly clad—a fascinating mixture of humanity. Licensed porters (*cargadores*) all but snatch the baggage from the bewildered visitor. Scantly clad in calico clothes, with sandaled or bare feet, they will carry anything from a hand-bag to a grand piano on their broad backs for a small fee; but it is well to arrange details before engaging their help. The lordly rancher, with clanking spurs, stiffly embraces his arriving guest, and, with a few pats on the back, the formality of greeting is over. Demure damsels, whose olive-skinned complexions, modestly though immoderately, plastered with white chalk, make their black snappy eyes and raven hair the darker, gather around in awkward groups; shapeless señoras, wrapped in mournful *rebozos*, old before reaching middle age; seraped and sombreroed señors; what a number of types have come to witness this event of the day, the arrival of the train!

Leaving the walled inclosure of the railroad yards, one looks down on the apparently cramped and crowded city be-



Photograph by Frank H. Probert

#### THE SHAFT OF A MEXICAN MINE

Labor is so cheap in Mexico that most of the silver mines use the "chicken-ladder" method of getting out their ore. The peons take heavy loads upon their heads and scale these rickety structures with an astonishing nimbleness.

low. Hard by, to the right, is the bullring, the scene on Sundays and fiestas of farcical combats between two-legged brutes and four-footed beasts.

In the soft sunshine of summer days the first vista of the city is striking indeed. Churches of magnificent proportions; ancient and modern architecture strangely blended in the same edifice; stately buildings; imposing markets; stores of all descriptions; and dwelling places, rudely bare, variously colored with neutral tints of calsomine, their grated windows and open doors exhibiting to all the sparsely furnished interior,

where bird, beast, and human eat and live together. The sordid squalor of the many contrasts strikingly with the oppressive opulence of the few.

#### HORSEBACK RIDERS MUST TAKE THE SIDEWALK

The cobblestone streets are crooked and narrow; so narrow, in fact, that *caballeros* must take to the sidewalk to permit of the passing of any kind of vehicle. The dingy tram-cars are drawn or dragged by relays of mules, three abreast, beaten into subjection by the stinging lash or coaxed into action by the curses



Photograph by Frank H. Probert

#### EVERY LABORER IS SEARCHED BEFORE LEAVING THE PATIO OF THE MINES

The peon laborer in the mines has always received as wages only about the equivalent of "victuals and clothes"; and frijoles, tortillas, sombreros, shirts, trousers, and sandals, with a little mescal to wash down the food, represent about the sum total of food and raiment that the peon knows.

of the youthful drivers, whose vernacular is wonderfully expressive and effective; indeed, I doubt if anything but a mule can really appreciate the depth of feeling and irresistible persuasiveness of the vile expressions.

What strange sights one can see in these main arteries of the city! I have set my camera on the balcony of my room at the Woods Hotel and will snap what passes by. At first, a herd of patient plodding burros loaded down with slabs of the pale green sandstone, quarried near by and used for building purposes; a legless cripple shuffles along on a board, propelling himself with his hands; a cargador trots along tirelessly with his awkward burden, in this case a sewing-machine; more burros overloaded with charcoal; another pack struggles under the weight of sacked ore from the mines; still another bearing grain to the market, and the street-car demanding loudly a clear track; a funeral procession, where laughing children carry a baby's casket, swaying from side to side to the accom-

paniment of anything but appropriate music, and behind the mourners in silent solemnity.

Strangely superstitious are these simple people. Grossly ignorant, constant in their faith, pathetic in their simplicity, kindly and respectful, their life is epitomized in the verse:

"Let the World slide, let the World go;  
A fig for care, and a fig for woe;  
If I can't pay, why I can owe,  
And death makes equal the high and low."

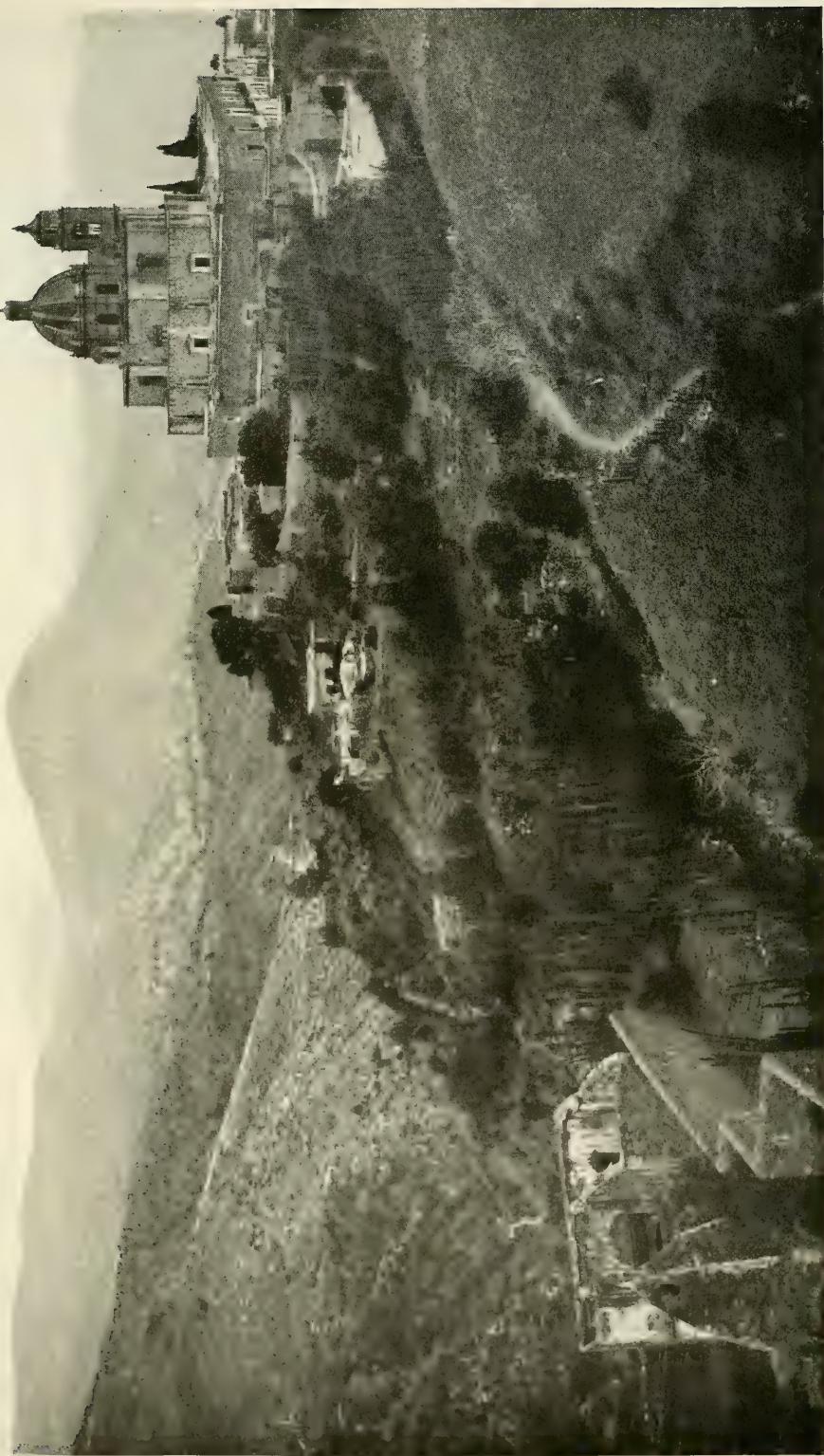
#### THE EASTER MORNING MEDLEY

'Tis Easter Sunday morning. I am awakened at early dawn by the tooting of tin horns, accompanied by the sonorous screeches of bass viols and fiddles as sounds are sown from their strings; by the shuffling of sandaled feet over the stones of the street, and by the babel of voices of passing peons. Church bells clang, sirens scream, whistles wildly mingle in the melody of merriment; for is not this the day when Judas Iscariot is to be hung in effigy!

Photograph by Frank H. Probert

THE CHURCH OF SAN CAYETANO : GUANAJUATO, MEXICO

This is one of the most imposing churches of Mexico. It was built by the rich neon owner of the great Valenciana mine, which is said to have had an output worth nearly half a billion dollars. He intended to make a basilica rather than a chapel out of it, but the controversy between him and the local head of the church resulted in the lowering of its rank by having only one tower complete. It is said that after the church was built silver was found to exist under its foundations, and that he was offered fabulous sums if he would allow it to be torn down and rebuilt on another site, so that the ore deposits could be worked. In its palmy days its service cost \$25,000 a year.





Photograph by Frank H. Probert

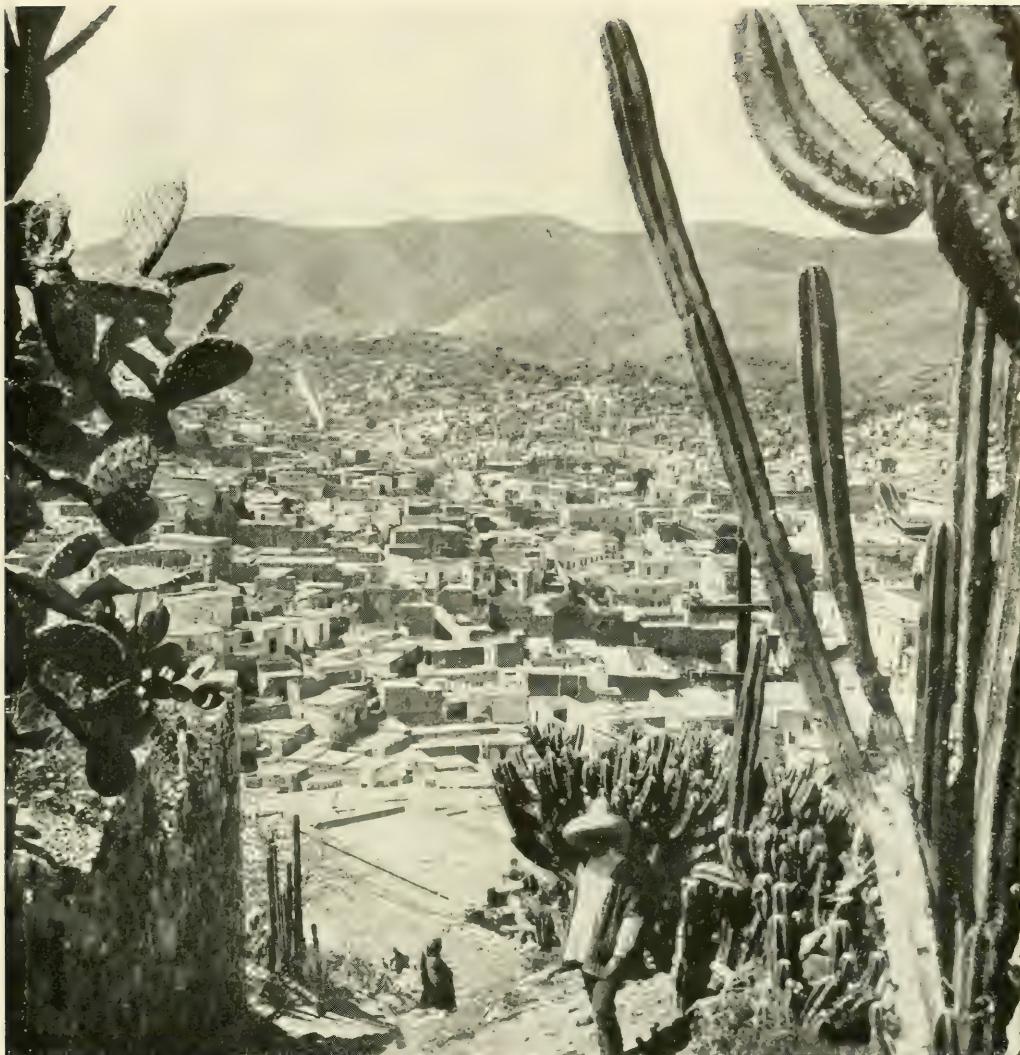
THE HILL-SURROUNDED CITY OF GUANAJUATO, MEXICO

This city received its name from the Tarascan Indians. It means "The Hill of the Frogs." It is said that here the Chichimecs, wanting a better god to worship, set up an image of a frog.

THE MINING TOWN OF LA LUZ, NEAR GUANAJUATO, MEXICO

From the discovery of America to the present time the world's production of silver has amounted to approximately twelve billion ounces troy, or a little less than 472,000 tons avoirdupois. Mexico has probably contributed more than any other single country to that total, and most of her annual output has come from the Guanajuato region.





VIEW OF GUANAJUATO, MEXICO

The city of Guanajuato is the capital of the State of the same name. It is built on the slopes of a mountain range and has a population of 40,000. Guanajuato is celebrated as one of the famous silver-producing regions of Mexico, and it is this industry which has been the foundation of the prosperity and development of the city.

A grotesque dummy figure is paraded through the town, followed by the jeering and cheering crowds, who have risen early to give expression to their righteous indignation against the betrayer. After circling the city, the procession halts, Judas is promptly yanked by ropes from the bearers and dangles in mid air, a sorry sight, spit upon, cursed, condemned, consigned to everlasting purgatory, to which place, at sunset, he is sent by the explosion of dynamite concealed in his carcass.

Ribaldry runs riot as the day advances, and night falls on an exhausted, though happy, people. What matters if the prison is overcrowded that night, or that the supply of pulque or mescal is depleted almost to the degree of exhaustion?

To the casual visitor from the States the habits and customs of these lowly people are strange, but fascinating. They do not need our commiseration or sympathy; they are content in their mode of living, and who shall say that they are



A WALKING WICKER STORE IN MEXICO

The Indian women of Mexico are industrious. Wages are so low that every hand must help to feed a mouth, else many would feel the pangs of famine. Prices of hand-wrought commodities are as low as the scale of wages. Baskets that would cost a dollar here may be bought for a quarter there.



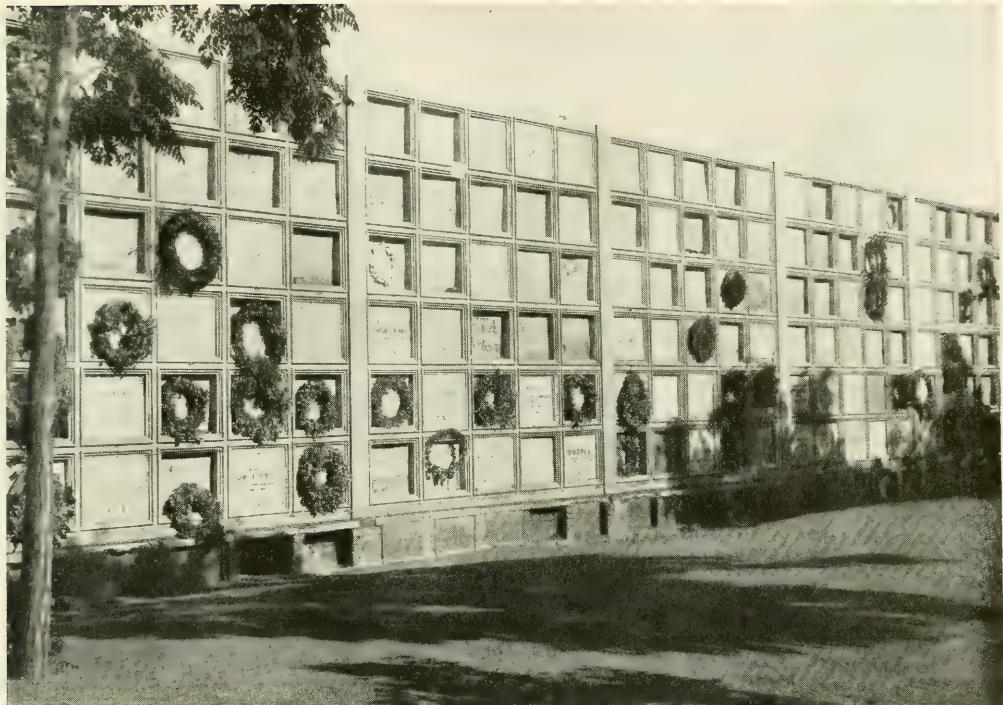
INDIAN GIRL: GUANAJUATO, MEXICO

The pure-bred Indians of Mexico who have held aloof from the white man's civilization are clean, wholesome, honorable people. One who knows them and the simple dignity and sense of honor they possess cannot but lament the fate that has caused their less fortunate brethren to see and imitate the worst side of the more civilized races.



YOKEs THAT ARE HARD AND BURDENs THAT ARE HEAVY

No traveler in Mexico with the milk of human kindness in his make-up can avoid a regret that a land of such rich undeveloped resources should afford such a poor living for so many of her people



Photograph by Frank H. Probert

**"BEWREATHED AND VAULTED TOMBS" IN A MEXICAN CEMETERY**

Rentals are for perpetuity, for five years, or, in the case of the very poor, for one year. In highland Mexico mummies are often taken out of the tombs and stood up, draped in sheets, in long rows against the wall. The sight is gruesome in the extreme.

the less happy or human in their habitat than many of us? There is a lot of sympathy wasted in this world, and maybe if we highly civilized and sensitive creatures lived closer to old Mother Nature and listened to her teachings our ills and ailments would vanish into thin air. Riches and poverty, sickness and health, joy and sorrow, leisure and work—in the abstract these are only relative, and our understanding of them is based on the environment in which we live.

**KNOWS HE WAS BORN TO SERVE**

The Mexican peon knows that he is born to serve, as did the old southern darky, and caste or class distinction is emphasized on all occasions. The mozo rides silently behind the lordly caballero; the peon woman steps into the street and bows her head as the padre passes; in the plaza on Sunday evening, when the melody of martial music fills the air, the upper classes parade in one direction, while the peons gyrate as an outer ring

in the opposite direction. As a class they are industrious and skillful if the time element is eliminated.

The peon miner is a competent workman when unhampered by modern machines and has a "nose" for ore that is truly remarkable. As tillers of the soil their methods are primitive, but productive; they still use oxen and the wooden plowshare, and the fields are fenced with imperishable dry-rock walls. In the making of pottery and basketry they excel; in tanning hides, saddlery, and the working of metals they are inimitable. The women, too, can grind corn on a metate, cook tortillas and frijoles, raise families, launder clothes on a rock near the creek, make the most exquisite laces and the finest of drawn work with equal skill.

**A SONG FROM THE DEPTHS**

I recall an interesting experience at the Nueva Luz shaft, the deepest shaft on the Veta Madre today. It is 2,031 feet deep, cut out of solid rock. Iron buckets,



Photograph by John H. Hall

CHURCH OF NUESTRA SEÑORA DEL CARMEN: MEXICO CITY, MEXICO

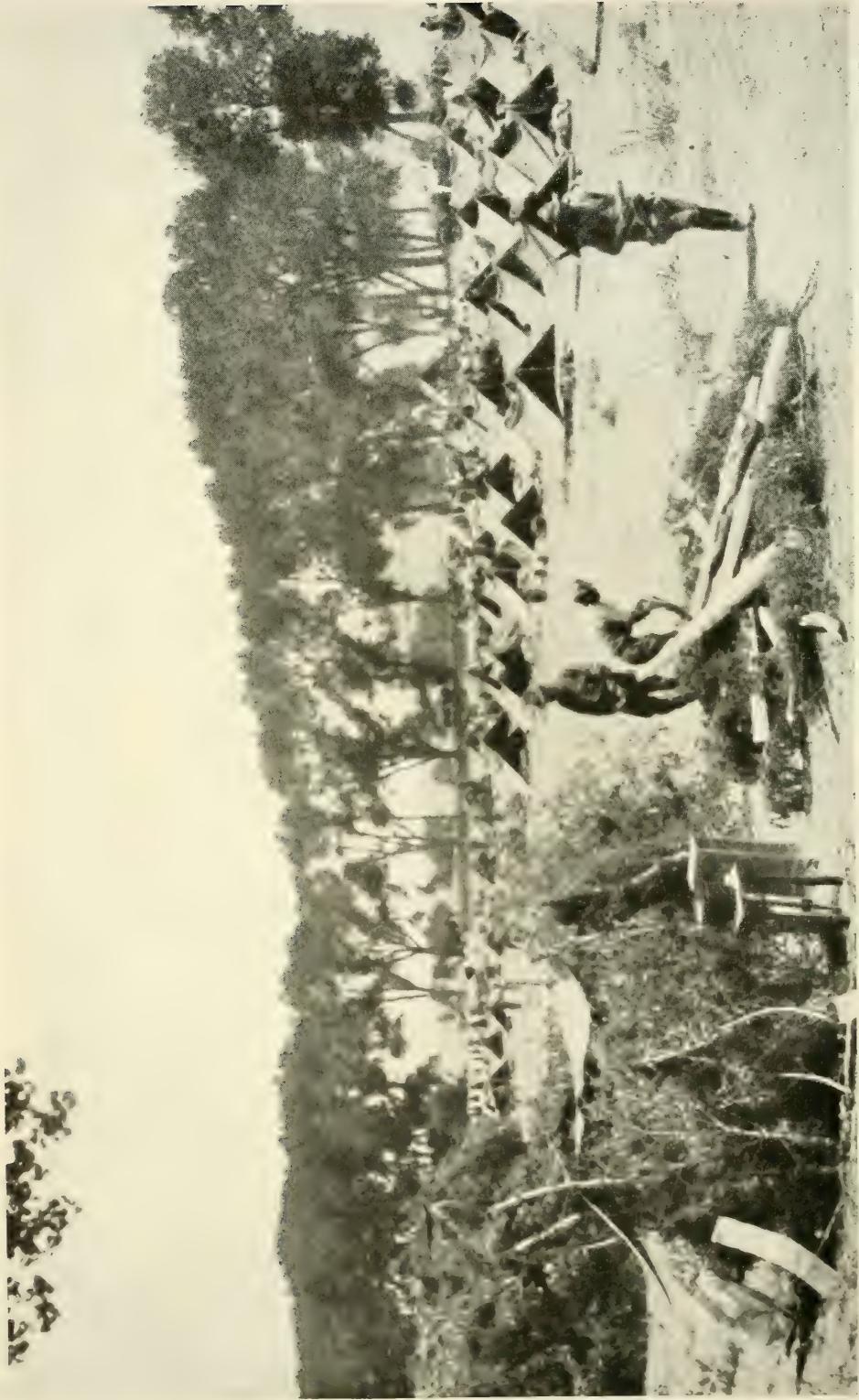
Mexico City is famous for its old churches. The American who visits that capital and becomes a guest at the historic old Iturbide is likely to conclude that all the church bells in Christendom have been gathered there to be rung simultaneously. Del Carmen, though old, has a new façade and a new tower with dome of blue, white, and yellow tiles. It stands in the poorest quarter of the city.

Photograph by Capt. D. H. Scott, U. S. A.

A MEXICAN OASIS 200 MILES SOUTH OF COLUMBUS, NEW MEXICO

With its banks shaded by cottonwood and its waters teeming with trout and striped bass, this stream affords a welcome camp site for American troops. The surrounding country is a treeless, trackless waste, with the nearest water 30 miles away to the north and south.





Photograph by Capt. D. H. Scott, U. S. A.

UNITED STATES TROOPS IN CAMP SOUTH OF COLUMBUS, NEW MEXICO

Not in the commodious tents familiar to militia camp visitors, but in these "pup tents," as the soldiers call them, our fighting men make their homes for months at a time while on active service. The illustration shows how brush and trees are utilized in the effort to mitigate the heat and glare of a semi-tropic sun in a cloudless sky. This camp is on the Sta. Maria River, 250 miles south of the United States border.

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MEXICAN TROOP TRAIN WAITING FOR A CLEAR TRACK NEAR AN AMERICAN CAMP

This picture was taken in the days before the Mexican Government peremptorily demanded the evacuation of Mexican soil by the American punitive Expedition and in the days when it was thought that Mexico would aid the American troops in capturing and forever eliminating Villa. Good will then existed between the soldiers of Mexico and those of the United States and "amigo" was the word. Today, however, greater and "gringo" seem to be more popular.



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POOR PEONS IN SALTILLO, MEXICO, WAITING FOR MONEY TO BE DISTRIBUTED BY CARRANZA'S REPRESENTATIVES AT THE GOVERNOR'S PALACE



Four-fifths of Mexico's population is made up of Indians and their mixed-blood descendants. They are naturally as improvident as our own Indians, even less fitted for the duties of citizenship than ours, and the twelve millions of them who are forced in war times to go half starved and in peace times are underfed make a pathetic picture as one journeys through their country reckoning up their woes.

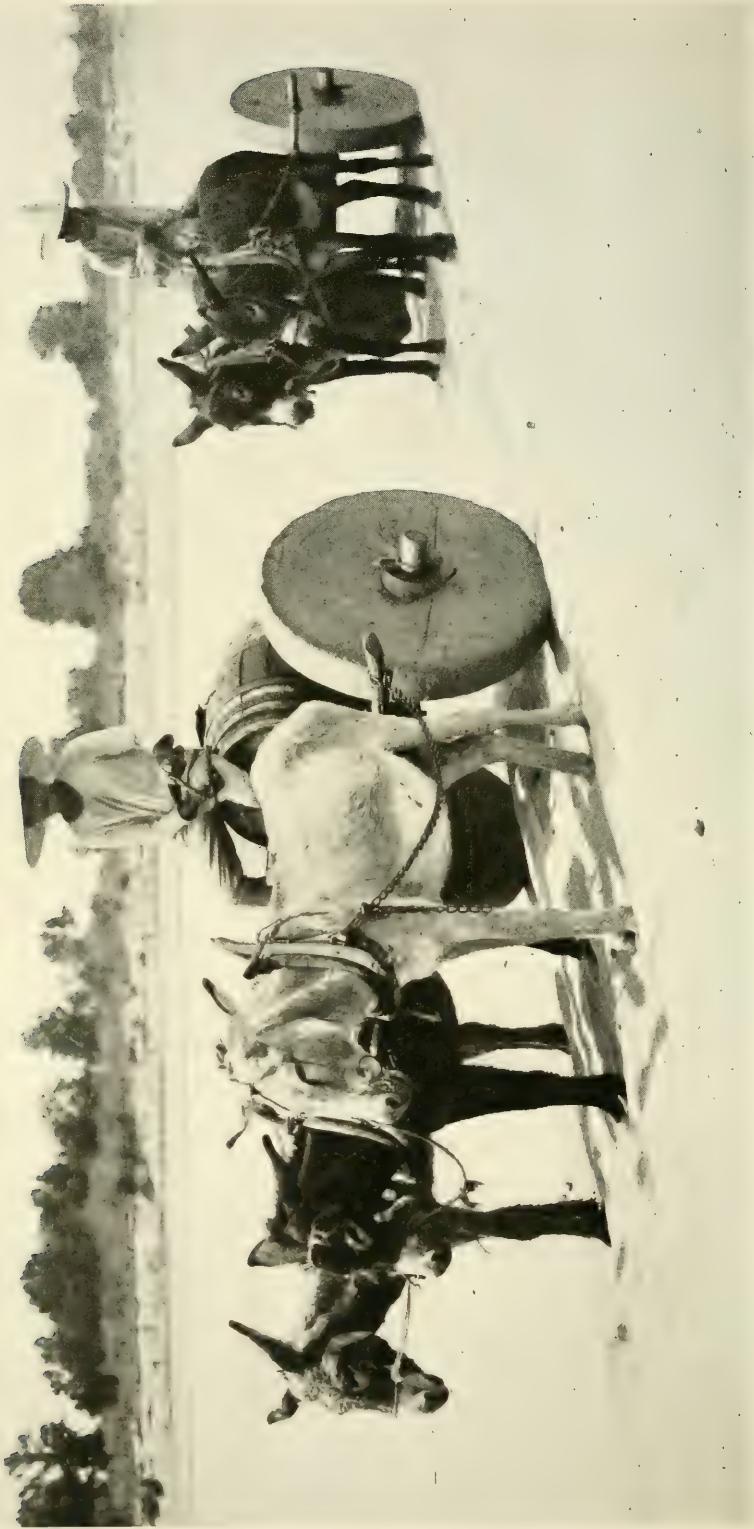


Photograph by Harriet Chalmers Adams

THE LOVE OF MUSIC SEEMS TO BE UNIVERSAL IN MEXICO

Among the Indian tribes who live away from the haunts of white men the women are noted for their virtue. The tribe insists upon the most rigid maintenance of the moral code, and the woman who errs is ostracized.

WATER-CARRIERS: CULIACÁN, MÉXICO



In this picture one may indeed read the story of highland Mexico. In the solid-wheeled, wooden-axed cart the unprogressiveness of the country appears; in the barrels we see the needs of a thirsty land, where pure water is about as hard to get as good food; in the sleepy-eyed, woe-begone donkeys, with their rickety harness, we recognize that drowsy and shiftless spirit of manana which seems to pervade whole nations.



A THREE-HANDED GAME OF MONTE

The Mexican peon loves excitement, and while bull-fighting is his first enthusiasm and cock-fighting a substitute for times and places which offer none of that amusement, monte and keno are the ever-ready means of relieving the tedium of quiet.

guided by wire ropes, are used for hoisting men, rock, and supplies, and even an experienced engineer is excused a feeling of fear and trepidation when straddling the bale over this yawning hole. The almost nude natives, oblivious of danger, jumped aboard, holding their torch of candles in the free hand, and as they were lowered began to sing. A flood of melody filled the shaft, a full crescendo reverberated from wall to wall, followed by softer cadences, and as I peered down into the hole the bucket continued its slow descent, the lights of the torches became more and more indistinct, the darkness deepened, the prayerful song came up with decreasing volume until it seemed like a distant echo from the unknown.

Then there was no light visible; no anthem audible, and I involuntarily said "Amen."

Guanajuato is a city rich in historic record, in its mines, in its natural beauty, and in its architecture. To describe even briefly the many things of interest would occupy more space than can be given to this article; but mention must be made of the theater, the prison, the Pantheon, the Esperanza dam, and some of the many churches along the Veta Madre.

El Teatro Juarez faces the plaza in the center of the city. It is an imposing pile, perhaps out of keeping with its surroundings; but Guanajuato is a city wherein the picturesque and strictly practical are irreconcilably mixed together. The de-



STREET IN GUANAJUATO, MEXICO

The Guanajuato River formerly ran through the center of the city, a swirling, churning, much-bridged mountain stream. But every heavy rainfall in the mountains brought a flood to the city, sometimes with the most disastrous consequences. Finally, a cloud-burst in 1905 caused so much damage that a tunnel was constructed to divert the overflow. The project cost \$350,000.



A CARAVAN OF PACK ANIMALS COMING IN FROM THE COUNTRY

Americans are wont to employ the mule as a symbol of stubbornness and to speak of the donkey as the epitome of stupidity, but patience and meekness are the outstanding characteristics of these animals in Mexico. With rations on which an American sheep or a European goat would go hungry, the burdens which these poor beasts are forced to bear are out of all proportion to their strength and size, and they are driven many a weary mile over bridle-paths where a horse would find hard traveling; yet they are always docile and uncomplaining, as if adversity were a stranger to them. Imagine a dozen donkeys transformed into as many lumber wagons, with long, heavy boards strapped on each side, and driven a dozen miles without food, except now and then a chance bit of prickly foliage which they manage to nip as they walk along!

sign is modern and highly decorative, built of the local green tuff and sand-stone. The superb portico, with its eight bronze figures, is borne on twelve Ionic pillars; the imposing steps, with stately flambeau, the wrought-iron grille work, the spacious foyer, and the richly decorated interior by Herrara are truly magnificent.

The Alhondiga de Granaditas (prison) is as constantly full as the theater is empty. It is one of the most historic buildings of the Republic, and will always be remembered not as a storehouse of grain, not as a prison, which it now is, but as the place where the first blow was struck for the liberation of Mexico from Spanish rule. Quadrangular in shape, with a central patio, a row of small Moorish windows near the top, the lower floor Tuscan, the upper Doric, the building has no architectural beauty.

At each corner is a large hook, from which, in the days of the struggle for independence, were hung four iron cages containing the heads of the great liberators—the patriot priest, Hidalgo, his military chief, Allende, and his comrades, Aldama and Jimenez. Here they hung for years until removed by a worshiping nation to the Altar of Kings in the cathedral of the City of Mexico. After the Grito de Dolores and the first ringing of the bell of Independence, Hidalgo and his followers moved on to Guanajuato, stormed the improvised fortress of Alhondiga, and killed all the Spanish troops that had taken refuge there. This was the beginning of the eleven years' war of Independence.

#### GRINNING MUMMIES IN GHASTLY ARRAY

On the summit of the Cerro del Trocada, to the west of the city, is the Pantheon. The four high walls surrounding the cemetery consist of vaults, tier upon tier, in which the remains of the dead are placed *pro tem.* or in perpetuity, according to the ability of the surviving relatives to pay the rent. It is not an uncommon but a gruesome sight to see a burro plodding wearily up the hill with a casket, hired for the occasion, strapped on its back.

At the gates disposal of the remains is summarily made if the deceased was poverty stricken, or maybe a niche in the walls is rented for a period of five years, after which time the bones will be placed in a common ossuary. For a small fee the attendant will admit the visitor to the "chamber of horrors." A winding stair leads to the crypt, where ghastly, mummified remains are placed in a ghostly row, grinning resentment at the curious.

El Palacio Legislativo is another civic monument, designed by Louis Long and decorated by Nicolas Gonzales and Claudio Molina. It is an edifice of three stories, the first floor being the Hall of Congress, containing many oil paintings of national heroes.

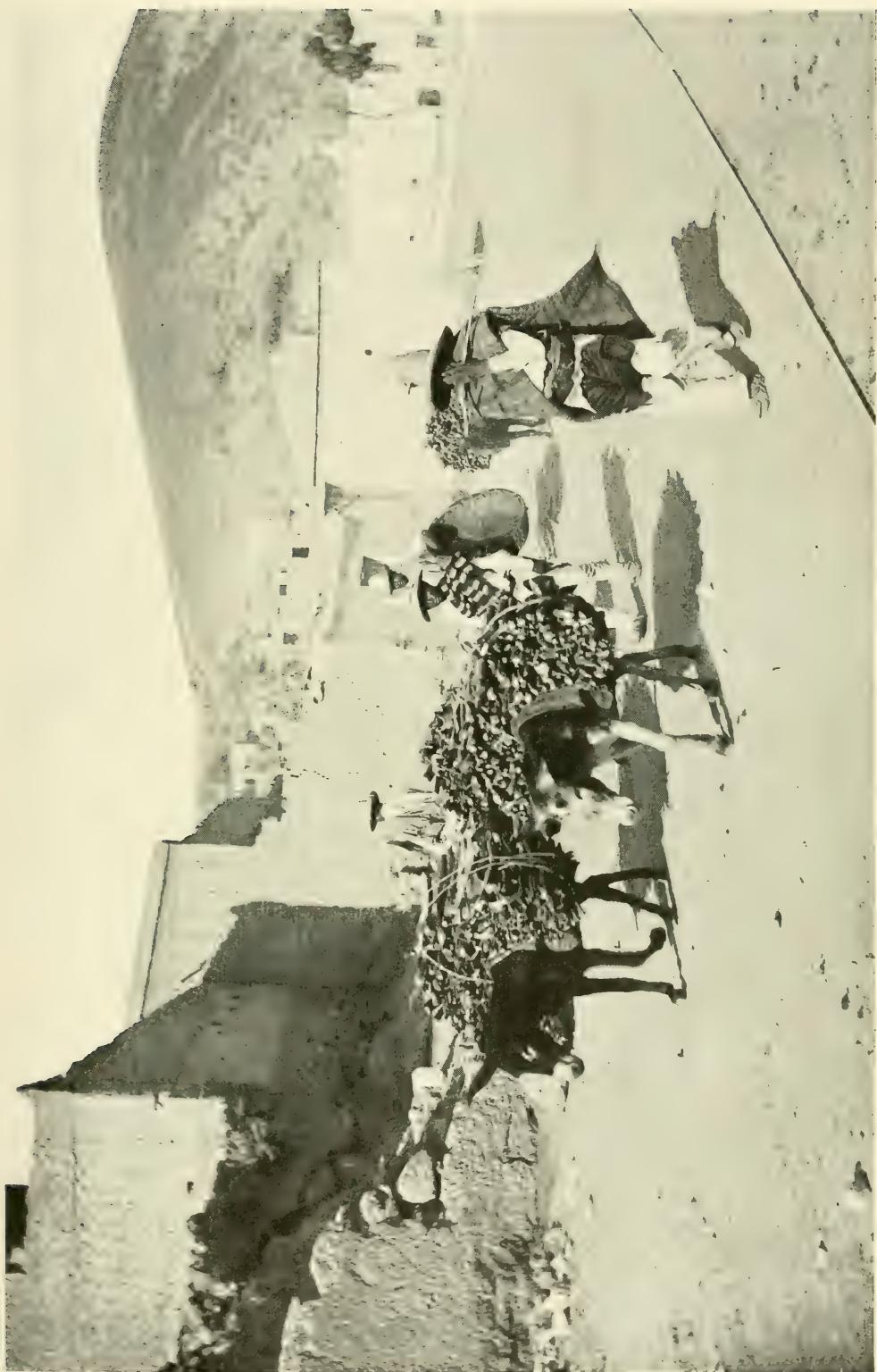
The water supply of Guanajuato has been carefully planned. It is both ample in quantity and of good quality. The run-off from the mountainous watershed is impounded by a series of dams of excellent structural and artistic workmanship. The Esperanza dam, built of native stone, is 95 feet high and wholly in keeping with the extravagance of a munificent municipality.

#### GUANAJUATO'S MANY CHURCHES

If the religious fervor of the people is measured by the number of churches, then surely we are in a pious community. In the city proper are many historic piles, with painfully modern interiors. Perhaps the finest is the Compania, a Jesuit foundation, built in 1747-1765. Its single tower contains some bells of exceptionally fine tones, the largest of which was blessed, in 1852, by Bishop Timon, of Buffalo, then resident in Mexico. The Jesuits founded their first church in Guanajuato in 1557, which later became the Collegio de la Purisima Concepcion. The venerated image of Nuestra Señora de Guanajuato, the gift of Philip II of Spain, was enshrined here until moved to the parish church of San Francisco, dedicated to San Juan de Dios and completed in 1696. After the suppression of the Juaninos by the Franciscans, in 1828, the original beauty of this sacred edifice was lost in its renovation, so that today it is a distressing patchwork.

TAKING FIRE-WOOD TO MARKET: MEXICO

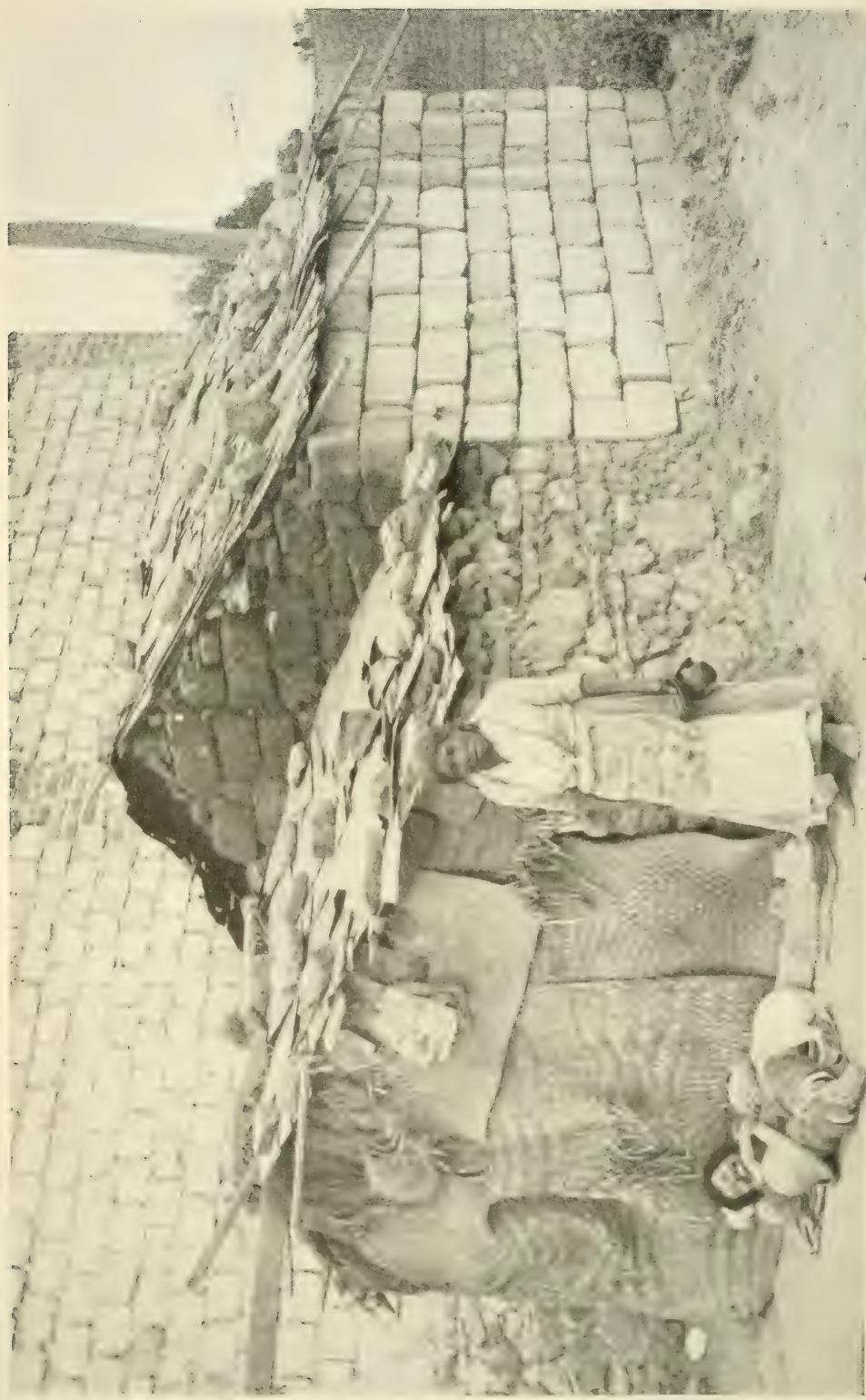
The meek and long-suffering donkeys of Mexico find life no bed of roses. Receiving no sympathy or consideration from his fellow-man, the peon, in turn, has none for his donkeys. "All they can stand under" is a load, and "until they are ready to drop" a day's march. What a field for an active society for the prevention of cruelty to animals!



Photograph by Bain

LOVE IN A COTTAGE

Although there is not a nail or a screw nor yet a pane of glass or a touch of paint in their house, and although everything that enters into its construction is nothing more than the salvage of the streets, this lazy peon and his hard-worked wife are perhaps as content with their lot as the owner of the best house in America.





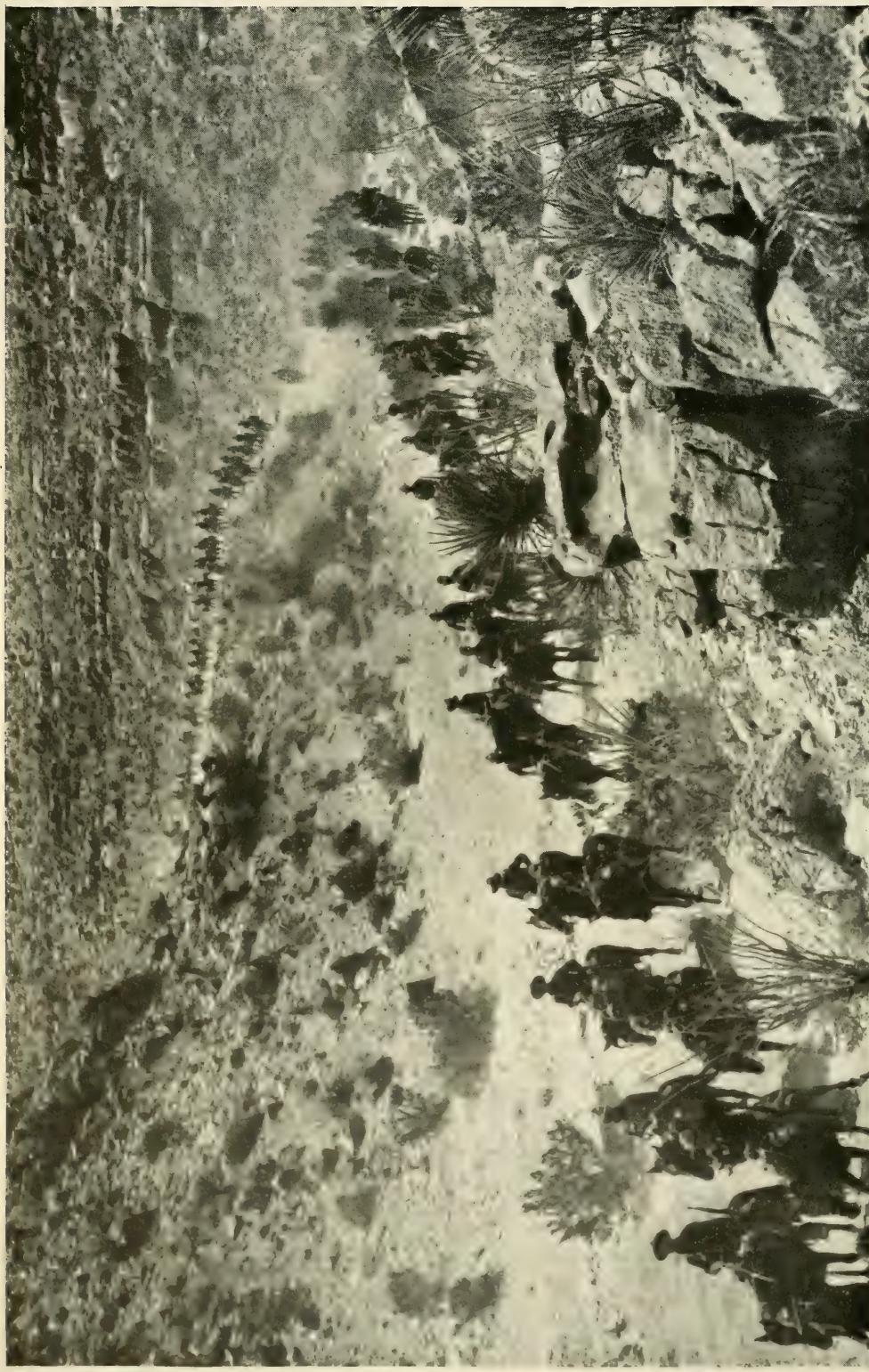
CARRYING BLEACHED PALM LEAVES FOR MAKING HATS: NEAR ZITACUARO, MEXICO

Every day in the year is straw-hat season in peon Mexico, and it takes millions of them to go around; so the sombrero business is always a thriving one, war or no war; and the Mexican peon is more fastidious about his sombrero than the American woman about her Paris bonnet.

© International Film Service

FOLLOWING THE MOUNTAIN TRAIL, IN QUEST OF THE MEXICANS WHO RAIDED GLENN SPRINGS

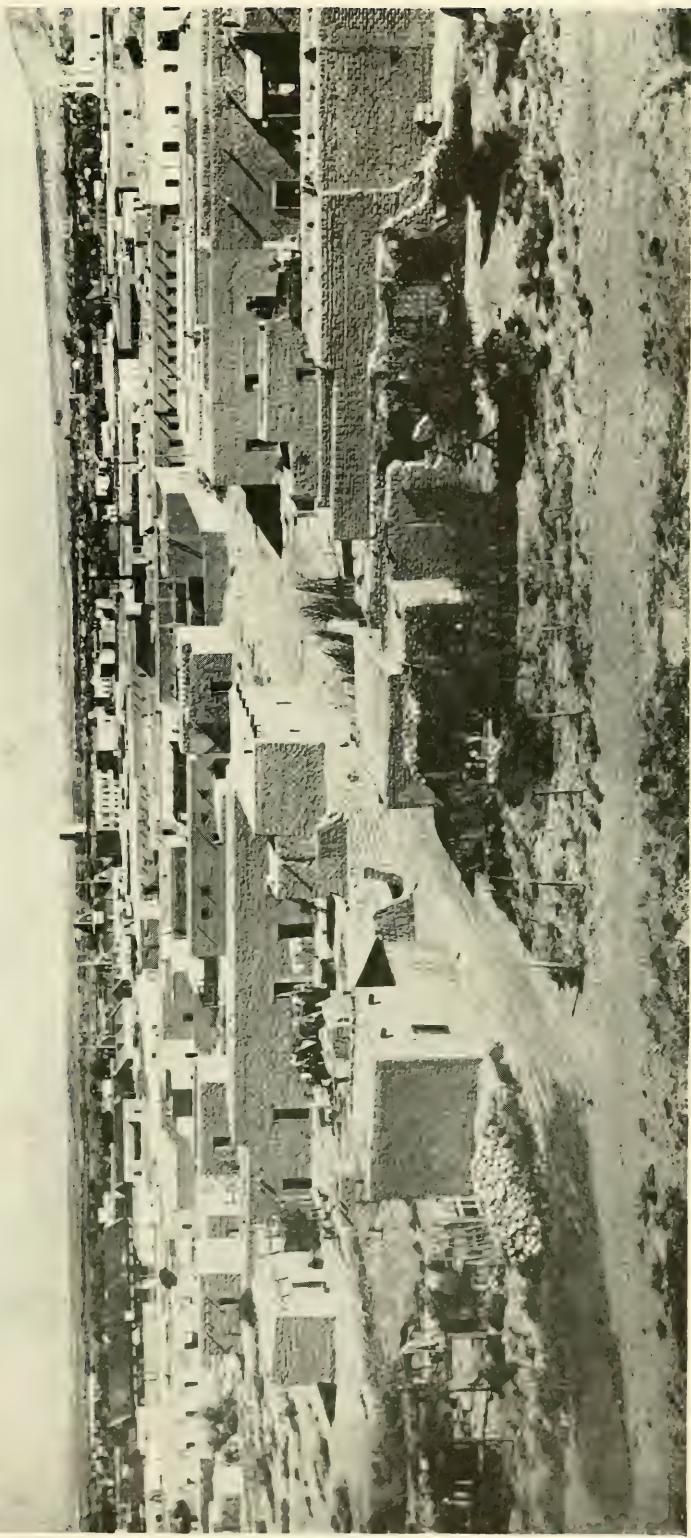
This picture affords some conception of what campaigning in northern Mexico means. The Mexican highlands are to Mexico what the Great American Desert was to the United States a century ago—inhospitable, sun-parched, cactus wastes, with here and there an adobe city rising out of the plains or set among the barren hills.



Photograph by Bain

A VIEW OF PARRAL, ONE OF THE MINING CENTERS OF MEXICO

This gives one a good idea of the poorer quarters of most of the cities of Mexico. Windowless houses are the rule rather than the exception, the door serving alike for the entrance of man and light and the exit of smoke. Perhaps two-thirds of Mexico's population lives under such conditions as these.





A GYPSY FORTUNE-TELLER: SAN LUIS POTOSÍ, MEXICO

San Luis Potosí is another of those Mexican cities with a population of more than 60,000 which causes the traveler to wonder how it manages to exist. The country around is so dry and parched that it would seem that it could not even partially provision a city of such size. But silver is the key to the secret. Mexican history shows that cities always grow close to silver mines, and that inhospitality of soil cannot counteract the magnetism of silver.



A RURAL HIGHWAY: SAN PABLO, MEXICO

The cactus fences of Mexico are an interesting sight to the foreigner. They have the valuable quality of permanency, although their tendency to spread out and appropriate more space than an orthodox fence should occupy is a disadvantage.

Photograph by James H. Hare

VERA CRUZ, WITH SAN JUAN DE ULUA IN THE FOREGROUND

The immense cost of San Juan de Ulua—reputed to have been 40,000,000 pesos—was enough to shock even Charles V of Spain. One day he was standing on a balcony gazing with hand-shaded eye intently into the west. "For what is your Majesty looking?" queried a courtier. "I am looking for San Juan de Ulua," replied the king, "for it certainly has cost me enough to be seen across the sea."



Still more pretentious and decidedly more picturesque are the churches on the Veta Madre, thank offerings for the material blessings vouchsafed to the chosen few in the early days of mining. Each mine supported its own thriving community, its priest, and its church. Cata, Rayas, and San Cayetano still raise their cathedral spires in peaceful benediction, their whitened domes reflecting the glories of the setting sun as their hushed aisles recall the ritual of the noonday of mining activity.

#### A WONDERFUL EDIFICE

The church of Valenciana (San Cayetano) has not been despoiled; neither time nor marauding man has changed its imposing grandeur; the grayness of its walls and the tarnish of its altars give to it an additional touch of peace (see picture, page 36). Antonio Obregon, to commemorate the finding of the great Valenciana bonanza, began building this church in 1765 and completed it 20 years later. The exterior ornamentation suggests Arabesque influences, but the architecture is unknown. Above the dome is an arrow, supposed to point the direction of the Mother Lode. Its interior decoration, altars, and furnishings testify to the lavish hand of the builder. The high altar is heavy with silver; piers, arches, and roofs are elaborately carved and show the individuality of the artisans, and the inlaid pulpit is one of the finest in Mexico. Let us hope that this monument, at least, will long escape the desecrating hand of vandalism and the ravages of warfare.

Six years after the conquest of Mexico the old Spanish fortress of Santa Ana was built to repress the depredations of the Chichimecas, an Indian tribe, who were constantly menacing the travelers from Zacatecas to the coast. Twenty-two years later silver ores were discovered in this district, and an old document, found in the archives of the Court of Mines, Guanajuato, records the denunciation of the Rayas mine. Nine years later the Rayas and Mellado mines pointed conclusively to the existence of a mineralized lode—the Veta Madre de Guanajuato, extending from Tapeyac to

Sierra. This was during the reign of Queen Elizabeth.

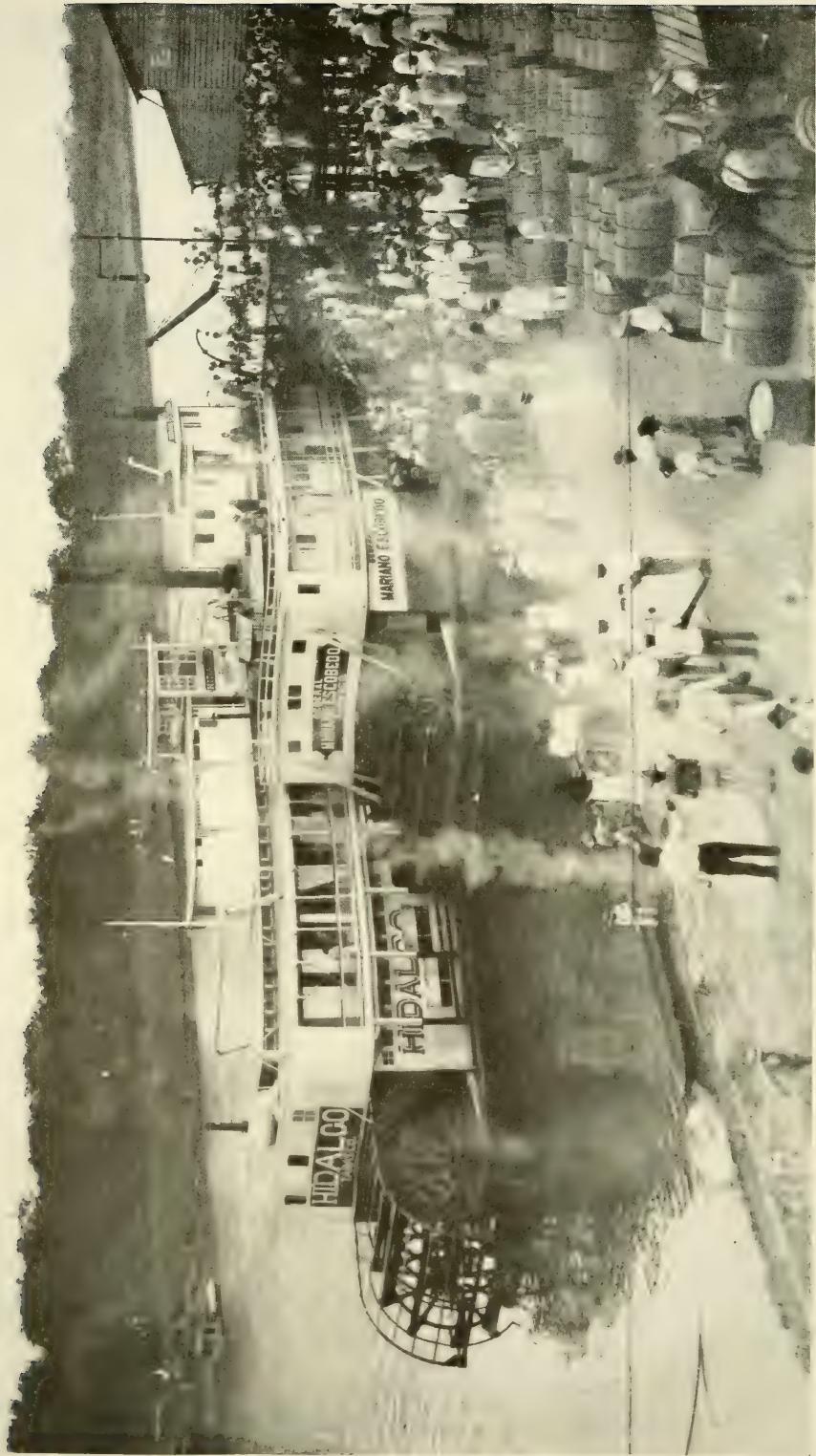
#### NO MUSHROOM GROWTH

The mining history of Guanajuato vies with that of the Nevadan gold camps of our days, only that instead of the unsubstantial mushroom growth, typifying the American mining booms, permanent and lasting monuments were raised, and remain as mute though eloquent testimony of former industry and wealth.

In the year 1600 there were 4,000 men at work along the Mother Lode. A few years later the Sierra vein system was found and, according to established custom, material blessings were reflected in pious charities. In the "Efemerides Guanajuatenses" there is mention of the blessing of a baptismal font in the chapel of El Cubo. In 1619 a royal patent was granted to this industrial center, whereby it received the dignity of the name of Villa Real de Guanajuato.

That slavery flourished in these early days is evidenced by two proclamations of 1590 and 1667, prohibiting the sale of Indians as slaves and the branding of a slave in the face. In 1700 the Villa Real de Guanajuato claimed a population of 16,000, mostly recruited from old Spain. Mining methods were most crude, explosives were unknown, and the only way of breaking rock was by building fires against an exposed rock-face and, while hot, dashing cold water on it, causing it to crack and split off.

The eighteenth century marked an era of progress and unprecedented prosperity. A record of precious-metal production was established, which our Comstocks, our Tonopahs, Goldfields, and other Western bonanzas have not approached. Gunpowder was used in boreholes, pumping machinery was installed, and development advanced to greater depths; the output increased, and many of the peon mine-owners became so wealthy and attained such power and celebrity that they were granted patents of nobility by the King of Spain and were counted among the élite of the Spanish aristocracy. Francisco Mathias de Busto, owner of the Cata mine, became Viscount de Duarte; José de Sardaneta, on finding



© Janet M. Cummings

A RIVER MAIL STEAMER ON THE RIO GRIJALVA: STATE OF TABASCO, MEXICO

To us "tabasco" means something hot. To the Indian of the Isthmian country it means "damp earth." But when Cortez first landed on Tabasco soil he got a very warm reception. He announced that he "desired only a free passage for his men," and that if there were any blood spilt it would be on the Indians' heads. They resented the invasion, however, and for a little while hostilities were lively. The Tabascans finally gave up and friendly relations were established.

SADDLE MOUNTAIN: MONTERREY, MEXICO  
Standing perpetual watch over Monterrey, this mountain is known throughout the Republic, for it appears on the label of the beer that has made the Mexican Milwaukee famous





PEONS COMING TO TOWN: HIGHLAND MEXICO

The rural peon visiting the city for a day usually has what seems to him a good time. The most essential requisite is enough money to buy pulque in sufficient quantity to produce that hilarity which makes one forget his work for the nonce.

the Santa Rosa and San Miguel bonanzas in the Rayas mine, was created Marquis de Rayas, and Antonio Obregon y Alcocar, the discoverer of the great ore shoot of the Valenciana, was made Count de Valenciana.

#### PROSPERITY - BEGOTTEN PIETY

The munificence of these grandees found expression in works of piety. Obregon built the church of Valenciana, already described. Rayas commemorated the San Miguel bonanza by an enduring monument at the mine, the sculptured portal being surmounted by a statue of the archangel Michael.

In 1741 Guanajuato was made a city, and had at that time nearly 100,000 inhabitants.

The deepest shaft on the Mother Lode, until very recent years, was the Tiro Gen-

eral, at the Valenciana mine. It was sunk by Obregon at a cost of one million pesos, but the bonanza it uncovered yielded over three hundred times its cost. It is 1,807 feet deep, 32 feet in diameter, octagonal in section, and lined with solid masonry for the first 100 feet. In striking contrast to our modern shafts, not a stick of timber was used to support the walls. Hoisting was accomplished by mule power. Eight malacates, or horse whims, one hoisting from each face of the octagon, raised the broken rock to the surface in rawhide buckets. Water now stands in the shaft 600 feet below the collar, and during the summer solstice, when the sun is directly overhead, rainbows play in the mist above the water. There is something strangely weird about this great hole.

The Rayas shaft, 1,400 feet deep, also



THE CATHEDRAL: MEXICO CITY, MEXICO

This splendid structure is one of the most imposing ecclesiastical edifices in the western world. Situated on the north side of the Plaza of the Constitution, on the east side of which stands the "White House" of Mexico, it occupies a position commensurate with its architectural and religious dignity. It is said that devout Mexicans contributed \$1,850,000 to its interior decoration.

octagonal, is wider still, being 38 feet across, while the Cata, 20 feet wide, reached down to the silver shoots 1,000 feet below.

In those days, when the tithes paid the King of Spain ran into millions of pesos, the Veta Madre was honeycombed with mine workings, bonanzas were exhausted, while others were being sought; each mine was surrounded by high solid masonry walls, and entrance to the patio was through guarded gates. Mining operations were conducted on a large scale,

but, while labor was cheap, costs were heavy, appliances crude, water was an unsurmountable obstacle, methods of treating ore most primitive, and geological knowledge almost a negligible quantity. The output began to fall off in 1810, and during revolutionary times work was practically suspended. Nearly a hundred years elapsed before interest was revived in the Guanajuato mines. Recent chemical, mechanical, and geological researches may give the Guanajuato district another long lease of life.



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VIEW DOWN THE VICA CANAL: MEXICO CITY

This tree-lined waterway is as picturesque as a Venetian canal, if one forgets the crumbling palaces; but one cannot help lamenting that it enters the city by the back door. On week-day mornings the busy boats carry food and flowers to the city, making it appear as if Mexico were fed and decorated via this canal.

# THE VENICE OF MEXICO

BY WALTER HOUGH

ONE of the pleasurable experiences among those that delight the traveler in Mexico is a visit to the home of the Aztec lake dwellers. Much of the charm of the great Valley of Mexico, where they live, is due to the stretches of water among the trees and verdant fields in a landscape framed in beautiful mountains and bathed with clearest air of heaven.

Their lakes—Texcoco, Xochimilco, Zumpango, and Chalco—do not reveal themselves except from the high mountains encircling the valley. They are shallow bodies of water in the midst of extensive marshes, unapproachable, and lacking the effect of our lakes with their definite shore-lines. For this reason, they have never been highways of civilized commerce, nor has navigation flourished in their shallow waters; but they were from these very hindrances destined to be jealous mothers of ancient and remarkable States, whose people, protected in the fens, dug out canals and developed an indigenous commerce and transportation to the fullest extent.

## DRAINING THE LAKES OF THE VALLEY OF MEXICO

They were for modern man a constant menace during seasons of flood and have required enormous engineering works to keep them in bounds. The first of these, never of great value, was begun some 300 years ago, and exists at the present time as a gigantic ditch over 13 miles long, 197 feet deep, and 361 feet wide, dug by the patient labor of impressed Indians, and called the Tajo de Nochistongo. The latest undertaking is a canal connecting the three lakes and leading their waters out of the valley by a tunnel through the eastern mountains. This splendid piece of engineering, completed some years ago, effectually controls the height of the water in the lakes and prevents inundations.

But long before Cortez came the Indians of the valley worked in the boggy

lake lands and dug canals hither and thither—main canals between the lakes and to the great city of Tenochtitlan and smaller canals between their fields. Through this maze of waterways, then as now, they sent their boats and in the fens built their thatched houses. Historically, Cortez was the first European boat-builder in the New World, when of an imperious necessity he launched his brigantines, of quaint sixteenth century pattern, if one may believe the artists, in the reeking waters of Tezcoco at the spot near Huejutla, where there is now a bridge called Puente de los Bergantines, not far from the capital.

Pere Sahagun, the Franciscan, records that “the City of Mexico is like another Venice, and the people themselves are comparable to the Venetians in urbanity and savoir.” This was written in the sixteenth century, but in the lapse of several hundred years the city’s wonderful water environment has become dry ground, and the seeker for lake dwellers will have to look farther afield in the entrancing valley of the sky.

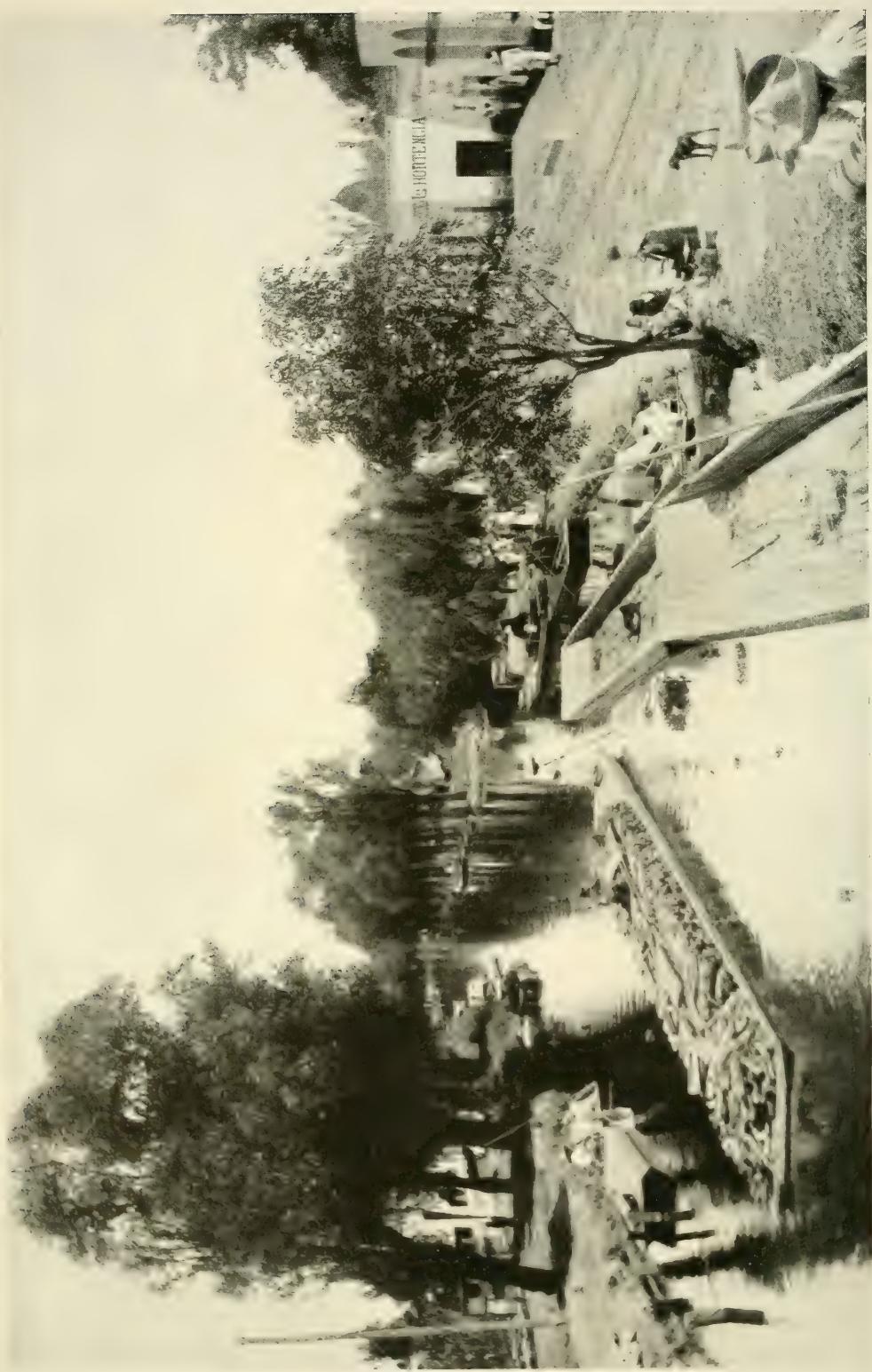
The way to the present Aztec Venice, which bears the name of Xochimilco, “in the field of flowers,” is through one of these ancient canals—a prehistoric water road from Tenochtitlan to the capital and seat of one of the group of seven Aztec tribes which long ago came from remote Aztlan to the rich Valley of Mexico.

## HARD TO GET A START

The life on the canal, vivid and picturesque, is as striking now as it was then; it may even be suspected that the change from that time to this has not been very great. It is hard to get a start to the land of the fens in more ways than one—the negotiations for passage in a barge with boatmen who display the characteristics of that tribe known the world over; and the conflicting claims also of all the costumes, incidents, shipping, and so forth, of the boiling, squirming kaleidoscopic canal and shore population on its multi-

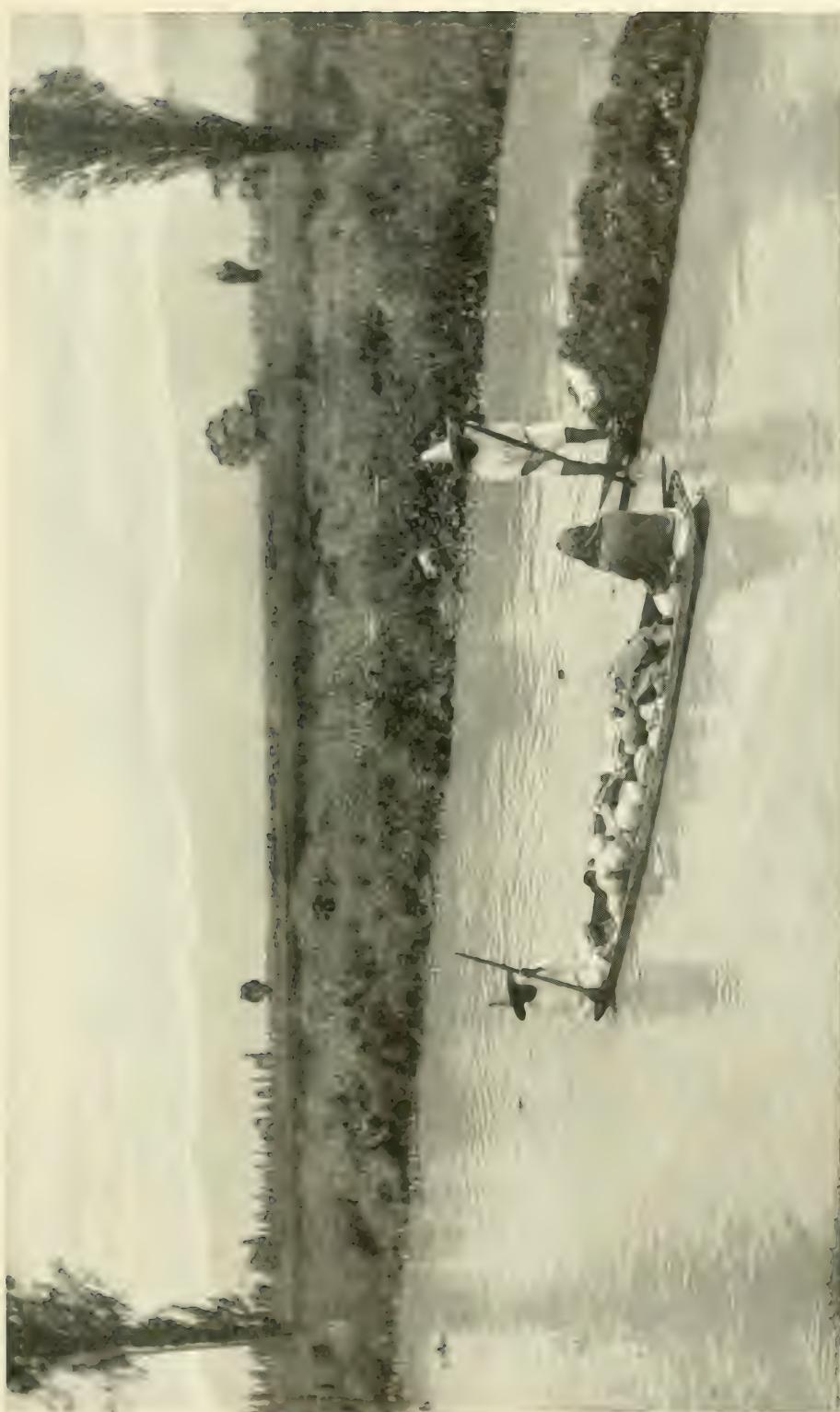
NAVIGATION ON THE CANAL IN MEXICO CITY

Once the wealth and beauty of Mexico dwelt along the boulevard bordering the National Canal; but its glory is departed, and a tawdry, odoriferous, peon-infested neighborhood it has become. When the annual flower festival at the little village of Santa Anita takes place, however, it becomes alive with color, and riotous good humor prevails.



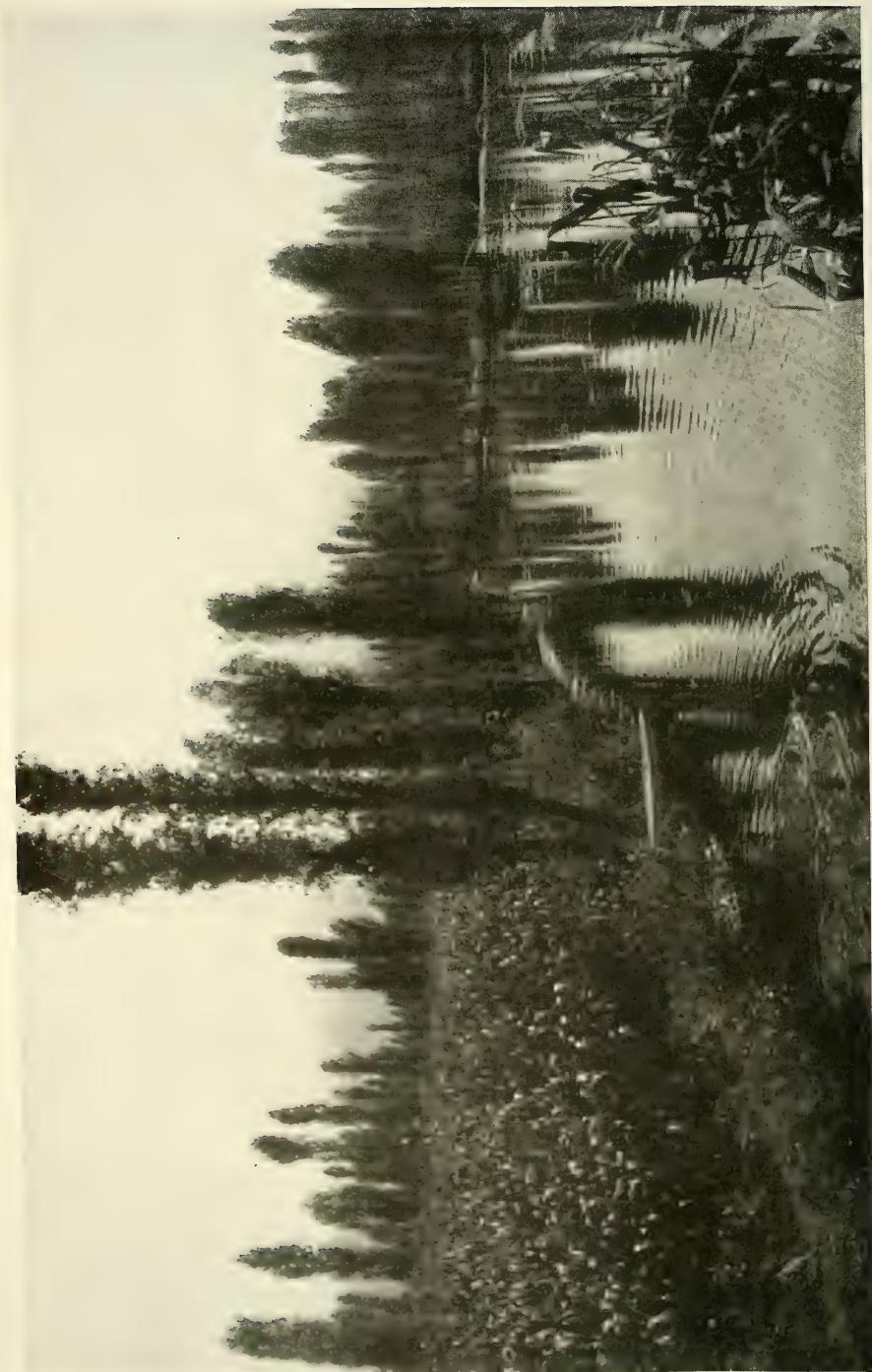
IN THE VALLEY OF MEXICO

The Valley of Mexico is a semi-arid plateau, a mile and a half higher than Washington, D. C., and is surrounded in turn by high mountains, with only a few natural passes. Its greatest length is 70 miles and its greatest width 45 miles, although its average length is less than 50 miles and its average width less than 30. When the mountains which surround the valley were thrown up by volcanic action, they are supposed to have inclosed the valley entirely. During ages that followed the valley was a large lake, with numerous islands during its surface. In the day of the Aztecs the water had subsided, leaving many small lakes instead of the one large one. The sinking of the Sunbird resulted in the cutting of a drainage canal through the mountain and the disappearance of most of these lakes.



LAKE XOCHIMILCO IN THE ENVIRONS OF MEXICO CITY

The lakes of the Valley of Mexico are noted for their beauty, and not the least of them is Xochimilco, which is connected with the capital by the Canal de la Viga.





INDIANS BOATING ON ONE OF THE CANALS IN THE VALLEY OF MEXICO

If these Indians were to live "the sanitary life" as thoroughly as they do "the simple life," there would probably be more centenarians in Mexico than in any other country

farious quests bewilder the beholder and make him forget that he is on a journey to see the lake dwellers in their primitive homes. Tardily, then, the barga comes into the clear pool in front of the medieval toll-gate fortress, where all shipping must go under a low bridge and where the old-time toll collector, armed with a pike, could threaten the recalcitrant without much effort.

Beyond the gateway begin more vistas of a new world! On this canal, bordered with trees and spanned by quaint bridges, is a perfect stream of craft, from the slender dugout *chaloupe* to the square-bowed flat-boat, hurrying on with everything to feed, repair, and adorn the great city. Freight is of all descriptions, but one looks curiously on the small bundles of grass and other green forage for animal feed, the pulque barrels, vegetables, and flowers.

The Indian boatmen, clad in white cotton shirt and trousers, are working with a will, sometimes wading in the canal

and drawing the heavy-laden boats after them; and alas! returning to their paradise, a woman piloting her husband who is the worse for pulque.

#### LIFE IN LAKE-LAND

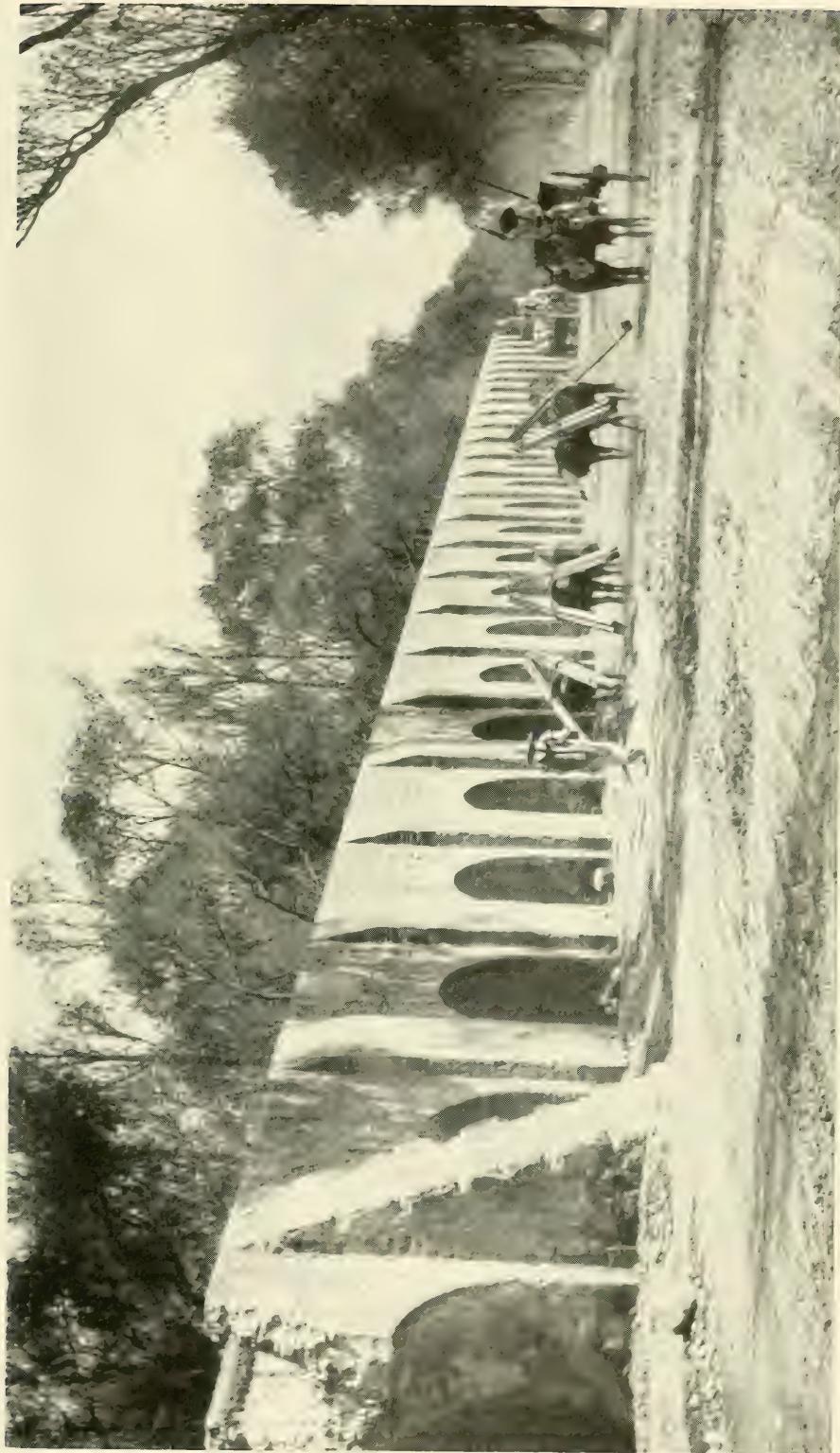
There are pictures and pictures innumerable, full of human interest and checkered with a marvelous play of light, shadow, and reflection, as we pass by the gardens and openings of the larger and smaller canals. Here are embankments and arrivals loading, unloading, and preparing to lay by for the night in a snug slip near where thatched houses play hide and seek in the luxuriant foliage; here a group of energetic washerwomen by the water margin, and there clouds of white or gaudy, much-belabored clothes on the bushes. No secrets are here; all goes on with the pulsing, urging force of labor freely and openly before men.

One remembers gardeners and gardens in the sunny flower and vegetable plots and children peeping out on the canal



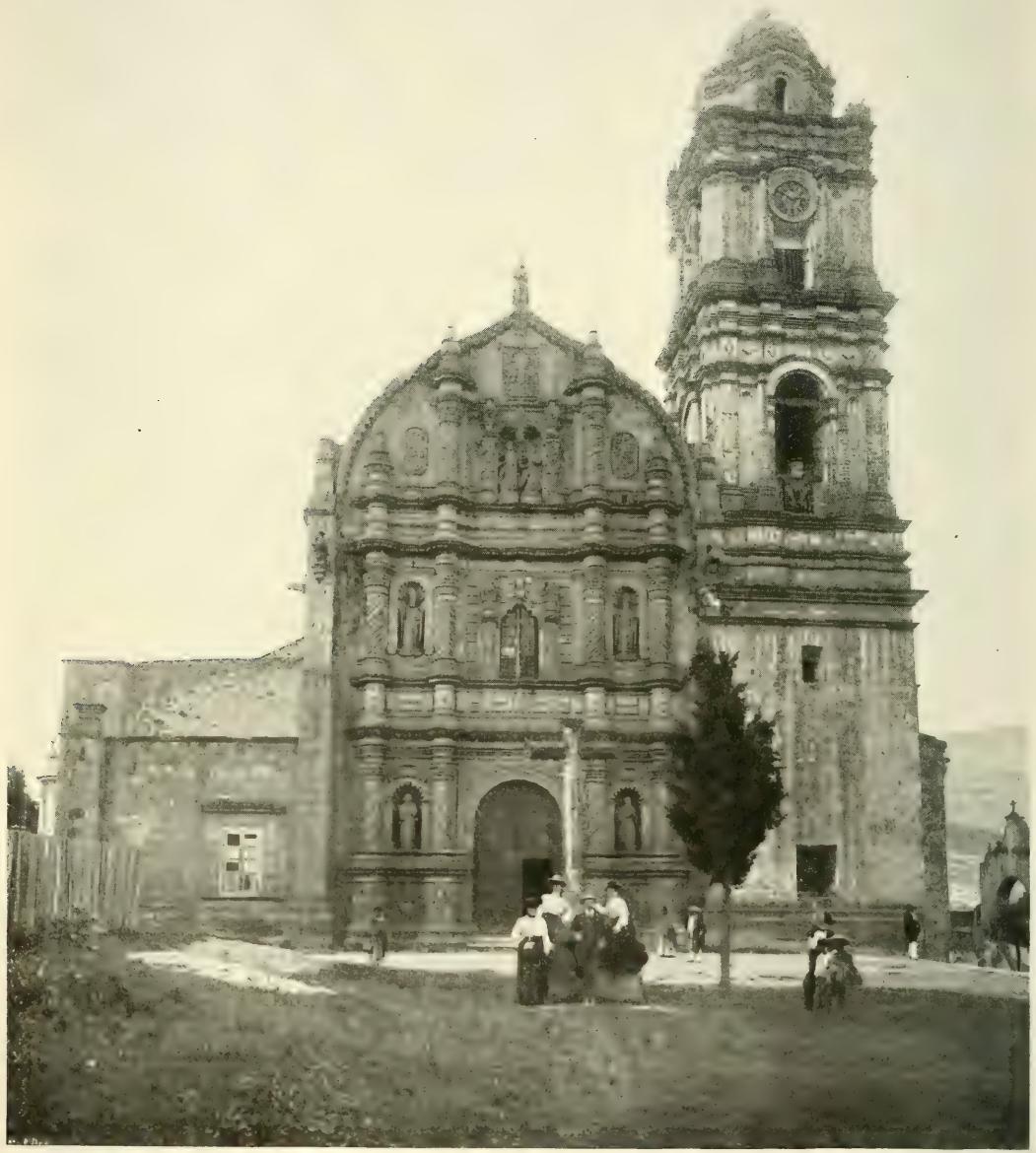
A MEXICAN WATER WAGON

In Mexico City one can see almost every form of land transportation that civilization has to offer. Here is the peon with a load on his back. There one sees a sled used before wheels were invented, and across the way a solid-wheeled wagon of a design antedating the invention of spokes. Here is a carriage, there a street-car, and farther up the street a modern automobile carrying passengers to a railroad train about to start out of the city. Now and then a flying machine tries out its wings, and the gamut from the human burden-bearer to the most modern carrier is run.



Photograph by Harriet Chalmers Adams

AN AQUEDUCT THAT HAS STOOD SINCE THE DAYS OF THE CONQUISTADORES  
Labor was cheap, even according to the Mexican standard, in the days of the Conquistadores, and the aqueducts that were built then were so well constructed that in many places they are still in perfect condition



OLD CHURCH AT TLALPUJAHUA, MEXICO

Tlalpujahuá is in the region inhabited by the Tarascan Indians, which lies due west of Mexico City. According to Prescott, the Tarascans had a Noah, called Trezpi, who escaped from a great flood in a boat laden with animals. Instead of a dove, Trezpi sent out a vulture first, and then a humming-bird, according to the legend. The methods of courtship in vogue among the Tarascans are peculiar. The lover goes to the spring where the object of his affection is accustomed to fill her water-jar. He holds her shawl until she accepts him, and then, with a stick, he breaks the jar which she holds on her head and gives her a betrothal baptism of water. These Indians once possessed the secret of tempering copper, an art now lost to the world.



ON THE CHINAMPAS CANAL, NEAR MEXICO CITY

In normal times life is easy in peon Mexico. Four centuries of penury have bred the love of luxury out of the natives' make-up, and they are now inured to hardships that would grind the very soul out of an American. What the average American wastes would seem a princely income to the Mexican peon.

highway from under umbrageous trees. Flotsam and jetsam in the canal are vagrant bulbs and flowers of water hyacinth, a wicked, beautiful plant, whose reproductivity makes men work to keep it down, but here it has met its match and is made to be useful. Bridges there are, and most quaint, like that perfect arch of Ixticalco, under which white geese seem to float in the air.

One feels that this panorama should last forever, especially if he does not have to supply the labor of locomotion. Here at this landing at Xochimilco it must be realized that the mere first leaves of our

experience, the loveliness of the country of the lake dwellers, are just unfolding.

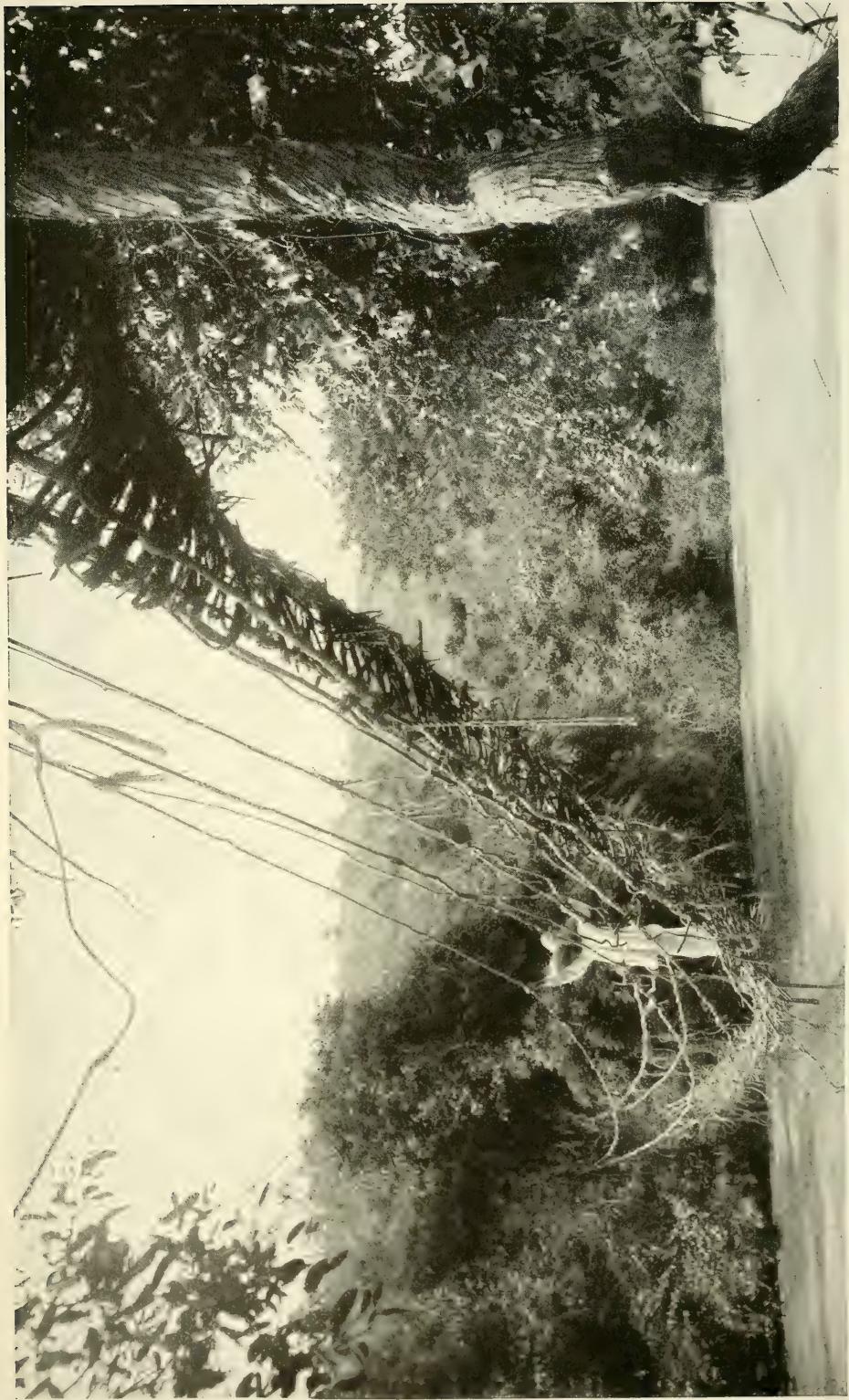
#### HIDDEN BEAUTIES OF XOCHIMILCO

The town is really built on terra firma, as the seven churches, each well supplied with raucous bells, the streets of quaint houses, and the broad lava-paved prehistoric market-place, well attest; but the town disguises and hides away the life of the canals and gardens, and its attractions for the tourist are soon compassed.

We turn into a narrow lane leading away from the formal streets and emerge into an Indian dooryard, and within a

A VINE BRIDGE SPANNING A MEXICAN RIVER.

In the art of making use of things provided by Nature-at-hand rather than by Industry-at-a-distance, the Mexican is something of a genius. He can build a bridge with no other tool than a machete, a wagon without a nail or a screw, and a house without a piece of iron in its construction. He does not need to go back to Nature—he has always been there.





THE COLLEGIATE CHURCH, WITH THE CHAPEL ON THE HILL IN THE BACKGROUND

This is the holiest shrine in Mexico. It stands on the site where the Virgin is reputed to have appeared to an Indian, Juan Diego, instructing him to take a message to the archbishop asking that a shrine be built there in her honor. After appearing to him several times, she finally commanded him to climb to the top of the hill, where the chapel now stands, but which had always been barren, and there to gather a bunch of roses to take to the archbishop. This he did; but when he unfolded his serape it was found to contain, so the account runs, a miraculously painted picture of the Virgin. This picture is now venerated by all Mexicans and occupies the center of the altar. The features and complexion are those of an Indian princess.

few feet of us is the main canal with its boats and floating water plants. The inhabitants of this little house group into which we have come as from another sphere are interested and friendly and ready to visit.

José, the active leader of the family, is going to take us to see the sights of the lake, and soon we are darting along other water streets bordered with spire-like willows, turning the corners and passing impressionistic gardens of cabbages, lettuce, pinks, and roses, until all sense of direction is lost. Soon the waterscapes become more extensive, and the bare-legged Aztec boatmen bring up over Los Ojos, the springs, which they call the source of the lake, and hold in a veneration inculcated by ancient lore and customs. Really, the spot is most impressive.

When the Xochimilcans, in the days of their idolatry, worshiped their lacustrian

spring, they placed therein a black stone image on the sparkling sand bottom of the crater-like fountain, where it was surrounded with plump water plants, and to this deity offerings of copal, pottery, and other effects were made.

#### IDOLS AND SKULLS IN SPRING

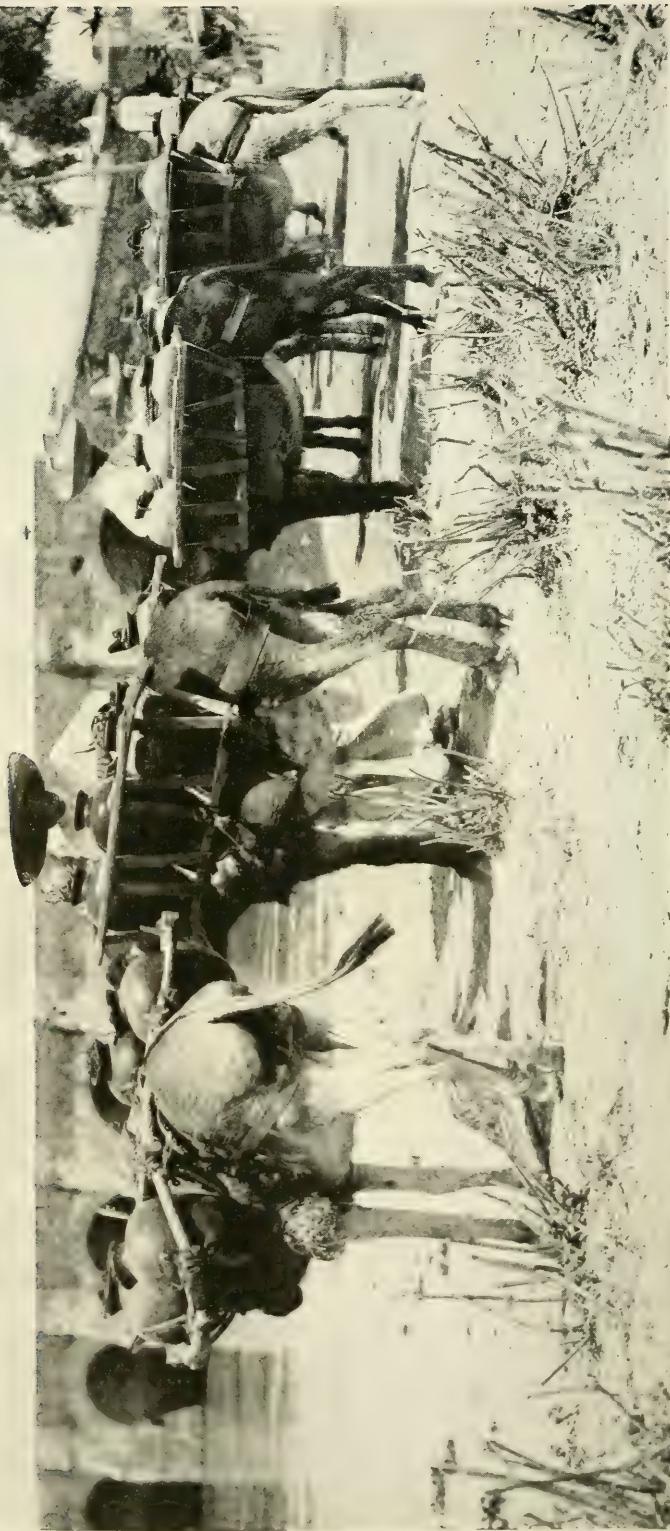
Sahagun relates the sincere pleasure which he felt when he accomplished the raising of the god of the fountain from his mossy bed and substituted in the place a stone cross. This holy object can no longer be seen; but the litter of broken pottery now there is not ancient, and one suspects that the *costumbre* of oblations may have come down to modern times.

Several bleached skulls of horses were also seen in the spring—why no one can tell; but probably there is a folk belief or a horse worship begun with those war steeds of Cortez, to account for it. The

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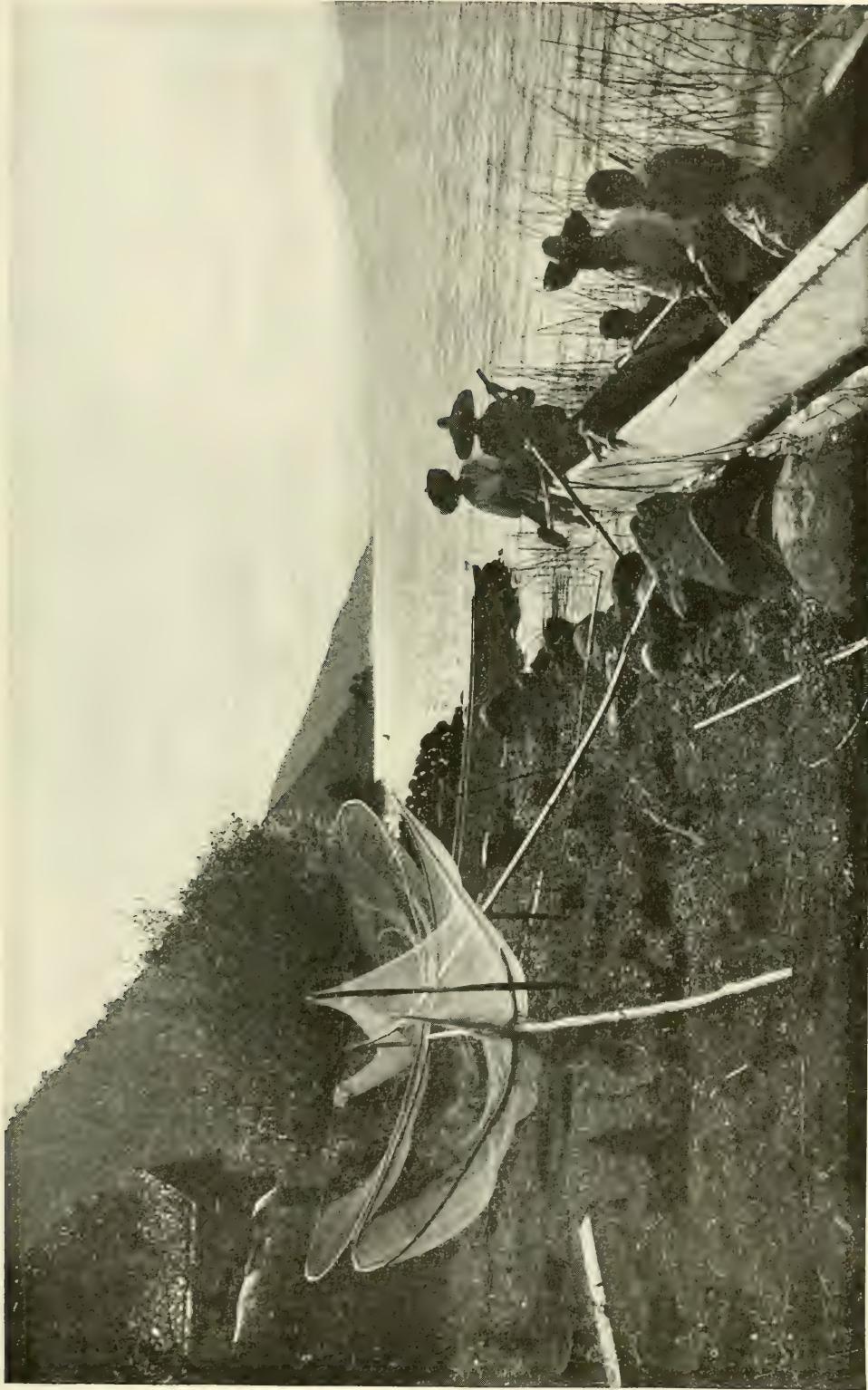
WATER-SELLERS AND THEIR DONKEYS ON THE SHORES OF LAKE CHAPALA

It is hard to realize, in a country where tap-water is universal in urban communities and well and springs everywhere in rural regions, what it means to live where you have to buy it at so much per jarful; and yet millions of Mexicans get their water via the "mule-back" route



LAKE PATZCUARO : MEXICO

The people who live along the shores and on the islands of Lake Patzcuaro live much to themselves, mingling with the outer world only when absolutely necessary. They use primitive log dugouts and make their living by fishing and hunting wild fowl. They are very fond of a species of salamander, the axolotl, commonly known to many as the water lizard. It has bushy external gills, similar to those which permanently characterize the mud puppy; its color is a mixed black and white. The flesh resembles that of the eel.



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THE WIVES AND CHILDREN OF THE MEXICAN SOLDIERS FOLLOWING THEM ABOUT

There is always to be found near a Mexican encampment a section where the wives and children live. In many of the Mexican battles women have taken part. This picture shows the women and children on the roof of one of the troop trains.





Photograph by Frank H. Probert

OFFERING DRAWN-WORK FOR SALE TO TOURISTS ON A MEXICAN RAILROAD

The Mexican Indian woman seems to have been born with a needle in her hand. Her drawn-work, for delicacy, beauty, and grace of design, is surpassed by none in the world. She can take the sheerest of handkerchief linen and draw out threads in a way that is the admiration and despair of many a cultured needlewoman.

springs have come out of their mystery in recent years and have been prosaically made to supply purer water to the City of Mexico.

These springs, as one sees them now, are bowls 100 feet in diameter and 30 to 40 feet deep, with water clear as crystal and cold, bursting up in the lake at the foot of the Sierra de Ajusco and fed by the snows. It is a remarkable experience to lunch there and drink the good water to the health of the spirit of the springs who has a choice assortment of broken crockery in his keeping. Views of snowy

Popocatepetl are glimpsed up the vistas of the lanes between the floating gardens on the return and heighten the lovely reflections of the evening.

The houses of the amiable Xochimilcos are flimsy structures, but well-built and neat, and a visitor receives quite a favorable impression of the people. The pretty children make friends easily and load down the Americano with presents of flowers loved by the lake dwellers as they were by their Aztec ancestors. Any one who shows a liking for flowers has won the way to their affection.

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U. S. INFANTRY AT THE END OF A SIX-DAY HIKE IN MEXICO

A nation could not find a more inhospitable region in which to campaign than northern Mexico. Desolate, barren, the land sterile, the people poor, the landscape depressing in its somber monotony, there is little to lighten the heart or to lift a weight from the soul. *Woe is written in the faces of its people and despair upon the face of the land.*





Photograph by Capt. D. H. Scott, U. S. A.

#### A PAIR OF MEXICAN SUSPECTS

These sheep may be camp pets, but their days of preferment depend largely upon the ability of the commissary department to supply other stewing ingredients. The training of burros and sheep as pets serves to break the monotony of camp life during periods of inaction in Mexico. Hours are spent and patience tested while off duty in trying to teach young lambs old tricks.

In the slip of the canal are the boats owned by the Indians living in the little group of three or four houses belonging to our friends, who combine the vocations of boatmen, gardeners, and fishermen, the latter plying huge nets that seem oversized for the tiny quarry inhabiting the desolate lakes. The gardener works with the primitive tools of his ancestors, and the boatman takes extravagant pride in his dugout *chaloupe*, which is his ancient water vehicle, and also prizes his passenger canoe and freight barge, if his family is rich enough to own them.

#### GARDENS BUILT ON HYACINTH FOUNDATIONS

Without moving from José's dooryard, we may by good fortune see a neighbor constructing a "floating" garden, and we are carried back without effort several centuries into the past. From the canals

the busy Aztecs throw great masses of water hyacinth upon the strip of bog to the thickness of a foot or more. The water hyacinth, which unfortunately does not fit into the ancient picture, is provided with large cellular floats—a natural provision for its dissemination, which has made it an obstruction to navigation in some of our southern rivers.

Upon this bed of floats they spread a layer of muck, dredged from the bottom of the canals. Perhaps before the plant floats have decayed, these gardens may drift away should the water rise. Even now on portions of the lake square miles of vegetation cover the surface like the "sudd" of the Nile, and the canal roads have to be staked at the sides to keep them from disappearing. Great drifts of microscopic vegetation cover the stagnant water of the open lakes with a mantle lovely in color, while the bottom is



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MOTOR-TRUCK TRAIN ARRIVING AT HEADQUARTERS CAMP NEAR NAMIOQUIPA, MEXICO

The camps and depots of the punitive force in Mexico depend for supplies, ammunition, and food upon these trucks, which make their regular trips from the border to the various camps which mark the progress of the work in Mexico



© Underwood & Underwood

SPLENDID WORK OF OUR CAVALRY IN MEXICO

Troopers of the American cavalry arriving at camp after a fatiguing 47-mile journey over Mexican sands and through Mexican mountains

coral red from a weed that thrives in the water.

The term "floating gardens" was properly applied by the early historians of Mexico to masses of water weeds covered with a layer of rushes bearing a thin layer of soil, employed by the Mexicans at a period when the fluctuating waters of the lakes prevented the formation of permanent *chinampas*, and so in the New World the Indians repeated the famed gardens of the lakes of Cashmere.

#### FLOATING GARDENS REQUIRE IRRIGATION

From the abundance at José's and on every side it is evident that the Xochimilcans are expert gardeners and assiduous at their work. Most of their plants are started in seed beds, from which they are transplanted to the *chinampas*, and it is strange to see boat loads of corn sprouts brought to be planted in this manner. Curiously enough, these morass gardens sometimes require irrigation, which is accomplished by throwing on water from the canal with a wooden scoop.

While we sit in these peaceful surroundings, we cannot but reflect that in some ways it is hard to convince the ordinary observer that the modern is the ancient, and make him realize how much the life of this lake village is a vivid rendering of that of the prehistoric lake dwelling, whose cycle extended from the rude Stone Age through the Bronze Age to the Iron Age, and whose lost and cast-off objects sunk in the mud, form now a wondrous museum filled with the history of their progress—the romance of art, wars, and love otherwise unchronicled in an era when letters were not known. So the story was repeated in Florida, in Venezuela, in Ireland, in the Vale of Cashmere, in the East Indies, and in various parts of the world where tribes lived over the water for protection.

The Xochimilcos settled in prehistoric times at a place now called the South of the Valley, and later they extended their villages to the southern slope of Popocatepetl and along the mountains that connect the great volcano with the Sierra de Ajusco, which overhangs the lovely valley of Mexico.

#### MAKING UNFRIENDLY NATURE A SERVANT

It is said that when the Aztecs came to Anahuac they were not strong in number and were compelled to inhabit the morasses, because they had not power to dispossess the settled populations which had occupied the favored locations. In this seemingly inhospitable but, as we have seen, protecting and stimulating environment, the Aztecs gradually increased in population and culture and became powerful enough to sweep away the ancient civilizations that occupied the valley and make themselves masters of their heritage.

These movements had been accomplished when Cortez came on the scene. The vast floods, which were very destructive to the towns situated on land lying little distance above the water level, did not much incommod the hardy lake dwellers, whose gardens would float, if necessary, riding moored to stakes, until the waters fell.

The visitor to the homes of the Xochimilcos may thus reconstruct history that is replete with interest. He will see, as Cortez saw, a people lighter in color than any North American Indians, below medium stature, with muscular and well-knit bodies commendably clean through daily ablutions.

#### SORROW AT BIRTH; JOY AT DEATH

It cannot be said that the Xochimilcan man has an open and ingenuous countenance, but it shows force of character and lights up quickly in response to kindness and recognition. The young women have round, often ruddy, but rather expressionless faces; the children are pretty, and the older women are better preserved than the women of the Pueblos of the southwestern United States. Both sexes work hard, and where there is such uniformity of poverty the struggle for existence makes life a serious matter and engraves deep lines in the faces of the breadwinners.

Thus a birth is heralded with mourning and a death with rejoicing. Their music is monotonous and disagreeable to the educated ear, and their amusements seem to be few; but, given advantages, these people show skill in the arts, and as

musicians they have made the Mexican bands known all over the world. They are gifted, besides, with a singular tenacity of purpose and mentally are capable of receiving a high education, which we may hope will be accepted with moderation.

What will be their future when their

swamps are drained and their old lake-dweller life merged into the humdrum of farmers? If by good fortune they are kept from the deadly effects of alcohol, that chief moloch of the Mexican Indian, no doubt they will live happily on the dry lake bottom as before in the days of Montezuma.

## THE LATEST MAP OF MEXICO

ESPECIALLY COMPILED FOR THE MEMBERS OF THE NATIONAL  
GEOGRAPHIC SOCIETY

**T**HE attention of the members of the Society is called to the map of Mexico presented in this number, 20" x 29" in size, and printed in four colors. Nothing has been left undone to make this the most accurate, the most detailed, and yet the most easily read map of that country ever compiled, embracing the very latest information obtainable from authoritative sources. It not only shows all of the transportation lines, but every station of even passing interest, as well as the villages and towns off of the beaten paths.

The map is drawn on a scale of 67.6 miles to the inch and has an insert, drawn to a scale of 33.8 miles to the inch, showing the great region embraced between Tampico and Vera Cruz on the east and Morelia, Guanajuato, and San Luis Potosi on the west. There is also a very helpful drawing which shows the size of Massachusetts, Connecticut, Rhode Island, and eastern New York in comparison with Mexico.

In addition to this, there is a small physical map showing elevations in Mexico. It gives at a glance a graphic portrayal of the physical appearance of the country, there being one color representing all territory below 1,000 feet, another elevations from 1,000 to 5,000 feet, a third showing that part of the country lying

between the 5,000 feet and the 8,000 feet contour, and a fourth showing all territory lying above 8,000 feet.

Particular attention is called to the legibility of the map. The ordinary map as full of detail as this one is difficult to read, but our cartographer in this instance has succeeded in gaining in detail without losing in legibility—a rare combination in map-making. A study of Mexico from the map-maker's viewpoint reveals many interesting facts. Although that country is only one-fourth as large as the United States, one can travel in a straight line as far as from National City, California, to Sitka, Alaska, or from Chicago to Nicaraugua, or from Richmond, Virginia, to Colon, Panama, without ever setting foot on other than Mexican soil. Likewise the distance between National City, California, and the mouth of the Rio Grande is greater than that from Baltimore, Maryland, to Galveston, Texas; also, it is farther from extreme northwestern Mexico to the extreme southeastern shore of that country than it is from St. Louis, Missouri, to San Juan, Porto Rico.

Extra copies of this map may be had for 50 cents each. Copies mounted on linen at \$1 each, and on rollers \$1.50 postpaid in the United States.



# AN AMERICAN GIBRALTAR

## Notes on the Danish West Indies

THE negotiation of a treaty between Denmark and the United States, under which Denmark is to sell to this country her holdings in the West Indies, at once brings into the relief of public interest a little group of islands on the northeastern rim of the Caribbean Sea. Not only because of their eventful history are these islands worthy of consideration, but because they have figured in many diplomatic negotiations, and their ultimate ownership may have an important bearing on the international relations of the future.

That this group of about fifty islands, only three of which are big enough to have a name on any but hydrographic charts and local maps, and the biggest of which one could walk around in nine hours, seem important to our government may be judged by the price it proposes to pay for them. We gave less than 2 cents an acre for Alaska, less than 3 cents an acre for California, Nevada, Colorado, and Utah, less than 14 cents an acre for Florida, and under 27 cents an acre for the Philippines. Even for the Canal Zone we paid but \$35.83 per acre. Yet at \$25,-000,000 for the group we are offering Denmark more than \$295 per acre for her holdings.

### THE ISLANDS MEASURED

Authorities have disagreed as to the area of the islands. Even as to the three main islands—St. Thomas, St. John, and St. Croix—there is no agreement upon the question of area. In order to get a definite statement as to their size, planimeter measurements of them were made on hydrographic charts in the offices of the National Geographic Society, and they show that St. Thomas is 28.25 square miles in area, St. Croix 84.25 square miles, and St. John 19.97 square miles, making a total of 132.47 square miles for the three islands. Some authorities give the area as 138 square miles and others as 142 square miles.

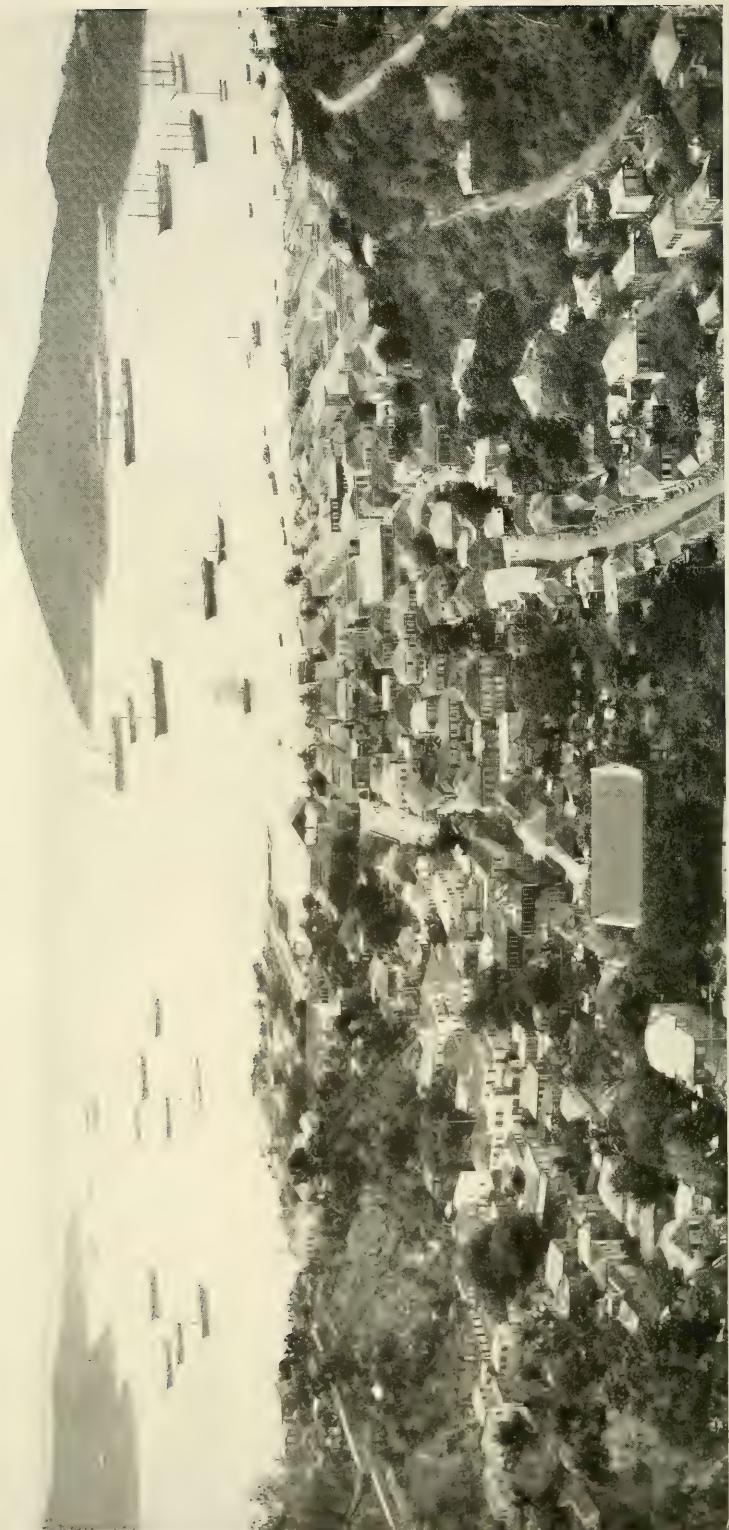
From the standpoint of the United

States, St. Thomas is the most important of the group of islands. This importance arises from the fact that the harbor on the south side of the island, on whose borders the town of Charlotte Amalie is located, is one of the finest in all tropical America. From the days of the buccaneers its strategic advantage has been realized, for when the Spanish Main was the happy hunting ground of the gentlemen of the Black Flag this harbor was their headquarters. Behind its outer hills the pirate craft found shelter from the open sea, and were well screened from the sight of passing ships until the moment came to pounce down upon them. In more recent times it has played the rôle of safe harbor for the thousands of vessels bound from Europe to Panama and surrounding territory, or *vice versa*. With a free port, where repairs, ships' stores, and coal might be had, upon which there had been no levy of tariff duties, the shipping world found the harbor of Charlotte Amalie an attractive way station on most of its Caribbean routes.

### A RUINED AGRICULTURE

The result was that agriculture in St. Thomas fell into decay, and nearly all of the activities of the island's population were devoted to the interests of its harbor, and one of the finest coaling stations in the tropical world was established there. It has a length of 635 feet, with a breadth of 160 feet, and is inclosed on three sides by a solid stone and masonry breakwater, built from 2 feet below ground to 7 feet above sea-level. More than 16,000 tons of coal can be stacked in it, and leading from the breakwater is a jetty where four vessels can coal at a time, thus affording striking facilities to steamers and ships of war which require their bunkers replenished with dispatch. Steamers drawing 17 feet of water can be coaled day or night at the rate of 100 tons per hour.

In addition to the coaling station there is a floating dry-dock and a marine slip,



THE TOWN OF CHARLOTTE AMALIE, ST. THOMAS, DANISH WEST INDIES (SEE PAGE 92)



Photograph by William H. Rau

CORNER OF MARKET-PLACE: CHARLOTTE AMALIE, ISLAND OF ST. THOMAS



Photograph by William H. Rau

#### NATIVE WOMEN COALING A STEAMER: ST. THOMAS, DANISH WEST INDIES

where splendid repair facilities are provided.

As long as these facilities were in demand St. Thomas was a fairly prosperous island. Men and women alike found it easy to get employment, at least for a part of the time, at what was to them a living wage, which was one cent per basket of coal, weighing from 85 to 100 pounds. Some carried as many as two or three hundred baskets during the four or five hours required to coal a ship. When not doing this work, they found considerable employment discharging coal from freighters which brought it to St. Thomas.

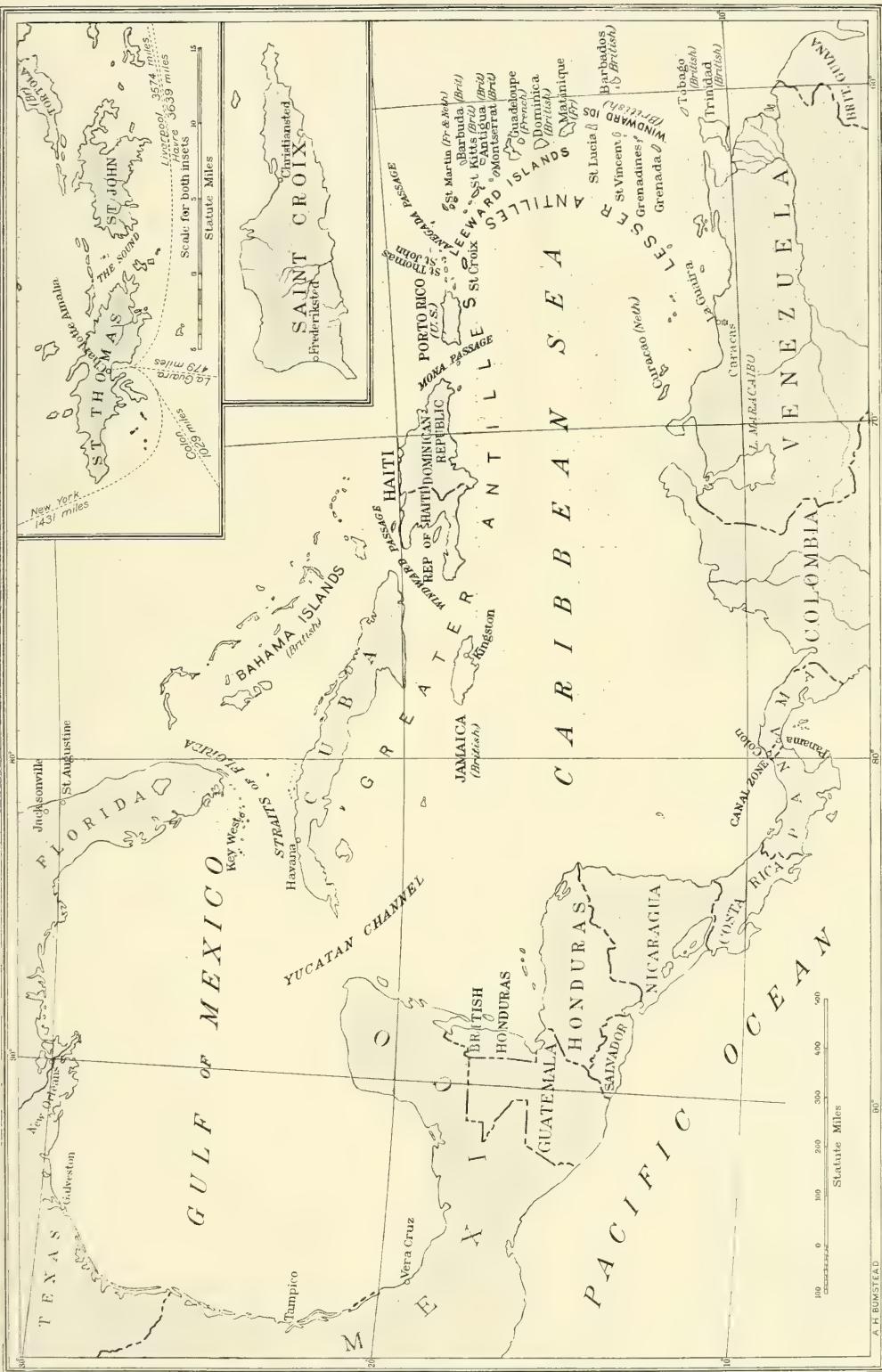
#### HARD HIT BY THE WAR

But then came the war in Europe and all was changed. The steamships of Germany, which made continual use of the harbor of St. Thomas, were driven from the seas, and today, where formerly all was business and enterprise, there is only now and then a ship that finds its way into port, and the people of St. Thomas,

their agriculture neglected for years, find themselves unable to gain a living, either from the land or from the sea.

The harbor is completely sheltered (see page 90). Outside is a roadstead partly protected by an outlying island, which provides anchorage for a great number of ships. At its mouth the harbor is 900 feet wide, and one passes through this narrow neck into a beautiful basin, three-quarters of a mile in diameter, whose waters are seldom disturbed, however much the sea beyond may rage. A trade wind blows during the whole year, with the exception of the hurricane months—August, September, and October—when it becomes irregular and sometimes ceases to blow altogether. The greatest heat is experienced in August, September, and October; but even then it rarely rises above 91 degrees Fahrenheit, while at times it falls as low as 64 degrees.

On three sides of the harbor the mountains and their outlying foothills rise sharply from the water, leaving but a very narrow beach; so that the major por-



**MAP SHOWING RELATIVE POSITION OF DANISH WEST INDIES (NEAR PORTO RICO)**

tion of the town had to find room for expansion by climbing up the side of the mountain.

Just outside of and above the town are the two old towers, commonly known as Bluebeard's Castle and Blackbeard's Castle. Legend has it that here these daring old buccaneers had their headquarters and played their romantic rôles as "the hornets of the Spanish Main"; but history disputes legend, for it says that they were built by the Danish Government as a measure of defense in 1689.

By climbing the mountain to Amapolie, within easy walking distance of Charlotte Amalie, one can, on a clear day, get a view of Porto Rico, St. Croix, and Bequia. A little farther one reaches heights where views, unsurpassed in all the Caribbean region, may be had of Porto Rico to the west and the Lesser Antilles to the south.

The West Indian-Panama Telegraph Company has a cable office at Charlotte Amalie, and it was from this place that the world got so much of its news during the Spanish-American War, as well as during the Martinique disaster.

#### WE WILL BUY A LOTTERY

The governor of the colonies lives in Charlotte Amalie from October 1 to April 1, and in Christiansted, on the island of St. Croix, from April 1 to October 1. He is assisted by a Colonial Council, consisting of four members nominated by the Crown and eleven elected by the people. How well the population is represented may be judged by the statement that out of nearly 11,000 inhabitants, in 1891, only 200 were voters. There is no color line in St. Thomas, or in either of the other islands, for that matter, and the larger part of the population is of mixed blood.

The State Church is Lutheran, although all others are tolerated. The Catholic and Episcopal congregations are the largest. The former has established a fine school for girls. The Jews have a well-built synagogue, while the Moravians have long been doing an important work among the negroes of the island. The Dutch Reformed and Wesleyan churches have also been engaged in like work.

If the purchase of the islands is consummated, the United States will acquire

an undesirable institution, known as the Danish West Indian lottery. How much the people of the islands appreciate this institution may be judged from the following statement by one of the leading residents: "Much has been said about the establishment of a lottery in the Danish West Indies. Those who consider it a form of gambling, detrimental to millions of the people, may cavil at it, but those who remember how these islands were once flooded with lottery tickets from other countries, many of them of shady reputation, can only be pleased at the establishment of our own, whose profits are to be used for the benefit of these islands, and which, at least, possesses the merit of keeping our money amongst ourselves."

#### AN AMERICAN GIBRALTAR

Naval officers declare that St. Thomas possesses advantages enabling it to be converted into a second Gibraltar. The structure of the island, with its long central ridge, having a general elevation of about 1,000 feet, with some points 1,500 feet, is especially fitted for the emplacement of fortifications commanding both shores at the same time, making it extremely difficult for an enemy to approach or obtain a foothold on the island. The elevated ground in the immediate neighborhood of the excellent roadsteads makes the question of harbor defense a comparatively easy one. While being near other islands, St. Thomas is practically in the open ocean, and permits entrance and egress of a fleet without being observed.

St. John, smallest of the three islands, with a good harbor in Coral Bay, is only 8 miles long and 4 miles wide in its broadest part. It has a population of less than 1,000; but it is an island that has done great service to America, for it is from here that come the leaves of the bay tree (*Pimenta acris*), from which that well-nigh indispensable toilet article for men, bay rum, is prepared. While most of the bay rum is made in St. Thomas, St. John produces most of the raw materials from which it is distilled.

This island once had many logwood trees on it, but they have almost entirely disappeared. Charcoal has long been in demand and the natives use logwood in



Photograph by William H. Rau

#### NATIVE WASHERWOMEN OF ST. CROIX

its manufacture. All of the islands have a striking variety of vegetation, 1,200 species having been counted on St. Thomas, and a proportionate number on St. John and St. Croix. The plantain, banana, sapodilla, bell apple, orange, mango, and lemon thrive. Sugar-cane flourishes when cultivated according to modern standards.

Communication between St. Thomas and St. John is maintained by several sloops. One of these has a history of more than a century in active service. It is the *Vigilant*, which has been, in turn, pirate, slave trader, and man-o'-war. Now she is a prosaic dispatch boat, carrying mail and cargo between the several islands.

#### ST. CROIX THE LARGEST

St. Croix is the largest, richest, and most populous of the three islands. It lies 40 miles south-southeast of St. Thomas, has an area of 84.25 square miles, and a population of approximately 20,000. It has much rich sugar land,

more than 16,000 acres being devoted to that crop. It is purely agricultural, with a fine tropical climate, excellent scenery, good roads, and hospitable people. Here, as in the other islands, one hears perhaps more English spoken than any other tongue. The Danes have never attempted to interfere with the native preference for English and have never made Danish compulsory in the schools.

The island is perhaps more like "United States" than any other territory in the West Indian group. Before the days of Bermuda's ascendancy as a winter resort, and of Palm Beach, the Riviera, and other places, many fashionable Americans journeyed to St. Croix to escape the cold. Also the children of the prominent families of St. Croix came to the United States to study, for the St. Croix planter admired America and her straight-from-the-shoulder way of doing things.

There are two towns in St. Croix—Christiansted and Fredericksted. The former is the seat of government, possessing the largest government house in

the Lesser Antilles. Fredericksted is the seat of business in the island, most of the sugar being exported from there. For scores of years the sugar planters, seeing that the United States is the greatest sugar-consuming community in the world, have hoped that the island might become American, thus providing them with a free market. In latter years the experience of the sugar planters of Porto Rico, who have grown very rich under the protection received by them as a result of American tariff laws, has stimulated this desire upon the part of those of the Danish West Indies.

The island has suffered, much as our own South has suffered in the past, from a lack of crop diversification; as everything in the South was for so many years cotton, so everything in St. Croix has been sugar, and the putting of all of its eggs in one basket has resulted seriously on many occasions. The Danish Plantation Company has sought to overcome this evil by introducing the planting of cotton, cocoa, coffee, and other crops.

The history of the Danish West Indies is full of interest. Columbus found St. Thomas inhabited by Caribs and Ara-waks in 1493. In 1657 a colony of Dutch settlers occupied the island; but when they heard of New Amsterdam, now New York, they left it to become a part of the new colony with such a remarkable future ahead of it. The English came to St. Thomas next, but in 1666 it was formally taken over by the Danish crown. In 1764 the King of Denmark took the government into his own hands and threw the port of Charlotte Amalie open, duty free, to all nations. In 1801 the British took the island from the Danes, but restored it after ten months. Again, in 1807, Britain took possession of St. Thomas, but returned it in the readjustments growing out of the Napoleonic wars in 1815.

#### AN ISLAND OF MANY FLAGS

St. Croix was settled by Dutch and English, but they quarreled and the Dutch had to get out in 1650. The English in their turn were driven out by the Spaniards. Then the French from St. Kitts

took a hand and expelled the Spaniards. France gave the island to the Knights of Malta; but after a prolonged, but losing, effort to put it on a profitable basis, the Knights, in 1720, demolished their forts, abandoned the island, and removed to Santo Domingo. In 1727 the French captured eight British vessels lying there and took possession of the island again, finally selling it to King Christian of Denmark.

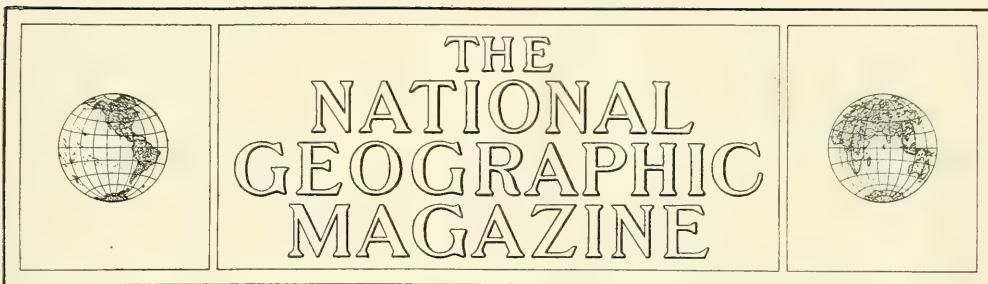
The first proposal to buy the Danish West Indies was made by Secretary of State Seward at Washington, in January, 1865. July 17, 1866, the United States offered \$5,000,000 for the islands. In 1867 Denmark declined to sell them for that amount, but offered St. Thomas and St. John for \$10,000,000, or \$15,000,000 for the three. Mr. Seward replied by offering \$7,500,000 for the group. Denmark made a counter offer of St. Thomas and St. John for that price. Finally Secretary Seward accepted the proposal; but then Denmark insisted that the consent of the peoples of the islands should be formally given before the sale was consummated. This was at first objected to by Mr. Seward; but he finally cabled our minister to concede the question of vote, and on the 24th of October, 1867, the treaty was signed. On January 9, 1868, the election was held, and out of 1,139 votes cast there were but 22 against the cession. St. John was unanimous, casting 205 votes in favor and none against. Denmark ratified the treaty, but Senator Sumner, then chairman of the Committee on Foreign Relations, held the bill unreported for more than two years. When he did report it, it was adversely.

Again, in 1902, the United States suggested to Denmark that we would like to buy the islands, and although that country had seen one treaty fail of ratification after it had been proposed by the United States and ratified by Denmark, it took up the matter again and signed the treaty providing for the sale of the islands. The treaty agreed to transfer them upon the payment of the sum of \$5,000,000. It failed of ratification by Denmark by only one vote. If the present treaty passes, that one vote will have cost the United States the sum of \$20,000,000.

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# THE NATIONAL GEOGRAPHIC MAGAZINE

## LITTLE-KNOWN SARDINIA

BY HELEN DUNSTAN WRIGHT

THOSE who have taken the Mediterranean route have at least had a glimpse of Sardinia from their steamer a day out from Naples. The island is in sight for some hours, and, if the steamer passes sufficiently close, a bold rocky coast can be seen on which Roman outlook towers remain similar to those scattered along the south shores of Spain. The tourist seldom includes a trip to Sardinia in his travels, as neither of his advisers, Thomas Cook nor Baedeker, recommends it to him. It, however, is one of the few foreign fields that has not been overrun and overfed by the tourist, and in many of the villages a traveler is still regarded as a guest and not as prey to be pounced upon.

Some day, when tourists are tired of taking the tours laid out for them by the guide-books, perhaps they will break away from the continent and set sail for Sardinia, especially if they are not traveling just to enjoy hotel comforts. One can rent a good automobile at Cagliari, and a week spent touring around the island would probably leave the pleasantest of recollections and an experience long to be remembered.

Sardinia can be reached by an eight hours' night voyage from Civitavecchia, the port of Rome, to the north end of the island. The crossing on the mail steamer is quite comfortable, but the knowledge that one must get up at five the next morning is rather appalling. The beauty of the sunrise over the sheer cliffs and

craggy isolated rocks of Golfo degli Aranci compensates, however, for this inconvenience and for the cup of bitter black coffee which comprises the breakfast.

As soon as one lands, a refreshing fragrance in the air is noticed—a perfume characteristic of Sardinia—not due, certainly, to orange trees, as is suggested by the name of the port, there being none in this district, but to the many wild herbs and shrubs all over the island.

The first couple of hours' journey down the island is over a rough, rolling country made up of granite and resembling parts of Arizona or Montana. This apparent waste land is used for pasturing goats, which feed on the shrubs. Here, as over most of the island, one finds the white flowering cistus, bright yellow ginestra, rosemary, a mass of blue when in blossom, and pink heather; also arbutus with bright yellow and red berries, thyme, juniper, and other shrubs.

### THE SWITZERLAND OF SARDINIA

Excepting the eucalyptus and pine planted near the stations, there is a noticeable lack of trees along the railway routes. Among the mountains, however, which occupy the eastern half of the island and occur to some extent along the western coast, there are important forests of oak, ilex, cork, and wild olive; also areas reforested with pine and chestnut trees. In the mountainous areas of the island are many fertile valleys.



Photograph by C. W. Wright

GIRLS AT DORGALI

Note the queer bonnets worn, made of many-colored silk

The scenery here compares favorably in grandeur with that of many countries of the world. The finest scenery is among the Gennargentu Mountains in the Barbargia Range, the highest peak being 6,233 feet above sea-level; on it there is usually snow from November to April. This region is called the Switzerland of Sardinia. In the other ranges are many picturesque peaks, as, for instance, Monte Albo, a group of limestone mountains with practically no vegetation on their slopes; so that the white mountains and the blue Mediterranean at their feet offer striking contrasts.

But, to return to the railway route, at Chilivani, one-third of the way down the island, is the junction of the road that goes west to Sassari, the capital of the northern province of Sardinia. This city is situated in the midst of a well-cultivated area, with groves of olive, almond, orange, and lemon trees and orchards of apples, peaches, cherries, and other fruits. The railway continues to the coast of Al-

ghero, an interesting old Spanish port, at one time surrounded by a high fortified wall. It is here that Admiral von Tirpitz owns a large agricultural farm and has a villa, and where, at the beginning of the war, the Germans were suspected of having a base for supplying submarines.

To the south, about half way down the island, at Macomer, is another branch road to Nuoro, a distance of 35 miles and the center of a mountainous district, the Barbargia, which was at one time said to be the home of the famous Sardinian brigands. These are practically "extinct" now, although occasionally one hears of a man who has murdered a neighbor or a member of his family for some personal wrong and, in order to escape the carabinieri, or national police, flees to the mountains and lives as best he can, sometimes stealing a lamb or a goat from a shepherd or stopping a lonely traveler to ask for food or a few soldi. Unfortunately, the general impression outside of Sardinia, even in Italy, is that



Photograph by C. W. Wright

#### GATHERING THE WHEAT

Harvesting machinery is seldom seen in Sardinia. The head-dresses of these two reapers are peculiar to the island. This type of cap not only furnishes a covering for the wearer's head, but is an improvised lunch bag, from which he will abstract a loaf of bread at the noon hour. At night it serves as his pillow.

the island is more or less overrun by bandits; this is not true, and a traveler on the island today is even safer than he would be in southern Italy or Sicily.

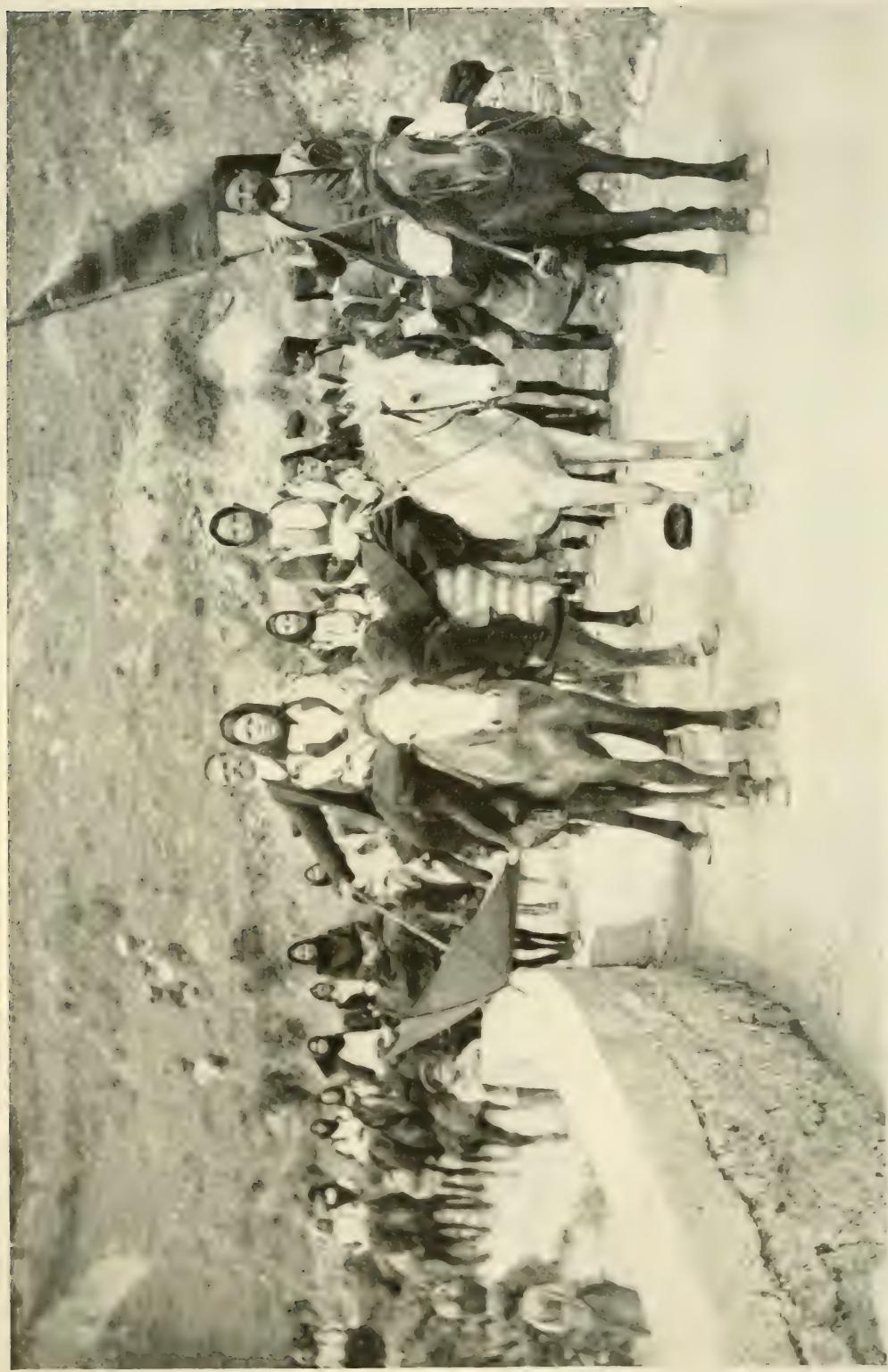
#### MEDIEVAL TOWERS CROWN CAGLIARI'S HILLS

Macomer is the center of the region where many fine horses are bred for the army, as are also the small ponies used in Naples. After passing this town, the railroad descends to Oristano, on the west coast, noted for its pottery and particularly its delicious pastry and almond sweets. The road then runs diagonally across a valley, from 10 to 15 miles wide, which extends down to Cagliari, at the southeastern end of the island.

Cagliari is the principal port of Sardinia, and is often visited for a few hours by tourists taking the weekly steamer from Genoa and Livorno to Tunis. The bay of Cagliari is most impressive. On

the right and left as you enter are hills, with mountains in the distance, while rising up from the lowlands directly opposite the entrance is the city, on a rocky hill 400 feet high. The top of this hill is encircled by a massive wall, built by the Pisans in the thirteenth century. At two of its angles rise the towers of the Lion and the Elephant, but of the tower of the Eagle, which completed the triangle, only the base remains. In the center of these fortifications is the old town and the cathedral. On the slopes of the hill outside the walls is built the modern city.

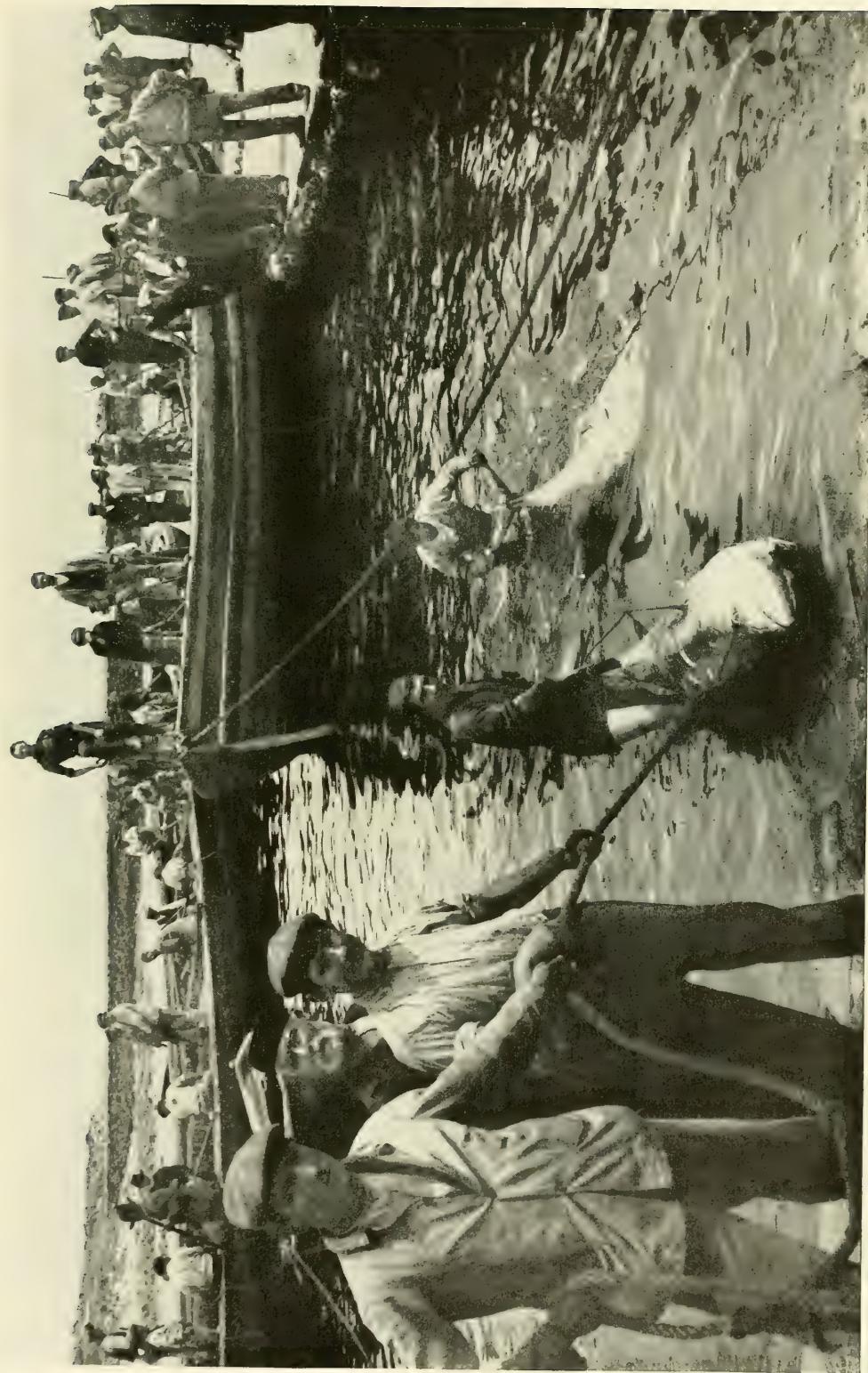
Surrounding Cagliari are shallow bays, which extend inland for many miles, and are of interest because of the government salt recoveries, where huge mounds of salt, 20 to 40 feet high, can be seen on the flats. In the spring flocks of flamingoes and other birds congregate on these lowlands and add to the beauty of the

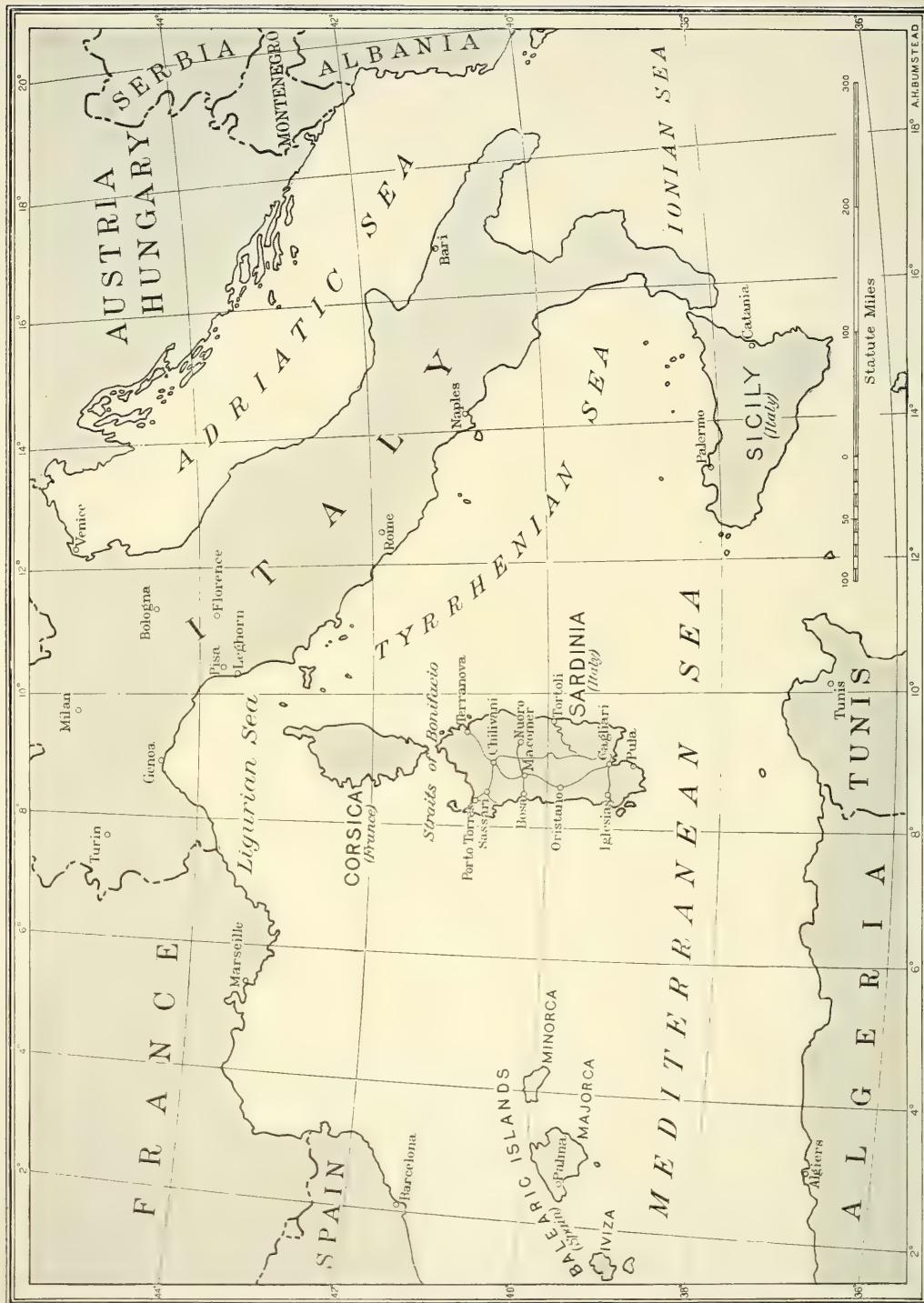


CAVALCADE OF HORSEMEN AND HORSEWOMEN STARTING ON A PILGRIMAGE TO A SMALL CHAPEL IN THE COUNTRY  
The banners carried by the leaders and the bright colors of the costumes make a striking picture. The saddle-bags are usually well filled in preparation for the feast

TUNNY FISHING AT PORTO TORRES

We get the word "sardine" from Sardinia, but we get few sardines, for practically all of this "catch" is consumed locally. The funny fisheries, on the other hand, are important and profitable. The Genoese control this industry on the island, for the Sardinians are not a maritime folk.





SKETCH MAP SHOWING SARDINIA AND HER RELATIVE POSITION TO ADJACENT MEDITERRANEAN COUNTRIES  
18° A.H.BUMSTEAD



SARDINIAN MINERS ON THEIR WAY TO WORK

Fifteen thousand natives find employment in the mines of the island. The center of this industry is in the southwestern corner, in the vicinity of Iglesias. Lead and zinc are the principal minerals, but silver, iron, antimony, coal, and copper are also produced. During the Spanish occupation of the island the mines of Sardinia were abandoned, for the soldiers of Aragon and Castile had discovered the fabulous wealth of the Montezumas and the Incas in the New World.



Photograph by C. W. Wright

THE COSTUMES OF ARITZO, CENTRAL SARDINIA

Just as the girls of the various towns and provinces of Holland are to be distinguished by the peculiar form of their quaint head-dresses, so the girls of Sardinian villages are known by the combination of colors in their costumes. The women and children dress alike—full skirts, usually dark red; white waists with full sleeves, and short bright red or bright blue jackets, open in front or laced around the waist. In some districts the pattern of the apron is the distinctive feature.



Photograph by C. W. Wright

#### GREETING THE TOURIST WITH A SMILE

Politeness is one of the striking characteristics of the Sardinians. As the traveler rides through a village the women, children, and the old men sitting at the doorways rise and cheerily cry out "Buon viaggio."

scenery. The land around the lagoons is especially fertile and well cultivated with truck gardens and vineyards, from which a very large quantity of wine is made.

Cagliari, the largest city on the island and the capital of the southern province, has about 53,000 inhabitants. The entire population of the island is estimated at 796,000, a density of population of 85 per square mile; this is a much lower figure than in any other part of Italy.

Among the objects historically interesting in Cagliari are rock-cut tombs on the hillside below the Castello. These are probably of the same period as the "nuraghi," the famous prehistoric remains in Sardinia, and some may have been enlarged by the Romans into the tombs which still exist, well preserved and with Latin inscriptions on their walls.

#### STRANGE RELICS OF THE BRONZE AGE

Of the Roman period an amphitheater remains. This is on the side hill to the

west of the city and is fairly well preserved, with the passages under the tiers of seats. The work of the Pisans in the cathedral was begun in 1312 A. D. and finished by the Aragons in 1331, but later partly rebuilt by the Spaniards in 1669. Among the modern buildings is a beautiful city hall, recently completed; a university with its library, which has a valuable collection of manuscripts, among them a code of laws made by Eleanora of Arborea, who was a ruler of a part of Sardinia when it was divided into four provinces under the Spaniards. The southeastern corner of the old fortifications has been remodeled to form a "piazza" above the city. Here concerts are held at midday on Sundays during the winter months and on summer evenings. It is the fashionable promenade, as is also the Via Roma, a boulevard along the edge of the bay.

Throughout Sardinia prehistoric monuments are prominent in the shape of

A VIEW OF THE ROCKY COAST NEAR THE NORTH END OF THE ISLAND

Cape Ferro is near the naval base of La Maddalena, on the northeast corner of Sardinia. Some miles south of this rugged point is the well-protected Gulf of Terranova and Golfo degli Aranci, where the traveler lands on the island after a night's voyage from Civitavecchia, the port for Rome.





THE COSTUME OF NUTORO

The large white sleeves beneath the slashed sleeves of the jacket; the full, short skirt and close-fitting trousers, are typical. One would think the man had stepped from his place in a pageant of the Middle Ages instead of being garbed in this customary costume for feast days.



A DOMESTIC SCENE IN SARDINIA

Many of the people of the island are victims of abject poverty, but their condition is not due to lack of industry. The styles never change among the women, who wear the native costume; so it repays the seamstress, the weaver, and the embroiderer expert to make garments that will last a lifetime, and can then be handed down as heirlooms for rising generations.

A PANORAMA OF CAGLIARI FROM THE HARBOR

The principal city of Sardinia is this town of 53,000 inhabitants. It was founded by the Phenicians and has been the scene of many striking episodes in the history of the island. In the year 1000 it was the stronghold of the Saracen chief Musat, who, after many years of war, was finally driven out by the Pisans, the latter having been promised the island by Pope John XVIII provided they evicted the Mohammedans.





A YOUNG MARRIED COUPLE OF IGLESIAS

The Sardinians have a high regard for womankind. They are a vigorous, hospitable, grave, and decorous mountain race, suspicious of all innovations. The silver buttons and voluminous trousers of the bridegroom are typical.

truncated cones about 30 feet in diameter at the base and built of large rough blocks of stone about 2 feet high and of varying lengths. These towers are the "nuraghi" belonging to the Bronze Age and show that the island must have been well populated in the centuries antedating the Christian era. The entrance to the "nuragli" usually faced the south and served to light the circular room within, as did

also a door opening to a spiral staircase built in the walls and leading to a chamber above the ground floor. Few of the "nuragli" have the roofing preserved entirely, so that we no longer see them in their full height or original cone shape. Some have two or three chambers on the ground floor with niches in the walls, probably for household gods.

These towers were undoubtedly fortif-



A SARDINIAN MAIDEN

This Sardinian musical instrument bears a striking resemblance to the pipes of the ancient Greeks. The serenader is wearing a sheep-skin mantle, which, in addition to being his "Sunday best," is his talisman to ward off fevers.



A LOVE SONG ON THE LAUNEDDA

Not only in their features, but in their language, do the natives retain traces of the many races which have occupied the island through the centuries—Phoenicians, Carthaginians, Romans, Saracens, Italians, and Spaniards. Many dialects are spoken, but Italian is now taught in the schools, and the men acquire the official language during their period of compulsory military service.



Photograph by C. W. Wright

#### THE COMMUNITY LAUNDRY TUB

Every day is wash day in Sardinia, and the public fountain takes the place of the village well of the Orient and the sewing circle of the Occident as a social center

fied habitations. They are usually situated in commanding positions at the entrance to tablelands, near the fords of rivers, or on almost inaccessible mountain peaks, and within signaling distance of one another. Traces of at least 5,000 "nuraggi" have been found.

The ancient tombs of the inhabitants of the "nuraggi" are usually found near them. These are called the "tombs of the giants," and are chambers  $3\frac{1}{2}$  feet wide and from 30 to 40 feet long, with a roof of flat slabs of rock and with the sides made of the slabs or of rough walling. The bodies were probably arranged in a sitting position. In front of the tombs are circles about 40 feet in diameter, surrounded by stones; these were, no doubt, used for sacrifices and burial rites.

Another type of tombs found in Sardinia is that of the small grottoes cut in the rock like those in prehistoric cemeteries in Sicily. In these tombs and in the "nuraggi" sarcophagi were discov-

ered, generally of marble; also idols consisting of small bronze figures varying from 4 to 17 inches in height, images of dogs, bats, apes, and other animals—all most crude in workmanship and grotesque in form; medals, coins, vases, ornaments, arms, and articles of terra-cotta and glass. Most of these latter must antedate the Roman occupation. Some of these relics and similar objects, including articles of jewelry dating from the Roman occupation, can be seen in the Museum at Cagliari.

#### LANGUAGE REFLECTS MANY RACES

The Phoenician settlement is the earliest of which there is any accurate knowledge. Sardinia was said to be the grain-producing center of the Carthaginians about 500 B. C. The Romans captured it in 238 B. C., and it was then noted for its supply of corn. The Romans built many towns and roads, and remains of their monuments, temples, and sepulchers

Photograph by C. W. Wright

A SARDINIAN SHEPHERD AND HIS FLOCK

The donkeys of the island are remarkably small, as this typical mount of the herder shows. The sheep are prized not only for their wool, but for their milk, which is converted into cheese and sold on the continent as the Roman product.

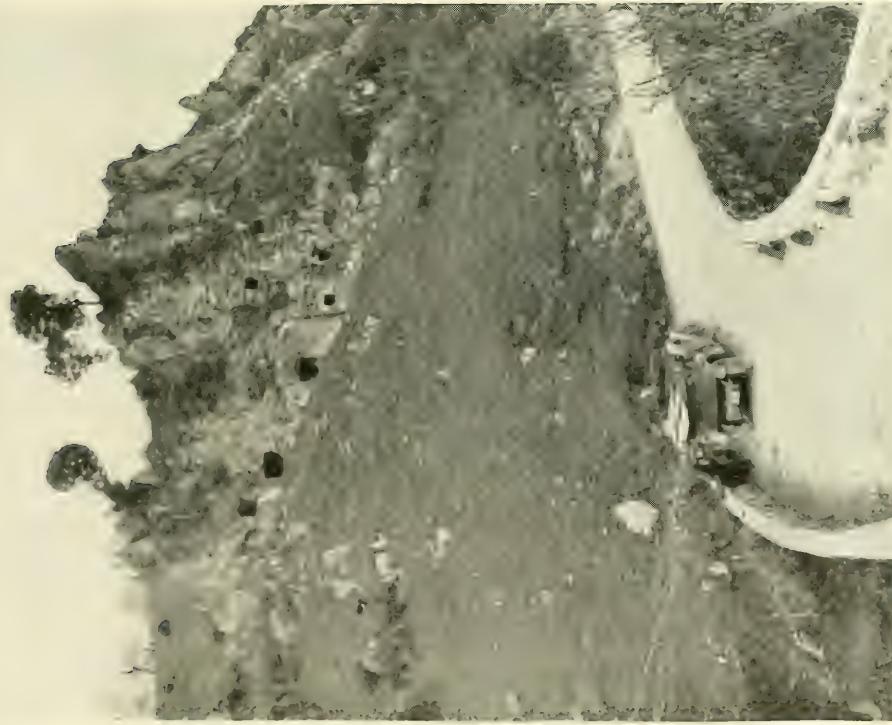




SARDINIAN BREAD, MADE ON FEASTIVE DAYS

BENEATH THE TOMBS OF THE ANCIENTS  
Viewed from a distance, these holes in the mountain side resemble natural caves, but they are the rock-hewn mansions of the "marghi," and are known as the "domus de janas," or houses of the spirits. In contrast to these hallowed places are the "giants' tombs," crude sepulchra of the prehistoric inhabitants of Sardinia, from 30 to 40 feet in length and  $3\frac{1}{2}$  feet wide and high.

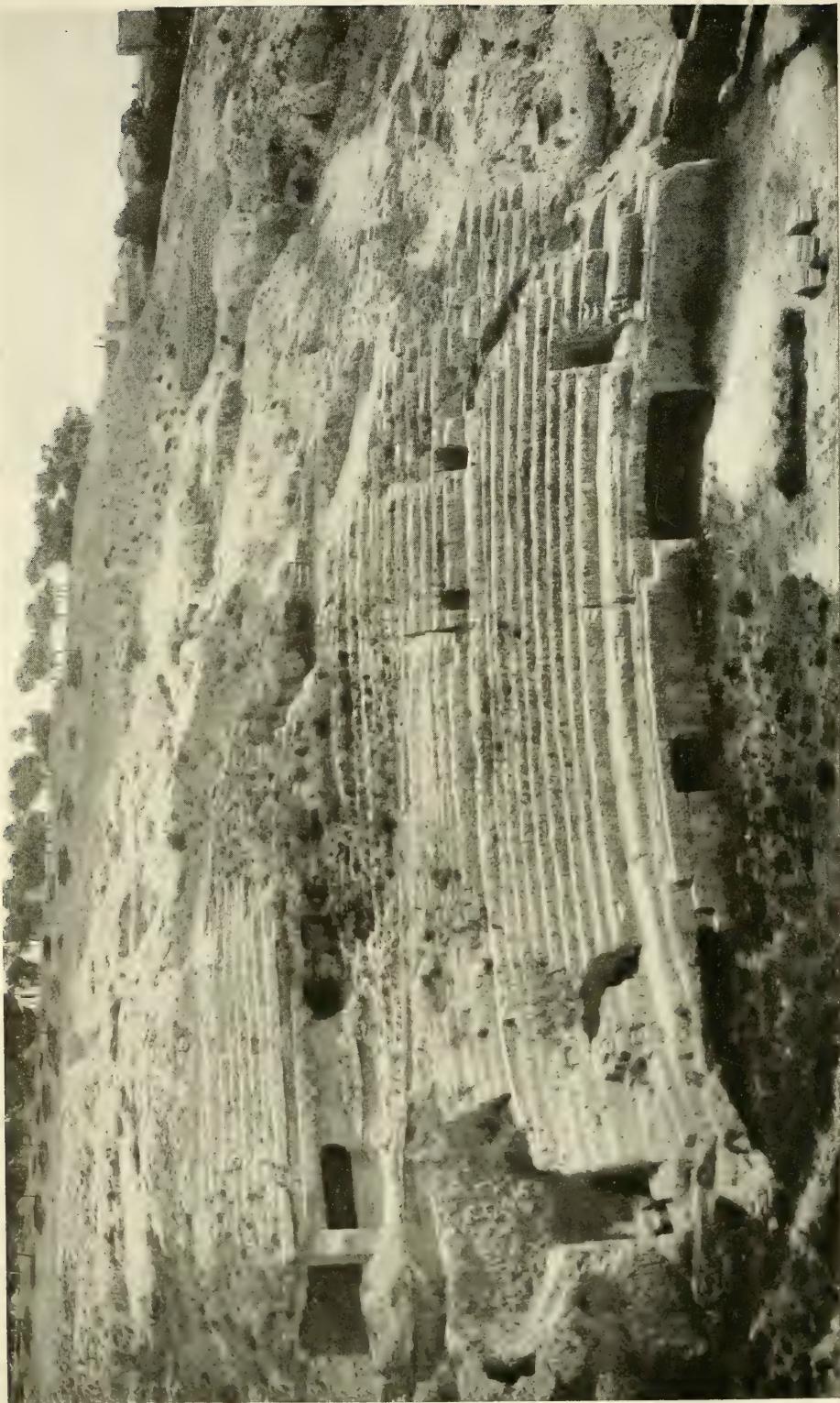
Photograph by C. W. Wright



The bread is a pure white, of fine texture, and is kneaded for hours before baking. The fair bakers are wearing their most elaborate costumes, reserved for religious festivals and holidays.

REMAINS OF AMPHITHEATER, NEAR CAGLIARI

This extensive ruin, with its rock-hewn benches, is a relic of Roman occupation. Sardinia furnished more human victims for the games in the great capital of the ancient world than sports for its own people. It is recorded that Sempronius Gracchus, after quelling two insurrections of mountain tribes, took 80,000 Sardinian slaves to Rome.





Photograph by C. W. Wright

#### SHEPHERDS OF POVERTY-STRICKEN SARDINIA

One glimpse at this trio would be enough to send a shudder down the spine of a stranger who has feasted upon the out-of-date tales of bandit-ridden Sardinia, but these three cronies are harmless natives, who, in spite of their bitter fight against heavy taxes and the relatively high cost of living, never annoy the tourists by begging, as do so many of the people of southern Italy.

are still preserved. The Byzantines captured Sardinia from the Romans and held it until the tenth century, when the Saracens took possession, and were in turn driven out by the Pisans. There are traces of the influence of Pisa in the fine Romanesque churches which are still well preserved. In some churches the late Gothic architectural style shows Spanish influence, which came after the surrender of the Pisans to Genoa, and then to James II of Aragon. In 1708 Cagliari surrendered to the English, but in the War of Spanish Succession the island came under the rule of Austria. Finally, after more exchange, it was given to the Duke of Savoy, who acquired with it the title of King of Sardinia.

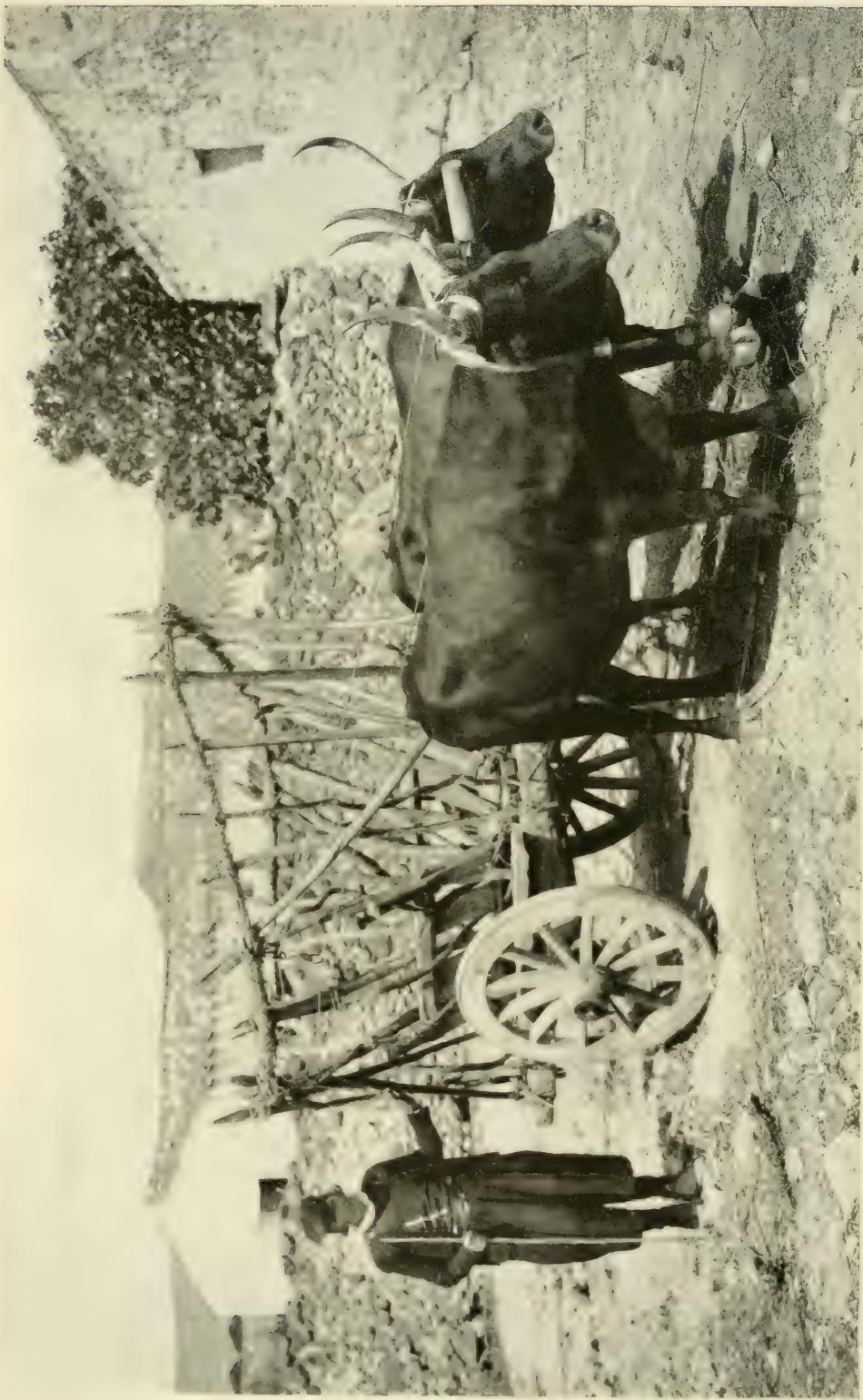
It is not strange that the language of the people should contain elements of the languages of all the races which have occupied the island. The dialects, of which there are five or six, are a mixture of

Latin, Spanish, and Italian, with a little Phoenician and traces of other ancient tongues. In Alghero, on the west coast, pure Catalan is spoken; in some villages almost pure Latin; and in Carloforte, on the southwestern coast, the Genoese dialect prevails. Italian, however, is now taught in the schools to the children, while the men acquire it during their compulsory military service.

To get an insight into the life of the inhabitants of this isolated island, one should visit its villages. It is in the entire eastern half, with its mountainous valleys and villages, where the real Sards now live. Here one will find them good looking and in good health, generous, hospitable, honorable, and quite poor. Politeness is carried almost to an extreme. Often as one rides through a small village the women, children, and old men sitting at the doorsteps rise and wish you a "buon viaggio"; or if it happens to be

TWO-WHEEL TRANSPORTATION IN SARDINIA

During the era of Roman occupation nearly 1,000 miles of roads were constructed on the island, and some of these are still well preserved. Although small, the Sardinian oxen make good draught animals.



noon, some may wish you a "buon appetito." Even the young boys are taught to take their hats off when strangers pass by; and if one is in an automobile and happens to stop to get out his kodak, a crowd of youngsters seem to spring up around the car, all anxious to be in the picture. To refuse a cup of coffee or a liqueur when visiting the house of an inhabitant of a village is an act of great discourtesy, and even the poorest have some beverage to offer.

#### NATIVES EXCESSIVELY POLITE

Generally speaking, the peasants seem to be somewhat downtrodden and do not realize their just rights. We thought the attitude of the man in the following incident most unusual: When motoring along one of the straight roads down through the valley to Cagliari, we saw a man ahead on horseback. He jumped off in a great hurry and, holding the horse by the end of the reins, got down into the deep ditch at the side of the road. As the car came up he was so interested in probably the first automobile he had ever seen that he forgot his horse, which, unexpectedly, gave a jump down into the ditch almost on top of the man, upsetting him and his saddle-bags into the mud. When we stopped to examine the harm done and to help him up he was very gratified and most profuse in his apologies for having disturbed us, saying: "Excuse me, excuse me; it was all my fault."

The music of the Sards is characteristic; not all quick and vivacious like that of the Sicilians or other southern Italians, but monotonous and slow, resembling very much the music of northern Africa. Often a long song will be sung to one phrase of a melody, like a sorrowful chant. The accordion is a favorite instrument, and in the villages on Sundays or other festas most of the inhabitants congregate in the principal piazza and dance to its music. The men and women form in a circle and dance slowly forward and backward, some of the younger men adding more complicated steps, occasionally breaking away from the circle and dancing with their partners; but the whole effect is dignified and staid.

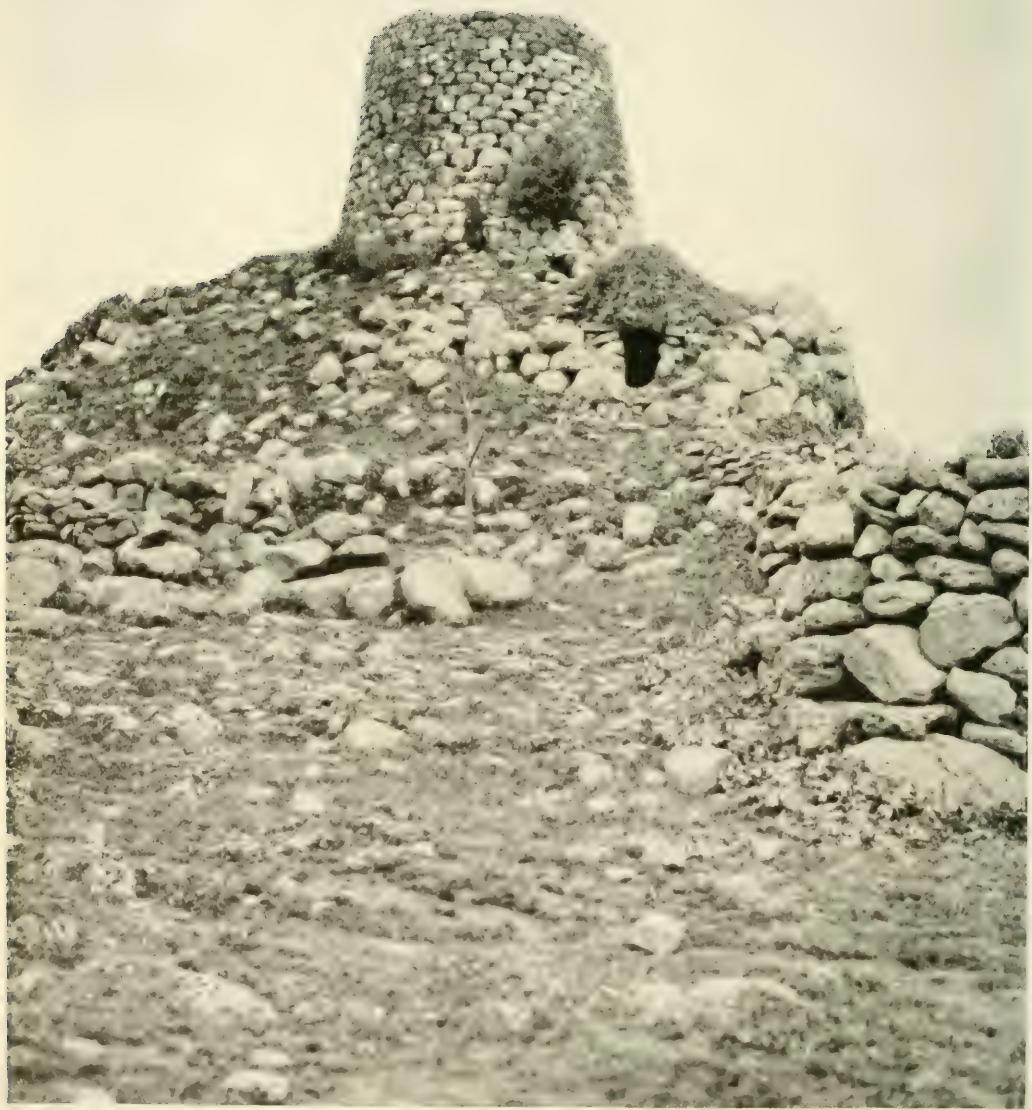
Each "paese" or village has its annual festival to celebrate the birthday of its own particular saint or some other church feast. The most renowned of these is the "festa" of "Saint' Efisio," the national feast of the island. The ceremony is in the form of a procession from Cagliari to Pula, a village 9 miles away, with the return to Cagliari. The saint was an official in the army of Diocletian, and for his conversion to Christianity was beheaded at Pula. On midday of May 1 the procession leaves and returns on the evening of May 4. It is composed of a cavalcade of horsemen all in the costume of the ancient Sardinian militia, escorting the image of the saint, which is preceded by musicians playing the "launeddas," an instrument made of three or four reeds of different lengths and like the pipe of ancient times.

In the region about Iglesias where the mines are, the workmen celebrate annually the festa of Santa Barbara, "the god of fire," which usually results in much wine drinking, followed by a few days' absence from work, so as to recuperate.

#### PICTURESQUE COSTUMES OF SARDS

The Sards' costumes are one of their greatest attractions. They are of rich, harmonious, though brilliant, colors, each village having its own distinctive type, which does not change from year to year; so the men and women are thus known by the clothes they wear. Unfortunately the general European type of dress is being adopted by the younger generation, and it is now difficult to find many towns in which the native dress is used by all the inhabitants.

There are a few such villages up in the mountains near Nuoro, where the railroad has not penetrated, and here it is most interesting to see the women and little girls all dressed alike. The skirts are usually very full, accordion plaited in some villages, with a distinctive trimming; white waists with full sleeves, and over these short jackets, open in front or laced around the waist. All in a town have the same combination of color, perhaps a dark red skirt and the jacket in bright red and bright blue, a diagonal stripe of each



NURAGHE, TO THE NORTH OF MACOMER, SARDINIA

Numerous prehistoric monuments like this relic of the Bronze Age dot Sardinia. The arrangements of the interior of these structures are such as to indicate that they were used as fortified habitations and not as tombs or temples. The diameters of these truncated cones range from 30 to 100 feet at the base, and they are from 30 to 60 feet high. The entrances, about 6 feet high and 2 feet wide, almost invariably face south.



Photograph by C. W. Wright

"GIOCARE ALLA MORRA!"

The game of "morra" holds for the man of Italian blood the same allurements that poker holds for some Americans, and that "craps" has for the southern darky. So excited do the morra players become over the hazards of this, their national betting pastime, that tragedies not infrequently result; hence the police frown upon the practice, but always with a certain fond indulgence. It is played entirely with the fingers and consists of trying to guess how many fingers your opponent will hold out at the instant he acts. It is more difficult than it sounds.

color meeting in the back, and with tiny bonnets of the two bright colors. In some the most distinctive characteristic is the covering of the head—a bright-colored handkerchief or a white veil folded back or held in place by a silver

chain under the chin; in other towns the apron is characteristic in its color and shape.

The most elaborate dresses are, of course, kept for festas, and these have hand embroidery and are often of very

heavy silks and brocades, sometimes with exquisite lace scarfs or veils folded back on the head. The jewelry is most elaborate, too—large gold buttons worn at the throat; large ear-rings and pendants. The costumes and jewelry are almost always heirlooms in the families.

The men's costumes usually consist of woolen leggings, white, full trousers, long or short, a full ruffle of black cloth worn around the waist; and this, too, differs in length. Some of the jackets are short and some long, but all have silver buttons down the front. The sheep-herd wears a sheepskin, on which the wool has been left, over his shoulders throughout the year, even in midsummer, and claims that it keeps away the malaria. In some districts the men wear a pointed cap resembling a Phrygian bonnet, long and narrow like a stocking, reaching almost to the waist; the point is either worn down over the shoulders or folded on the top of the head and may be used as a pillow at night. It is apt to contain anything from bread to snuff, which is indispensable to the older Sard. A queer custom of some of the younger men is to let the hair on the top of their heads grow often to 15 inches in length, and then roll it up into a puff, which looks like a pompadour, across the forehead.

Among the distinctive products of Sardinia is cheese made of goat's milk and used very generally by Italians. The wines are noted for their strength. An interesting export is cork, which is taken from the trees every five years, leaving the bare, red trunks noticeable all over the island. Many sheep, goats, pigs, cattle, and horses are raised and sold on the continent.

#### IMPORTANT MINING OPERATIONS

The mining industry is probably the most important, the principal metals produced being lead and zinc. Iglesias, in the southwestern corner, is the center of mining activity. The mines employ about 15,000 workmen, and the output is

approximately 60,000 tons of lead concentrates and 120,000 tons of zinc concentrates annually. Some silver, iron, antimony, copper, and coal are also produced.

The tunny fisheries off the island of San Pietro are noteworthy. In the spring schools of these fish pass through the Mediterranean, and enormous numbers are caught in nets and brought to the large canneries at Carloforte.

There is very good hunting on the island. The moufflon, a cross between a wild sheep and a deer, is found in the mountains and is native only to Sardinia; there are also some fallow deer and red deer. By far the most numerous of the big game is the wild boar. Hare, partridges, woodcock, snipe, quail, and wild duck are all found in large quantities.

#### AN ISLAND OF WILD FLOWERS

The wild flowers are most beautiful, and there is practically no month in which a great variety is not found. Among these are orchids, narcissus, lilies, gladiolas, irises, cyclamen, fox-gloves, poppies, and sweet peas. In the summer months, usually from May until September, there is no rainfall. During the winter the rains are heavy and often accompanied by strong winds. In the northern part of the island a good deal of snow falls, and often the ground remains covered for a month at a time; but in the southern part of the island there is almost never any snow and seldom any frost. In the gardens there roses, heliotrope, calla lilies, nasturtiums, ivy, geraniums, marguerites, and many other flowers bloom all winter. It is during the summer that these cease blossoming.

May, June, and October are the months most pleasant for travel in Sardinia. The country is at its best then; the cultivated fields green, the wild flowers most profuse, the climate least variable, and the roads, which are covered with "ghiaia," or broken rock, from December to February, are then in perfect condition.

# THE AWAKENING OF ARGENTINA AND CHILE

## Progress in the Lands That Lie Below Capricorn

BY BAILEY WILLIS

**W**E NORTH AMERICANS, who live in a vast continent that lies nearly all in the temperate and cooler zones, scarcely realize that South America is four-fifths tropical. Fields of wheat and oats are familiar to us, but in South America are scarcely seen outside of Argentina and Chile, except in high, cool valleys. South America might be called a banana country.

Bananas grow from Paraguay to Mexico; wheat and oats flourish only in the tapering tip of the southern continent; and this gives to Argentina and Chile a peculiar interest among South American countries as the homes of vigorous, energetic peoples competent to rule themselves. To Argentina and Chile we may add Uruguay and the highlands of southeastern Brazil, and also the limited areas of the tropical Andes, whose altitude gives them cool climates. The rest of the continent, the vast interior, is the land of the siesta—the land to be developed and administered by peoples of the temperate zones.

The great task and obligation of Argentina, southern Brazil, and Chile, the A, B, C powers, is to guide the development of the tropical Americas, through the exercise of wise statesmanship, toward stability, peace, and prosperity.

Rio de Janeiro, on the Atlantic coast, and Antofagasta, on the Pacific, mark the southern limit of the tropics, and thence southward the southern continent narrows rapidly to the point of Cape Horn. The equivalent distance in North America is from Florida to Labrador, or from oranges to reindeer moss. Florida and Rio are both renowned for their oranges, and Cape Horn shares with Labrador a most inhospitable reputation; but it is more like Scotland than Labrador.

### THE SCOTLAND OF SOUTH AMERICA

The southernmost land, tapering southward between the oceans, is nowhere so

cold as the broad expanse of North America is in similar latitude, and Tierra del Fuego, a region of bogs, fogs, and snow squalls, is a congenial home for Scotchmen and long-wooled sheep.

Buenos Aires, the focal point of life and intercourse south of Rio, lies half way between Rio and Cape Horn, in the latitude corresponding to Charleston. Palms grow there in the public gardens, and yet, the houses being unheated, a northerner may greatly enjoy on a damp, chill winter day the soft coal fire which he will find where Englishmen congregate.

Neither very cold nor very hot, the seasons are similar to those of our coast from Norfolk to Charleston; but they are reversed. As the sun circles northward past the Equator their summer ends, while our winter half year begins. There is always summer, north or south; always winter, too. When we are preparing to leave the cities Argentine society is gathered from the country estates for pleasure and politics in the greater metropolis, which alternates with Paris and vies with the French capital in seasons of gaiety.

### THE METROPOLIS OF THE SOUTHERN HEMISPHERE

Buenos Aires is to Argentina what Paris is to France—the center of the national industries, thought, and culture. Commerce, journalism, politics, the drama and music, literature, art, and social life are intensely focused there. The brilliant activity of the greatest city of the Southern Hemisphere (the fourth city of the Americas, after New York, Chicago, and Philadelphia) draws the Argentines to it as a flame attracts moths, and one-fifth of the population of the country struggles there in feverish competition for pleasure and gain.

No traveler to the southern countries but stops as long as he may in Buenos Aires to enjoy or to study the most cosmopolitan, yet most latinized, of the

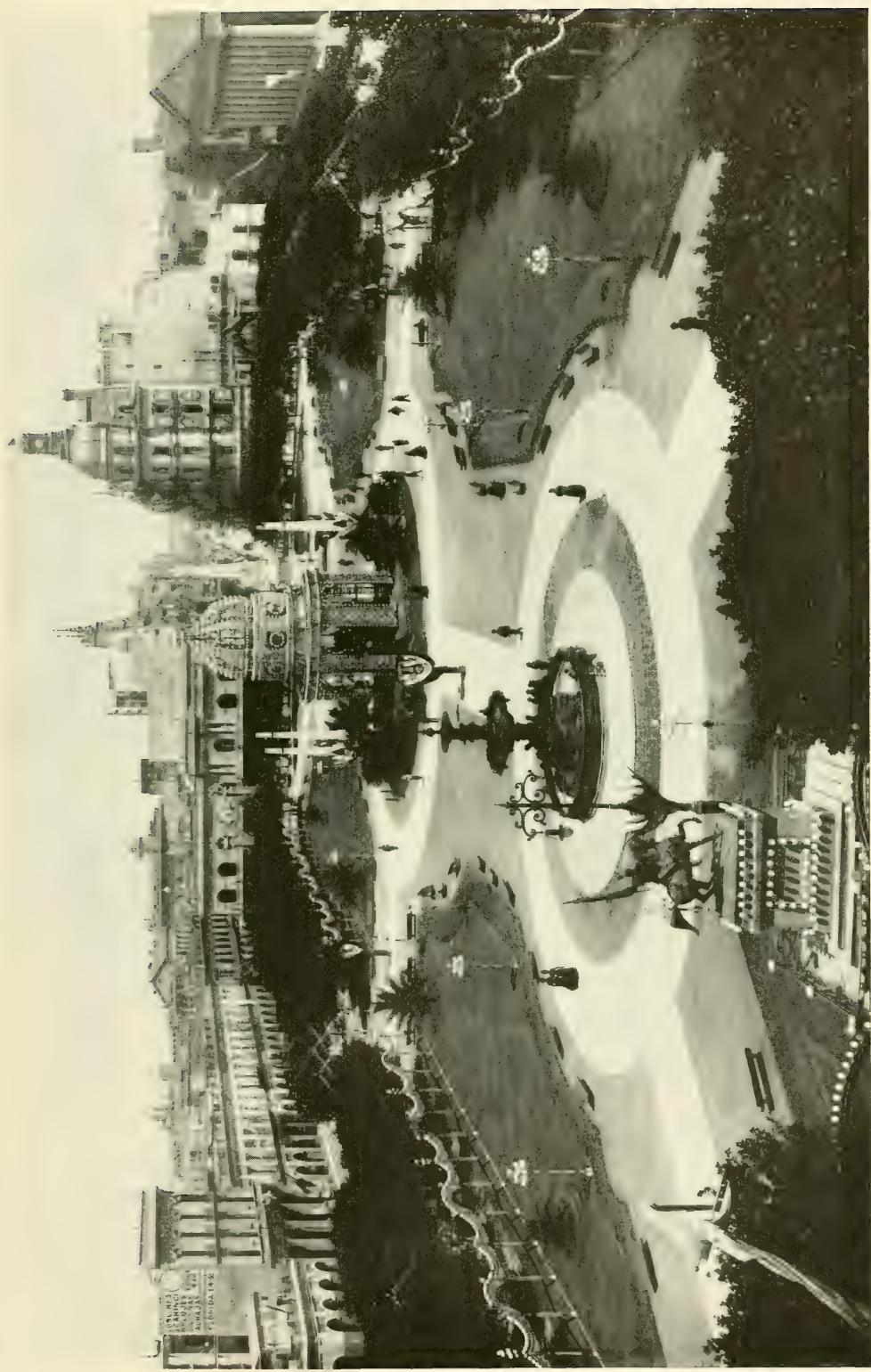
A COWBOY CONCERT IN ARGENTINA

On the thousand and one big estates of the pampas of Argentina the cowboys live much of the time in houses on wheels. They sleep inside and find shelter from cold and rain there, but they cook and eat and rest in the open whenever weather conditions permit.



PLAZA DE MAYO: BUENOS AIRES, ARGENTINA

Buenos Aires is the most populous and the richest city in the southern half of the globe. Fifty years ago the Argentine was what Illinois and Iowa and Kansas were a hundred years ago—it had millions of undeveloped acres of the best black soil the earth has to offer. But they were scores and even hundreds of miles from a railroad. Then came the railroads, opening up the country and making a thousand millionaires almost over night.



AN ARAUCANIAN CHIEF (CACIQUE) AND SOME OF HIS WIVES: CHILE





Photograph by A. S. Iddings. © Keystone View Co.

AN ITALIAN SETTLER AND HIS FAMILY: MENDOZA, ARGENTINA

Mendoza is the southern California of Argentina. Irrigation has long been successfully applied to its vineyards, which produce more wine than the combined vineyards of the entire United States of North America. The whole of the province lies at an altitude of more than 2,000 feet. Italians are, for the most part, employed in the cultivation of the grapes, the whole family accompanying husband and father to the field and assisting in tending the vines. The babies are put to sleep in improvised tents while their elders work.

Spanish-American cities. We shall have occasion to return to the metropolis that is at once the heart and the brain of the country, but first let us look at the land itself, of which the port is the gateway.

The location of Buenos Aires combines the advantages of those of New York and of New Orleans in all that relates to oversea and to inland commerce. Trans-oceanic routes converge to the Rio de la Plata as they do to the Hudson; the navigable waterways of the Paraná-Paraguay reach as far into the interior as the Mississippi-Missouri and offer deeper channels to navigation. As far as Argentine jurisdiction extends, the Uruguay, Paraná, and Paraguay rivers have been

dredged and buoyed and already are prepared to serve as arteries of commerce, such as the Mississippi is yet to become.

North of the Rio de la Plata and between the Atlantic and the Paraná-Paraguay basin stretches the most beautiful and healthful region of semi-tropical South America. Here are the coffee plantations of São Paulo, Brazil, the most productive of the world; here the German settlements of Santa Caterina and Rio Grande do Sul constitute the isolated Teutonic colonies; here Uruguay and Paraguay form buffer States between the great rivals, their neighbors, and here are included the rich Argentine Commonwealths of Entre Ríos and Corrientes.



A WELL-TO-DO FARMER AND SOME OF HIS VAQUEROS

## A LAND OF VAST POSSIBILITIES

Equivalent in area to the region which stretches northwest from the Alleghanies to the Mississippi and the Great Lakes, equal to the States of Alabama, Mississippi, Tennessee, Kentucky, Ohio, Indiana, and Illinois in extent, beautiful in upland landscape of verdant hills and valleys, this territory invites a dense population whose prosperity would be assured under a good government.

But divided as it is by arbitrary political boundaries, misgoverned with various degrees of misgovernment, it lies inert. The failure of individual and governmental initiative, the isolation of the frontier, where weak settlements face the forest, the lack of roads and railroads leave the interior still a part of the wilderness.

Santos in the north and Montevideo in the south are the outlets of this rich country. Both are important shipping ports, from which railways radiate westward and northwestward. Eventually they will be connected with one another and with Asunción, on the Paraguay, by lines that will develop and will exploit its resources.

Montevideo holds a position naturally superior to that of Buenos Aires, and were it the capital of an equally great republic might rival the latter in wealth and population; but, limited as Uruguay is by the Argentine and Brazilian possessions to the proportions of a petty State, it constitutes the hinterland of a secondary city, which Montevideo will long and perhaps always continue to be.

The Rio de la Plata separates two widely different districts—the wooded uplands of Uruguay and the treeless pampas of Argentina. The former is the southern extension of the great region of Brazil, and although now largely brought into cultivation, it is a region where trees flourish as a part of the indigenous flora. The pampas, on the other hand, have always been treeless until plantations of eucalyptus or orchards of fruit trees were laid out upon the estates of wealthy Argentines.

## PAMPAS COMPARED WITH PRAIRIES

The pampas are a vast grassy plain. Is there anything more to be said? As

an Englishman put it, "What can you say about a bally billiard table except that it is a bally billiard table?" Yet the plain of the pampas is not like the great western plains of the United States. The latter are broken by gullies, furrowed by streams, traversed by river valleys. The pampas are not.

Among all landscapes of the world there is none more meadow-like than the flat pampa, with the cattle grazing in the rich grass; but the meadow grass hides no meandering brook. Hour after hour and day after day you may ride without crossing a stream. You will, however, encounter many shallow pools and lakelets.

The pampa looks so flat, so featureless! But is it? Watch a horseman galloping away toward the horizon, toward which he rises silhouetted against the sky. Soon he sinks and drops out of sight, having apparently ridden over the edge of the world; but an hour later he may rise again, topping a more distant swell of the vast grassy ocean surface. North, east, south, or west it is the same—a billowy plain, hollowed and molded by the wind, the free-flowing air, which in place of running water has sculptured the immense expanse of fine brown earth.

## THE AMERICAN WINDMILL'S GREAT SERVICE

It is a paradise for cattle in the average year, when the rain fills the lakelets and the pasture, whether freshly green or cured to natural hay, affords abundant feed. Occasionally a dry season intervenes; the water pools dry up; the plain becomes a waterless desert. Formerly in such years disaster overcame the herdsman and his herds. Lingering by the shrinking pools, hundreds of thousands of cattle and sheep suffered from thirst and famine till they fell and mummified in the dust. It is somewhat different now.

The seasons still vary inexorably, and from time to time comes one of drought and loss; but it has lost its gravest menace. Scattered over the pampa, wherever they may be wanted, are windmills, and beside each mill is a tank and drinking trough. The wind, which so sculptured



THE ARGENTINE VERSION OF THE AMERICAN PRAIRIE SCHOONER

Here is a woman who owns 180 square miles of prairie land; there an Irishman who landed penniless fifty years ago and now has land valued at \$20,000,000. Some of these big landowners are still many miles away from the railroads. The 8-ox cart takes the place in this antipodal bonanza farming country of the 4-horse team on the American farm.



Photograph by Nevin O. Winter

THRESHING ON THE PAMPAS WITH AN AMERICAN ENGINE AND AN ENGLISH SEPARATOR

The people of Argentina annually raise for export forty dollars' worth of foodstuffs per capita. The highest prices ever paid for breeding stock has been paid by the Argentines, with the result that they have the finest draft horses, the best of beef cattle, and the highest type of sheep. Argentina is becoming one of the world's great granaries.

the hollows of the plain that a very large proportion of the rainfall sinks into it, now pumps the supply back to the herds, which otherwise might perish stamping the dust just above the subterranean waters.

Man meets Nature and conquers her, the more effectually the more intelligently he goes about it. Common sense impels the ranchero to erect windmills, or in seasons of drought to drive his cattle to districts of more abundant rainfall. The Argentine is also raising fodder crops, and as the cattle industry becomes organized on the sound economic basis of the greatest good for the greatest number, instead of the system of "*Sauve qui peut*," the herds of the pampa will no longer know the famines that in earlier times depopulated the plain.

The soil and the climate of the pampas give the Argentine Republic its high rank among the wheat and corn growing countries of the world. The soil is an ancient alluvium, the fine sediment carried by old rivers far out from the mountains, like the deposit now being made by the Para-

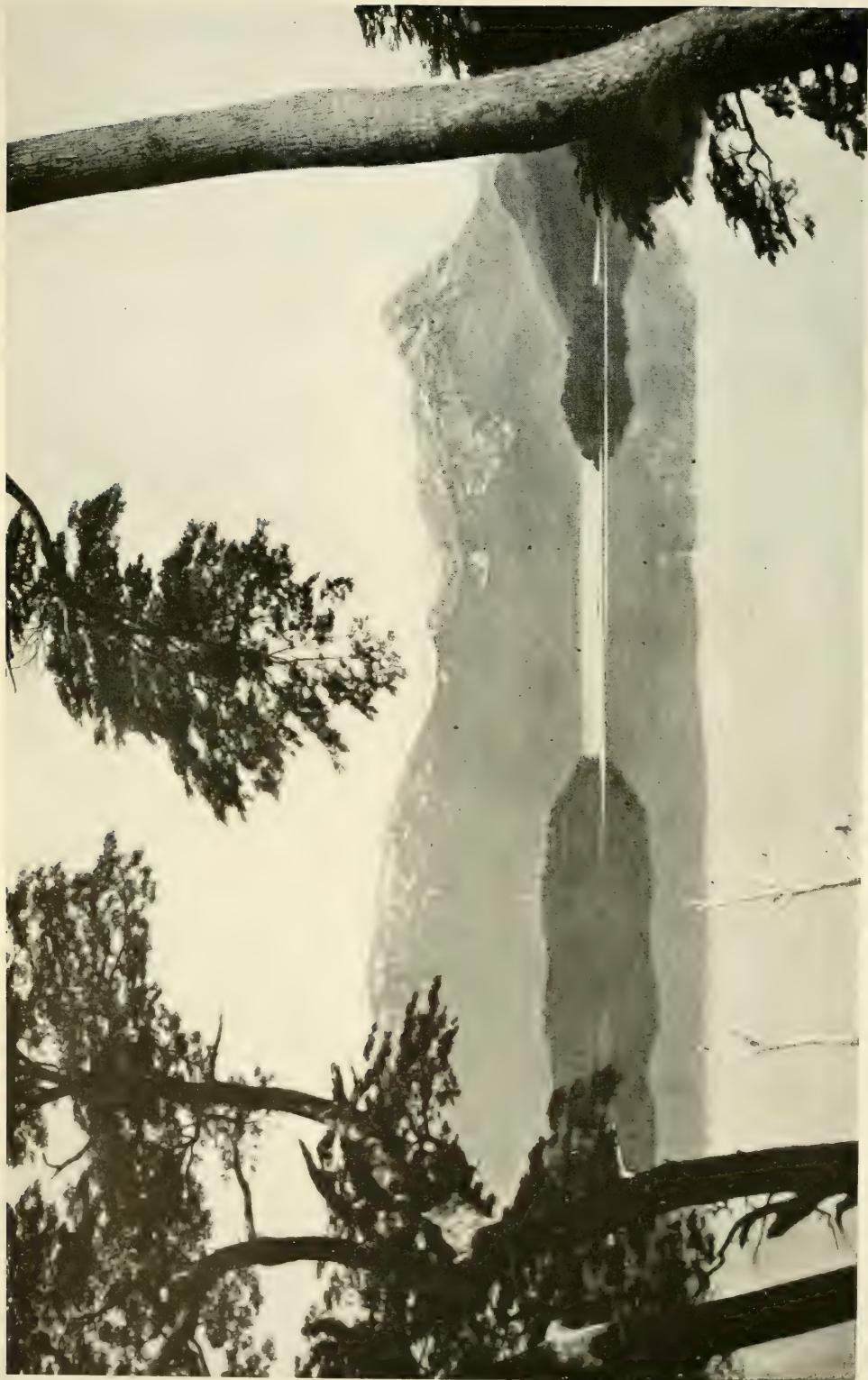
guay and its tributaries, an island delta far in the interior of the continent. The sediment was very fine, and mingled with it is a large proportion of fine volcanic dust, blown from the volcanoes of the Andes.

It covers about 200,000 square miles in the provinces of Buenos Aires, Santa Fe, Córdova, and San Luis. Like the renowned loess soils of China, it is exceedingly fertile and, being very porous, absorbs the rain waters, which rise again by evaporation and supply the surface soil constantly with plant food.

WHEAT REGULATED PROSPERITY

In former days it mattered nothing to the world at large and comparatively little to the Argentine himself whether the season was a favorable one for wheat or not; but now, when millions beyond her confines look to Argentina for bread and when Argentine prosperity is regulated by the wheat she sells, it matters much.

The time will come, probably, when plentiful rains or drought will matter less than now; for at present agriculture in



Photograph by Bailey Willis

MIRROR LAKE (LAGO ESPEJO), IN THE ARGENTINE NATIONAL PARK, NORTH OF LAGO (LAKE) NAHUEL HUAPI LAKE REGION OF THE ARGENTINE ANDES, TERRITORY OF RIO NEGRO

The boundary with Chile follows the distant crest, with summits at about 6,500 feet above sea. The altitude of the lake is 2,560 feet—near the line of the transcontinental railway from Puerto San Antonio, Argentina, to Valdivia, Chile.



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#### THE BAY AND CITY: VALPARAISO, CHILE

The city of Valparaiso, as well as almost the whole of Chile, have been severely tried by earthquake, and the fact that the nation has risen from each such disaster with no apparent interruption to its growth is nothing short of remarkable. The city was almost wholly destroyed on August 16, 1906, by an earthquake and the terrible fires which attended it, sustaining a \$100,000,000 property loss. Yet within a single decade few, if any, traces of the disaster may be seen, and the city is larger and more prosperous than ever.

Argentina is in that elementary state when it is most exposed to injury by the vicissitudes of climate. Great fields are cultivated by few hands. The poorly prepared soil, the shallow plowing, the neglect of cultivation, all invite losses in any but a favorable year.

In the east the rainfall is usually abundant or excessive. There are areas of Buenos Aires province which are inundated by heavy rains, and great drainage

works have been undertaken by the government at the instance of the land-owners. From east to west the rainfall diminishes till it becomes insufficient for agriculture in the average year, and farming can prosper only where irrigation is practicable.

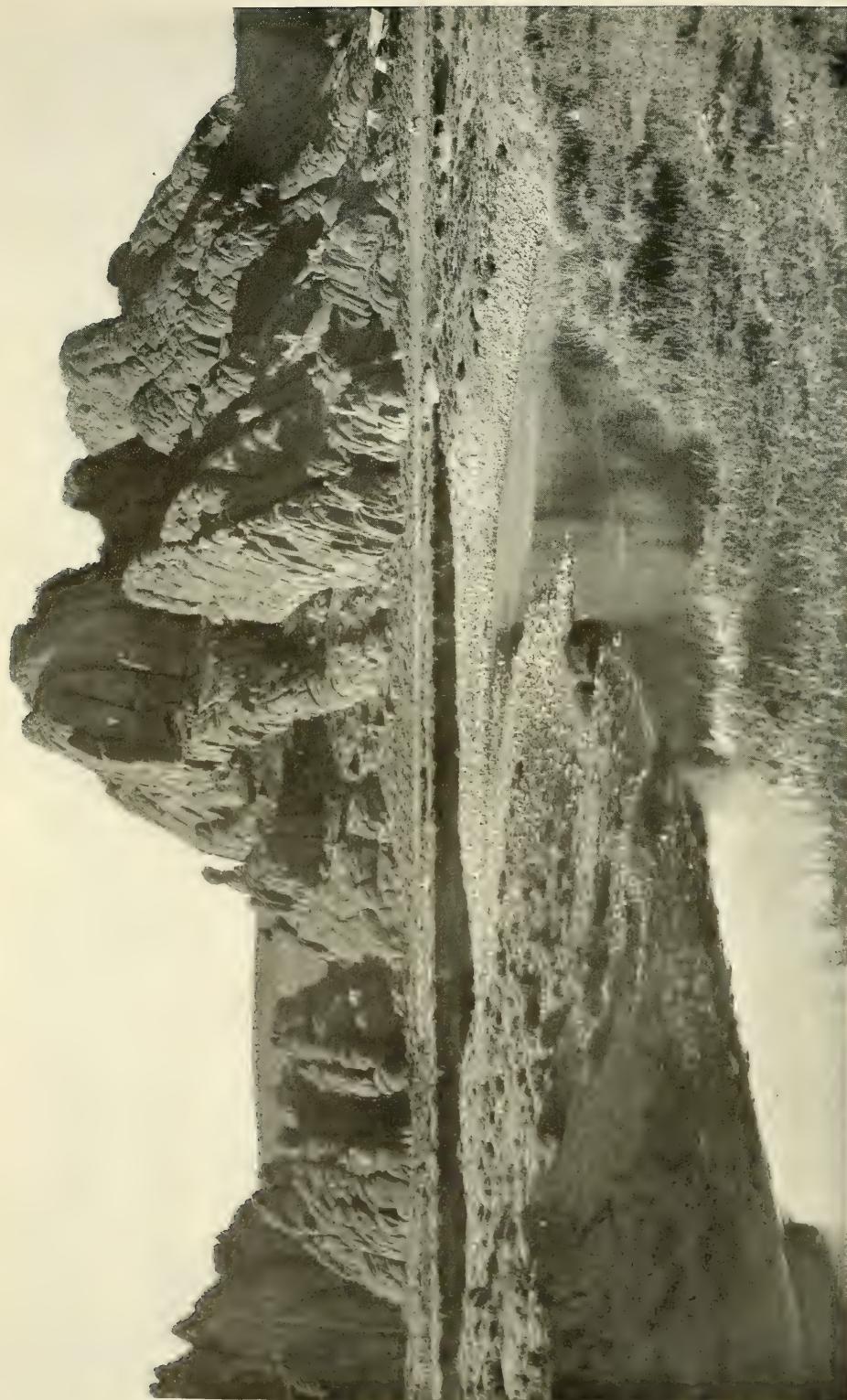
#### SOILS SUITED TO EVERY CROP

Thus the pampas, of which we may think as a monotonous region, exhibit

Photograph by Bailey Willis

VALLEY OF PILEAN YU: RIO NEGRO (BLACK RIVER), ARGENTINA

Resurrected peaks in the treeless pampas of Rio Negro, 50 miles east of the Andes. These rocks represent an old mountain ridge which was completely buried under volcanic ash and has been exposed again by erosion. The valley is characteristic of the grazing country at 3,000 to 4,000 feet above sea.



great diversity of aspect. Proportions of them may be flooded while other distant regions of the same plain are drying up. Portions are suited to the growing of wheat, others to cattle raising, and still others in the warmer, rainy zone about Rosario are adapted best to the raising of Indian corn.

The Great Southern Railway of Buenos Aires compiles for its own information charts which show the quantities of wheat, oats, linseed, cattle, sheep, and alfalfa received at each of its stations year by year. Thus the management may know not only what income any station yields, but also what is the crop that produces the particular return. It is most interesting to observe the grouping of products—wheat in this district, oats in another, cattle elsewhere—each in its preferred localities predominating over minor quantities of the other products and demonstrating the existence of controlling factors which give great economic diversity to the apparent natural monotony of the pampas.

In part due to natural conditions, in part dependent upon artificial ones, such as the lack of roads, these factors are changing from year to year; and they are destined to change constantly in the direction of greater security and productiveness in agricultural pursuits as the country passes from the actual primitive conditions of development to those of a more advanced community.

#### THE HUB OF THE ARGENTINE WHEEL OF FORTUNE

To gain an idea of the extent of the fertile pampa region, one needs but look at a railway map of Argentina. Buenos Aires and Rosario are the two ports of shipment of its products, the centers from which traffic radiates to all sections of the country. English and other capital has been expended to the amount of 200,000,000 pounds sterling in building railways to develop the rich lands, but in the more arid and less profitable country the lines have been extended only as trunk lines, aimed to reach some distant point. The pampas are the hub of the Argentine wheel of fortune, of which Buenos Aires, the Argentine El Dorado, is the center.

The area of the pampas, about 200,000 square miles, is one-sixth of the country. In the larger part which lies beyond the pampas, the other five-sixths, there is a great extent of lands destined by the general scarcity of water to pastoral pursuits; there are some real desert areas; and there are also districts of great natural resources, which are either actual or potential contributors to the natural wealth.

#### THE ROME OF THE ANTIPODES

In the Argentine all travel, all enterprise, all development, stars from Buenos Aires. Let us place ourselves in that Rome of the Southern Hemisphere, from which all roads lead, and make rapid excursions to the more interesting of the outlying provinces of her commercial dominion.

An excursion to the northward may pass by rail through the provinces or States of Entre Ríos and Corrientes to the Territory of Missiones, which was secured by Argentina through the arbitration of her boundary with Brazil by President Cleveland. Entre Ríos and Corrientes are lands traversed by ancient watercourses of the Paraná, which form wide expanses of swamp among the moderately high ridges and plateaus.

Misiones, an extension of the western table-land of Brazil, is a paradise, like upland Florida, scarcely ever touched by frost. This is the route to Paraguay and the old city of Asunción, from which the traveler will prefer to return by one of the steamers plying down the river of Buenos Aires or Montevideo; or, if it be one of the Brazilian Lloyd line, even making the voyage to Rio.

The line of the Central Córdova Railway, after leaving the Paraná and Rosario, runs through Córdova, the conservative seat of Spanish aristocracy and learning, and on through the desert of Santiago de Estero to Tucumán, the oasis where the sugar monopoly flourishes. Tucumán lies in a local area of greater rainfall at the foot of the superb Aconquija Range, a spur of the Andes which towers more than 10,000 feet above the city.

Where the streams from the mountains spread upon the tropical plain, there

Photograph by Bailey Willis

LAKE NACIONAL HUAPI: ARGENTINE ANDES  
View from the outlet of the lake, where the Rio Limay (Limay River) leaves it, toward the Andes. The lake is 60 miles long, winding to the right behind the promontory and penetrating to the heart of the Andes. The new transcontinental railway between Puerto San Antonio, Argentina, and Valdivia, Chile, will cross the Limay at this point and skirt the lake opposite the range. Mount Tronador, the highest visible peak, has an altitude of 11,400 feet.



are extensive plantations and refineries ; and on the mountain slopes are the villas of the wealthy planters, who may be whirled in a few moments in their autos over well-built roads to temperate or even to alpine climes. Extending still farther northwest, the railway reaches Quiaca, on the Argentine boundary, where it is eventually to be connected with the Bolivian system that centers in La Paz. Those who do not mind two or three days' staging may even now go on via La Pas to Antofagasta or Mollendo, on the Pacific coast.

Córdova, the old university town, was linked in the old colonial days by such lines of commercial intercourse as existed and by ties of interest rather with Tucumán, San Juan, and Mendoza, the centers of population in the Andes, than with the isolated settlement of Buenos Aires on the coast ; and in sympathy at least the relation still holds. Provincial conservatism is characteristic of the interior cities. In Mendoza, however, wealth has done more to modify the old customs than in Córdova.

#### THE SOUTHERN CALIFORNIA OF SOUTH AMERICA

Mendoza is the southern California of Argentina. Irrigation has long been successfully applied to her vineyards and she has grown rich on their products. She lies also on the historic route across the Andes by which San Martín entered Chile with the army that liberated that country from the Spanish dominion. The railway now ascends by the valley of the Mendoza River over the barren wastes of the high Andes, which are here cursed by both drought and cold ; and, passing through the summit at 10,600 feet, descends rapidly to the valley of the Aconcagua River and the fertile plains of central Chile.

In our excursions thus far we have traveled among the centers of the old Spanish settlements founded 300 years ago. Now let us turn to the south and southwest, to the country where the Indians were dominant till within 30 years, where explorers now living have been held captive by them, or have been able to traverse the plateaus and mountains

only as companions of the roving Indian bands.

Bahia Blanca is today a city of 70,000 inhabitants, with extensive wharves, huge wheat elevators, and various lines of railways converging to it. Yet as late as 1879 it was an outpost which was repeatedly isolated from Buenos Aires by powerful Indian raids. Now the intervening pampa is all converted to private property and divided by wire fences.

#### A POOR PROSPECT BECOMES A RICH INVESTMENT

When, in 1902, war over the question of the boundary in the Andes seemed imminent between Argentina and Chile, it was felt that easy communication must be established between Buenos Aires and western Patagonia, where the disputed boundary lay, and the government gave the Great Southern Railway of Buenos Aires a very liberal concession to build a branch from Bahia Blanca westward up the valley of the Rio Negro as a strategic element of defense.

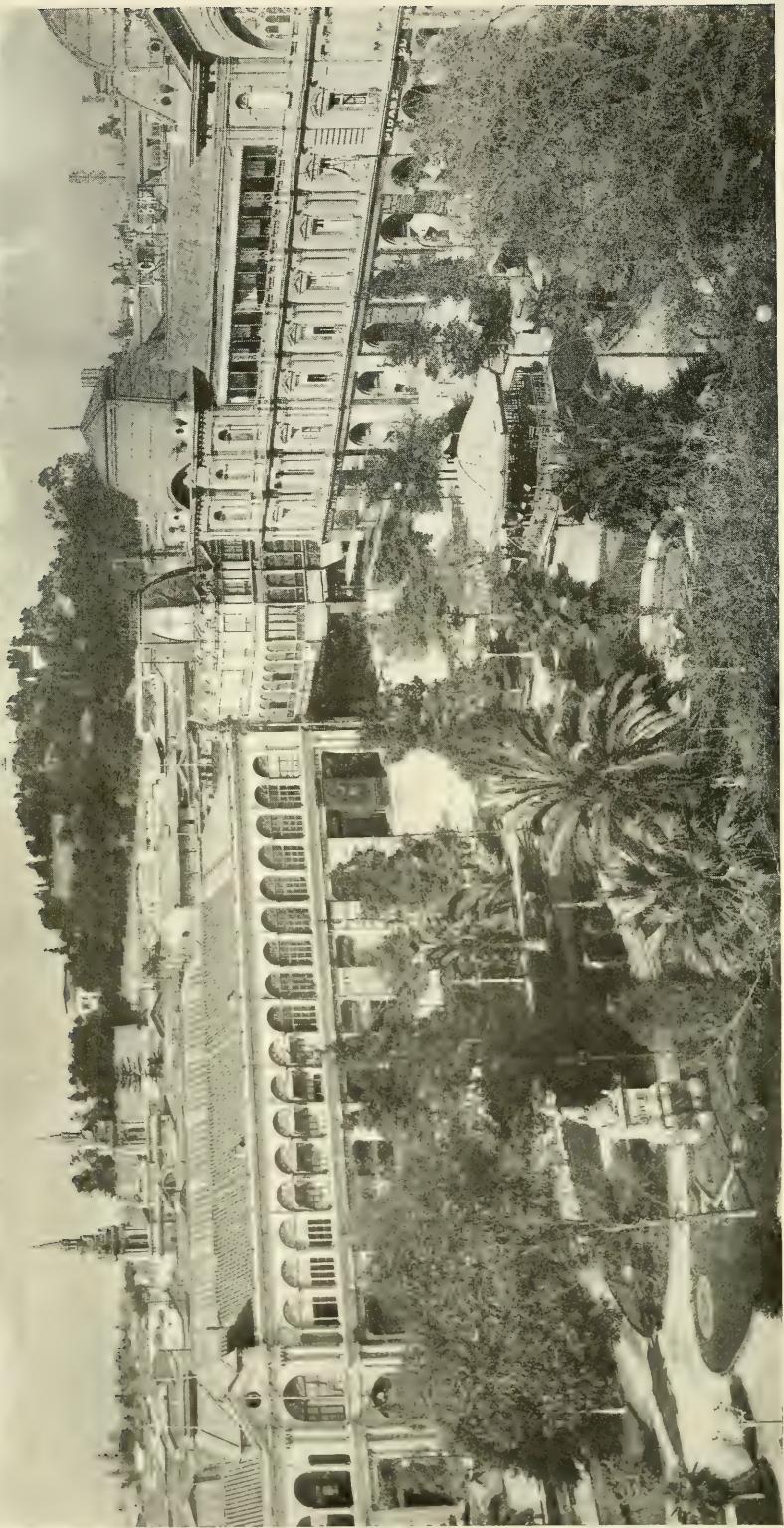
The company undertook it unwillingly, for the country was considered a desert ; but the road has paid interest on its cost almost from the first year after its construction, and, being now extended beyond the valley of the Rio Negro to a low pass in the Andes, it will ultimately form a transcontinental route which will connect Bahia Blanca with Concepción.

In the valley of the Rio Negro is a region which, through the utilization of the waters of that great river for irrigation, is being converted into one of the garden spots of the Republic. The climate, which in temperature resembles that of our south Atlantic coast, the fertile soil, and the abundance of water, which will eventually be brought under control, so as to minimize the effects of floods and the scarcity of the dry seasons, all combine to give this district a rich promise. At present it is still in the initial stages of development, lacking adequate organization of its industries and society and needing competitive development of means of communication with its markets.

In this excursion to the valley of the Rio Negro we reach the southern limit of the connected Argentine railway sys-

VIEW OF SANTIAGO, CHILE, WITH THE ANDES IN THE BACKGROUND

"Santiago is the chief city of Chile, but not in the same degree as Buenos Aires is of Argentina. It contrasts with Buenos Aires as the conservative capital of a small country with the metropolis of the continent. You feel in the Chilian capital the conservative character of the people; in Buenos Aires the liberal spirit of the world city" (see text, page 139).



tem. We are on the northern borders of Patagonia, the synonym for remoteness and isolation. Yet within its confines are to be found immense sheep ranches, managed not only by Argentines, but the largest and best of them by Scotchmen and Australians, who direct the investment of English capital. National railways have been extended at government cost from several ports of the Atlantic coast into the interior, and when the wave of prosperity once more returns to Argentina, as following the present depression it soon will, Patagonia will invite still larger investments of capital and take rank among the growing territories of the Republic.

#### A HIDDEN SWITZERLAND

One is constantly surprised at the magnitude of the far southern country. Hidden in the Andes of Patagonia and occupying but a small part of their great length is a country as large as Switzerland—a region of beautiful lakes, forests, and snow-covered peaks.

We have now spoken of southern Brazil and of Argentina. There remains of the temperate lands of South America only Chile, that longest and narrowest of all the countries of the world. Having a greater extent from north to south even than Argentina, it stretches 2,700 miles, from Cape Horn to the deserts of Atacama, within the tropics. Its width is rarely more than 125 miles from the ocean to the Andean crest. If we were to place it upon a similar stretch of coast in North America, it would cover Lower California, California, Oregon, Washington, and British Columbia to the St. Elias district of Alaska.

Chile is divided into three sections by the natural features of the Pacific slope of the Andes. The northern is that of the semi-arid and desert region, which reaches from Peru southward to Valparaíso. It is an utter desert in the north and becomes less inhospitable toward the south. It is traversed from the Andes to the coast by short, deep valleys, separated by high spurs of the mountains, and communication from north to south has always been exceedingly difficult. Nev-

ertheless, the Chilean engineers have found a route by which to extend the State railway which shall link Santiago with the territories conquered from Peru.

#### THE HEART OF CHILE

The central section extends through 9 degrees of latitude for a distance of about 600 miles from Valparaíso to the island of Chiloé, south of Puerto Montt. This is the heart of Chile, the only portion of the country which can support a sufficient population to constitute a nation. The area is not large, about 100,000 square miles, and much of it is occupied by mountain ranges of great height and ruggedness.

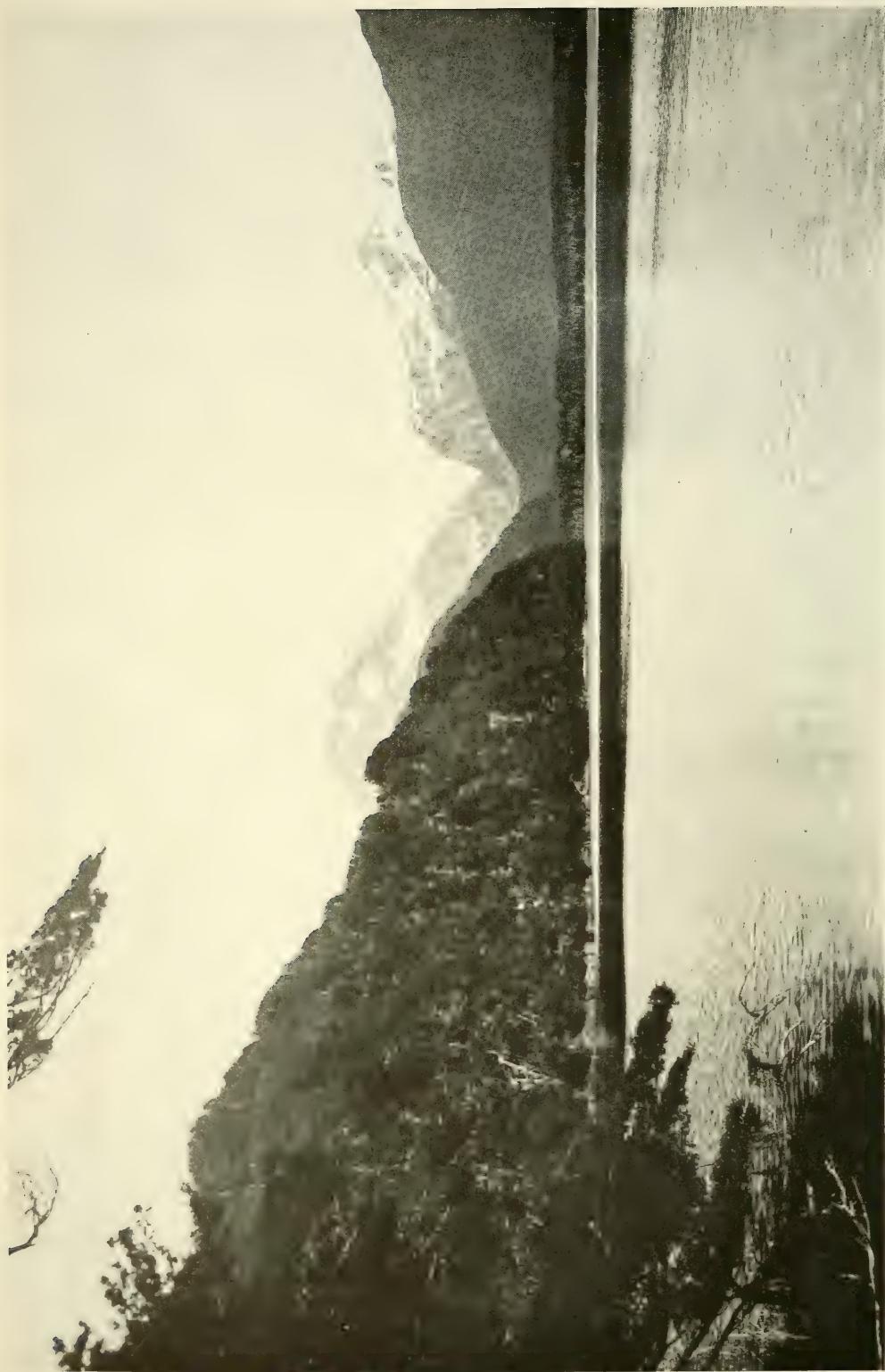
But between the Andes and the coast range there extends in this section a valley similar to that of California, which is the seat of the Chilean people. Many rivers rising in the Andes descend to it and meander more or less directly westward through the coast range of the Pacific; but the intervening divides are nowhere of such altitude as to interrupt the continuity of the great valley that extends from north to south. Santiago is situated at its northern end, and flourishing cities are located at each favorable point on the railway that connects the capital with Puerto Montt.

The climate as we go from north to south becomes ever more humid, and we pass from the irrigated lands about Santiago to the dense forest swamps of the southern portion of the district. While much of the land has been cleared or is in the process of clearing, in a state which reminds one of our own Pacific coast 30 years ago, other areas remain impenetrable forests, still unexplored after nearly 400 years of occupation of the country.

The third section of Chile, extending southward from Puerto Montt through 14 degrees of latitude to Cape Horn, is like our southern Alaskan coast—a stretch of islands and peninsulas broken by intricate channels and profound fiords that penetrate far into the land. Tumultuous rivers descend from the Andes and debouch into the fiords in swampy deltas which are covered with dense forests.

Photograph by Bailey Willis

THE PASS OF THE BLACK BOX OR CAJÓN NEGRO : ANDES  
The Bahía Blanca-Concepción transcontinental railway will be located high above the lake (Lake Villarrino) and will pierce the range below the pass in a tunnel a mile long, at 3,880 feet above sea



The large island of Chiloé, which was conquered by Valdivia before the middle of the sixteenth century, is well populated and occupies a position with reference to the more frequented northern coast similar to that which Vancouver Island holds to San Francisco. Farther south the population becomes very scanty, glaciers descended from the Andean heights, and the savage but majestic scenery of Smythe Channel and the Straits of Magellan suggest that of the inland passage and Lynn Canal of the Alaskan coast.

#### SANTIAGO AND BUENOS AIRES

Santiago is the chief city of Chile, but not in the same degree as Buenos Aires is of the Argentine Republic. Buenos Aires has become almost the Republic itself, in the sense that Paris is France; but Santiago is but the capital of the country, which has other cities that may compare with it in local importance. Santiago contrasts with Buenos Aires as the conservative capital of a small country with the metropolis of the continent. You feel in the Chilean capital the conservative character of the people; in Buenos Aires the liberal spirit of the world city.

The people who are developing the lands of South America, and in that development are themselves evolving special characters and new racial types, are those whom we loosely call Latin-Americans. Their language is of the family of the Latin tongues, and that fact fixes in the public mind the relationship of the people among European nations; but that is a very superficial estimate. If we call them Spanish-Americans and we consider what the Spaniards' origin is, we shall come nearer knowing our neighbors.

#### THE SPANIARD AN IRISHMAN FIRST

The ancient Spaniard was a Celt before he was conquered by Rome, and as a Celt he is represented today by the still distinct group of the Basques. The greater part of the Celtic tribes were less resistant. Five hundred years of Roman government and two hundred of domination by the Visigoths, followed by eight centuries of Moorish influence, con-

sciously and unconsciously wrought changes in the people, evolving the special Spanish type.

All of the races which entered into that type were more or less numerous and influential in the development of the other people of Europe, except one. The Moors constitute an element of the Spanish blood which produced traits that are peculiar to the Spaniard among European peoples. In studying America we should not forget that the Moors maintained their civilization in Spain up to the date of the discovery of America and influenced the character of the Spanish conquerors. They represented that Arabic civilization which maintained learning and science during the dark ages of Europe, and their daring courage, their impetuosity, and their individualistic spirit have been transmitted to their remotest descendants.

#### A MANY SIDED DESCENT

A further fact relating to the origin of the Spanish - Americans, and one frequently cited by their own writers, is the mixing of the invaders and the aborigines in the colonial populations. Their writers tell us that the Indians who died under the tyranny of the Spanish masters bequeathed to those masters half-breed sons and daughters to perpetuate the race. The mestizo, or half-breed, became a universal and numerous element; the criollo, or American-born child of European parents, the local and less common factor in the colonial population.

Thus there sprang into existence the Spanish-American race, child of the Celt, the Roman, the Goth, the Moor, and the American Indian. His Spanish fathers were themselves variously characterized: the austere Basque, the arrogant Castilian, the impetuous Estremaduran, the facile and graceful Andalusian. And the Indian mothers were as unlike: the gentle Aztecs of Peru, the fierce Guarani of Paraguay, the sanguinary Puelche of the Pampas, the indomitable and independent Araucanian of Chile.

Inheritance tells. The Spanish-Indian mestizo exhibits the diversity of his ancestry. To inheritance has been added the effect of local environment and isola-

Photograph by Bailey Willis

FOREST OF BEECH AND BAMBOO IN THE ARGENTINE ANDES

While Argentina does not possess the timber resources of its neighbor, Brazil, there are many thousands of square miles of forest lands still untouched



tion. A profoundly interesting field of research in human variation awaits the student of the race in evolution.

In touching on this vast example of human evolution involving today 60,000,000 of people, we can glance only at some of the incidents related to the Argentine and Chilean nations. Both populations were well established before the close of the sixteenth century, but by very unlike elements. Valdivia and his successors, the invaders of Chile, were soldiers bent solely on conquest, such as they had taken part in in Peru, for immediate gain; the colonists who in successive expeditions founded Buenos Aires came with wives and children, with horses, mares, and implements of husbandry, to settle in the land.

#### THE SPIRITED PRODUCT OF A RACIAL AMALGAMATION

The warring invaders of Chile met and mingled with a warlike Indian race, the Araucanians, and their issue is without question the most independent, the boldest, the most aggressive of South American peoples.

The merchant colonists who sought the Rio de la Plata maintained to a greater degree the purity of the European blood and have constantly been reinforced by fresh immigrations from all the nations of western Europe. They are today the most enterprising, as they are the most cosmopolitan and progressive, of the Spanish-Americans.

During the first century of its existence the colony of Buenos Aires was the victim of that monopolistic policy so characteristic of the individualistic Spanish tendencies. Although destined by geographic situation and accessibility from both land and sea to be the commercial focus of the continent, the settlement was denied commercial intercourse.

During half a century the shipment of cargoes to or from Buenos Aires was absolutely prohibited under penalty of death, and during the following 50 years traffic through the port was so restricted and burdened as to amount to prohibition. Lima was the center of government and monopoly. All the produce of the continent destined to Spain was gathered

there and shipped via the Isthmus of Panama. Only articles of small bulk and high value could pay the freight charges and the imposts. The heavy freight of hides, wheat, or wool could not move by that channel; and the pampas of Buenos Aires, producing nothing more valuable, shipped nothing.

No more colossal example of misgovernment, no more striking illustration of the incapacity of medieval Spain to govern the colonies her soldiers had won, is to be found even in her annals.

#### STATE'S RIGHTS IN THE ANTIPODES

The northern cities—Córdova, Tucumán, Mendoza, and San Juan—were established by leaders from Lima and remained attached to that transmontane capital, through which their commerce flowed. They did not sympathize with Buenos Aires in her isolation; and, later, when independence from Spain had been won, when the Argentine Republic was struggling into existence, the civil wars were fought between the conservatives of the interior and the progressives of the coast. Something of the same division exists today. Córdova and Mendoza are intensely provincial; they are for States' rights. Buenos Aires, grown immensely powerful and the seat of national government, emphasizes national control.

The isolation of Buenos Aires and the pampas influenced the evolution of the Argentine people of the country outside of the cities in a striking degree. It helped to develop the Gaucho, the Argentine plainsman, whose natural evolution in adaptation to the environment of the pampas was intensified and accentuated by separation from the ameliorating effects of intercourse and culture.

The Gaucho sprang from the Spaniard and Indian. He was a nomad. His life of frugality, activity, and hazard favored the fittest and fiercest. He knew no law save that of might. He was independent, daring, familiar with violence, and careless of life. Had he through a Spanish parent some Moorish strain, he represented in the pampas his ancestors, who had galloped over the plains of Arabia. Sarmiento describes in graphic language the wild barbaric character and life of

the Gaucho and finds a likeness to Arabs he himself had known.

#### THE CARRANZAS AND VILLAS OF A BYGONE GENERATION

In the wars of independence, 1810-1816, the Gaucho played an important part under General San Martín and General Belgrano; in the civil wars that followed he fought under captains of more or less authority, such as Carranza, Villa, and Orozco are today; and in the tyrant Rosas, 1830-1852, he became the dictator over the lives and fortunes of the higher classes of society.

It would be of interest in a study of Rosas to compare and contrast him with Diaz of Mexico, Guzman Blanco of Venezuela, Francia and Lopez of Paraguay, and many others of his kind, who represent the natural product of anarchy, the tyrannical "caudillo," or chief; but in Argentine and Chilean history the tyrant belongs to a vanished past.

Under the presidents who have succeeded, from Mitre, in 1862, to Saenz Pena, in 1910, the government of the Republic has been held by those who felt themselves entitled to rule by virtue of their education, intelligence, and ability.

#### WHEN REPUBLICAN GOVERNMENT WILL DAWN

Saenz Pena took the patriotic stand that he was president of the nation, not of a party only; he carried sound election laws and enforced them, with the result that the administration was antagonized, the congressional majority was disorganized, and the law-making body was paralyzed by party strife, which is not yet ended. Meanwhile the radical and socialist vote grows with each election, and may become a serious menace in a country where there is no considerable middle class of conservative property owners—citizens between the wealthy land-owners and the peons.

Immigration and the occupation of

lands by the small farmer proprietor are means working toward the establishment of the middle class, without which so-called republican government in Argentina or elsewhere must always remain a figment of reality. The government wisely seeks to promote immigration, and there are laws designed to favor the increase of small holdings, the principal one being the inheritance law, which tends toward the division of large estates.

But immigration is not large. It is offset by emigration, amounting, in 1911, 1912, and 1913, to about 50 per cent of the immigrants. And the net annual result is an increase of only about 2 per cent in the population. Considering the great extent of territory, the small population, and the wealth of the nation, this is not a favorable showing. Spanish and Italian immigrants form about 80 per cent of the total, and entering, as many of them do, merely as laborers for the harvest season, they form an even larger proportion of the emigrants.

The attachment of these peasants to their homes in Spain and Italy is one reason for their return migration; but there is a deeper cause for emigration and for the small net increase in population by immigration. There is no room in Argentina, except in remote territories, for the man with small capital unless he is willing to remain a laborer. Liberal immigration laws do not help him. His way to independence as a farmer is barred by the great landed proprietors.

In Argentina, as in all other Spanish-American countries, the prevalence of great estates, the condition of the "latifundia," the old Roman curse, is the greatest obstacle to citizenship and good government. To pursue this topic would lead us too far afield; but it is pertinent to the contrasting of North and South America to remind ourselves that the Republic is founded in that body of intelligent and independent citizens who own their homes. They alone govern steadily.



## WARDS OF THE UNITED STATES

### Notes on What Our Country is Doing for Santo Domingo, Nicaragua, and Haiti

THE island of Haiti, upon which are located the Black Republic of Haiti and the Mulatto Republic of Santo Domingo, is the scene today of two of the most interesting experiments in government that may be found anywhere in the world.

After a century of effort to maintain itself as a separate, independent, sovereign nation, Santo Domingo in 1905 found itself about to fall victim to its own excesses. Revolution had followed revolution almost with clocklike regularity. There were assassinations, there were betrayals, there were conspiracies, there were wars within and wars without—war with Haiti over boundary questions and civil war over the control of the government. Debts were piled up without thought of the day of payment, or even provisions for meeting interest charges. Those who were in control of the government, whether for a day or for a year, were more concerned about the money that could be abstracted from the national treasury than they were about the preservation of the national credit.

So long and so steady was the orgy of revolution, speculation, debt-making, and interest-dodging that the nation's credit grew worse than that of its individual citizens. Finally the day of reckoning came. Foreign warships approached the ports whose harbors had given refuge to the great discoverer Columbus, and whose capital city still contains what undoubtedly are his ashes, and demanded that the claims of their subjects be satisfied—claims for money advanced, claims for interest accumulated, claims for property wantonly destroyed—and they demanded it at the point of big naval guns.

Ordinarily the Dominicans, like most of the other peoples of tropical America, dislike the Monroe Doctrine and view it as a reflection upon their strength. They think they are big enough to take care of

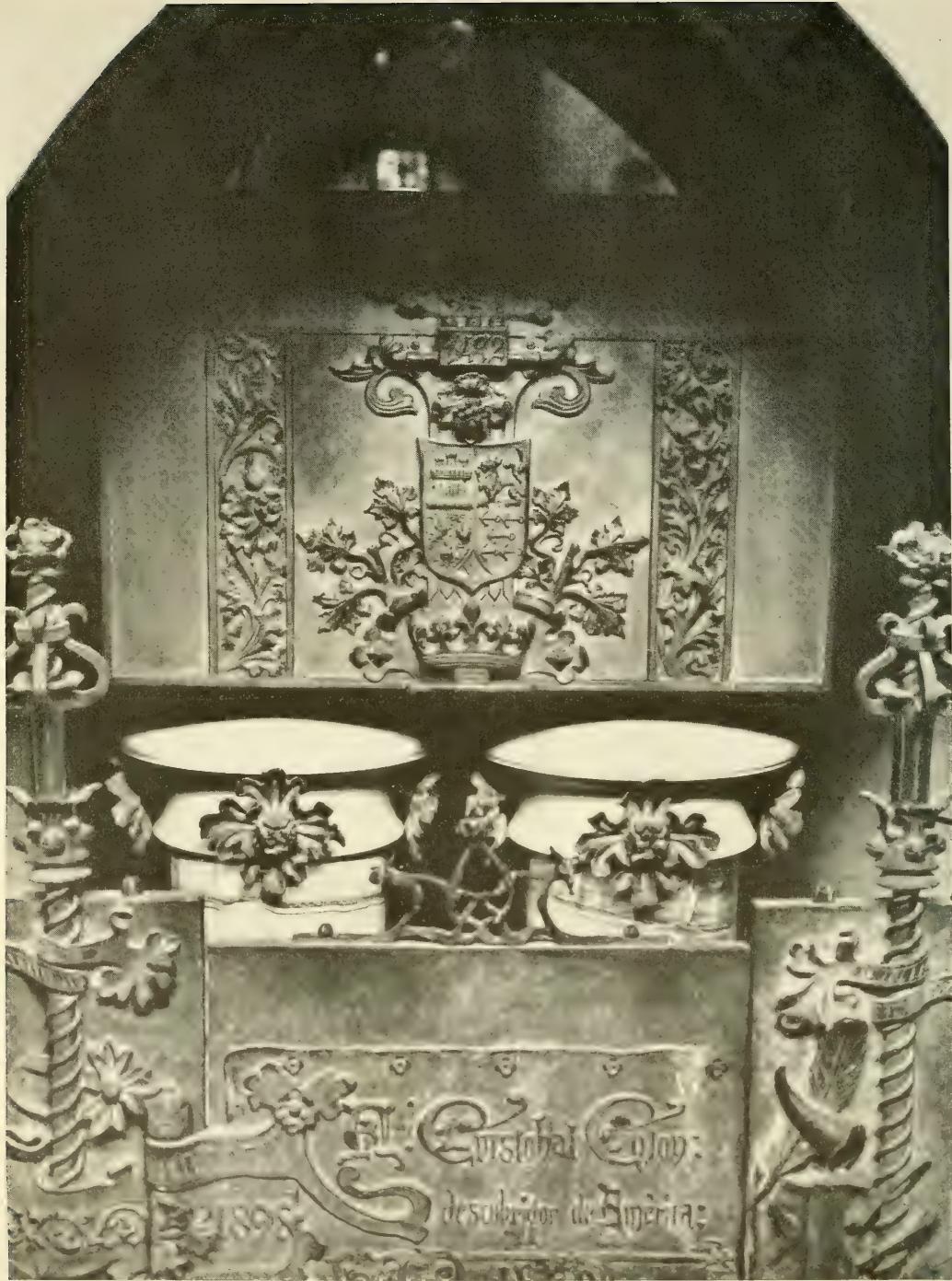
themselves and look upon that international policy as one tending to interfere with their sovereignty.

#### ANY PORT IN A STORM

When Santo Domingo's treasury was empty, however, its borrowing capacity at zero, and Europe at its door threatening to take over its administration, and thus to collect its debts, no harbor ever looked more like a haven of refuge to a storm-tossed mariner than the Monroe Doctrine did to the Dominicans. In a hole from which they were powerless to extricate themselves, they were ready enough to negotiate a treaty turning over the control of the country's customs to the United States if, in return therefor, the United States would protect them from angry European creditors and rejuvenate their treasury.

And so it was that in 1905 the United States undertook to serve as treasurer of Santo Domingo and to vouch for her debts. Under the modus vivendi first, and then under the treaty, it was agreed by Santo Domingo that the United States should take over her customs-houses, put them under an American Receiver of Customs, and distribute the collections in certain proportions among the several necessities of the country. First, the cost of the receivership should be met, not to exceed 5 per cent of the collections; then \$100,000 was to be paid monthly into the interest and sinking funds for the amortization of the loan which had been made under the guarantee of the United States; the remainder was to go to the Dominican Government, with the exception that when the revenues exceeded \$3,000,000 a year one-half of the excess should go to the sinking fund.

There was a provision in the agreement giving the United States some control over the power of revenue legislation. It was to be consulted when changes of the tariff laws were consid-



Photograph by Harriet Chalmers Adams

THE TOMB OF COLUMBUS IN THE CATHEDRAL OF SANTO DOMINGO CITY: SANTO DOMINGO

When the Spaniards undertook to remove the ashes of the great discoverer from Santo Domingo to Havana, they apparently made a mistake and took the casket containing the bones of his son, Diego, instead; for later, when the cathedral was being remodeled, a leaden casket was found, the inscriptions on and in which tend conclusively to show that it contains Christopher Columbus' ashes. The most painstaking care was taken to establish the identity of the casket found, and practically every unbiased investigator agrees with the historian of Columbus, John Boyd Thatcher, that his ashes repose in the Cathedral of Santo Domingo instead of at Sculla, Spain, as the Spaniards believe.



Photograph by Harriet Chalmers Adams

#### RUINS OF THE DAYS OF COLUMBUS: CAPE ISABELLA, SANTO DOMINGO

These are the ruins of the oldest surviving structure of the white man's permanent occupation of the New World

ered, and the debt could not be increased without our consent.

When the question of a revision of the tariff came up it was urged by the American authorities that the duties should be laid on luxuries rather than upon necessities, upon the things of the rich rather than upon those of the poor. It was the other way around under the old régime. There was a high duty on cotton and a low one on silks, a heavy impost on beer and a light one on champagne. Rice bore a heavy duty and sardines in oil next to none.

#### A NEW TARIFF POLICY

Under the revision supervised by the United States all this was changed. The tariff, as a whole, was cut down, and necessities were admitted at low rates and luxuries at high ones. The general reduction was 50 per cent on export taxes and 14 per cent on import duties.

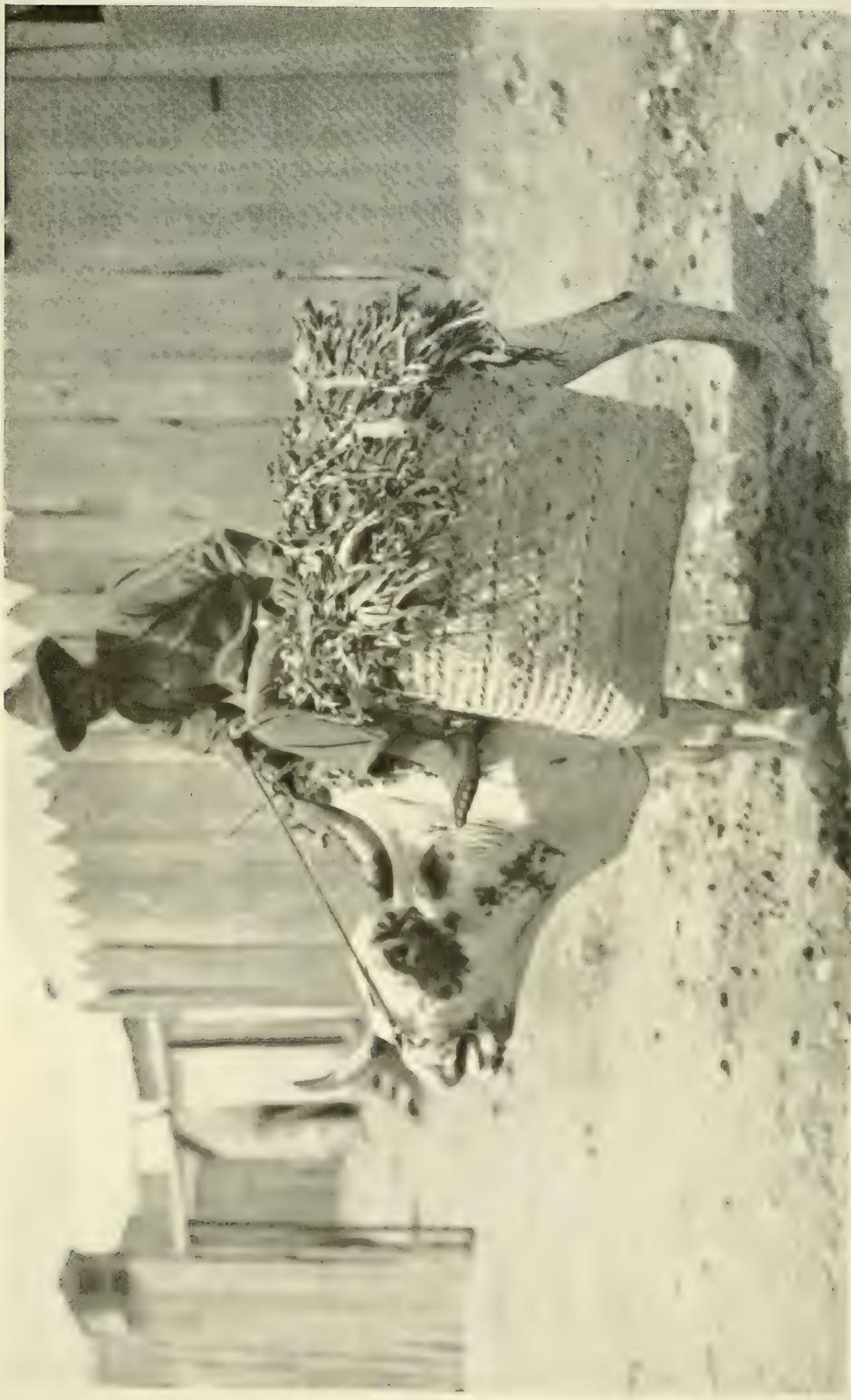
And yet, in spite of this great reduction, in spite of payments of \$1,200,000 a year on the debt, there was still left a

greater net income for the use of the government than it had ever had before.

#### AN ASTOUNDING PERFORMANCE!

Not only that, but, under the law which entitled him to 5 per cent for the expense of collections, the receiver was able to reduce the costs to such a point that in seven years he turned into the Dominican treasury \$200,000. It was astounding to the Dominicans that any one should turn into the treasury the savings of an economical administration.

For a long time it was thought that, deprived of the opportunity of securing customs-house revenues through the seizure of ports, revolutions could not support themselves. But after six or seven years of peace, during which unprecedented strides of progress were made, trouble broke out again, and during 1914 and 1915 it became so serious that the United States was forced to intervene in behalf of peace and to demand, with marines on shore and naval guns trained and pointed on the ports, that the country re-



CARRYING CEROONS OF TOBACCO TO TOWN: SANTO DOMINGO

Santo Domingo is naturally one of the richest countries in the world. Its sugar lands rival those of eastern Cuba, and its tobacco lands produce a leaf almost as fragrant as does the wonderful soil of Cuba's western provinces.

Photograph by Harriet Chalmers Adams



Photograph by Harriet Chalmers Adams

#### GATEWAY TO THE CITY OF SANTO DOMINGO

Near the river gate is a sturdy ruin, made up of two square towers joined by a central block. Black and roofless, in spite of the squalor of its surroundings, it still proclaims the time when it was "the magnifical and princelyke house" of Christopher Columbus.

turi to a state of quiet. And so today the Dominicans, realizing that the Monroe Doctrine is determined to afford them protection from their own excesses, their own bitter passions and blind purposes, have accepted the inevitable and have secured the blessings of peace from without when they could not attain that end themselves. It is a reluctant acquiescence they yield, but a wholesome one, none the less.

It has not been without effort or without expense, nor yet without the actual sacrifice of blood and life that our country has stepped in to play the rôle of Good Samaritan to the peoples of Santo Domingo, Haiti, and Nicaragua, who had lost the blessings of peace and were unable to regain them. In Haiti alone we lost one officer and six marines and had a number wounded. How much in money it has cost has not been ascertained officially, but the usual estimate is that it costs \$1,000 a year to support an American soldier in the tropics, and thousands of them have been sent down there. Of

course, the bulk of this would have been spent whether such help was rendered or not, for the Marine Corps is maintained even though it sees no active service.

#### OUR COUNTRY'S COLONIAL ACHIEVEMENTS

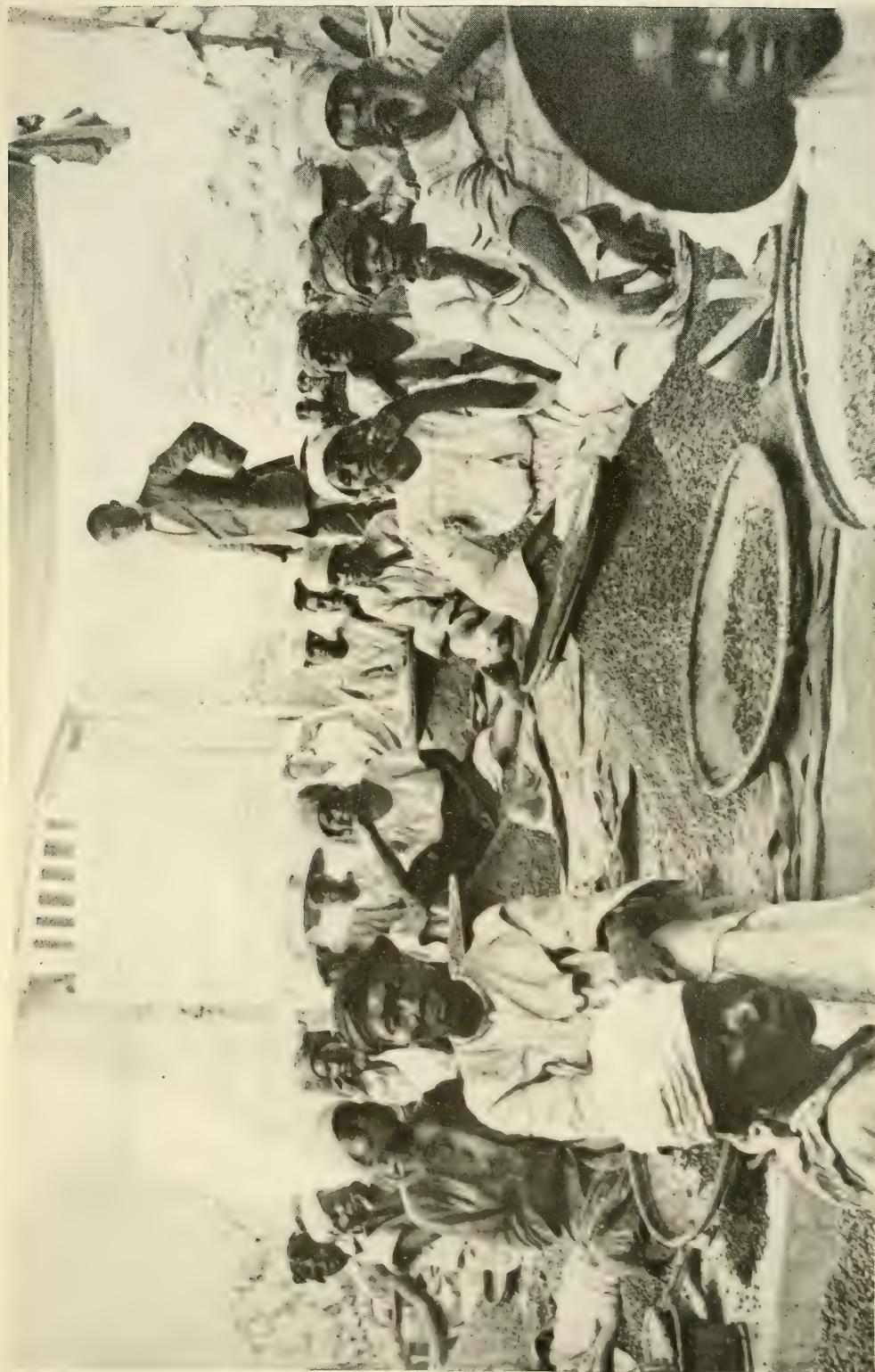
But out of it is growing results of which a nation which covets no territory, which seeks only its own security and the welfare of its unfortunate neighbors, may well be proud.

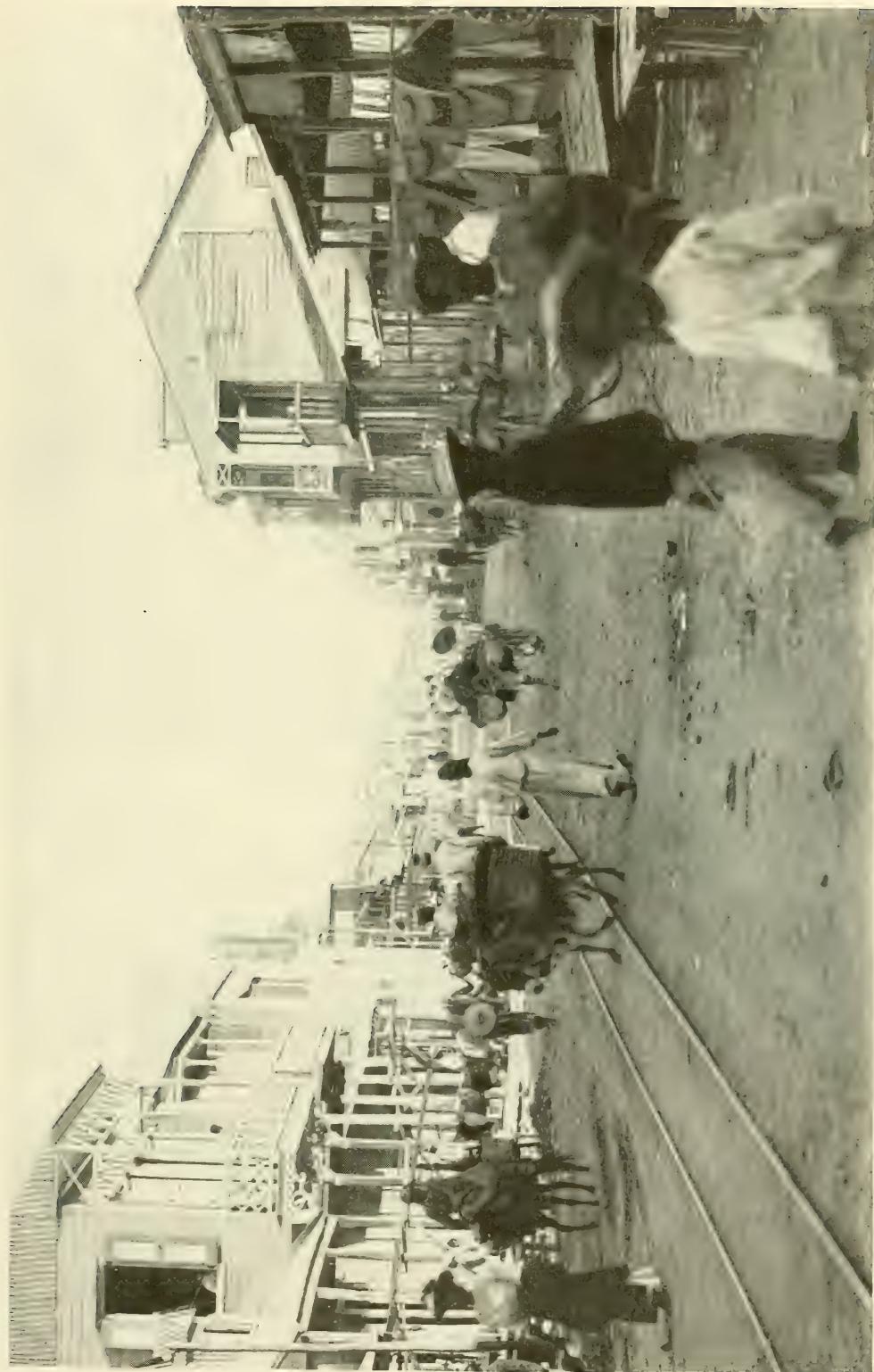
In Porto Rico we have reduced the death rate from 45 per 1,000 to 19 per 1,000, and a beginning along the same lines is being made in these new fields of American altruistic endeavor. In Porto Rico wages have increased from 16 cents to 75 cents, and stable conditions show encouraging results in the same direction in our new ward lands. In Porto Rico the school attendance jumped from 20 per cent to more than 85, and these new wards are trying to follow in Porto Rico's path.

Wherever America has gone, whether to Cuba, whether to Panama, whether to

SORTING COFFEE BY HAND: HAITI

When the French were driven from the Island of Haiti it was one of the richest coffee-growing regions in the world. Little has been done in the development of this industry during the century that has followed, and while Haiti still produces enormous quantities of the aromatic berry, it is due to the natural exuberance of the soil and not to the care taken of the trees. Indeed, it is said that most of the coffee trees now at a producing age in Haiti are of volunteer growth.





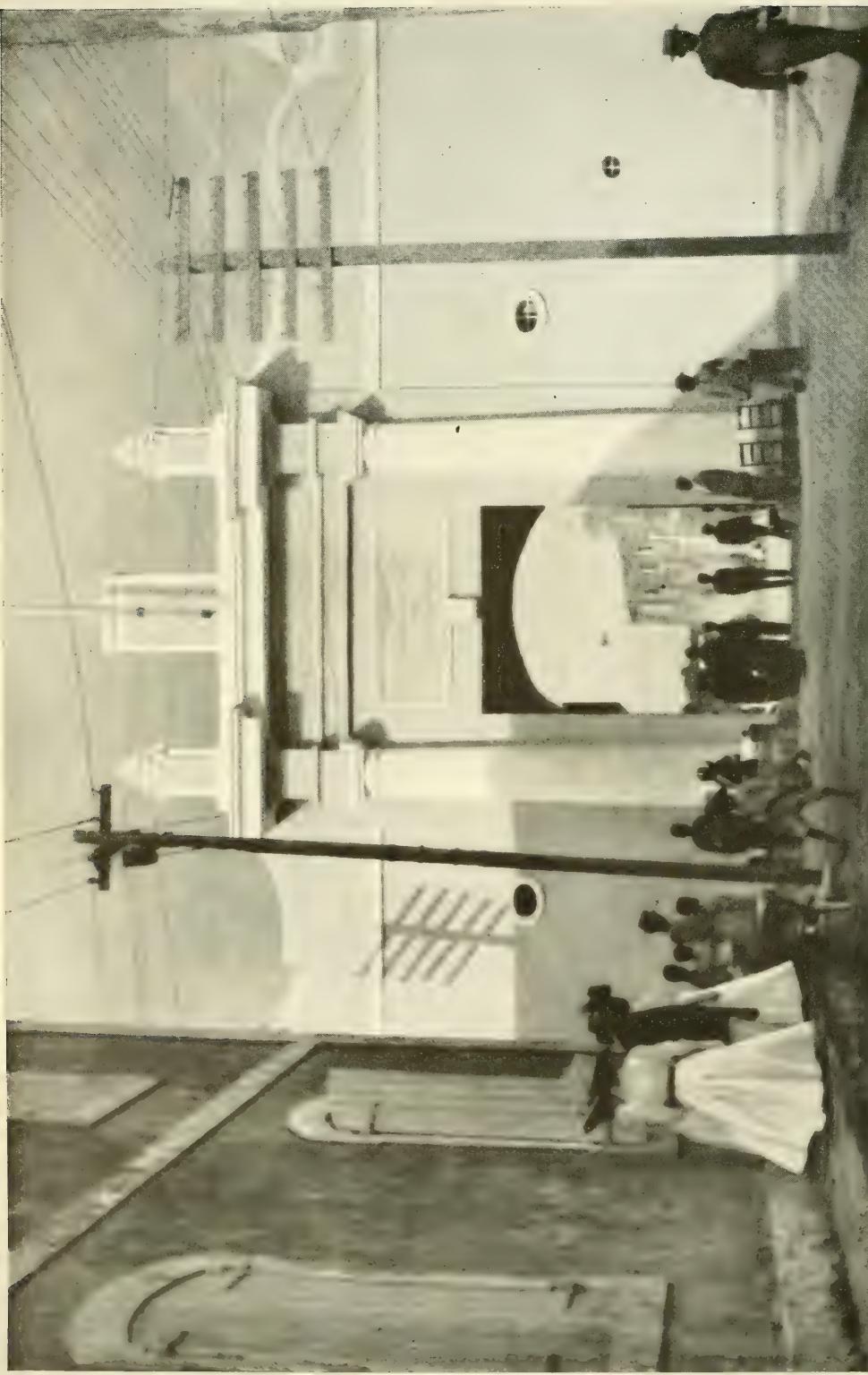
A STREET SCENE IN PORT AU PRINCE, HAITI

American naval officers whose duties have carried them to the ends of the earth, and to the most insanitary of the world's cities, have declared that the stench of Port au Prince offers more offense to the sense of smell than the odors of any other spot they have visited. Open sewers, decaying fish, dead animals, and whatnot made the City Dreadful before the Americans applied the same methods they used in the Havana-Panama clean-up.

Photograph by Harriet Chalmers Adams

GATEWAY OF "TIOMENAJI," THE OLDEST FORT IN THE NEW WORLD: SANTO DOMINGO CITY

It is a fascinating experience to visit Santo Domingo and wander amid the ruins of the ancient city—from the old fortifications to the first stone church built in the New World and to the tomb of the Great Discoverer. Nowhere else in this hemisphere are there scenes fraught with more historical significance to Americans than here where Columbus had his hour of triumph and his hour of sorrow, and where, when he had embarked upon the Great Voyage from which he would never return to endure the fickle favor of petty princes, his ashes finally found repose.





Photograph by Harriet Chalmers Adams

#### ON THEIR WAY FROM SCHOOL: SANTO DOMINGO CITY, SANTO DOMINGO

The inhabitants of Santo Domingo City well may be a proud people. For, in the words of Ober: "What other city of America can boast as its one-time citizens a great discoverer like Columbus, a fifteenth century humanitarian like Las Casas, a monster of depravity like Ovando, and a quartette of conquerors like Velasquez, who subjugated Cuba; Cörtez, who conquered Mexico; Balboa, the explorer of Darien, discoverer of the Pacific, and Pizarro, who stole the treasures of Peru?"

Santo Domingo, Porto Rico, Nicaragua, the Philippines, or Haiti, the welfare of the people has been her first concern; and while all colonial history shows that the tares of evil are never absent from the wheat of good, our nation's record of help given where most needed is one that well may challenge our admiration and quicken our patriotism.

The success in Santo Domingan customs administration and debt amortization led to another experiment along the same line a few years later. Nicaragua became revolution-torn, resulting in the overthrow of Zelaya and the conversion of the country from an unspeakable despotism into one of ruinous anarchy. Rival factions issued fiat money as freely as tap water flows from a spigot. The treasury was bankrupt, interest was in

default, foreign creditors were threatening through their governments to collect their debts with gunboats and cruisers, and there was not enough money to be had by the party in power even to pay salaries, much less soldiers' wages.

#### HELPING NICARAGUA ESCAPE THE THROES OF CHRONIC REVOLUTION

In its insecure tenure under these conditions, the party in power was only too willing to save itself, and incidentally the country, by appealing to the United States and by offering to make itself an instrumentality in American hands for the rejuvenation of the nation. The United States accepted the opportunity, and a treaty was entered into giving this country control of Nicaraguan finances and the right to intervene in the interest



OFFICERS OF THE HAITIAN ARMY ON THE STREETS OF PORT AU PRINCE, HAITI

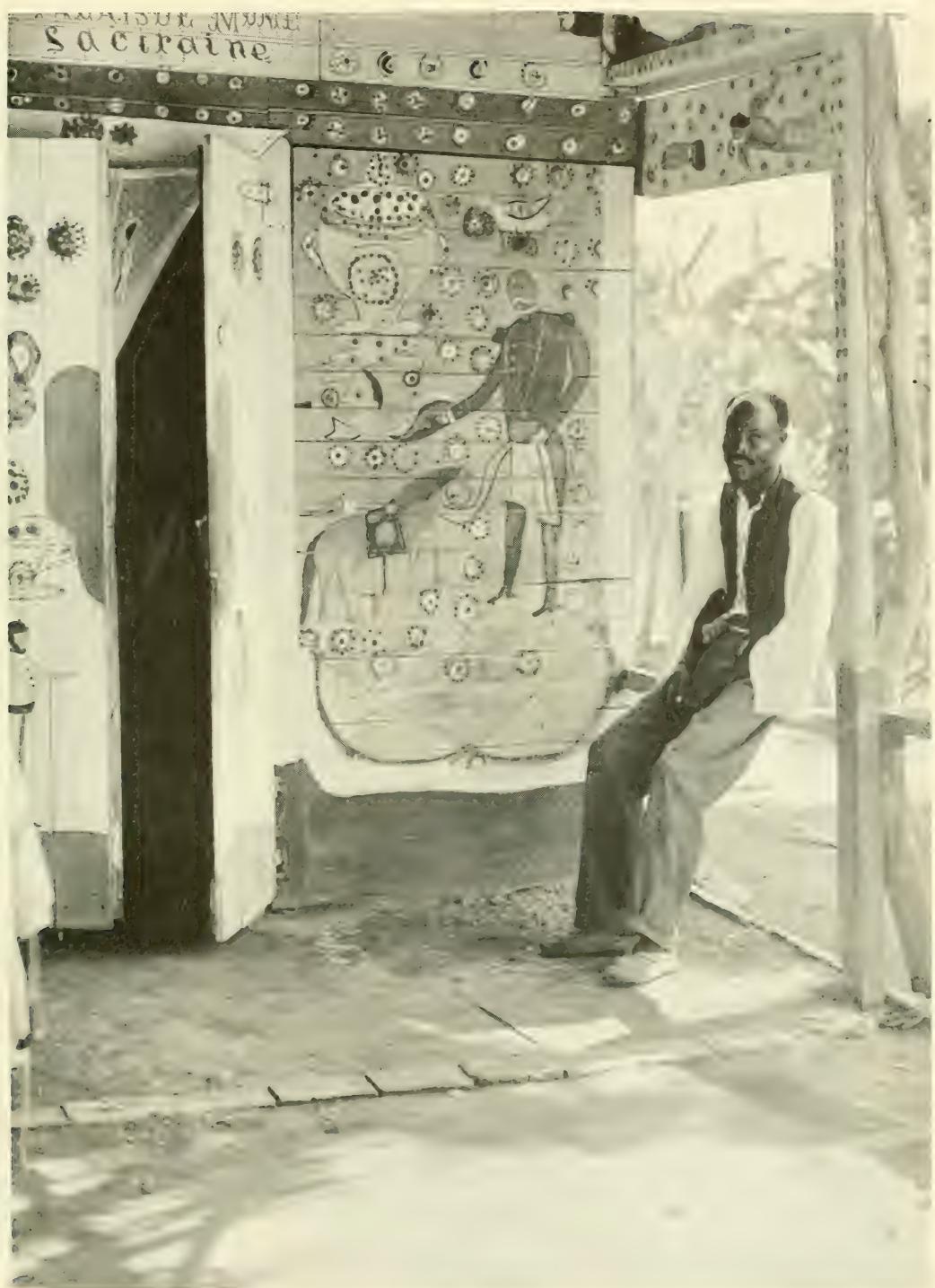
The army officers of Haiti were as fond of gold lace as a mountain girl of bright colors. Small wonder, then, that the regalia of a field marshal was everywhere in evidence. Times have changed, however, and now the American marine in quiet khaki takes the place of the Haitian fire-eater and his resplendent costumes.



Photographs by Mrs. C. R. Miller

HAITIAN SOLDIERS CARRYING COFFEE TO THE WHARF IN ORDER TO GET SOMETHING TO EAT

The pay of a Haitian soldier was small at best, nothing at worst, and at all times insufficient to keep the warrior fed decently. The days for loading coffee on departing ships were great days in Haiti. They were days when the army got a square meal.



THE ENTRANCE TO A SO-CALLED VAUDOUX TEMPLE: HAITI

Every authority on Haiti agrees that vaudoux, or voodoo, worship exists there, and that it is probably a survival of African fetichism. It is agreed by all authorities that now and then in the frenzy of the snake dances the worshipers refuse to be content with anything less than a sacrifice of the "goat without horns"—a living child. When one of the recent presidents of the Republic was assassinated, he carried the emblems of vaudouism next to his heart, showing that the cult has existed even in the highest places.



THE FISH MARKET: PORT AU PRINCE, HAITI

Situated in a region famous for its fine fish, among them the delectable and plentiful "red snapper," the Haitians eat quantities of salt-cod from Massachusetts waters; and the quality of this imported staple is such as would not find favor in American markets.



Photograph by Harriet Chalmers Adams

STREET SCENE: SANTO DOMINGO CITY, THE CAPITAL

"Still, in spite of it all, Santo Domingo remains one of the most fascinating and inspiring cities in these waters. . . . To walk through its highways and its alleys is to turn over the pages of an old missal illuminated with faded gilt and precious colors, the incense-perfumed leaves of which are patched with shreds of gutter journals and interbound with gaudy prints, ballad sheets, and play bills."—TREVES.

of peace during the life of the compact. Controlling the finances after the Santo Domingan plan, the United States arranged a new loan, most of it to be spent in refunding the debts of Nicaragua and the remainder in making certain internal improvements necessary to the progress of the country.

Here, again, the plan worked beautifully as long as hydra-headed revolution remained under cover. Trouble broke out again, however, and only the presence of American marines has served to keep the peace. The "outs" are bitterly against the rôle being played by the United States; but Nicaragua is being rejuvenated, in spite of every handicap that their state of mind entails.

This rejuvenation consists in the placing of the country on a stable financial basis, both with respect to foreign credit and internal investments, the lowering of the death rate through sanitary work, the extension of education through the opening of new schools, and the development of the country through financial arrangements for the construction of a railroad

from the west to the east coast, the dredging of the rivers, etc.

That this all amounts to armed intervention no one can deny. But both in Santo Domingo and Nicaragua the step was taken because necessity impelled it. Unless the United States was to be forced to abandon the Monroe Doctrine, it had either to deprive other countries of their remedies or else intervene itself.

But it was and is an intervention only to discharge our international duty to the countries of Europe under the Monroe Doctrine and to rescue the countries in which we intervened from this hopeless morass of perpetual bloodshed and their people from the quicksands of unending riot.

If conditions were bad in Santo Domingo when the United States undertook to help the country back to peace and prosperity, they were worse in Nicaragua when we assumed the rôle of guardian. But even in Nicaragua they were mild indeed as compared with those obtaining in Haiti when our country finally stepped in there.



Photograph by Mrs. C. R. Miller

A STREET IN JACMEL, HAITI

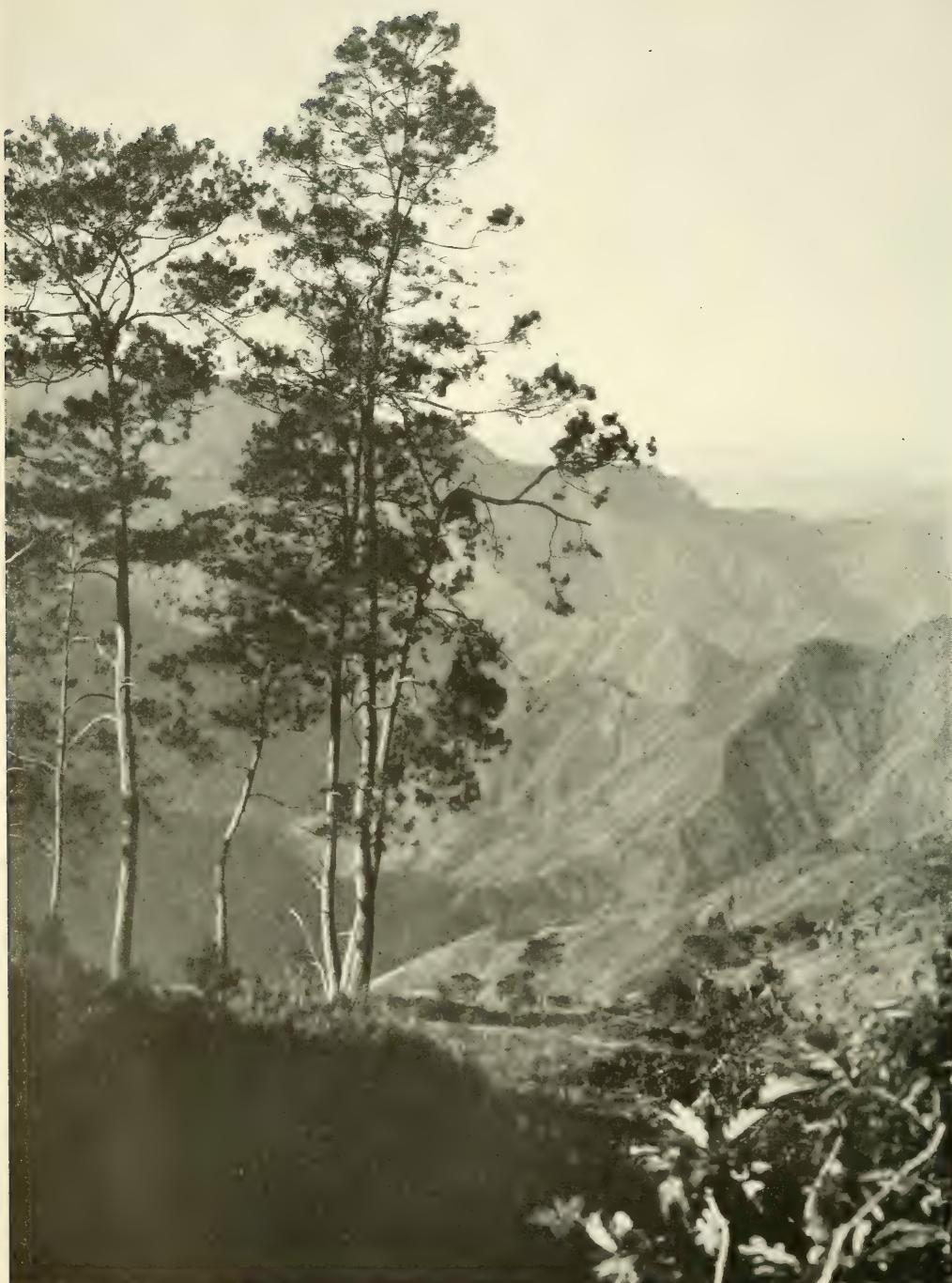
If the American protectorate over Haiti does nothing else but clean up its cities, an infinite service to an indifferent people will have been rendered

Photograph by Mrs. C. R. Miller

TYPICAL HAITIAN SOLDIERS

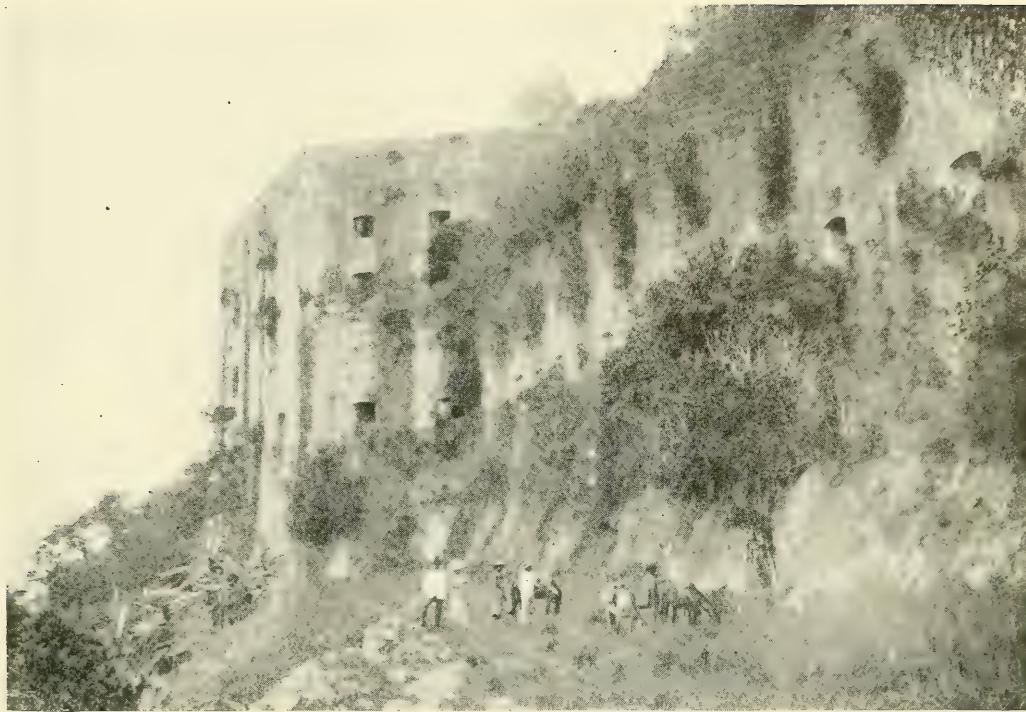
Peeling the Haitian armies in those days before the American "Big Brother" movement was not a difficult job. Garrison rations consisted of a sugar-cane stalk two or three feet long, and whatever else the soldier could beg, borrow, or steal!





AMONG THE MOUNTAINS OF THE BLACK REPUBLIC

While most of the territory of Haiti is covered with a jungle growth of bewildering density, there are many mountain sides which are brown and bare, the result of centuries of erosion.



Photograph by Harriet Chalmers Adams

#### THE STRONGHOLD OF CHRISTOPHE

"Two hours further back in the hills stands the stupendous castle erected by the King as a retreat when the French should come to avenge his murdered masters. They never came, having had enough of Haiti; but there Christophe immured himself behind walls twenty feet in thickness and a hundred feet in height, in the long galleries and on the parapets mounting more than three hundred cannon, most of which may be seen today. Here at last died the great black king, self-slaughtered by a silver bullet driven into his brain."—OBER.

#### CONDITIONS UNBELIEVABLY BAD

Conditions always have been unbelievably bad in that Republic. To begin with, it is a place where black rules white, where the Caucasian is referred to as the "blanc," just as we refer to the "negro." Froude, whose verdict agrees with those of Sir Frederick Treves, who lived in the island; Sir Spencer St. John, who was for 15 years British Minister there, and F. A. Ober, who spent the best part of two decades studying the islands of the Caribbean, says of the Haitians: "They speak French still; they are nominally Catholics still; and the tags and rags of the gold lace of French civilization continue to cling about their institutions. But in the heart of them has revived the old idolatry of the Gold Coast, and in the villages of the interior, where they are out of sight and can follow their instincts, they sacrifice children in the serpent's

honor after the manner of their forefathers."

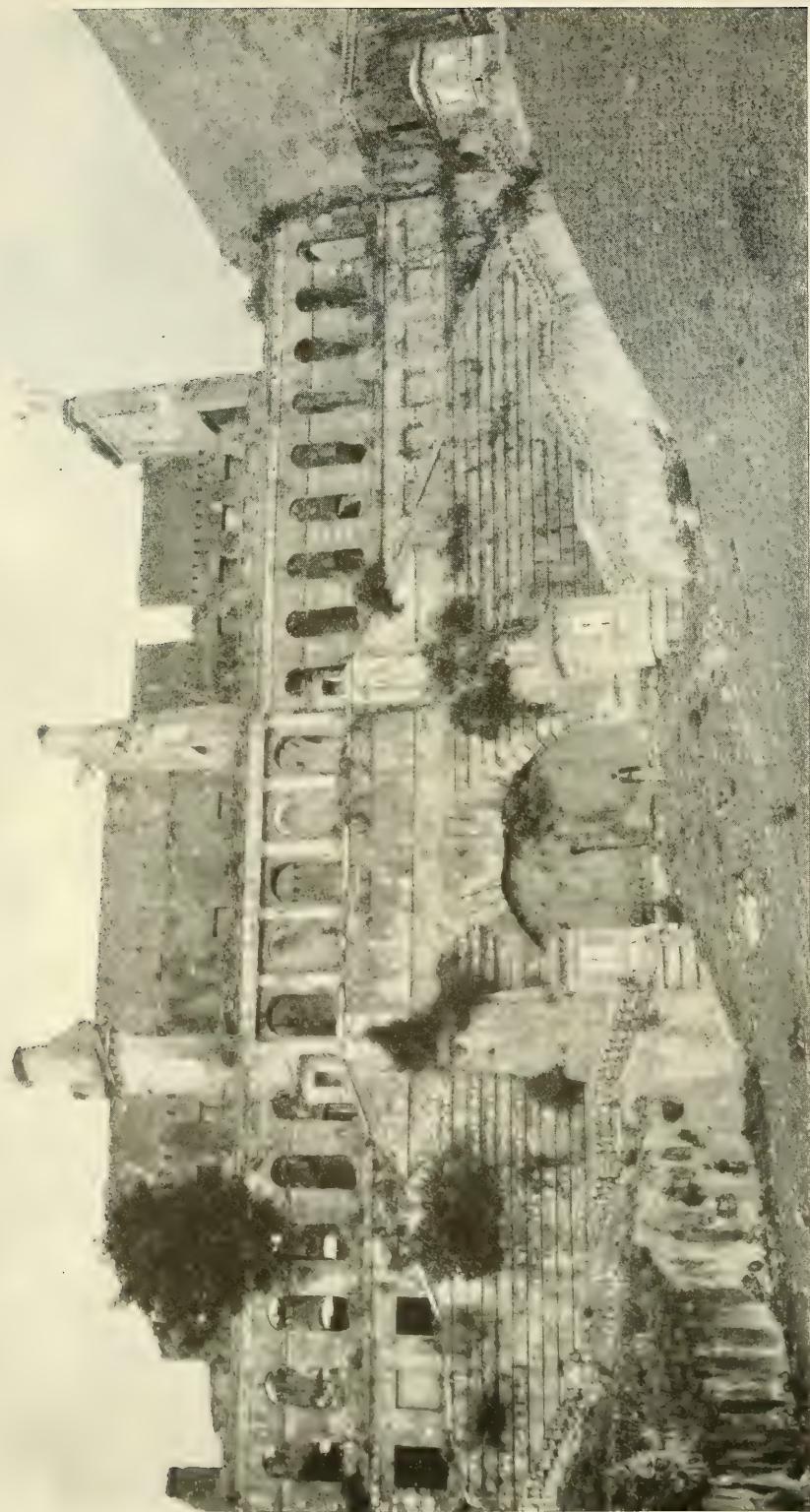
Sir Spencer St. John adds to this the statement: "I have traveled in almost every quarter of the globe, and I may say that, taken as a whole, there is no finer island than that of Santo Domingo—Haiti. No country possesses greater capabilities, or a better geographical position, more variety of soil, of climate, and of production, with magnificent scenery of every description, and hillsides where the pleasantest of health resorts might be established, and yet it is now the country to be most avoided, ruined as it is by a succession of self-seeking politicians, without honesty or patriotism, content to let the people sink to the condition of an African tribe, that their own selfish passions may be gratified."

F. A. Ober, commenting upon the story of the country written by Sir Spencer,

Photograph by Harriet Chalmers Adams

THE PALACE OF SANS SOUCI, BUILT BY CHRISTOPHE

This remarkable edifice is situated in the hills above the level vale Milot, with a background of forest and a foreground sprinkled with palms and the huts of simple cultivators. Dilapidated ruins and a tangle of tropical trees are the rueful remnants of the glory that was once the Palace Without Care and the gardens of delight of the King of Slaves—Christophe.



Painted by Harriet Chalmers Adams

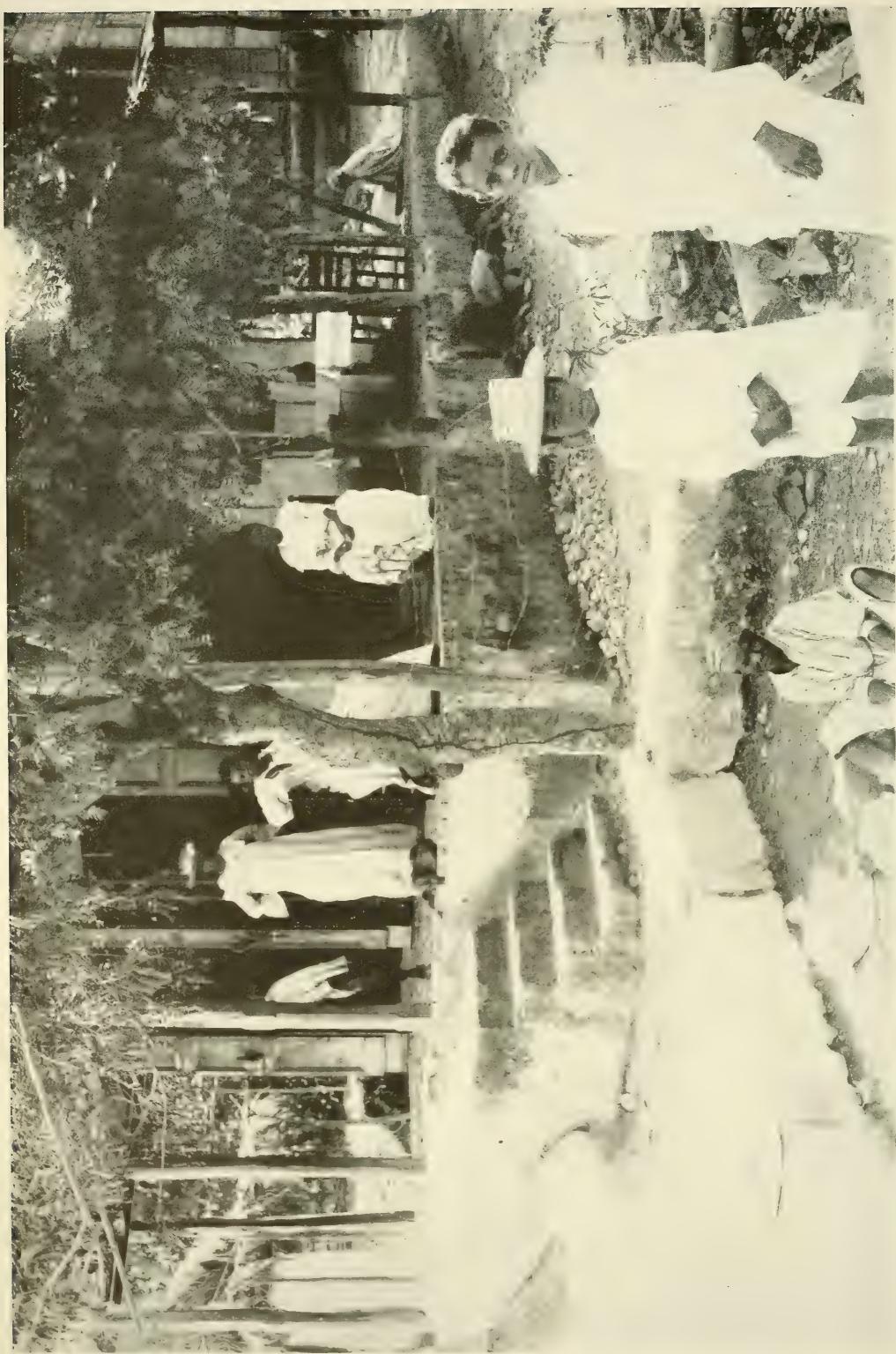
SOME OF THE GENERALS IN THE HAITIAN ARMY BEFORE THE AMERICAN OCCUPATION

When one of our diplomatic representatives visited Haiti a few years ago, President Laveaux told him he was reducing the size of his army, and that the generals mustered out of service were put to breaking rock on the street. At one time there were more officers than men in the Haitian army, according to apparently authentic statements.



The Haitians live in a land of almost inexampled fertility. Drought and frost are both unknown. The soil is wonderfully fertile and nothing but sheer lack of initiative and industry keeps them from becoming rich.

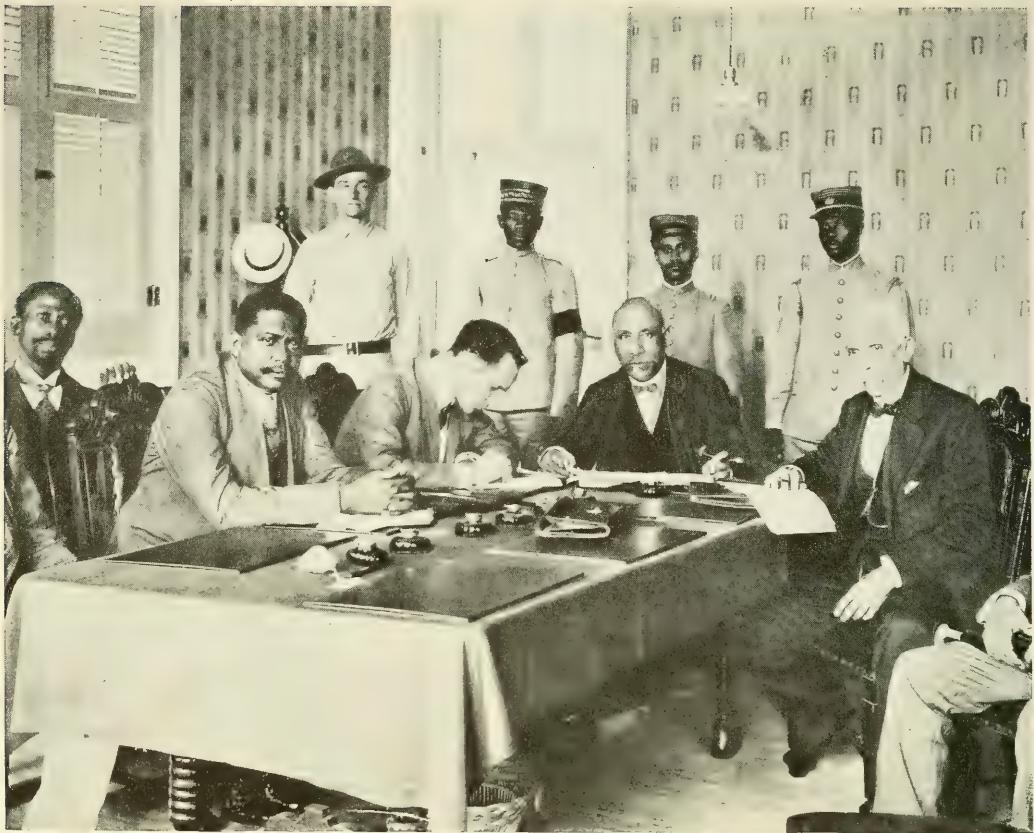
A HAITIAN COUNTRY HOME OF THE BETTER CLASS



A TYPICAL COUNTRY ROAD IN HAITI  
It is over such roads as these that Haiti sends its products to market. Compared with the roads of Jamaica, Cuba, or Porto Rico, they furnish eloquent testimony as to the economic backwardness of this land of potential riches.

Photograph by Mrs. C. R. Miller





THE PRESIDENT AND STAFF, PORT AU PRINCE, HAITI

The marine in the background tells the story of the presence of the American force in Haiti. The Haitian soldiers have been organized into a constabulary under the direction of American marines, and many of the latter have been promoted from the ranks and are now officers.

tells us "he scathingly arraigns the Haitians and gives details of the revolting practices of the Vaudoux and the cannibals of the country. There is too deep a belief in the almost preternatural power of the *papa-lois* and *maman-lois* (high priest and priestess of the Vaudoux), and the dread of the terrible *loup-garou*—the human hyena that kidnaps children, buries them alive, and then resurrects them for the sacrifices—is too pervasive and real to permit of denial by those who have to live in Haiti and endure the evils they cannot remedy."\*

It was Dessalines who led the forces which defeated the French, massacred their women and children, and set up an

\*See also "Haiti, a Degenerating Island," by Rear Admiral Colby M. Chester, U. S. N., in NATIONAL GEOGRAPHIC MAGAZINE, March, 1908.

independent government. From that time, 1804, to the present they have had 28 rulers, including a king and an emperor. Of these only 4 completed their terms of office, 2 died in power, 5 were assassinated, 10 were exiled, 1 committed suicide, and 1 abdicated under compulsion.

Of Christophe, the second ruler, Sir Frederick Treves gives us this glimpse: "To Dessalines succeeded Christophe, one of the most ludicrous figures in modern history. He was a mulatto slave, who took upon himself the title of Henri I. He created a copious black aristocracy, whereby the water-side porter became a duke, and the footman a marquis. He drew up a code of laws, the Code Henri, in imitation of the Code Napoleon. His court was as gorgeous as the court in an opera bouffe. More than that, he built



Photograph by Mrs. C. R. Miller

#### STREET-CAR SERVICE IN PORT AU PRINCE, HAITI

The Haitian street railroad makes one think of the old-time elevated train service in New York. The engines are rusty, leaky, and carry smoke-stacks seemingly huge enough for a trans-Atlantic liner.

the palace of Sâns Souci, an unbelievable edifice worthy of the 'Arabian Nights.' The ruins of this fantastic edifice still crown certain gracious heights near Cape Haitien. Henri I did one wise thing: he shot himself after a burlesque reign of some thirteen years." He might have added that the fastidious Christophe used a silver bullet; lead was too plebeian for his brain.

#### THE DUKE OF LIMONADE

Another ruler was Soulouque, an illiterate and superstitious negro, who, under title of "Emperor Faustin I," established a "nobility," among the recipients of his honors being His Grace the Duke of Limonade and His Highness Prince Bobo.

In 1912, when the Knox Mission to Latin America visited Port au Prince, President Laconte was in power. The city then thoroughly fitted Ober's description of it when he wrote: "As to Port au Prince, I can bear testimony respecting its utter filthiness, and agree with a recent resident there that it may bear away the palm of being the most foul-smelling and

consequently fever-stricken city in the world. Every one throws his refuse before his door, so that the heaps of manure and every species of rubbish incumber the way. The gutters are open, pools of stagnant water obstruct the street everywhere, and receive constant accession from the inhabitants using them as cess-pools and sewers."

But conditions were good then to what they became later. Laconte had set some of his generals to breaking stone for macadamizing the streets, and white residents said that the town was cleaner that year than it had been in their memory.

#### A REIGN OF TERROR

But Laconte did not rule long. He was assassinated, the palace was burned down, and there was inaugurated a carnival of crime, and an orgy of revolution such as history perhaps never before was called upon to record. Indeed, the four years that began with the assassination of Laconte and ended with the surrender of the last rebels to United States authority were a nightmare of terror.

In one case the body of a dead ruler



HAITIAN SCHOOL CHILDREN OF THE BETTER CLASS

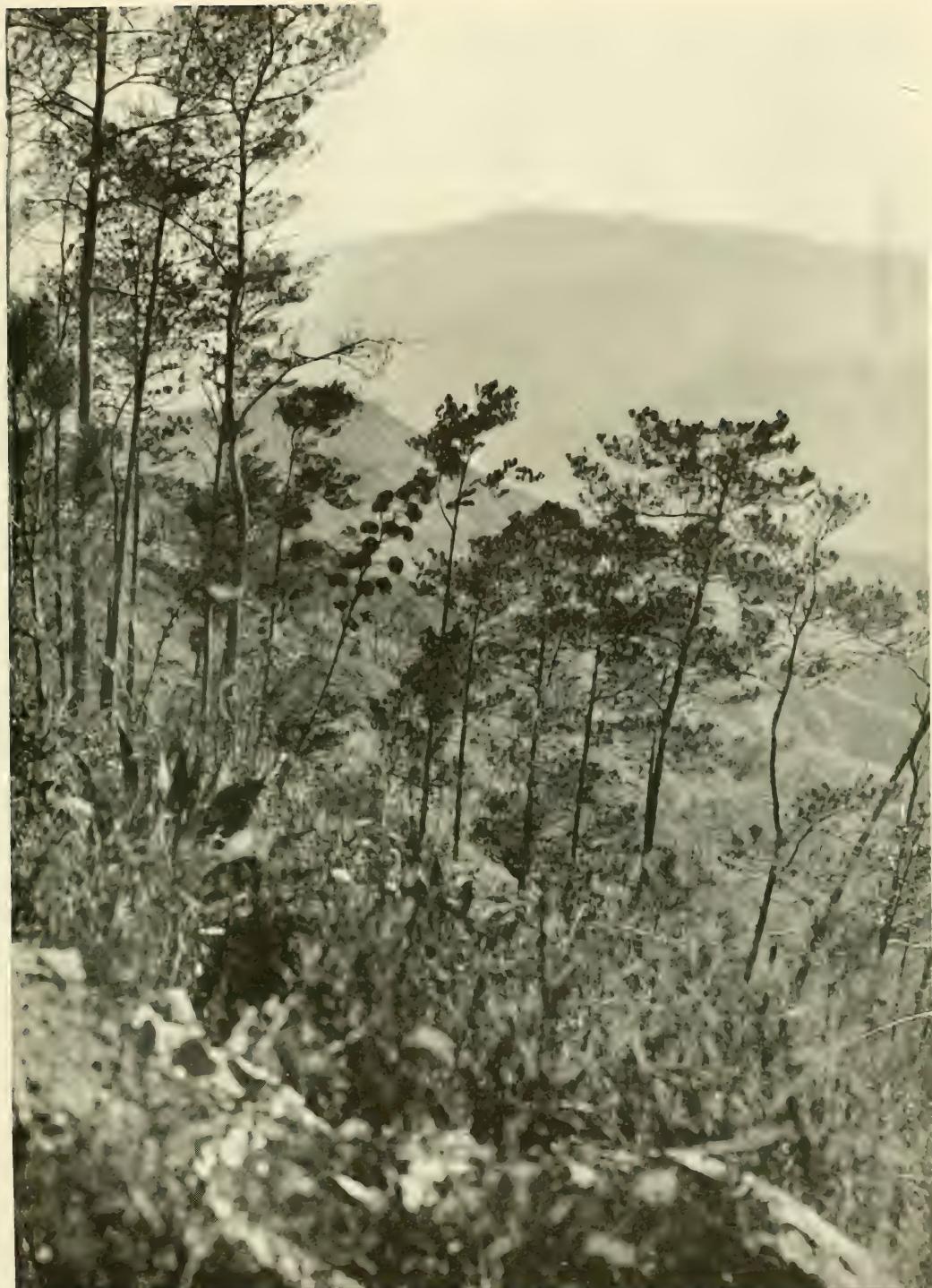
Although Haiti has been the victim of very bad government, at the same time it is probable that more attention has been paid to general education there than in the majority of tropical American countries.



Photographs by Mrs. C. R. Miller

HOME LIFE IN THE COUNTRY: HAITI

The inhabitants of the country districts of Haiti are warm-hearted, polite, good-natured, and usually care less for the morrow than for the pleasures of the moment



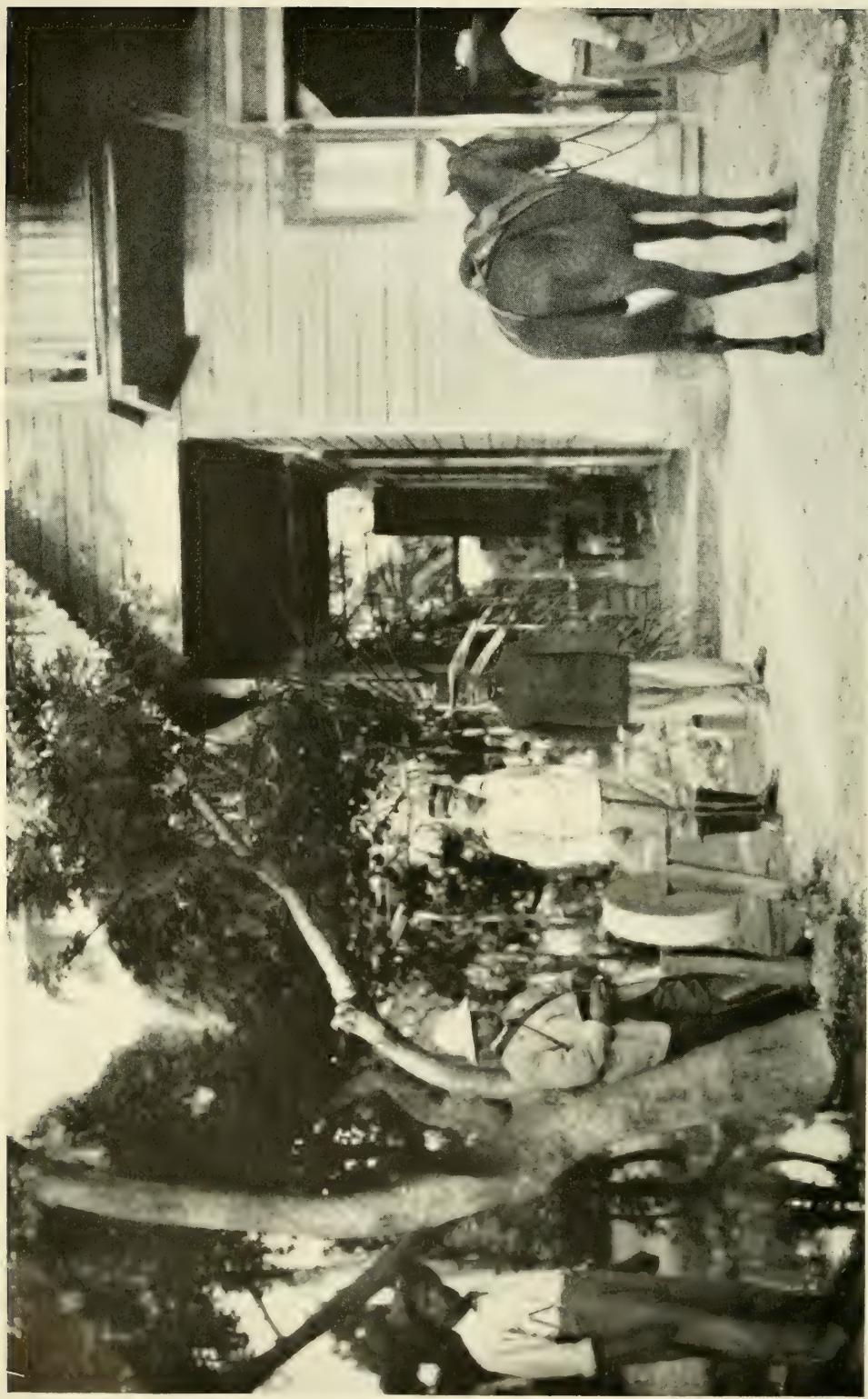
SADDLE MOUNTAIN, NEARLY 9,000 FEET HIGH, THE HIGHEST PEAK IN HAITI

The King of England once asked one of his admirals who had visited the West Indies about the appearance of the Island of Haiti. The old sea dog took up a piece of paper, crumpled it in his hand, and laid it on the table. "That, your majesty," he declared, "is a fair illustration of Haiti." No island of equal area in the New World, perhaps, has as many or as high mountains as Haiti.

Photograph by Harriet Chalmers Adams

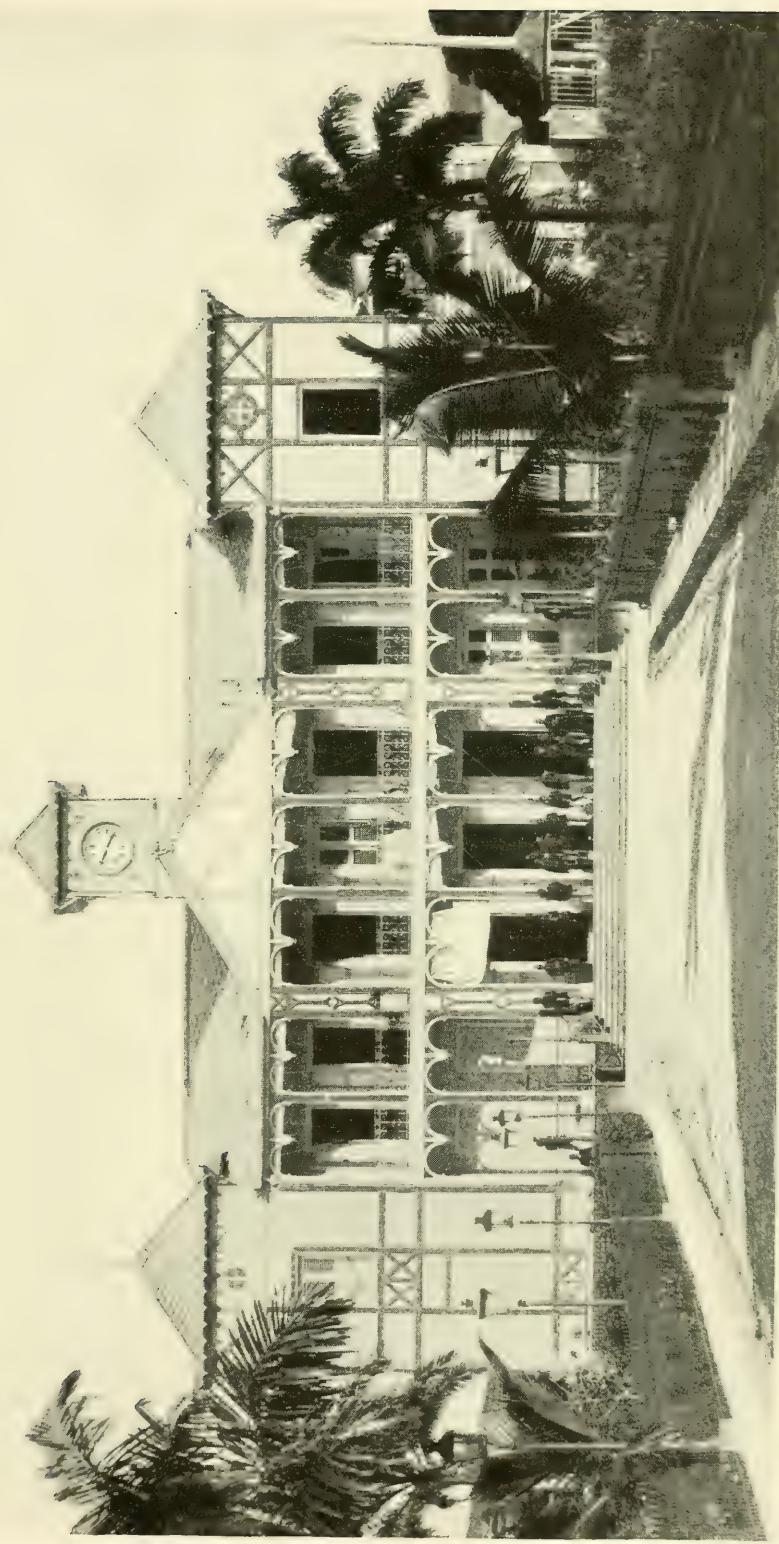
HOUSE OF A HAITIAN SENATOR

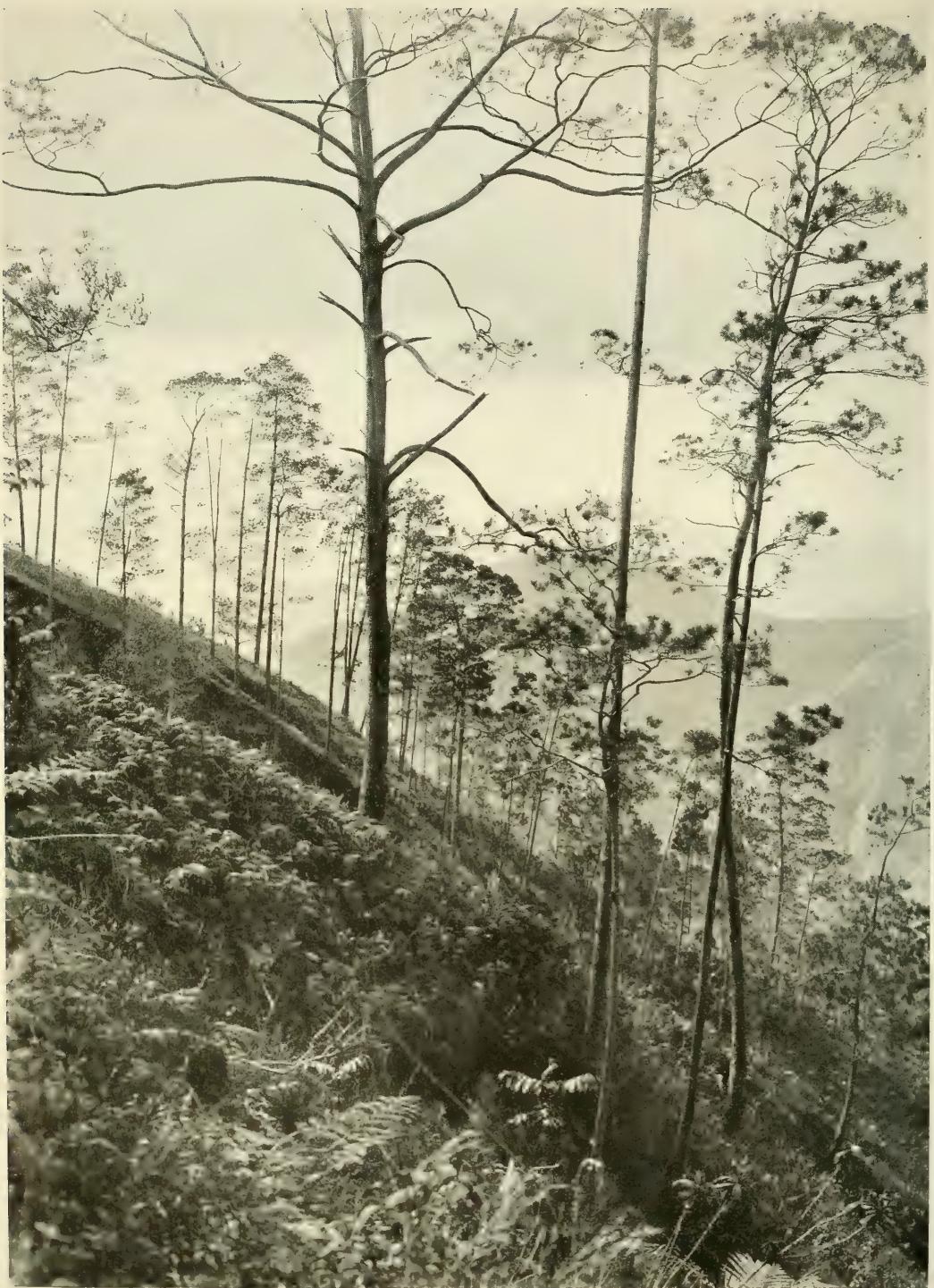
Haiti is not remarkable for its beautiful residential architecture. Foreigners have had few property-owning rights, and the natives have not been given to the erection of costly homes.



THE FORMER NATIONAL PALACE: PORT AU PRINCE, HAITI

This was the Haitian White House until 1912, when President Laconte was assassinated and the building burned to the ground to cover the crime. It was situated in the Camp de Mars, which Ober well describes as resembling a vacant city lot rather than a public parade ground, being totally devoid of vegetation and encumbered with all sorts of rubbish peculiar to the vacant lot, including the goat and the tomato can.





#### MOUNTAINS OF HAITI

When Nature was distributing her gifts to the islands of the earth Haiti seemed a favorite child, for she bestowed upon it a fertility of soil, an abundance of rainfall, and a wealth of mineral resources that left little to be desired.



Photograph by Mrs. C. R. Miller

A COUNTRY TAILOR AT WORK IN HAITI

There are no "sweat-shops" in Haiti and tailoring is not a very exacting art. The excessively hot climate calls for light-weight clothing, and this is usually imported ready-made from Europe.



Photograph by Harriet Chalmers Adams

THE SALT SELLER: CAPE HAITIEN, HAITI



A TYPICAL MARKET-DAY SCENE: PORT AU PRINCE, HAITI

Nearly all the produce for the feeding of the population of Port au Prince, a city of some 60,000 people, is brought in on the backs of donkeys. The public squares are converted into open-air market-places, and here the buying and selling goes on from early morning until 4 or 5 o'clock in the afternoon, when the caravans begin their toilsome journey homeward.

was lying in state in the cathedral, when a military company was drawn up and commanded to fire into the coffin, which they did with riddling effect. In still another case 110 leading citizens were shot and a reign of terror surpassing even past performances was inaugurated.

This in its turn resulted in the storming of the French legation, where President Guillaume Sam, who had ordered the execution of these people, had taken refuge. He was dragged out; his body was drawn and quartered and dragged through the streets.

Before this latest outbreak, which was in July, 1915, there had been numerous threats of intervention, Germany and France at one time acting jointly in their representations. But this outbreak, which had followed repeated efforts on the part of the Washington Government to find a remedy short of intervention, was the straw that broke the patience of the United States and led it, both for its own safety and the protection of the Haitian people and the foreigners domiciled there, to intervene.

#### THE NEW ORDER IN HAITI

A new President, Tude Dartiguenave, was elected with the approval of the American authorities, and the United States stands behind his government. In return Haiti has entered into a treaty with the United States, which has been ratified by both countries, embodying the principles of the Dominican and Nicaraguan receiverships, together with some new features.

By this treaty the United States practically underwrites a loan of sufficient amount to settle all the legitimate debts of the country and to finance the beginning of its development, opening up its



STATUE OF DESSALINES, ERECTED 1904

"Then came Dessalines, who, when he had cleared the island of the French, caused himself to be crowned as Emperor of Haiti under the title of Jacques I. His reign, marked as it was by extraordinary debaucheries, was very short, for after he had been two years upon the throne he was happily assassinated."—SIR FREDERICK TREVES.

mines, putting its agriculture on a solid basis, and otherwise preparing to make it the region of plenty that nature has equipped it to be.

But the treaty goes further than those with Santo Domingo and Nicaragua. It provides for an American-officered constabulary which shall have control of the peace of the country and the regulation of all matters pertaining to arms and ammunition. Furthermore, it provides for the appointment of a sanitary engineer whose recommendations, as ap-



Photograph by Mrs. C. R. Miller

#### THE TRIUMPHAL ARCHES OF AUX CAYES, HAITI

The woe-begone donkey in the foreground is a picture perhaps more typical of Haiti as it is than any other that can be imagined. One may see processions which include hundreds of these life-weary creatures traveling to the Haitian markets in the morning and returning with exchanged products in the evening, and frequently carrying women seemingly heavier than themselves.



#### IN THE CEMETERY : PORT AU PRINCE, HAITI

The Haitian negro is true to type in his love of ostentation and display. The funerals are nearly always elaborate, and the cemeteries are most ornate spots.



VIEW OF THE GRAND RUE: PORT AU PRINCE, HAITI

The character of the architecture of the capital city is well shown in this picture. The rickety boardwalks spanning the gutters, even at the post-office, which is the building in the center with the two flagstaffs, show how primitive conditions really are.



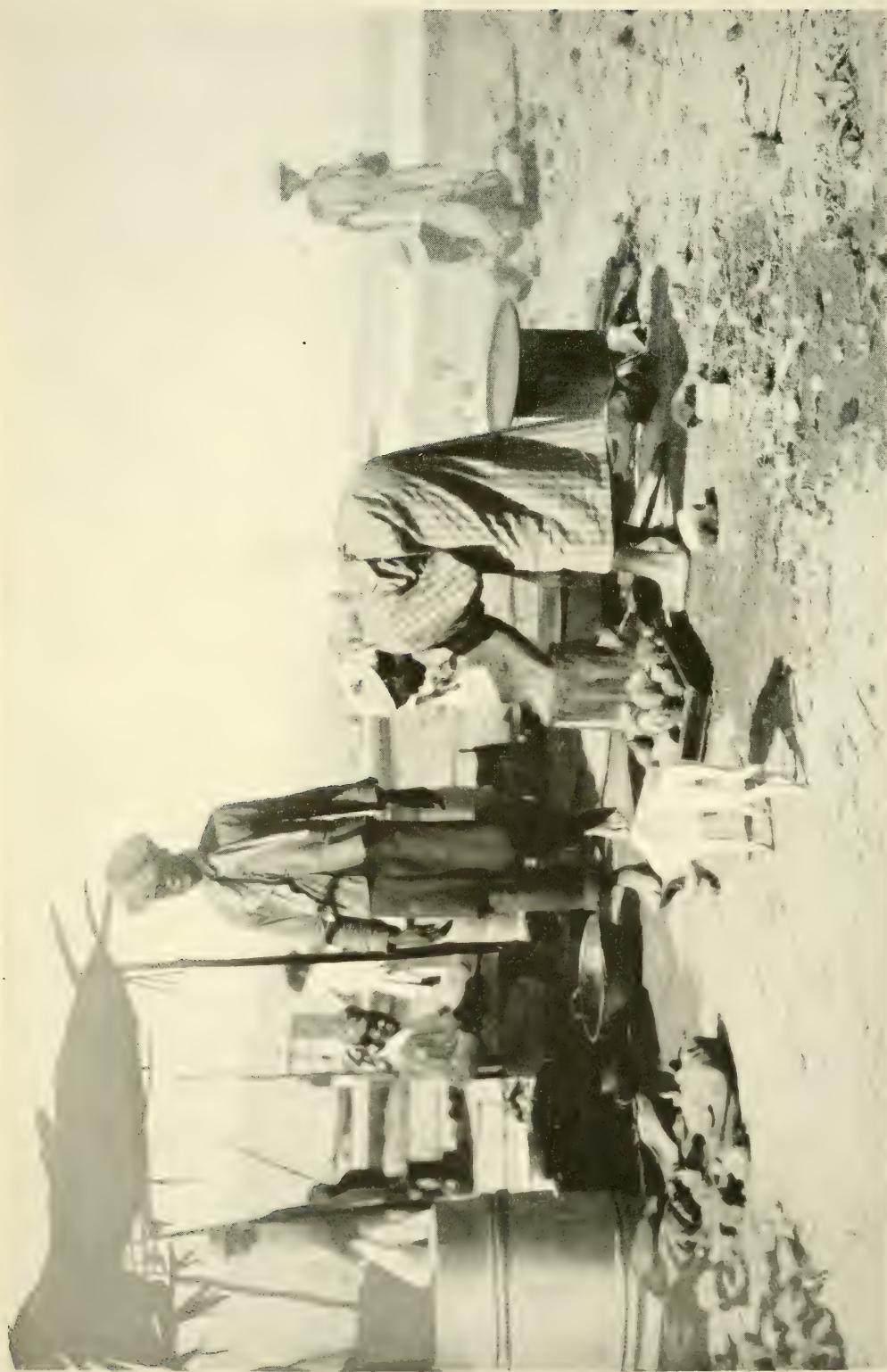
A VIEW OF MILOT, CAPÉ HAÏTIEN, HAITI

It was off this coast that the flagship of Columbus was wrecked, and here he left most of his men when he returned to Spain for aid. Upon his return to the settlement, which he called "La Navidad," he found the whole party dead, including an Englishman, named Allard, and an Irishman who was entered on the *Santa María's* books as William of Galway.

Photograph by Mrs. C. R. Miller

AN OUTDOOR KITCHEN IN HAITI

The simple life and life in the open are lived in Haiti; but indifference to dirt and a disregard of the most fundamental laws of sanitation result in a high death rate despite all



proved by the United States, are to be carried out in the cleaning up of the cities of the Republic.

This new departure probably will insure peace, quiet, honest administration; and if it does, Haiti will certainly go forward as few small countries ever have. Its mountains are filled with mineral wealth; its valleys are so fertile that the slightest attention can make them produce like an Eden; its forests contain vast stores of precious hardwoods and dyewoods. It is, indeed, a region where nature has lavished its richest gifts, and where a simple population, under a firm yet gentle, beneficent guidance, may realize the blessings of tranquil abundance.

#### SIZE AND APPEARANCE OF THE ISLAND

Some one has roughly compared the Island of Haiti to a huge turtle swimming eastward on the line between the Atlantic Ocean and the Caribbean Sea. The head and the forward three-fourths of the body are occupied by the Dominican Republic, while the hind legs and the other fourth of the body are under the sovereignty of the Republic of Haiti.

It contains approximately 28,000 square miles of territory, being not quite as large as the State of South Carolina. The part occupied by Santo Domingo is a little smaller than the combined areas of Vermont and New Hampshire, while that occupied by the Republic of Haiti is not quite so large as the State of Maryland.

Although the Republic of Santo Domingo has nearly twice as much territory as that of Haiti, its population is less than one-third as large as that of the black republic. This has resulted in bitter feeling between the two nations—a feeling that is a century old. The Haitians have repeatedly tried to get a slice of Dominican territory, now by open war, and now by rival boundary claims; but to date they have not succeeded, and it is to be presumed that the influence of the United States during its protectorate will be against any reopening of this issue.

The island of Haiti is one of the four of the Greater Antilles and the second in area and population. It is the only island in the West Indies besides Cuba that is independent. It got its name from a Carib word meaning "mountainous" or "high land." Columbus, who established the first settlement in the New World on its northern coast, renamed the island, calling it Hispaniola.

It is about 400 miles long, varying in width from 24 to 165 miles. It is covered with densely wooded mountains, with a large number of beautiful and fertile valleys between them. Loma Tina, which towers over 10,000 feet above the sea, is not only the roof of the island, but of all the West Indies. The average height of the main mountain range is about 7,000 feet. There are many rivers, but they are usually short and swift, the alluvial plain being very narrow.

## A LITTLE JOURNEY IN HONDURAS

By F. J. YOUNGBLOOD

HAVING occasion a short time ago to travel through Honduras, I endeavored, before leaving Los Angeles, to gain some idea of how the trip should be undertaken, but found I could obtain very little information about the country and practically no details in regard to climate, trails, necessary equipment, etc. What few bits of stray information I did get proved, as a rule, entirely incorrect, and it is possible that what I learned by experience may be of

some slight assistance in saving another traveler both trouble and money at some future time. And it will be found that the lack of information in traveling in Central America is a greater handicap than almost anywhere else.

There are two chief arteries of travel in Honduras—one from Amapala, on the south coast, to Tegucigalpa, the capital, and the other from Puerto Cortés, on the north coast, to the same place.

Starting from the United States, it will



VIEW OF COMAYAGUELA, WHICH IS PRACTICALLY A PART OF TEGUCIGALPA,  
HONDURAS

This picture was taken after the rebuilding of the bridge shown in the illustration on page 182



Photographs by F. J. Youngblood

AN EXAMPLE OF NATIVE HOUSES OF THE BETTER SORT

It is in such shelters as this that the traveler must spend most of his nights on the trail from the ports of Amapala and Puerto Cortés to the capital

cost practically the same amount to reach Tegucigalpa by either port of entry; but the time taken and the inconveniences met with on the two roads are vastly different. To reach Amapala, a steamer may be taken at San Francisco. The voyage, as a rule, occupies 22 days, not because this length of time is necessary to cover the distance, but because the boats are slow, carry cargo, and stop for a few hours, or it may be for a few days, at ports in Mexico, Guatemala, and Salvador. For the traveler who is in no hurry, this voyage is extremely interesting. Our ship touched at Mazatlan, Acapulco, and Salina Cruz, in Mexico; Ocos, Champerico, and San José, in Guatemala; Acajutla, La Libertad, and La Union, in Salvador. We anchored for three days off San José, and many of the passengers took advantage of the opportunity to visit Guatemala City, almost a day's journey inland.

#### A PICTURE OF AMAPALA

On arriving at Amapala, I received courteous treatment everywhere; in many cases the natives of the country must have gone to considerable trouble on my account, and on one occasion the foreman of a hacienda where I had been stopping swam his horse across a river seven times to assist a friend and myself with our baggage; yet we were "Gringos," whom he would probably never see again. In Amapala arrangements must be made to continue the journey to Tegucigalpa by mules. There are only a few miles of railroad in Honduras, on the north coast, and as transportation is primitive it is best to understand that in crossing or going through Honduras conveniences must be forgotten; there are no particular hardships to be borne or dangers to be faced, but the creature comforts of home are missing.

From Amapala a launch is taken to San Lorenzo, where the necessary mules should be arranged for in advance, since they have to come from Perspire, a town some miles away. If a light pack is all the traveler has, it can be taken with him on a mule; otherwise it is better and cheaper to send heavy baggage forward by ox-cart, and, naturally, this will take

considerably longer. Tegucigalpa should be reached in three days, there being a fairly good road all the way. As it is a constructed road and not a trail, 25 days from San Francisco may be considered the length of time required by this route.

#### A PUZZLING FINANCIAL SYSTEM

The monetary system of the country should be studied immediately upon landing. The standard is silver and the rate of exchange is two and one-half to one; in other words, the Honduran dollar (peso or sol) is worth 40 cents gold. Funds should be taken from the States in gold coin only; this will pass everywhere and is eagerly sought for by the merchants. The paper money of the country is as good as the silver, but away from the large towns and cities it is hard to get small change for a bill; hence it is advisable always to have a good supply of silver to pay the charges met with here and there on the road.

A mozo or servant should also be hired with the mules. He is an absolute necessity to the stranger and is usually sent to you by the owner from whom you have hired the animals. The mozo practically arranges your day's journey; he packs and saddles your mules, shows the way, does any odd thing you wish while on the road, and may be depended on always to get you a house for the night, for, except in Amapala, Tegucigalpa, Puerto Cortés, or the largest places, so-called hotels cannot be found.

#### HOSPITALITY AND CURIOSITY

As a rule, the night will be spent in a native house, sometimes little more than a hut, built of mud, thatched or roofed with tiles. One is apparently always welcome to the best the house affords; but a hammock as part of the traveler's outfit is a necessity, for the beds of stretched bull-hide or canvas are usually fully occupied, if not by those at whose home you are a guest, then by other residents greatly to be feared.

Everybody sleeps in one room—men, women, and children together. Your hosts are curious, but politely so, watching you undress and get into your hammock, with a calm stare that must not be



Photograph by F. J. Youngblood

THE SEVENTH AGE OF WOMAN IN HONDURAS

On the visage of this centenarian the pencils of Poverty and Privation, as well as that of Time, have drawn countless indelible lines of suffering and sorrow. The crutches which guide her tottering steps are crude forked sticks which are a torture as well as an aid. At her side are the sturdy children of the third or fourth generation. And here, as in every other corner of the globe, the doll is the girl's dearest treasure.



Photograph by F. J. Youngblood

#### IN THE MARKET-PLACE: TEGUCIGALPA, HONDURAS

Burdened with one of the heaviest per capita debts in the world, Honduran people still manage to eke out a living. If the United States owed as much in proportion to its population, we would have a national debt of twenty-two billion dollars.

considered impertinent, for a white man is not an every-day visitor. I, myself, rarely undressed completely. Sometimes I would only take off hat, coat, and boots; sometimes only my hat, for sleeping in one's clothes becomes second nature after awhile, and bathing and changes of linen can be better indulged in along the roadside.

#### THE CITY OF TEGUCIGALPA

Arrived in Tegucigalpa, one discovers that it is not necessary to carry a large outfit from the States. The city, with the adjacent town of Comayaguela, boasts a population of from 12,000 to 15,000 and has many good stores where almost all the ordinary things required on such a trip can be purchased.

Were I to cover the ground again, my pack would be a very light one, probably weighing less than 100 pounds, and would contain several suits of khaki, some light flannel underclothes and outing shirts, two or three pairs of high boots, rubber boots, a rubber riding coat, and a few personal necessities.

If a long trip into the interior from

Tegucigalpa is intended, a supply of canned food should be obtained in the city; but along a regular trail tortillas, beans, rice, some sort of meat, coffee, and a few other things can usually be obtained at small cost. The cooking is fairly good, though monotonous, and the extras carried in the way of sardines, compressed soups, bread, or biscuits in tins, etc., is merely according to individual taste, although bacon, tea, flour, and the other foods will always come in handy, as the natives are not hearty eaters and their supply is sometimes limited. Everything mentioned can be purchased in the city or from the mining company store, which has an office there.

#### A SHORTER ROUTE

But continuing the comparison of the two ways of getting into the country, we have already noted that approximately 25 days are required via Amapala. Puerto Cortés may be reached by any one of several fruit-line steamers running from New Orleans or Mobile. The mail boats from New Orleans take between five and

Photograph by F. J. Youngblood

A VIEW OF TEGUCIGALPA, HONDURAS

This picture shows the seething waters of a mountain torrent in freshet season just after a section of the principal highway bridge of the capital city has been swept away. Such a mishap is a calamity in Tegucigalpa, for, unlike any other capital city in North or South America, its only means of communication with the seaboard is over wagon roads (see page 178).



Photograph by F. J. Youngblood

A TYPICAL, NATIVE FAMILY GROUP OF THE INTERIOR

There is no race suicide in Honduras, but infant mortality is pitifully high. The people are hospitable, and are ready to share bed and board—the bed often the bare floor, and board little more than tortillas, frijoles, and coffee—with the wayfaring traveler.



six days to make the trip, as they call at various ports on the coast; the Mobile boats make the run in three and four days.

From Puerto Cortés a railroad runs to La Pimienta, which means another day, although the distance is less than 60 miles. There begins a five or six days' ride on mules over fairly hard trails, which are very bad in spots.

Honduras is a country of hills and valleys; of rain and sunshine; of large and small rivers. A half dozen rivers may be crossed in one day, and, while they are usually narrow and shallow, a few hours' rain will turn them into roaring torrents, absolutely impassable. I have been held up for five days by a stream that when I first crossed it was less than three feet in depth. When I wanted to cross the second time, a few weeks later, it had been raining, and even the natives remained on whichever side they chanced to be until it went down again. But, given favorable conditions, the Puerto Cortés journey may be said to be only one-half as long in time taken as the route via Amapala.

#### GENERAL CLIMATIC CONDITIONS

Honduras is not an unhealthful country, but a small medicine case of standard remedies should be taken. Quinine is the most useful of all. Along the rivers and on some parts of the coast fevers are to be expected at times, but are not so frequent in the interior at altitudes of 1,000 feet or more.

On the south slope of the country the rainy season extends from about the last of June to the first of November; on the north slope it begins earlier and lasts longer.

In time the country will be far better known than it at present seems to be, for it undoubtedly holds great mineral wealth among its natural resources.

There are no flour mills, yet three crops of wheat can be raised a year; there are no sugar refineries, yet cane grows luxuriantly; there is no cotton industry, yet cotton will bloom all the year round; bananas are raised on the north coast, yet they will grow as well in the interior, but

there is no transportation for them or for anything else.

Honduras is said to be the most backward of all the Central American republics, and she will remain so until railroads cross the country and the government becomes stable. Then there will be great opportunities here for many, and Americans and American capital will always be welcome.

The country is just a little larger than the State of Pennsylvania, yet it has a population of only a little more than half a million. It has the largest per capita debt of any country on the face of the globe except New Zealand—at least it had before the present European war upset all statistical conditions. It owes \$220 per capita. Most of this debt was created by loan-shark methods, however, for Honduras would agree to pay \$10 to get one—or some such ridiculous proportion.

The name of the country is said to be derived from a Spanish term meaning "depth," the early explorers having found difficulty in striking water shallow enough for anchorage. They were so delighted when they reached the Nicaraguan shore near by that they called the headland "Cape Gracias a Dios" (Cape Thanks to God), a name it still holds.

Honduras, Salvador, and Nicaragua all border on Fonseca Bay, one of the finest harbors on the west coast of either America. Guatemala and Salvador have also built a link of railroad between Zacapa and La Union, which makes another transcontinental railway. It is the conflict of the interests of these States that produced the protests of Central America against the treaty between Nicaragua and the United States, involving canal and naval rights in that bay.

It may be added that a knowledge of Spanish, attending strictly to one's own business, and a realization that the natives are far from being savages will help a person get through the country better than a revolver, although the latter may be carried for a case of extreme emergency. However, the ability to speak a little of the language is the most important thing of all.

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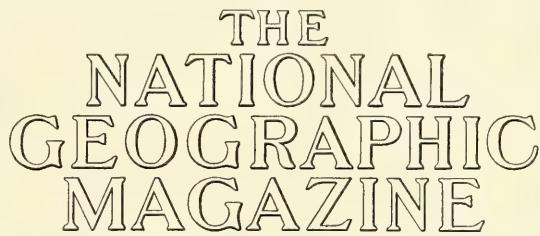
#### INDEX FOR JANUARY-JUNE, 1916, VOLUME READY.

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# THE NATIONAL GEOGRAPHIC MAGAZINE

## ROUMANIA AND ITS RUBICON\*

BY JOHN OLIVER LA GORCE

**F**EW States in history have been called to such momentous decisions as Roumania faced when it plunged boldly into the Niagara of blood and carnage that has rolled down over Europe for these two long years.

But both hope and fear beckoned the Roumanians—the hope of a greater Roumania and the fear of a strangled homeland.

The brave people of this little kingdom—for it is less than one-fifth as big as Texas—have many proverbs. “The water passeth and the stones remain,” they say, referring to their own persistence as a people in spite of the floods of humanity that have swept over their territory. And again, “Water draws to its current and the Roumanian to his race,” a statement to illustrate the cohesiveness and national spirit of the people.

### A WHIRLPOOL OF RACIAL RIVALRIES

In the whirlpool of racial rivalries of southeastern Europe—where Roman and Goth, Hun and Slav, Magyar and Mongol, with all of their descendant peoples, have run over one another and been run over in their turn—fate left the Roumanians in the majority in a territory of more than 90,000 square miles. It scattered more than 12,000,000 of them over these lands—more than 7,000,000 in Rou-

mania itself and some 5,000,000 elsewhere (see “Map of Europe,” 28 x 30 inches, in four colors, published in the July, 1915, number of the GEOGRAPHIC MAGAZINE).

In Bessarabia, a province of 17,000 square miles and 2,600,000 population, belonging to Russia, two-thirds of the people are Roumanian; in Transylvania, the eastern part of Hungary, a land of 21,000 square miles and having a population of 2,500,000, 60 per cent, Roumania claims, are Roumanians; in Bukowina, an Austrian crownland of 4,000 square miles and 1,000,000 population, more than half are said to be Roumanians (see also pages 201 and 202).

And so 12,000,000 people yearn for a “restored” Roumania—all ethnographic Roumania under the flag of political Roumania. If their country remained neutral, they reasoned, there would be no chance of such a happy result. They might, they felt, get something out of Russia if the Central Powers won with Roumania on their side; but Transylvania and Bukowina would still be beyond their grasp.

On the other hand, they believed Russia would give them Bessarabia as a prize for participation on her side, and the Allies Bukowina and Transylvania on condition of an allied victory.

\*See also “Roumania, the Pivotal State,” by James Howard Gore, October, 1915; “Roumania and Her Ambitions,” by Frederick Moore, October, 1913; “The Changing Map in the Balkans,” by Frederick Moore, February, 1913, in the NATIONAL GEOGRAPHIC MAGAZINE.



Photograph by Erdelyi

#### TYPICAL ROUMANIAN COSTUMES OF THE CARPATHIAN AND EASTERN ALPS REGIONS

The Wallachian peasant who has not adopted the homely clothes that come from the ready-to-wear factories of western Europe is a picturesquely dressed man. His costume is white. The trousers are something like twice the length of the leg and are made to fit with numerous wrinkles; his shirt is made to hang tunic-like over his trousers and is gathered at the waist with a red belt; his coat is a sort of military cape, usually of brown woolens or of tanned sheepskin.

#### LED BY HOPE, IMPELLED BY FEAR

But if hope of a "reunited" Roumania appealed greatly to the Roumanian, the fear of strangulation, if not extinction, turned the scales positively to the cause of the Allies.

To show what this fear was and how it impressed the people of Roumania, I can do no better than to quote from a booklet issued from the Oxford University Press, whose author is D. Mitran, a Roumanian advocating intervention. He says:

"But if the Allies win, the Austro-Hungarian monarchy will no doubt be dismembered, and Roumania will find herself in the not very enviable position of being tenderly squashed between the palm of the Slav and the fingers of the Magyar.

"But, further than this, one of the chief aims of Russian policy has always been the possession of the Dardanelles. Russia never was as near to its realization as she is now, when the Turkish Empire is a thing of the past and when she has England as an ally—England, who has always barred her way to the Golden Horn.

"Russia in Constantinople, however, means the strangulation of Roumania. Bulgaria has an outlet on the Ægean, Serbia will no doubt have one to the Adriatic, but Roumania depends entirely upon the Dardanelles. Her splendid position at the mouth of the Danube, her possessions on the Black Sea, will be of little worth with the mighty Empire of the Tsar dominating the Black Sea, the Sea of Marmora, and the Straits. Not only is the cheap waterway an absolute necessity for the bulky products—corn,



Photograph by Frederick Moore

A ROUMANIAN GIRL COMING FROM MARKET



MARKET-PLACE IN A ROUMANIAN TOWN

There are a million small farmers in Roumania and only a few thousand large ones; but the few big landowners have more land than the many small ones. The average size of the million small farms is 8 acres, while that of the 4,471 large ones is 2,200 acres. With so many small farms, naturally a prolific farming population has little money to buy machinery and must be content with the ways and methods of past generations.

petroleum, and timber—which form the chief exports of Roumania, but these also form the chief exports of Russia, who, by the stroke of the pen, may rule Roumania completely out of competition."

#### FIFTY PEASANTS CAST ONE VOTE

Let us turn from her choice and the trials its making involved and go about among the people, in the hope that we may learn something of their ways, their viewpoint, their relationships, their history.

Roumania proper is a country of 53,000 square miles, with a population, as stated before, of less than 8,000,000. It is thus slightly larger than Pennsylvania, although it has half a million fewer people than the Keystone State.

The country today is governed by a king, who is a constitutional monarch, and a parliament made up of a Senate and a Chamber of Deputies. The Senate has 120 members, who are elected for eight years. No man with an income of less than \$1,880 a year can be a senator. The Chamber of Deputies has a member-

ship of 183, and the term of a deputy is four years. The masses can vote for deputies indirectly, but not even indirectly for senators. It takes fifty manhood-suffrage votes to offset one property-owner's or educated-man's vote. The men who get their right to vote on the basis of manhood suffrage and not on the basis of wealth or education simply vote for a man to cast their vote for deputy, and it takes fifty of them to have one vote cast in their behalf.

The electorate is divided into three classes, the value of their respective votes being dependent on the status of the individuals entitled to vote in the several classes. The manhood-suffrage contingent above referred to constitutes the third class. Railroad passes are given by law to all government officials, including both senators and deputies.

#### SURPASSES ALL HER BALKAN NEIGHBORS

Military service is compulsory, and usually every boy has to spend two or three years with the colors upon reaching his majority, after which he goes into



Photograph by Erdelyi

#### WALLACHIAN MARKET FOLK

In the old days of the United States, before the advent of the mower and the reaper, the mountain folk came down into the valleys in the planting and reaping seasons. The Wallachians, to this day, in times of peace go into Hungary by the tens of thousands to help with the sowing and reaping.

the occasionally maneuvered reserve. During times of peace the ranks were filled in many localities by drawing lots, for army discipline was trying to them after the free and easy life of the peasant home, and the young men seldom liked to serve.

In normal times the receipts and expenditures of the government amounted to approximately \$120,000,000, or one-eighth as much as our own. The king receives half a million dollars a year, and the heir to the throne \$60,000.

#### ROUMANIA COMPARED TO HER NEIGHBORS

One may get a good idea of the relative standing of Roumania and her Balkan neighbors from a few statistical comparisons. She has a population of 141 per square mile, as compared with Serbia's 137, Greece's 94, and Bulgaria's 108. Her imports amount to \$15 per capita, as compared to Serbia's \$7.50, Greece's \$7.80, and Bulgaria's \$8.75. Her exports per capita amount to \$18.42, as compared with \$7.63 in the case of Serbia, \$7.21 in the case of Greece, and \$7.87 in the case of Bulgaria. She also spends approximately one and a half times as much per capita for govern-

mental purposes as Greece, Serbia, or Bulgaria in normal times.

Industrially the country is almost entirely given over to agriculture, and, area for area, it produces more cereals than any other great grain-producing nation in the world. Its farm lands are about equally divided between the small farmer and the rich land-owner. There are about a million farms with an average size of eight acres, and then there are 4,471 estates with an average size of 2,200 acres.

The result is that one finds the strangest contrasts in farming methods. Here is a big estate, where every sort of farm machinery that the United States has to offer is to be found—the binder, the mower, the steam gang plow, the riding cultivator, the manure spreader, and even the steam header and thresher. And then hard by are a hundred small farmers who still harvest their grain with the sickle, thresh it with the flail, or tread it out with oxen and winnow it with the home-made fork. They mow their grass with the scythe, rake it with the hand rake, and haul it in with ox-carts.

But even with the very primitive methods that characterize half of the



Photograph by Erdelyi

AN ANCIENT GATEWAY TOWER IN TRANSYLVANIA, HUNGARY

This picturesque old town, Medgyes, has walls and bastions and churches that are survivals of the days of medieval Europe. It lies in Transylvania, that part of Hungary which the irredentists want to bring under the Roumanian flag.

farming of the country, they manage to coax a rather bountiful crop out of the soil. They produced 89,000,000 bushels of wheat last year, an average of nearly twenty bushels to the acre—a yield almost a third greater than our own. Their corn crop amounted to 110,000,000 bushels, or nearly twenty-two to the acre. They also had a 29,000,000-bushel crop of barley and an oat crop of similar proportions.

The year before, 1914, they experienced the throes of a crop failure, the wheat yield being cut in half and other cereal crops being sadly below normal.

In normal years they have a big surplus, with about 40,000,000 bushels of corn, 50,000,000 bushels of wheat, and 11,000,000 bushels of barley to throw into the world's markets. Heretofore, since the outbreak of the war, the Central Empires had been able to buy the bulk of this surplus, and the blow of Roumania's participation in the war will probably be as heavy from an economic as from a military standpoint.

#### PECULIAR CUSTOMS, STRANGE SUPERSTITIONS

The great bulk of Roumania's population belongs to the peasant class, for there are comparatively few cities and most of them are small. Many of these peasants live on the great estates, where their forebears for generations have farmed for the absentee landlords.

An interesting class these peasants form, with their peculiar customs, their striking superstitions, their primitive ways of looking at things in general.

The evil of race suicide has never invaded rural Roumania. It is regarded as worthy of honor to be the head of a numerous family. As in all lands where many of the people are more or less illiterate, there is a high death rate, though the fact that the bottle-fed baby is almost unknown in peasant Roumania tends to overcome the high infant mortality that would otherwise result.

That they are a fecund folk is revealed by the fact that, although their death rate is high, they still have an annual excess of 118,000 births over deaths. Apply that same ratio of increase to the Ameri-

can people, and without a single immigrant we would grow at the rate of more than a million and a half a year—fifteen million or more between census years. Yet, even with our enormous immigration, between 1904 and 1913, inclusive, we grew only a little more than 14,000,000.

The average Roumanian peasant is not given to the kind of thrift that leads him often to a savings bank. The patrimony of his sons and daughters is more often good will, good health, and an honest mind than it is land, or money, or houses. So narrow is the margin upon which a young couple starts out in life that it has come to be a proverb among them, "Married today and out at the elbows tomorrow." For children come apace, and the prices of the things the peasant has to sell are even lower than the prices of those he has to buy, and not until his own labors are supplemented by those of sons and daughters has he much chance to prepare for even the shortest of rainy days.

When a young Roumanian peasant lad's thoughts turn to love and his mind begins to incline toward marriage, he goes to his mother rather than to his sweetheart with his tale. He tells her all about it, but rarely thinks of confiding the happy secret to his father; for Roumanian peasant fathers have faced the stern realities of life so long that they are apt to forget that they were once boys, and therefore have little sympathy with love-lorn tales.

#### IF THE FIRE BURNS, LOVE TRIUMPHS

But the mother acts as ambassador to the father, and if he can be induced to look with favor upon the lover's choice, he calls in two of his best friends in the village, tells them of the son's dreams, and asks them to accompany the said son to the house of the object of love's young dream. Mayhap the girl herself has not yet received from the youth a single hint of his love; but even so, as he and his spokesmen approach the house she suspects the object of his visit and peeps through any crack or cranny that is convenient.

If it happens to be winter, the father of the girl invites the company in, and, surmising their mission, gives some hint as to his attitude by the way he looks after the fire. If he keeps it burning

brightly, they know he is favorable. If he lets it die down a little, they understand he is only of an open mind on the subject. But if he lets it go out entirely, there is no use arguing the question.

It usually happens that the father of the girl is of an open mind, and the boy's spokesmen tell what a fine, husky young fellow he is, what a good brother he is to his sisters, what a good son to his mother, what his patrimony is, how industrious he is, etc.

#### THE NATIONAL DANCE

The Roumanian peasants have a saying that they must dance on Sunday to keep the creak out of their bones on Monday. Most of the dances are at the public houses—dance halls under the blue sky, as it were—and young and old gather there. The old folk spend the day with the tipple, while the young ones dance. There is very little drinking on any other day of the week, and a tipsy man except on Sunday is seldom seen.

The national dance is a sort of cross between a jig and the game of ring-around-the-rosie. All the dancers clasp hands and form a ring. They then begin a stepping, swaying motion that never moves them out of their original tracks, and to the music of the Tzigana band they keep it up for hours.

The dances are organized by the boys of the community. They arrange for the music, provide the refreshments, and preside as masters of ceremonies. When the girls reach a marriageable age and have been sufficiently instructed in the household arts, they are allowed to attend these dances as participants. "She dances at the dance" is the peasant way of saying that a girl has made her *début* and is eligible for matrimonial attentions.

"Many hands make light work" is another proverb of the Roumanian peasant, often put into practice. Almost every night there is a neighborhood gathering like the old-fashioned apple-cutting or apple-butter boiling in early American rural history. The houses have their turns at these parties, and there is always a kettle of cornmeal mush and baked pumpkin and potatoes and popcorn ready for the occasion. All hands join in the evening program of combing, carding,

and spinning the household supply of wool or flax, the while neighborhood gossip passes current among the elders and occasional words of love or childish jest among the more youthful members of the party.

One-third of the area of the country toward the north and west is inhabited by semi-civilized shepherds. Up in the Carpathians in summer and down in the sheltered valleys in winter they lead their flocks, sleeping in the open with them and despising any other shelter than that which primitive nature and the starry sky afford. They seldom speak; indeed, their solitary lives leave them little opportunity for conversation. They wear their hair and beards long, and have coarse, white woollen shirts and long mantles of wool-covered sheepskin.

#### SIGNS AND PORTENTS GOVERN PEASANT LIFE

The Roumanian peasant is much given to superstition, and he has a sign for everything. If shingles are not nailed on a roof in the proper sign, they will turn up at the ends; if potatoes are not planted in the proper sign, they will grow on top of the soil and be a failure; if you have money in your pocket when you see the new moon, you will not "go broke," at least not until another new moon comes. On the other hand, it is held to be dangerous to announce to those in the house that the new moon has appeared, for in that case all the pots and pans in the kitchen will be broken before the waning moon passes.

When a peasant child is christened, all of those present assume the relation of god-parents, and it is a superstition that there must be no intermarriages between god-fathers and god-mothers. The result is that christenings are not widely attended, and those with matrimonial ambitions eschew them entirely.

The utmost care is taken by some to prevent a child from seeing its image in a mirror before it is three years old, for if it does it will become a victim of the "falling sickness," which will send it stumbling through life.

The girls of Roumanian country districts take great pride in a clear, healthy



Photograph by Erdelyi

A WALLACHIAN FAMILY: TRANSYLVANIA, HUNGARY

These are Roumanians whose ancestors crossed the Transylvanian Alps out of Wallachia and into Transylvania. The longing of Roumania to unite under her flag all her people—Wallach and Moldave alike—whether they dwell north of the eastern Alps or east of the Pruth, was one of the influences that led her to enter the raging torrent of war that has all but engulfed the continent of Europe.



Photograph by Erdelyi

A ROUMANIAN WOMAN AT GAVOSDIA

The peasant woman usually grows some silk. She buys the silk-worm eggs and uses the spare bed, if there be one in the house, as a hatchery. She feeds the worms on mulberry leaves, and, if the ants do not invade the place and destroy the worms, she soon has enough fiber for a veil or a waist. She spins and weaves it herself.

complexion. And just as the girls in our own rural districts a generation ago would get up before breakfast and steal down unobserved on the first day of May to wash their freckles away in the dew of the morning, so the girls of Roumania take red and white threads, twist them into cords, from which they suspend coins around their necks. These talismans they wear from the dead of winter to the moment they see the first blossom of spring, feeling sure that thereby they will guarantee themselves a milk-white complexion, rosy cheeks, and ruby lips.

#### BUCHAREST—THE GAY CAPITAL

But if there is primitive simplicity in Roumanian peasant life, there is ultra formality in the polite circles of Bucharest, the national capital. "The Paris of the East" its inhabitants proudly call their city, and in the character of its architecture, the ways of its people, the prices in force at its hotels, it justly deserves the title it has vauntingly assumed.

This near-eastern metropolis is about equal in size to our own National Capital, and yet it has twenty times as many restaurants and cafés, ten times as many street lights, and twice as many theaters. It is regarded as the most expensive place in the world for the well-to-do and the cheapest for the poor. Prices at the Hotel du Boulevard are higher than in New York or London, and travelers who have visited Monte Carlo's leading hotels and then journeyed to Bucharest have found its rates from 15 per cent to 25 per cent higher than those obtaining in the hostellries of Monaco.

But if their prices are high, their service and their food leave nothing to be desired. The cuisine of the leading hotels and private homes is French, and money is no consideration—quality is paramount. Some of the finest restaurants east of Paris are in Bucharest, and the night life, with its passionate, pulsating gypsy music, its sparkling wine, its beautiful women, its scintillating jewels, its handsome men, is as gay and alluring as anything the world has to offer.

As to clothes, everybody who pretends to dress at all dresses in the mode of Paris, and the gowns of the élite are as

up-to-the-minute as those to be seen on the Champs Elysees.

Gambling flourishes openly, and high stakes are the rule rather than the exception. Many of the players own farms as big as an American county, and their incomes are proportionately large.

#### RUSSIAN EXILES AS STRANGE "CABBIES"

The source of the wealth of Bucharest is the big country estates and the cheap labor. The rich "boyar" has a whole army of retainers, who receive little more for their toil than did the slave in our own country before the Civil War—their "victuals and keep." The result is an immense income, which finds its first expression in a very fine residence in Bucharest, and later in the maintenance of an ultra-expensive establishment. It is said that the Roumanian Government has the finest home for its foreign ministry to be found in all Europe. It was built by one of these "boyars," or landed proprietors, who had the misfortune to die soon after his palatial home was completed. The government thereupon acquired it.

Nobody but the proletariat thinks of walking in that picturesque capital. Nearly all of the "cabbies" own their own teams of long-maned, flowing-tailed Russian horses. They are Russian exiles of the Skopti sect, who have a religious belief that no family should have more than one male child and who resort to a religio-surgical ceremony to insure this condition.

They wear great blue-black velvet coats, the skirts of which reach to the ground. Their waists are bound about with multihued sashes, the flowing ends of which drop back over the seat, and one can guide his driver by pulling one end or the other of this sash when language difficulties stand in the way.

If the presence of the landed aristocracy in Bucharest reminds one of Buenos Aires, the driving customs bring to mind those of Mexico City. Every evening all polite Bucharest turns out in its smartest equipages and drives up and down the beautiful parkway known as the "Chaussee." Along this superb drive the endless-chain procession moves in double



Photograph by Erdelyi

A MARKETING SCENE IN TRANSYLVANIA, HUNGARY

Banffy Hunyad lies in Transylvania, but its population is not Roumanian. It is the center of a rich district, "Kalotaszeg," which is a small island of Hungarian civilization in the sea of Wallachian Transylvania. The women are noted for their beauty and the men for their stalwart build. The tight-fitting jackets of the women are a mass of harmonious colors, and their raven-black hair is bound in ribbons.

file, with the center of the boulevard reserved for the royal turnouts. There is no physical line of demarcation between this "king's highway" and the other part of the boulevard, but courtesy toward the royal family draws and respects an imaginary one.

#### PRINCE CHARLES THE MIRACLE-WORKER

But Roumania was not always thus. Forty years ago it was, both as to country and as to capital, one of the most backward nations of Europe; and then it called Prince Charles of Prussia to its throne. Although he had to travel to Bucharest *incognito* in order to escape the secret service of Austria, which was determined to keep him out, he immediately set to work to bring the country up to a higher standard, and the story of his reign, which closed with his death soon after the European war began, is largely the same sort of story of development as that of Germany during the reign of his Hohenzollern kinsman. King Carol, as he was called, had for his queen Elizabeth, a German princess, better known by her pen name of Carmen Sylva. She, too, was spared the sorrows of Roumania's hour of decision, having died a few months ago. They had one child, but it died in infancy, and Carmen Sylva turned her interest to the poor of the country and to letters and music. It is said that she was perhaps the most talented queen of her generation. She could converse in six languages; she wrote some thirty books; she composed an opera that was staged and praised on the continent, and her symphonies and songs have won a place in the world of music. Likewise she was no mean wielder of the brush, and was an expert needlewoman. Her pride was her work for the blind, for whom she founded an institution in Bucharest.

The present king is a nephew of King Carol. His wife is a granddaughter of Queen Victoria, and therefore a first cousin of most of the reigning heads of Europe.

Under the new era initiated and carried down to the present by the Hohenzollern dynasty, Roumania has gone far ahead of her neighbors of the Balkan region, and

the visitor to Bucharest early finds that its people resent the idea of being classed with the Balkan States. They feel that they are the superiors of the Serbs, the Bulgars, the Montenegrins, and the modern Greeks, and that their country is superior, just as the people of A, B, C South America feel that their nations are not to be confounded with the remainder of Latin America.

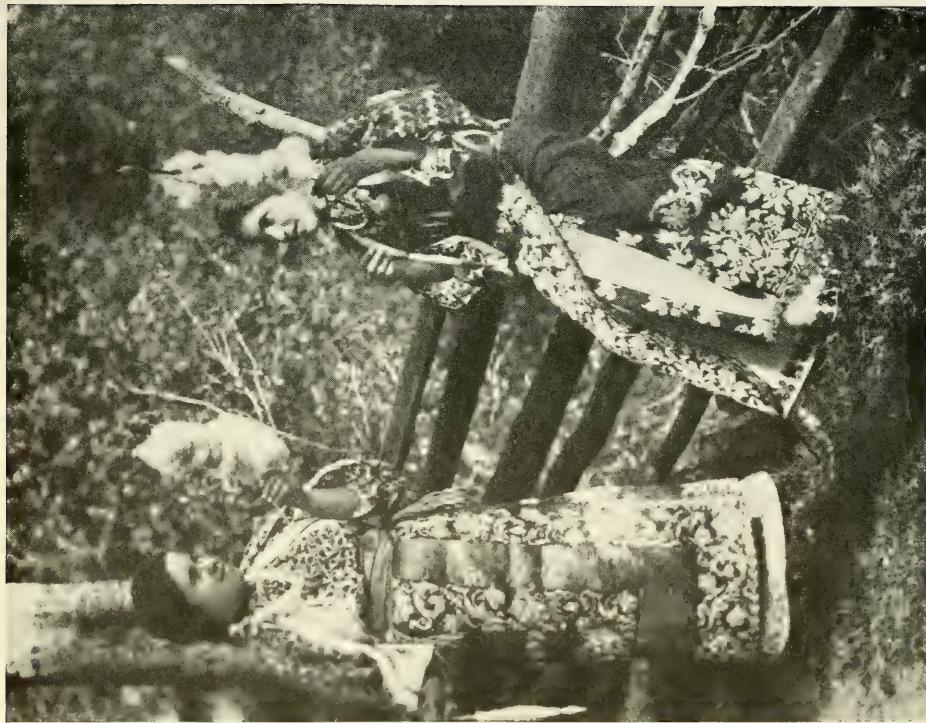
#### CUSTOMS PERPETUATE HISTORY OF ROME'S GLORY

Let us now turn to Roumanian history and note some of the outstanding events that have been the crossroads on her highway from the past to the present. The early inhabitants were Dacians. Pliny and Herodotus agree that they were the bravest and most honorable of all the barbarian tribes that Rome encountered in her days of expansion. Thucydides praises them as wonderful fighters on horseback.

The Trajan Column in Rome bears the author's story of the great emperor's conquest of this territory. Across the Danube are the ruined piers which once supported a bridge built by Trajan, and some sections of the great military road he constructed still are in use as a part of the national highway system.

Also there are many customs which still proclaim the ancient rule and influence of Rome that have persisted through the centuries since the departure of her glory. For instance, there is the old Phryric dance, the robes with bells on sleeves and girdles. The Roumanians still shout in unison to prevent Saturn from hearing the voice of the infant Jupiter; and even their oxen proclaim the "glory that was Rome" in their names, for here you may see Cæsar and Brutus as yoke-fellows, and there Cassius and Augustus.

But when Rome withdrew, what is now Roumania became the Belgium of a series of racial struggles between the East and the West, first this horde and then that overrunning the fertile valleys. Invasion became the normal condition of Roumanian territory, and the sturdy descendants of the early Romans and Romanized Dacians learned how to survive even such



Photograph by Frederick Moore

#### ROUMANIAN GIRLS MAKING THREAD

The Roumanian peasant woman has a keen appreciation of the color values and combinations. She embroiders her dresses with thread she has grown from the seed—so to speak—for she plants the flax, gathers the fiber, and carries it through all its processes, from breaking and carding to spinning.



© International Press Photo Company

#### Tsigany Women: ROUMANIA

There is perhaps no music in the world more passionately weird, touching deeper chords of pathos, or reaching higher pitches of joy than that of the Tsigany folk of southeastern Europe. It has made them famous wherever the lovers of the weird and the exhilarating foregather.

conditions. When the waves of invasion swept over their valleys they simply retired to the mountains and waited for them to recede; nor did they wait in vain. The water of invading humanity in very deed did pass, and the stones of persisting Roumanian life did remain; and, although for many a weary generation their problem was to save themselves from extinction, they survived.

Today Roumanians are proudest of their Latin descent; so proud, indeed, that although their religion is Greek, and although there are more than 6,000 centers of Eastern influence, in the shape of Orthodox churches with Orthodox priests, they are drawn toward ancient Rome and not toward historic Greece.

#### THE SHUTTLECOCK OF NATIONS

For a thousand years the country was the shuttlecock in the game of political battledore and shuttlecock staged by the rival sovereigns of Europe—Russia, Poland, Hungary, Austria, Turkey, etc. Once Peter the Great established a protectorate over the Roumanians. Then came Catherine the Great with a plan to annex them to Russia. Austria, afraid that such a course meant Russian territorial expansion in a direction that threatened her, objected so vehemently that Catherine reconsidered, and Moldavia and Wallachia were placed, in 1774, under the suzerainty of Turkey.

In 1861 the two principalities decided to unite under the name of Roumania, in accordance with an agreement reached by the Powers, following the Crimean War. Their autonomy guaranteed, the Roumanians selected an army officer, Col. Alexander Cuza, as their prince, who thereupon came into power under the title of Alexander John I, Prince of Roumania.

In 1866 the ruling element in Bucharest decided that they wanted a change, so they politely invaded the prince's bedroom one night, gave him a certificate of abdication to sign, and announced that there was a carriage waiting which would convey him to the station, where he was to take the night express to Paris. He obeyed and disappeared forever from public gaze.

Thereafter a provisional government elected the Count of Flanders, brother to the late King Leopold of Belgium. But Austria and other powers protested so vigorously that the act was reconsidered and Prince Charles called, as previously stated.

#### ROBBED OF SPOILS OF VICTORY

When Carol assumed the throne, it became one of his principal aims to free his country from the suzerainty of Turkey. When the conflict between Russia and Turkey was impending in 1875, he first attempted to have the Powers guarantee the neutrality of Roumania during the war; but they were too busy with their own affairs and his efforts failed.

Then Roumania decided to enter an agreement with Russia. This agreement, which is illuminating, in the light of present-day history, granted free passage of Russian troops over Roumanian soil, Russia undertaking to respect the political rights and to defend the integrity of Roumania.

One of the first acts of Roumania after hostilities began was to declare her independence of Turkey. As the war proceeded, Russia found herself in sore need of help. Repeated appeals finally brought Roumanian participation, and Prince Carol was given the supreme command of the allied forces before Plevna, where he gained a great but costly victory.

When the war ended and Turkey and Russia entered into the Treaty of San Stefano, it did recognize Roumanian independence, although Roumania was not admitted to the peace conference. But it also provided that Roumania should get the swampy country between the Danube, where it flows north, and the Black Sea. On the other hand, Russia was to have Bessarabia, territory which Roumania claimed and a part of which she had occupied.

Roumania stood firm against the idea of giving up the beautiful Bessarabia in exchange for the unattractive Dobrudja. Russia thereupon threatened to disarm the Roumanian army, to which Prince Carol responded that Russia might destroy his army, but that it could not be disarmed.



Photograph by E. M. Newman

A VILLAGE STREET IN ROUMANIA

The day of "tap water" in every house in Roumanian cities is still a long time in the future, and such water-carriers as these are a common sight

The Congress of Berlin, which overthrew the Russo-Turkish treaty of San Stefano, did not interfere with Russia's determination to force Roumania to accept Dobrudja in exchange for Bessarabia, and Roumania came out with less than she had when she went in. All she could do was to console herself with Lord Beaconsfield's remark to her, that "in politics the best services are often rewarded with ingratitude."

In 1881 the Roumanians decided that they were entitled to the rank of a full-fledged kingdom, and proclaimed their country the Kingdom of Roumania, crowning their sovereign king with a crown of steel made from cannon captured by their ruler himself in the bloody battle of Plevna.

Although any one who comes to study Roumania, her people, and their brave history will be almost certain to sympathize with the wrongs she has endured in

years gone by, at the same time he will not escape the feeling that she, too, has contributed something to the injustices of history. Always bitterly resentful of ill-treatment toward any of her race by other countries, she has forgotten to show that charity toward others under her power that she asks for her people from other nations. Her treatment of the Jew has been almost as harsh as that patient race has experienced at the hand of any oppressor.

THE PERSECUTED BECOMES THE  
PERSECUTOR

It is hard to conceive in our own great land of liberty and equality how any nation could make such proscriptions against a race as Roumania has made against the Jew. No one is allowed to employ a Jew who does not also employ two Roumanians, and that means non-employment for the sons of Israel. Jews

are not allowed to be bankers, druggists, tobacconists; they have no standing in court, no right to employ counsel, no right to send their children to school except they pay for the privilege, which is free to all others. They cannot own farm land, are denied the right of holding government positions, and are prohibited from organizing or controlling stock companies or corporations. Furthermore, although some of them for forty generations have lived in Roumania, they are aliens still, under Roumanian law.

#### THE LAND OF HER DESIRE

When the Powers assented to the creation of Roumania, one of the terms of the agreement was that all of her subjects should stand equal before the law. But later Roumania decided that she would consider the Jew an alien, and so the agreement was nullified, with no hand raised in an effective protest.

The persecution, however, is economic rather than religious, for the experience of all eastern Europe has been that the Jew, under a free competition, manages to prosper where others barely exist, and so the attempt is made to handicap him as an equalizing process. Yet in spite of all his tribulations, in spite of governmental processes which would seem to leave nothing to the Jew but to emigrate, he manages to keep the noose from strangling him and to survive the fierce struggle.

While Roumania thus makes the Jew an alien, she does not regard him so when she needs men for her army. Then he is Roumanian from the crown of his head to the sole of his foot, although even in the army he cannot become an officer or escape the menial jobs that military operations always involve.

Having thus far considered the Roumania of today, let us now turn to the Roumanian lands of a possible tomorrow—Transylvania, Bessarabia, and Bu-kowina (see also pages 185 and 186).

Transylvania has a geographical rather than a political existence. It is a part of Hungary, although it is almost as much separated from geographical Hungary as the great plateau west of the Rockies is separated from the Mississippi Valley.

It is the great highland region which forms the western slope of the Transylvanian Alps and the southern slope of the southeastern Carpathians. "The mountains cradled and brought our race to the manhood of its existence," say the Roumanians, and this applies both to the gradual western slope of the eastern Alps as well as to the sharper eastern slope.

In this territory one may find every form of scenic beauty from the idyllic pastoral picture to the majestically rugged mountain and the frenzy-churned waters of torrential rivers. The region's popular customs, language, and costumes are preserved in all their primitive originality, amid sharply defined boundaries created by nature and a sternly cold climate born of the high Alps.

#### A POTPOURRI OF PEOPLES

Those who travel through it look with bated breath upon the fabulous coloring of the bewitching pictures which water, rocks, forests, sheltered valleys, and white, glistening peaks, together with striking people, conspire to make. It is a veritable treasure-house of contrasting costumes: here those of the Wallachian, here those of the Moldavian, here those of the Saxon, here those of the Hungarian, and here all of them in a gay *pot-pourri*, with a sprinkling of Greek, Bulgar, and Serb, of Gypsy and of Slovak, thrown in. There are a million and a half Wallachians in Transylvania, 700,000 Hungarians, and 200,000 Saxons.

In the heart of Transylvania there is a district known as the Kalateszag, which has been strikingly described as a Hungarian island in the sea of Transylvanian Wallachia. Banffy-Hunyad is its center, and it is a place famed for its beautiful women. With their steely black hair, their rainbow-hued ribbons, their pearl fillets, and their tight-fitting, art-embroidered jackets, they present a picture that can never be forgotten.

There are many salt mines in Transylvania. The ones at Marosujvar produce a hundred million pounds of salt a year. In the one at Tordo there is a gallery known as the Joseph gallery, where one may hear his voice echoed and re-echoed sixteen times.

From the standpoint of material value, Bessarabia would be worth more to Roumania than Transylvania. It is one of the richest provinces of Russia, and, with the Pruth on the one side and the Dniester on the other, it is ideally watered, no place within its boundaries being more than forty miles from a navigable stream. With the exception of a few miles of its Bukowina boundary, it is entirely surrounded by water—the Dniester, the Pruth, the Danube, and the Black Sea. Kishinef, which is remembered with horror as the scene of the frightful Jewish massacre of a few years ago, is its capital.

The southeastern corner of Bessarabia lies only a dozen miles or so from the great Black Sea port of Odessa—the New York of southern Russia.

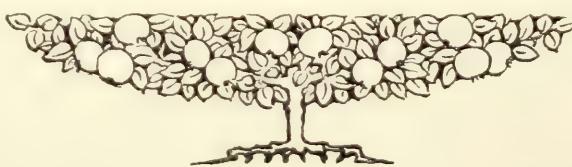
#### SURROUNDED BY VAST SLAVIC SEA

The climate is, on the whole, salubrious, and while the northern part is somewhat mountainous, through the presence of the outlying spurs of the southeastern Carpathians, the bulk of the territory lies in a rolling farming country that has produced marvelously, considering the poor farming methods practised, and is capable of great crop yields under modern conditions of cultivation. There is much of that rich black soil that has made Illinois, Iowa, and Kansas famous for their agriculture.

Bukowina is an Austrian crownland traversed by offshoots of the Carpathians, and famous for its horses and cattle. It has many fine forests, numerous rich mines, and its people have been thrifty and industrious. It has belonged to Austria for nearly a century and a half, having been ceded to that country by Turkey in 1777. It is populated by a veritable congress of races, with the Slav and the Roumanian well in the majority. Where once the effort was to Germanize the Roumanian, the encroachments of the Slav led Teuton and Roumanian to stand together against his powers of absorption.

Surrounded on every side by the Slavic Sea—the deep ocean of Russia, the bay of Serbia, and the gulf of Bulgaria—who can say whether in future centuries the attrition of the Slavic tide will wear away the Roumanian shore, or whether this present great war will fix political boundaries that will be as firm as the geographic boundaries themselves?

Remembering how she has been excluded from peace conferences in the past, how even her right to be heard in the Congress of Berlin was gainsaid, how she usually has lost in the field of diplomacy whatever she has won on the field of war, she probably has had an understanding this time that, in the event of an allied victory, will insure her the territorial expansion she craves and salvation from the strangulation she fears.



# SALONIKI

BY H. G. DWIGHT

*"Saloniki is not a common city, but a country of the fortunate."—Eustathius,  
Bishop of Saloniki in the fourteenth century.*

**S**ALONIKI stands on rising ground at the head of a long gulf, shaped very much like what the classicists call a Phrygian cap, or what is perhaps more familiar to us as the liberty cap of the French Revolution. This gulf, bending to the east in such a way that its inner recesses can never feel the disturbances of the open sea, is formed by that peninsula of Chalcidice whose three long promontories of Kassandra, Longo, and Athos are the most salient feature of the northern Ægean (see map, page 271). The longer western shore of the gulf sweeps in a curve of over a hundred miles from Saloniki to the tip of the peninsula of Thessaly.

For the greater part of their course these spreading coasts are both high and admirable to look upon. But the line of the Greek mainland is in particular notable because above it tower the three classic peaks of Olympus (9,800 feet), Ossa or Kissavos, as it is now known (6,400 feet), and Pelion or Plessithi (5,300 feet).

## STRATEGICALLY VALUABLE APPROACHES

The natural advantages of this inland sea are further increased by various points, indentations, and islands that divide it into four parts. The inmost section is the landlocked bay of Saloniki, a great oval harbor formed by the delta of the Vardar and the opposite cape of Kará Bournóu. The span between the two is no more than 6 or 7 miles, and they lie 10 miles from Saloniki, making a lake-like basin of perfect security.

This complicated and beautiful disposition of mountains, capes, and islands makes the marine approaches of Saloniki of equal interest to the strategist, the geographer, or the mere admiring wanderer by sea. As regards approaches

from the land, Saloniki is also happily placed.

## NATURE DEFENDS THE CITY

The city faces west and south, toward Macedonia and Thessaly, looking out at Olympus through the gate of the inner bay. The immediate edges of the bay are flat, having been gradually leveled by the three rivers that pour into it. But at no great distance from the water the final spurs of the Rhodope Mountains make an amphitheater which rises east of the city into three peaks of 3,000 feet each (see map of Europe, 28 x 30 inches, published in the July, 1915, number of the NATIONAL GEOGRAPHIC MAGAZINE).

On the north the hill of Daoud Babá reaches a height of 1,500 feet, whence the ground drops away into the plain of the Vardar. This fertile depression, locally known as the *campania*, stretches inland and northward 40 or 45 miles to the buttresses of the Pindus range and the heights that separate western from central Macedonia.

These inclosing eminences are all in Greek territory. Through them strike five main avenues of exit, radiating toward every part of the Balkan Peninsula. The southernmost, the valley of the Vis-tritsa, the classic Heliakmon, is the main artery of communication between Saloniki, Thessaly, and Athens. No railroad, however, as yet connects the systems of northern and central Greece.

## IMPORTANT RAILROAD OUTLETS

Next, to the southwest, opens the valley of the Mavronéri (Lydias), an affluent of the Vardar, which has always been a highway between the Ægean and the Adriatic. Through it runs the railway to Monastir, 120 miles distant.

A second and more important railroad follows the main stream of the Vardar



Photograph by F. Caloutas, Syra

KING CONSTANTINE AND EX-PREMIER VENIZELOS AT SALONIKI

(Axios), the chief river of Macedonia, leaving Greek territory near Gevgeli, some 40 miles to the northwest. At Üsküb, about 150 miles from Saloniki, it divides, one branch going to Mitrovitsa, on the confines of the old Sanjak of Novi Bazar, the other joining at Nish the main line of the Orient Railway.

This is the highroad between Greece and Europe proper, and was the route followed by the Austro-German armies on their advance into southern Servia. The streams flowing through these valleys, with their tributaries and the lakes which they feed, make the *campania* the

granary of Saloniki. But as they converge toward the city and the gulf they form a region of swamps which is harmful or useful, according as one regards it from a hygienic or a strategic point of view.

A fourth and less practicable valley, that of the Gáliko, opens behind Saloniki to the north. Last, but not least, especially in the light of current events, is the long valley of Langátha (*th hard*), which separates the Chalcidice from the scarps of the Rhodope range. Starting a little to the north of the city, this depression runs due east to the Gulf of Órfana, or Rendina, lying between Kavala, the island of Thasos, and the outer shore of Athos.

#### THE SHORTEST ROUTE BETWEEN MACEDO- NIA AND THRACE

Two lakes make up 28 of the 40 miles from Saloniki to the sea, through the valley of Langatha. It forms the shortest and easiest route between Macedonia and Thrace. Through it of old ran the Roman road

that went from Durazzo to Constantinople, by way of Elbasan, Ohrida, Monastir, and the valley of the Mavroneri. And long before the time of the Romans, Xerxes and his invading Persians streamed through the Langatha Valley on their way to Greece.

The modern railroad, however, takes a more roundabout route, winding among the foothills of the Rhodope, never very far from the Bulgarian border, through Seres and Drama to the Bulgarian port of Dedeagatch, 160 miles from Saloniki, and meets the main line of the Orient Railway near Demótika, in eastern Thrace.

It is not surprising that a city so admirably placed, whether for defense or for communication, enjoying the temperate climate of the northern Aegean, and amply provided with the various resources of field, wood, and water, should long have been known to men, and that its possession should often have been disputed.

#### SALONIKI MORE MODERN THAN ATHENS AND CONSTANTINOPLE

Yet compared to its two great neighbors, Athens and Constantinople, Saloniki is relatively a modern town. Founded originally as an Ionian colony, the place was first known as Therme, or Therma, from the hot springs which still exist in that eastern district of the bay. It fell into the hands of the Persians in 512 B. C., when Darius overran Scythia and Thrace; and Xerxes reassembled his own forces there preparatory to his invasion of Greece.

During the great days of the Macedonian Empire the city played no notable rôle, for Philip and Alexander the Great held their court at Pella, in the hills beyond the Vardar. The present town was founded about 315 B. C. by King Cassander of Macedon, and named after his wife Thessalonike, half sister to Alexander the Great. The adjoining peninsula of Kassandra takes its name from the king himself, who founded another city on its shore.

Under the Romans, Saloniki grew greatly in importance. Made a free city, the capital of the surrounding region, it became the home of many Roman colonists, and not a few famous names associate themselves with the town. Cicero lived there for a time in exile. St. Paul was another temporary resident, whose epistles to the Thessalonians we still preserve.

#### NERO BUILT A COLONNADE

The emperor Nero decorated the city with a colonnade, a few of whose battered caryatides were visible there until a few years ago, under the picturesque name of *las encantadas*—the Enchanted Women. They are now in the Louvre.

Trajan erected a rotunda in honor of

the Cabiri; for they, with Aphrodite of the Baths, were patrons of pagan Saloniki. Galerius, one of the associates of Diocletian in the purple, made Saloniki his headquarters. Licinius, coemperor with Constantine the Great, died or was put to death there in 324 by his successful rival. Theodosius the Great also lived there, in 380, in order to keep his eye on the Goths.

After his retirement to Milan, ten thousand of the Thessalonians were butchered in the circus, in punishment for insulting the emperor's lieutenant. St. Ambrose, Bishop of Milan, thundered from the pulpit against the imperial murderer, and Theodosius eventually made a most humiliating public penance.

During the Byzantine period Saloniki became the second city of the empire. Its situation made it the commercial capital of the Balkan Peninsula, and it rivalled Constantinople as a port of traffic between eastern Europe and Alexandria. But its wealth and its comparative remoteness also made it a frequent object of attack. Avars, Goths, and Huns came time and again to its gates. The Saracens captured and sacked it in 904. The Normans descended upon it in 1185.

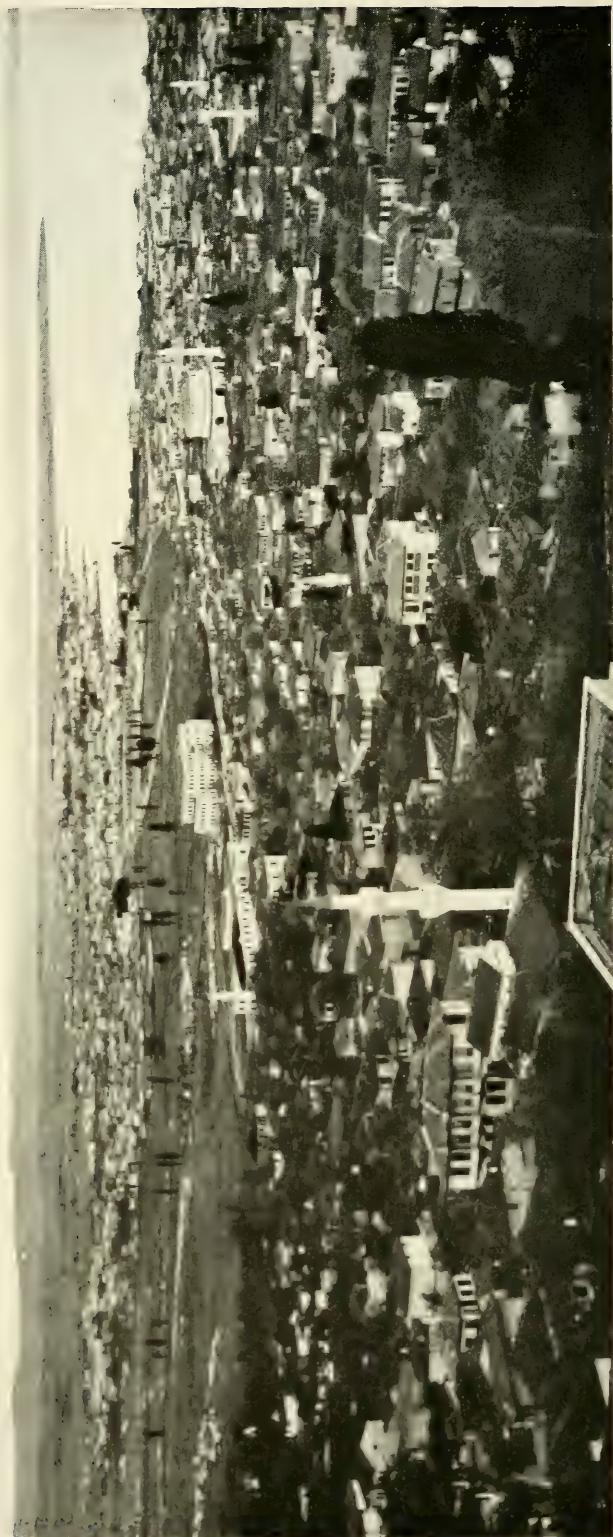
#### SERB AND BULGAR VISITORS

And it is not uninteresting to recall that among the most assiduous of these redoubtable visitors were the Serbs, and especially the Bulgars. These neighbors owed much to Saloniki, from whom they took their faith and, indirectly, their alphabet; for it was from Saloniki that St. Cyril and St. Methodius went forth to convert and to civilize the hardy mountaineers of the Balkans. The hardy mountaineers, however, lost no opportunity to take more merchantable loot from Saloniki, though Saloniki itself they never took for long.

After the conquest of Constantinople in 1204 by the Franks and Venetians of the Fourth Crusade, Saloniki fell to the lot of Boniface, Marquis of Montferrat, who made it the capital of an imaginary kingdom. In 1222 King Demetrius, son of Boniface, was driven out with his Lombard nobles by a Byzantine prince of Epirus.

A VIEW OF SALONIKI, THE ALLIED BASE ON THE BALKAN FRONT

Saloniki is a city of about 140,000 population, nearly half of them Sephardic Jews, whose ancestors were driven from Spain and Portugal many centuries ago. In the right background is the White Tower, built by Suleiman the Magnificent (see also page 219).





© Underwood & Underwood

#### A STACK OF JAM FOR THE ARMY AT SALONIKI

The ensuing two hundred years were the most unhappy in the troubled history of the Thessalonians, who were fought over and bandied about by Greeks, Bulgars, Serbs, Catalans, Venetians, and Turks.

The latter first appeared on the scene in 1380. They did not definitely take possession, however, till 1430. Then Sultan Mourad II, father of the conqueror of Constantinople, captured the town from the Venetians, gave it over to sack and massacre, carried off seven thousand of the inhabitants into slavery, and changed many of the churches into mosques or tore them down for use in his own constructions. Some of the marbles of Saloniki were carried as far away as Adrianople.

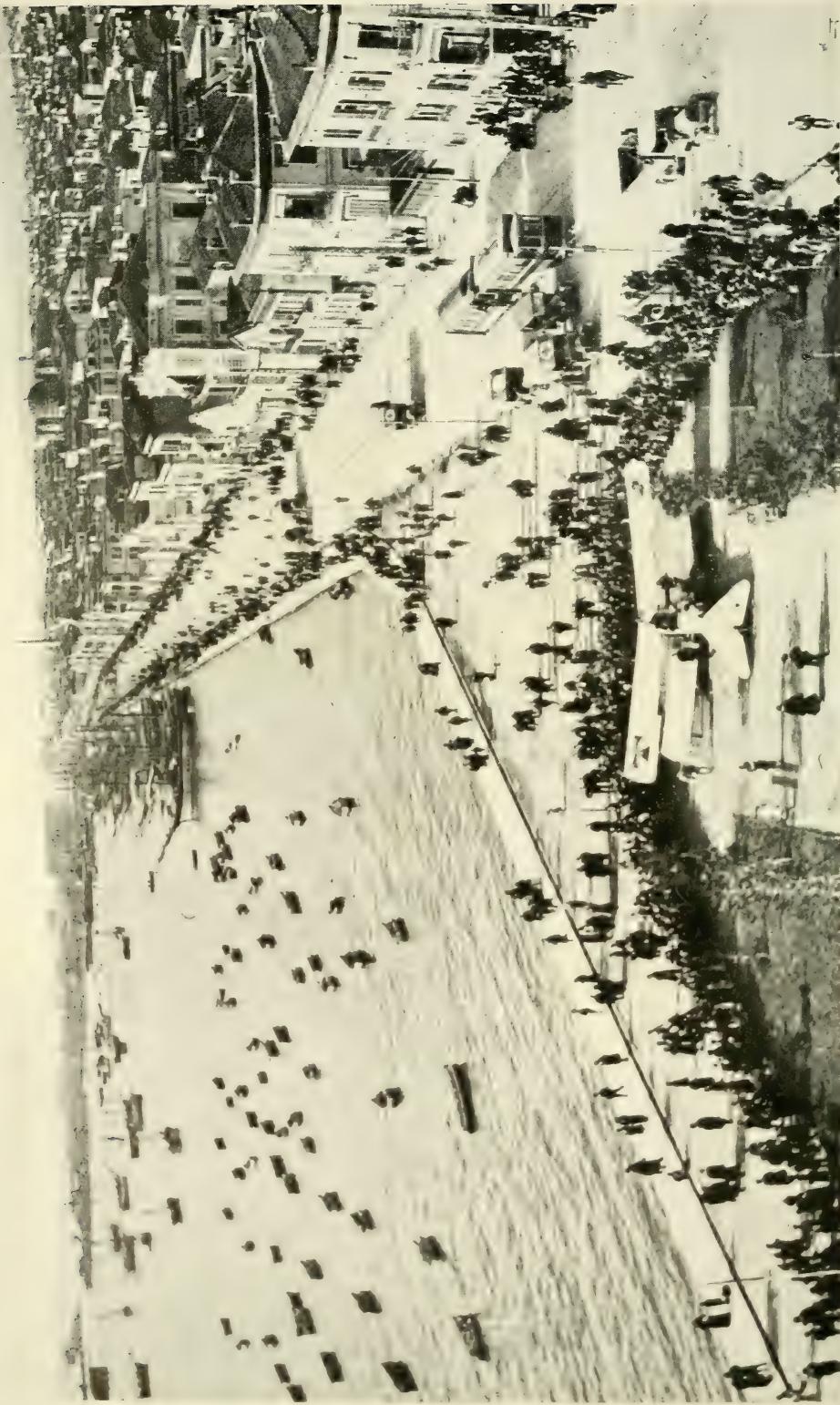
#### UNDER TURKISH RULE FOR 500 YEARS

For nearly five hundred years the Turks remained in undisturbed possession. Yet it is perhaps not quite accurate to describe their possession as undis-

turbed; for during the latter part of that period the frontiers of the empire drew steadily nearer, while toward the end of it Macedonia became the scene of incessant revolutionary outbreaks.

In 1904 the European Powers attempted to solve the situation by making Saloniki the seat of an international board that administered the finances of Macedonia and organized a well-drilled and well-equipped gendarmerie. This foreign surveillance, which threatened to become closer after the historic Reval conference of 1908, precipitated the Turkish revolution of the same year.

The revolution was organized in Saloniki and proclaimed there, the official ring-leaders of the movement being Niyazi Bey and Enver Bey, now Enver Pasha, Minister of War and guiding spirit of the Young Turks. In 1909 the progress of the revolution brought about the dethronement of Sultan Abdül-Hamid II, who was thereupon exiled to Saloniki. Nowhere else in the empire



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THE RIVER FRONT OF SALONIKI

In the foreground is a German "aviatik," brought down by French air scouts during one of the recent air raids by the Germans.



Photograph from Brown Brothers

#### SEA WASHING OVER INTO THE MAIN STREET OF SALONIKI

Barrels from lighters washed ashore. Traffic suspended.

would it have been more difficult for him to corrupt his keepers or to escape, and he spent three and a half years as a prisoner in the suburb of Kalamaria.

#### REMOVING THE EX-SULTAN

The outbreak of the Balkan War, in the autumn of 1912, made it advisable for the ex-sultan to be removed to Constantinople. He was most unwilling to return, however, and was only persuaded to do so by an emissary of the German ambassador, who took him through the Greek blockade in the dispatch boat of the embassy.

A few weeks later the Greek army entered the city, followed closely by a smaller detachment of Bulgarians. The final treaty of peace, signed at Bucharest in 1913, adjudicated Saloniki, with the remainder of the Chalcidice and their strategic hinterland, to Greece. But it is apparently written that Saloniki shall never long enjoy the blessings of peace. At all events, an army of the Allies, as we know, is now entrenched there. And he

is a bolder prophet than I who will foretell what may yet lie in store for the people of Saloniki.

There is another aspect of Saloniki which is scarcely less involved in darkness and controversy, but which leads us away from too dangerous ground and offers a perhaps welcome escape from the harassing questions of the present. It is not surprising that so venerable a city should contain most interesting relics of its past. What is more surprising is that these should be so little known to the world at large.

#### AMERICAN STREET-CARS PASS UNDER ROMAN ARCHES

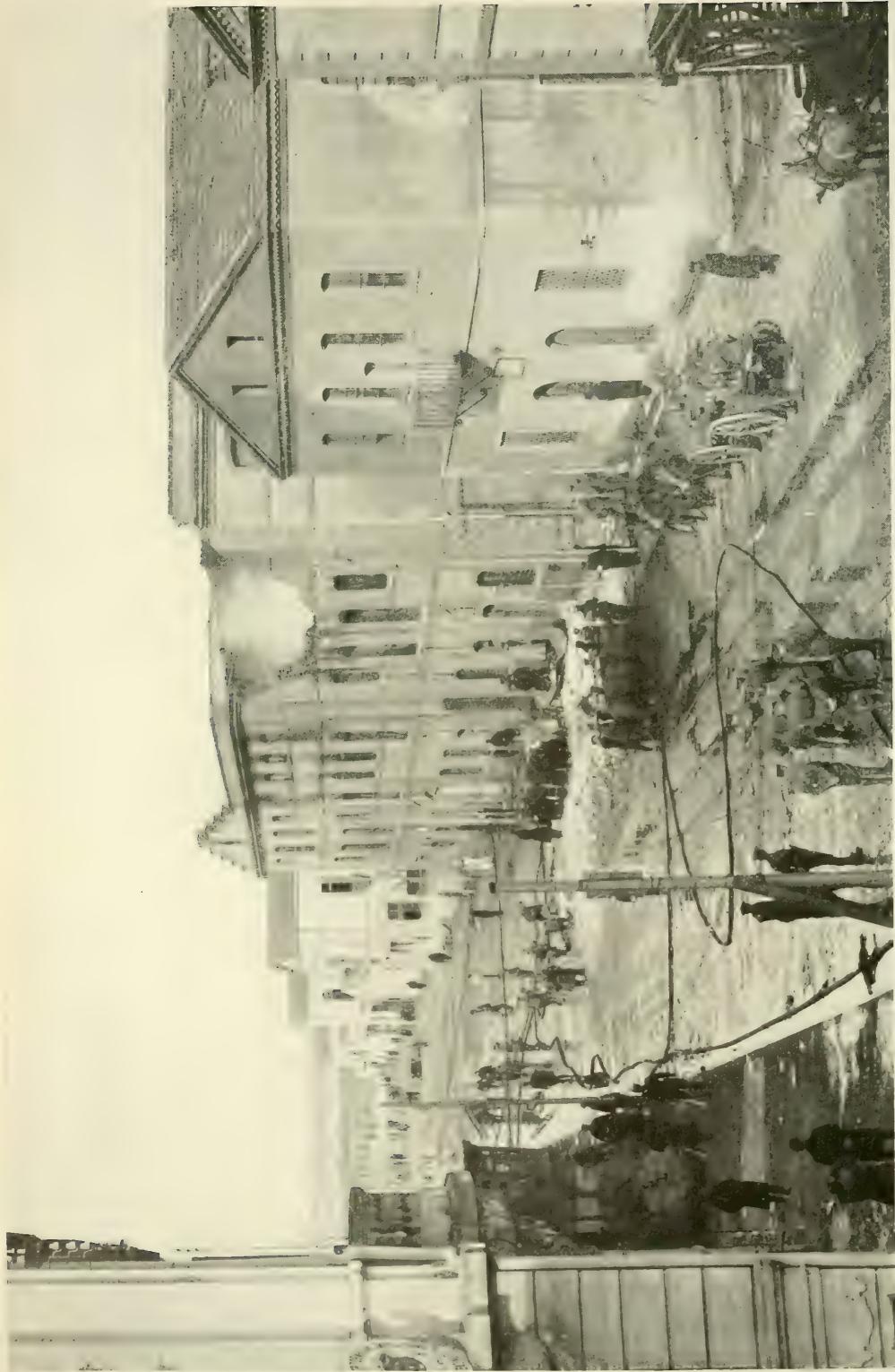
The oldest and most accessible of the antiquities of Saloniki is the long Street of the Vardar, slitting the town in two at the foot of the hill. This street is a segment of the old Roman highway from the Adriatic to the Bosphorus, which earlier still was the Royal Way of the Macedonian kings (see page 213).

The street is not particularly imposing,

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A VIEW OF A WRECKED BANK, SHOWING THE SHORT DISTANCE BY WHICH THE AVIATOR'S BOMB MISSED THE BUILDING AT THE IMMEDIATE LEFT, USED BY THE FRENCH AND SERVIANS AS THEIR HEADQUARTERS; SALONIKI

The Servian national monogram is shown on this side of the latter building





Photograph by Paul Thompson

GREEK CATHOLIC PRIESTS, FRENCH AND SERVIAN OFFICERS, AND MACEDONIAN CITIZENS IN COSMOPOLITAN SALONIKI

and as you watch the khaki soldiers kick up its dust today, there is little to remind you of the Janissaries of yesterday, the cohorts of Belisarius, the Roman legions, the phalanxes of Alexander, or Xerxes and his Immortals. Still, you may play fancifully enough with the centuries, as American electric cars, driven by a modern Greek, a Spanish Jew, or haply some stranded Turk, clang back and forth under the Roman arch that spans the Street of the Vardar near its eastern end.

The bas-reliefs about the bases of this arch are so blurred that archaeologists long disagreed as to its precise date. But a train of camels distinguishable among them and the name of the river Tigris have sufficed to identify the monument as a triumphal arch of Galerius. In A. D. 296 Diocletian ordered him from the Danube to the Tigris to meet the invading Persians (see page 214).

Galerius was beaten and only saved his own life by swimming the Euphrates. But the next year he returned to Mesopotamia and wiped out his disgrace by

destroying the army of the Persian king.

The walls of Saloniki were long a more visible memento of her past. During the last generation, however, they have gradually been disappearing. The sea wall was naturally the first to go, followed by the lower part of the land wall on both sides. Sultan Abd-ül-Hamid II caused a modern boulevard to be laid out on the site of the old fortifications to the east, where the city has overflowed into the suburb of Kalamaria, little suspecting that he would ever live to see his handiwork or hear it renamed after that strange beast, the Constitution.

#### THE WHITE TOWER

He was wise enough to spare the great round tower at the angle of the two walls, which is the chief ornament of the water front. The White Tower, surrounded by a smaller crenellated wall of its own and four bartizan turrets, is comparatively modern, being the work of Süleiman the Magnificent (see page 219).

But the greater part of these old de-



Photograph by Paul Thompson

#### A SALONIKI CROWD GATHER TO SEE THE FRENCH MINISTER AT ATHENS LEAVE A CONFERENCE

The English hotel, the American street-car, and the French automobile proclaim the influence of the Modern West in the New East

fenses date from the fourth century of our era, when Theodosius the Great took pains that Saloniki should not suffer the fate of Adrianople at the hands of the Goths. The walls of Saloniki are thus older than the more famous walls of Constantinople, which were built by the grandson of Theodosius.

A year or two before their final departure from Saloniki the Turks set about destroying the remaining fortifications on the heights behind the town. The acropolis of the Macedonian city was here, and several fragments of the original Greek masonry remain. In Byzantine times the citadel was called the *pentepyrgion*, the five towers, from an inner circle of walls and towers that defend it. They contain many interesting monograms and inscriptions.

Saloniki possesses numerous other relics of archaeological interest. The visitor is continually discovering fragments

of antiquity—a pre-Christian tomb turned into a fountain, the stylobate of a statue carrying a street lamp, an intricate Byzantine carving set into a wall, a broken sarcophagus.

#### SALONIKI'S CHURCHES

But the finest remains of the ancient city are its churches. How they ever survived the tempests of the Middle Ages is a miracle. Nevertheless they did, twenty-two of them. And there they stand today, turned back into churches after their five hundred years of use as mosques, illustrating the story of Byzantine ecclesiastical architecture even more beautifully, in certain ways, than those of Constantinople. Moreover, they make up between them a museum of the lost Byzantine art of mosaic, unrivaled save in Constantinople and Ravenna.

The oldest of these churches, and after the arch of Galerius the most ancient



Photograph by Frederick Moore

THE STREET OF THE VARDAR: SALONIKI (SEE PAGE 209)



Photograph by Frederick Moore

THE ARCH OF GALERIUS ON THE STREET OF THE VARDAR, IN SALONIKI, GREECE

The arch is Roman, the driver, mayhap, is a Spanish Jew, and its passengers are Greek and Turk, Jew and Gentile, bond and free; for it is a congress of nations that gathers in Saloniki and the gamut of human conditions that its people run.



Photograph by F. J. Koch

#### THE TURKISH CANDY SELLER: SALONIKI

There is no law requiring the screening of food in Saloniki, and the traveler here, as well as elsewhere in southeastern Europe, wonders how many hundred million germs are sold with every sale of street-side sweetmeats.

monument in the city, is St. George. During the long Turkish period it was the mosque of Hortaji Süleiman Effendi. St. George is unlike any other church in Saloniki or Constantinople, in that it is of circular form (see page 220).

Its design, more characteristic of Italy than of the Levant, reminds us that Saloniki was more directly under Italian influence than under that of Constantinople, and that until the eighth century the city was, in religious matters, subject to Rome. The exterior of the church has no great effect and the dome is masked by a false roof. The interior is more imposing. The immensely thick walls contain eight vaulted recesses. Two of these are entrances, while a third, cutting through the full height of the wall, leads into the apse. The barrel vaulting of the recesses is encrusted with mosaics of great antiquity.

#### DID ROSI KNOW HOW TO SPELL?

Having begun to drop into ruin, these mosaics were handed over, some years

since, to a restorer, who painted in what he lacked the means to replace. He also had the courage to sign his name, Rosi, to the result, causing the present witness of his infamies to question whether he even knew how to spell. His imitations, however, and the fragments of original mosaic give an idea of the invention and decorative sense that covered those ceilings with birds, flowers, and linear designs in blue and green and gold.

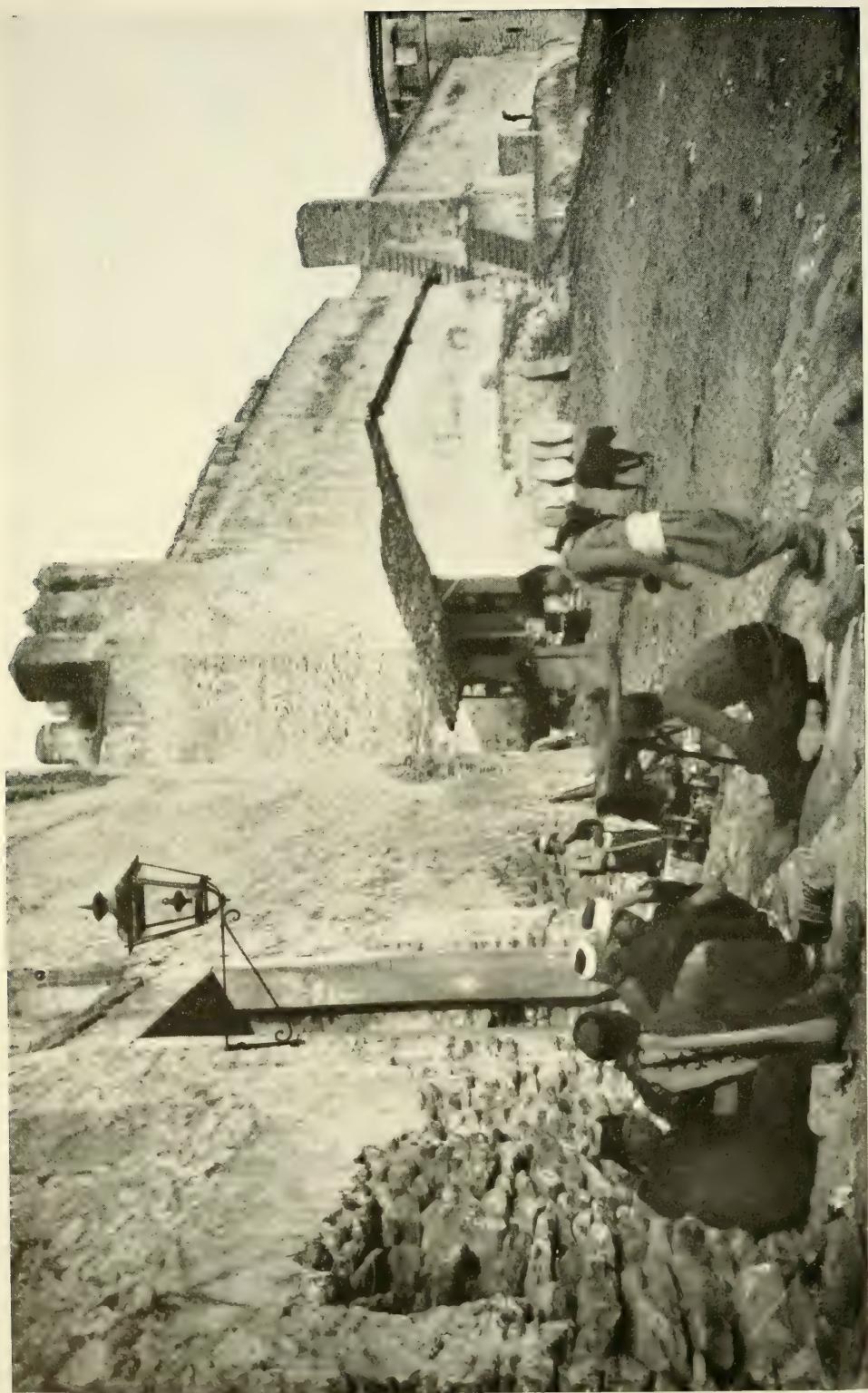
The dome of the church contains the finest mosaic in Saloniki and one of the finest in the world. The Roman, the pre-Christian air of St. George, is emphasized again in that series of classic-looking personages and buildings, divided architecturally into eight parts, corresponding to the eight openings below, but united by a mosaic balustrade that seems to guard the spring of the dome. At one point of the balustrade a peacock perches, his tail drooping magnificently toward the spectator.

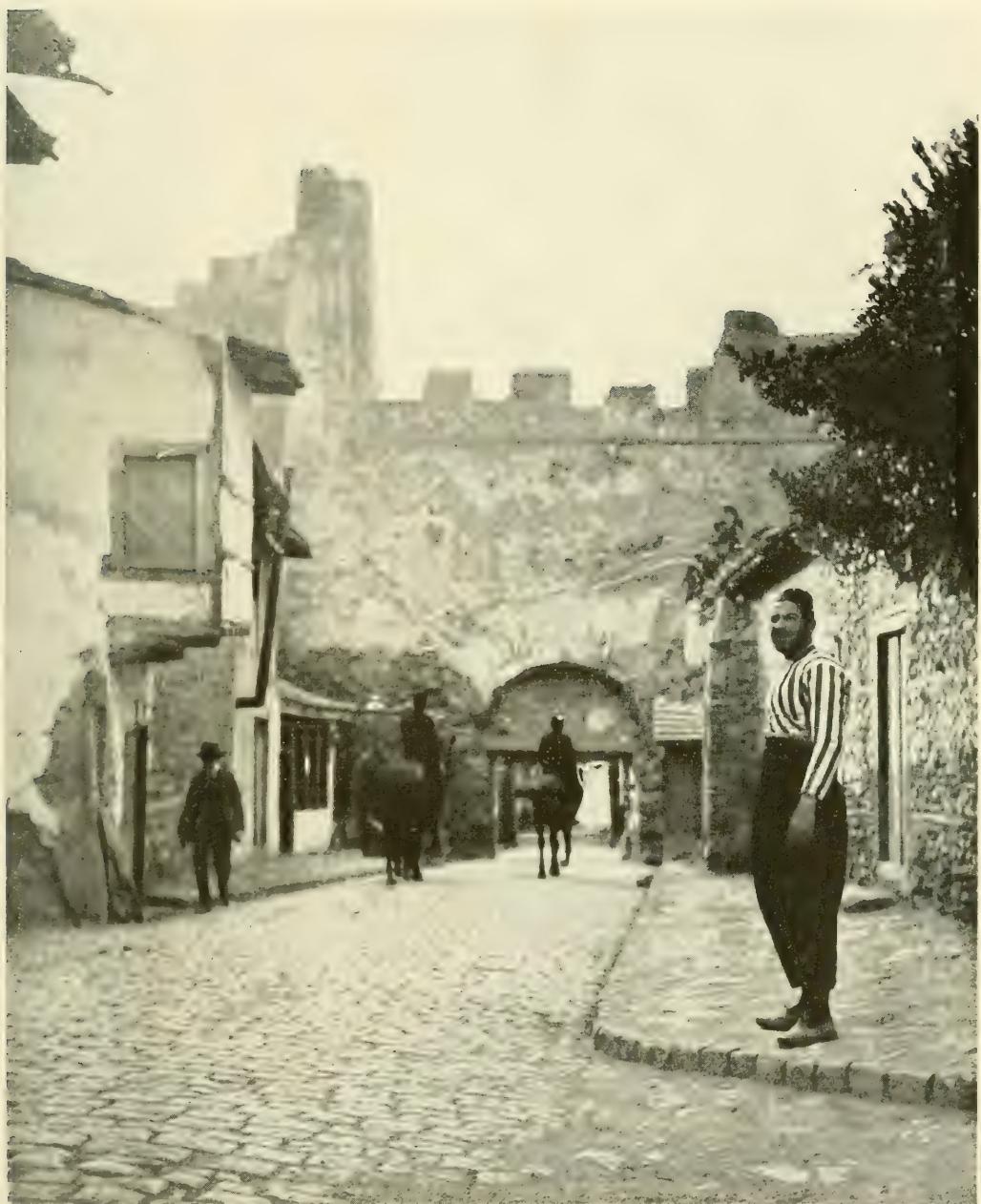
Not the least interesting of the churches of Saloniki is St. Sophia. Like its greater

Photograph by Frederick Moore

THE WALLS OF SALONIKI

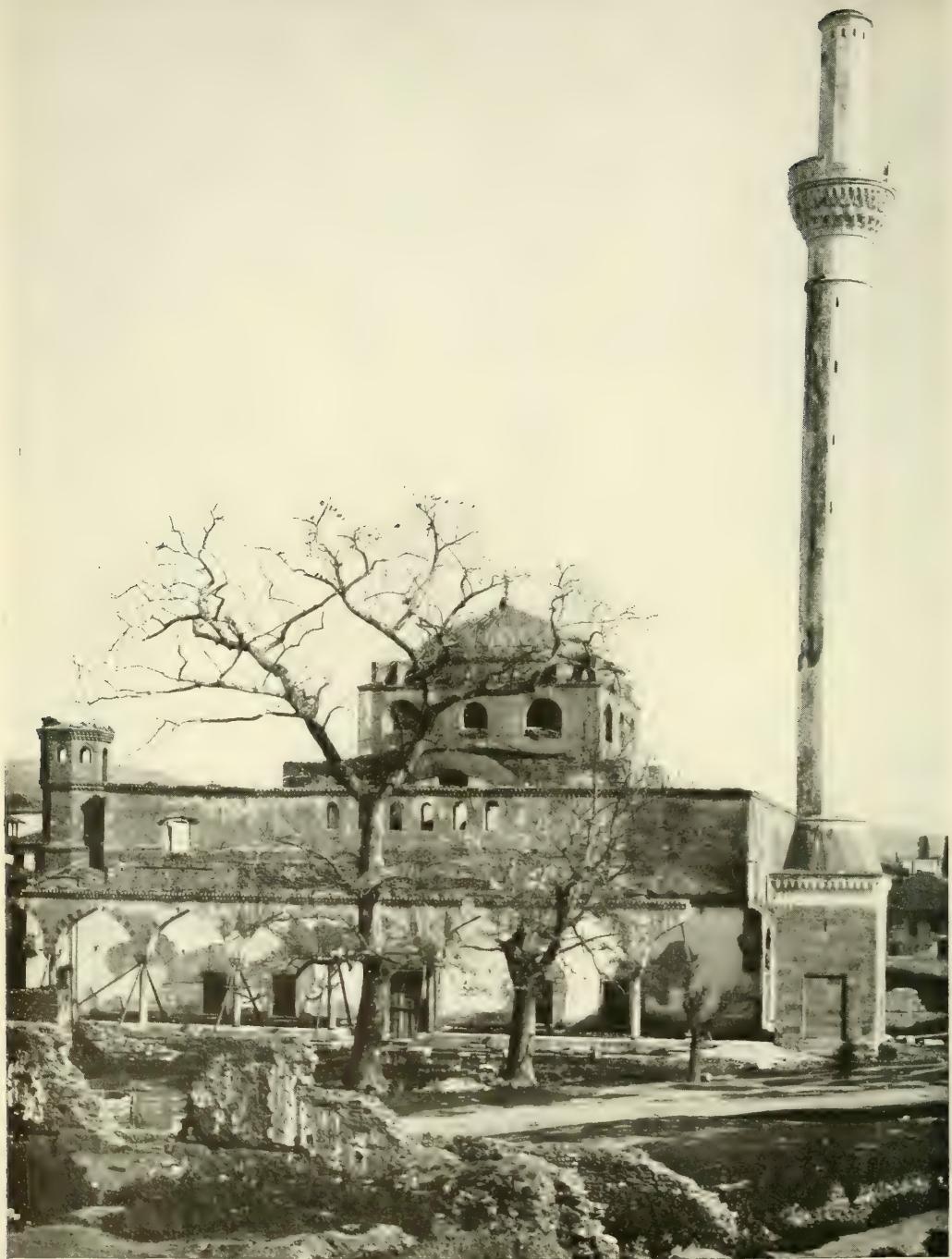
Saloniki is the terminus of four railroads—one running to Nish, Servia; another via Uskub to Mitrovitz, Albania; a third to Monastir, and a fourth toward Constantinople





Photograph by Frederick Moore

A GATEWAY IN THE CITY WALLS: SALONIKI



Photograph by P. Zepdji

THE CHURCH OF ST. SOPHIA BEFORE ITS RESTORATION IN 1910: SALONIKI

Until its last destruction by fire, in 1891, St. Sophia was one of the few Byzantine churches preserving its original atrium (see page 219)



Photograph by H. G. Dwight

THE WHITE TOWER, BUILT BY SÜLEİMAN THE MAGNIFICENT (SEE PAGE 211)

homonym in Constantinople, it is a domed basilica, and it was long considered to be a provincial copy of that great original. As a matter of fact, the Saloniki church is the original, having been built a hundred years or more the earlier, at the end of the fourth or the beginning of the fifth century (see picture, page 218).

For the student of Byzantine architecture, therefore, it has a place of its own, as being a tentative solution of problems which Justinian's cathedral was so triumphantly to surmount. The church has suffered disastrously by fire, earthquake, and restoration.

But the original lines of the structure remain, the pillars and beautiful capitals of wind-blown acanthus, and two fine fragments of mosaic. In the vault of the bema is a gold cross inscribed in a circle, on a rich blue-green ground, while the golden semi-dome of the apse contains a seated Virgin and child—of the eighth century. The principal mosaic, an Ascension, with decorative green trees between the standing figures, lines the great dome. It is supposed to date from 645,

though the figure of Christ in the center is older still.

SOME TURKS TOLERANT

I first saw these interesting mosaics while Saloniki was still a Turkish town. And it struck me as confirming in the Saloniki Turk, leader in the movement of his country toward western civilization, a tolerance less characteristic of his Asiatic brother—that decorations contravening every canon of orthodox Mohammedanism should remain to offend the eyes of the faithful. There are more mosaics to be seen in the larger St. Sophia of Constantinople, but none of them represent human forms or ornament the central parts of the structure.

This impression, repeated in St. George, was strengthened by the Cathedral of St. Demetrius. That five-aisled basilica, dating from the beginning of the fifth century, although restored and enlarged in the seventh, is the largest and best preserved of the Saloniki churches, as well as one of the finest structures of its type in existence.



Photograph by H. G. Dwight

THE CHURCH OF ST. GEORGE, KNOWN IN THE TURKISH PERIOD AS THE MOSQUE OF  
HORTAJI SÜLEİMAN EFFENDI

"Its design, more characteristic of Italy than of the Levant, reminds us that Saloniki was more directly under Italian influence than under that of Constantinople, and that until the eighth century the city was, in religious matters, subject to Rome" (see text, page 215).

Although pillaged at the time of the Turkish conquest, it fortunately fell into the hands of the Mevlevi, more popularly known as the Whirling Dervishes, who are among the most tolerant of Mohammedans.

ALL MEN BROTHERS

The dervish who showed me about, on the occasion of my first visit, pointed out that the figures objectionable from a Turkish point of view had merely been covered with a curtain, adding that all men were brothers, and that mosques and churches alike were the houses of God.

St. Demetrius, at any rate, still contains much interesting and beautiful decorative detail. There are superb verd-antique columns on either side of the nave, their early Byzantine capitals are of great variety, and the spandrels of the

arches are ornamented with charming designs of inlaid marble. There is also a good deal of mosaic in the aisles and the bema, the oldest being that of the north wall. It dates from the seventh century, though some of it has been retouched.

In spite of its early period the basilica has an oddly baroque air. This is chiefly due to an imitation of a cornice on a flat surface of variegated marble. And in one place the veined marble of the walls, sawn in thin sections from the same block, is so arranged as to simulate drapery.

In a dark chamber opening out of the narthex is shown what purports to be the tomb of St. Demetrius himself. But the real shrine was despoiled at the time of the Turkish conquest, and existed in another part of the cathedral.

## PATRON OF THE HUSBANDMEN

A place like Saloniki might have suggested to Heine his fancy of gods in exile. St. Demetrius is not merely the successor of Aphrodite and the Cabiri in the prayers of the Thessalonians. He is, by some strange turn of fortune, the true heir of Pelasgian Demeter. As such, he is the patron of husbandmen throughout the Greek world, and his name day, November 8 (or October 26, old style), marks, for Greeks and Turks alike the beginning of winter—as the day of his associate St. George, upon whom has fallen the mantle of Apollo, marks the beginning of summer.

Whether the Greek St. Demetrius and the Turkish Kassim be one and the same, this is not the place to inquire. But their fête day is the same, and the Cathedral of St. Demetrius was called by the Turks the Kassimieh. In any case, the good people of Saloniki, whether Christian or Mohammedan, must have found it highly significant that the Greek army of 1912 entered their city on the name day of their patron saint.

## UNREALIZED OPPORTUNITIES

Many cities that can boast so much in the way of interesting antiquities have survived themselves. They live only in the memory of what they have been. But not so Saloniki. She is too much interested in what she is and in what she is going to be to think very much about her past. So little indeed has she yet taken in, as the remainder of Europe has so profitably done, the possibilities of a past, that I was unable to find there a map of the city.

And as I went from shop to shop in search of photographs of the churches I was followed by an officer looking vainly for a Baedeker. Imagine—in a town where one may live quite as comfortably as in Siena or Verona, and where there is quite as much to see!

Somebody had told me that Saloniki was rather like Genoa. My first impression, therefore, was of a disappointing flatness, not in the least comparable to the lofty air—the piled, bastioned, heaven-scaling air—of the Italian city. Yet Sa-

loniki scales heaven; too, in her more discreet manner.

And there is even something faintly Italian about her. This is most palpable on the broad quay of the water front, especially when a veritable row of fishermen from the Adriatic are drying nets or sails under the sea wall, just as they do in Venice. The crescent of white buildings facing the blue bay would not look foreign in any Rimini or Spezzia.

The White Tower, which is the most conspicuous of them, might perfectly have been the work of an Italian prince. Indeed, a Doge of Venice is said to have built the first edition of it, and Süleiman the Magnificent employed Venetian masons for his own.

## A GREEK "MOVIE" THEATER

A "splendid palace" opens florid gates of hospitality there. A skating rink and a cinematograph offer their own more exotic attractions to the passer-by. Cafés abound, overflowing onto the awninged sidewalk. Electric trams clang back and forth in proud consciousness of the fact that they existed when imperial Constantinople was yet innocent of such modernities.

They take you around the eastern horn of the bay to the trim white suburb of Kalamaria, where consuls and other notables of Saloniki live, and where Sultan Abd-ül-Hamid II spent nearly four bitter years in the Italian Villa Allattini, looking out at the provincial capital which he and Nero both embellished in their day. On the opposite horn of the crescent is the Latin-enough park of Besh Chinar—Five Plane Trees—where it is good to sip coffee and listen to music in the cool of the day.

And if you did not know that greater prize and ornament of Saloniki for Olympus, the true Thessalian Olympus of Greek legend, you might easily imagine it to be some white Alp or Apennine looming magnificently across the bay.

Look a little closer, however, and this Italian appearing town has unfamiliar details. The white *campanili* that everywhere prick up above the roofs of weathered red are too slender and too pointed



Photograph by H. G. Dwight

TURKISH HOUSES IN SALONIKI

This picturesque bridge, color-washed in red, and frescoed in quaint landscapes, leads from the mansion of its owner to his garden across the street

for true bell towers. Then, as you land at the quay you perceive that the electric cars are labeled in strange alphabets. The cafés do not look quite as they should, either.

A COSMOPOLITAN ASPECT

As for the people in them, a good many would pass without question. Just such slight and trim young men in Italy would sit at little tables on the sidewalk. Just such young women, rather pale and powdered as to complexion, rather dusky as to eyes and hair, would sit beside them. And you hear a good deal of Italian. But you hear more of other and less

familiar languages. And those red fezzes are a new note. So are those more numerous hay-colored uniforms that sat at no *caffè* in my Italian days.

A more striking note is afforded by numerous dignified old gentlemen taking their ease in bath-robés, as it were, slit a little up the side and tied about the waist with a gay silk girdle. Over the bath-robe they usually wear a long, open coat lined with yellow fur, which guards them from the cold in winter and in summer from the heat. And none of them is without a string of beads, preferably of amber, dangling from his hand and giving him something to play with.

Such an old gentleman should be accompanied by an old lady, who contributes what is most characteristic to the local color of Saloniki. The foundation of her costume is a petticoat of some dark silk, and a white bodice crossed below her throat—a very thin bodice, cut very low at the neck, and very palpably unstiffened by any such mail as western women arm themselves with.

WHERE THE CAMERA  
FAILED

Over this substructure the old lady wears a dark satin bolero lined with fur and two striped silk aprons—one before and one behind. The latter is caught up on one side, some corner of it being apparently tucked into a mysterious pocket. But the crown and glory of the old lady is a head-dress which I despair of describing. I wouldn't have to if the old ladies of Saloniki had not formed a conspiracy against me or thrown over me some incantation that put my wiles to nought.

For though I shadowed them by the hour, camera as inconspicuously as possible in hand; though I lay in wait for them behind corners and snapped at them as they passed, I never succeeded in properly potting one of them. Therefore I can only affirm that they wore on their heads, pointing down toward their noses, an invention that looked to me like the pork-pie hat of Victorian portraits—if such a name be not too abhorrent to those particular old ladies.

The Saloniki specimen is no true hat, however. It seems to be a sort of flat frame, tightly wound about with a stamped or embroidered handkerchief and crowned with an oval gilt plaque set



Photograph by H. G. Dwight

A BIT OF OLD SALONIKI

off by seed pearls. Whatever its color, this creation invariably ends in a fringed tail of dark green silk, also ornamented by a gilt or gold plaque of seed pearls, hanging half way down the old lady's back. In this wonderful tail the old lady keeps her hair, of which you see not a scrap, unless at the temples. And about her bare throat she wears strings and strings of more seed pearls.

A MOTHER OF MANY

She is, this decorative, this often extremely handsome old lady, a mother in Israel. The old gentleman in the gaberdine is her legitimate consort, while many of the modernized young people at the café tables are their descendants—very many. A dozen different estimates of



Photograph by Zepdji

A GROUP OF BULGARIANS IN SALONIKI

One sees everywhere in this Greek metropolis reminders of the centuries during which Turkey ruled in Saloniki. Only the latest maps show Saloniki as a part of Greece, for it was only during the first Balkan War that the region of which it is the center became Greek territory.

the population were given me, varying according to the race of my informant; but they all agreed on the point that Saloniki contains not far from 150,000 people, and that more than half of them are Jews.

There is also a considerable Moslem population of Hebrew origin, mainly descended from the followers of Sabataï Levi, of Smyrna, a would-be Messiah of the seventeenth century, who created a great stir in this part of the world, and

who, being at last offered his choice between death and Islam, elected the latter. Several of the Young Turk leaders belong to these *Dönmeh*, as they are called, or Those Who Turned. They are still looked upon a little askance by the orthodox of both confessions.

Altogether the Jews of Saloniki are more than a mere piece of local color. They hold their heads up as do their co-religionists in no other city in Europe—down to the very boatmen in the harbor.



Photograph by Frederick Moore

#### GREEK WOMEN OF DRAMA, NEAR THE BULGARIAN BORDER

"It is not surprising that a city so admirably placed, whether for defense or for communication . . . should long have been known to men" (see text, page 205)

Pleasant, hearty-looking fellows the last are, too; fair-haired, many of them, and blue-eyed. The language of these children of Abraham is a corrupt Spanish. The fathers of most of them were driven out of Spain in the fifteenth century by Ferdinand and Isabella. Long before that, however, St. Paul mentioned a synagogue in the city of the Thessalonians.

#### PICTURESQUE COSTUMES PASS AND SCHOOLS ARE FILLED

I could not help regretting that the younger generation should renounce its picturesque heritage of costume. Yet I was told that the change had entailed the happiest results for Saloniki; had made a dirty medieval town cleaner and more comfortable than any other in its neighborhood; had filled shops and banks and schools. And it played in the greater

domain of the Turkish revolution a part that has yet to be recorded.

Between the quay and the Street of the Vardar lies the New Jerusalem of this energetic population. The seaward part of it is a Latin-looking and Greek-speaking quarter for which Saloniki cherishes considerable tenderness. I preferred, myself, such portions of it as have not yet been Haussmannized, or Midhatized. For Midhat Pasha, father of the Turkish Constitution, was many years ago Governor General of Saloniki, and he left his mark in streets of uncommon straightness for the Levant.

Between them alleys of sharp light and shade meander under broad eaves, and glimpses of pleasant courts and loggias are to be caught through open doors. There also congregate many at the receipt of custom, the more favored of



GREEK PEASANT GIRLS FROM THE CAMPANIA

"Women in hats, women in kerchiefs, women in embroideries that you want to buy off their backs—and sometimes do!—women in the Turkish domino, offer a complete exhibition of Balkan fashions" (see text, page 228)



Photograph by H. S. Cresswell

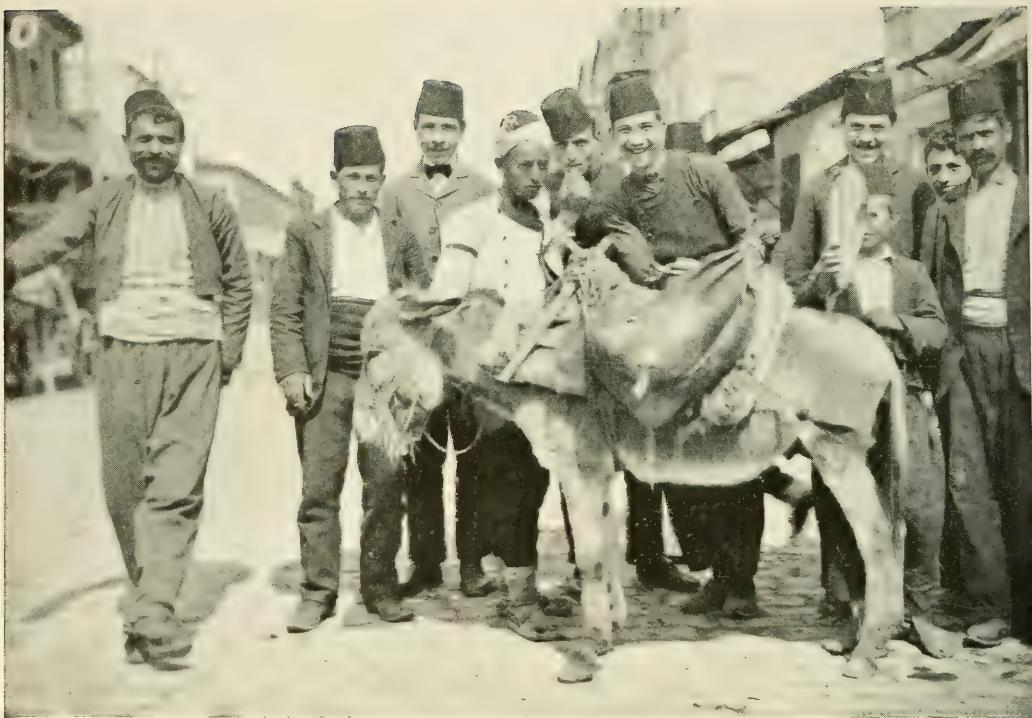
MACEDONIANS IN SALONIKI

Bulgarian peasant women dressed in the costume of Albania



Photograph by Frederick Moore

TWO GENERATIONS OF BULGARIANS AT DRAMA



Photograph by Frederick Moore

#### REFRESHMENTS IN SALONIKI

"As I listened to Mr. Black Eyebrow, looking about me at the red fezzes, the white skull-caps, the fur robes, and all the other variants of the Saloniki scene . . . I began to understand . . . why the equilibrium of races in Macedonia is so difficult to bring about" (see text, page 232).

them in roofed or awninged thoroughfares, into which the Ægean sunlight picturesquely drips.

#### A CONGRESS OF NATIONS

Little is Latin there. To loiter among the booths of the bazaar, to explore the busy squares and markets beyond it, to stroll in the crowded Street of the Vardar, or to idle among the coffee-houses of its western end, is to take in something of the Macedonian question. Fur robes and green pigtails are only incidents among many. Sedate red fezzes come and go. Tall Albanians, variously braided according to their tribes and wearing a white skull-cap on one ear, stalk through the crowd with that lordly swing of theirs.

Bulgarians, less lordly, but no less indifferent to the opinion of the world at large, mind their own business in brown home-spun. Kilted Greek peasants in tight white trousers tasseled under the

knee, booted Montenegrins with hanging sleeves, lend the scene an operatic air.

Women in hats, women in kerchiefs, women in embroideries that you want to buy off their backs—and sometimes do!—women in the Turkish domino, offer a complete exhibition of Balkan fashions.

Beyond the Street of the Vardar the Turkish quarter begins. Saloniki is naturally less of a Turkish town than it was, when the Turks stood second and the Greeks third in the roll of the local babel. But while they have now changed places the fez still adds a very appreciable note to the color of Saloniki.

While Jews and Christians, too, live in this part of the city, the higher you climb the better you might imagine yourself to be in Stamboul. There are more stone houses, and some of them are unfamiliarly frescoed on the outside. The windows, though, are latticed, as they should be. There is a good deal of decorative iron work about them.



Photograph by Frederick Moore

#### THE BUTCHIER: SALONIKI

"Saloniki is naturally less of a Turkish town than it was when the Turks stood second and the Greeks third in the roll of local babel. But while they have now changed places, the fez still adds a very appreciable note to the color of Saloniki" (see text, page 228).

#### LISTENING TO A NATURALIZED GRAMOPHONE

Upper stories lean out toward each other on curved wooden brackets. Stenciled under broad eaves, or hung there like a picture in a frame, is an Arabic invocation: "O Protector!" "O Proprietor of all Property!" Occasionally you pass a building like a mosque without a minaret, whose domes are studded with glass bulls' eyes and within whose doorways lounge half-nude figures in striped togas—a Turkish bath. And you keep discovering little squares where a plane tree or two make shadow, where water is sure to trickle, and where grave persons sit on rush-bottomed stools, sipping coffee,

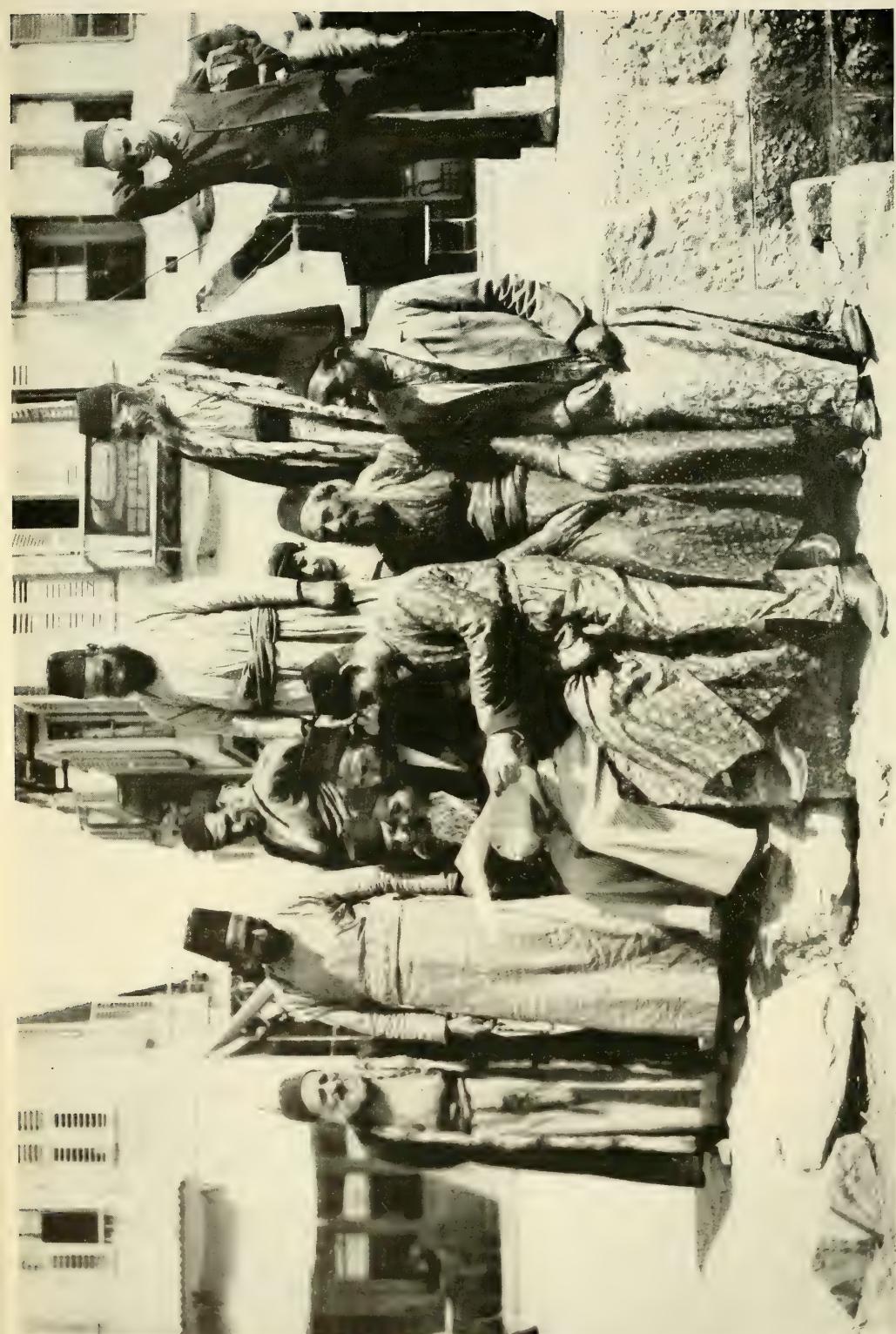
smoking water-pipes, and listening it may be to a naturalized gramophone.

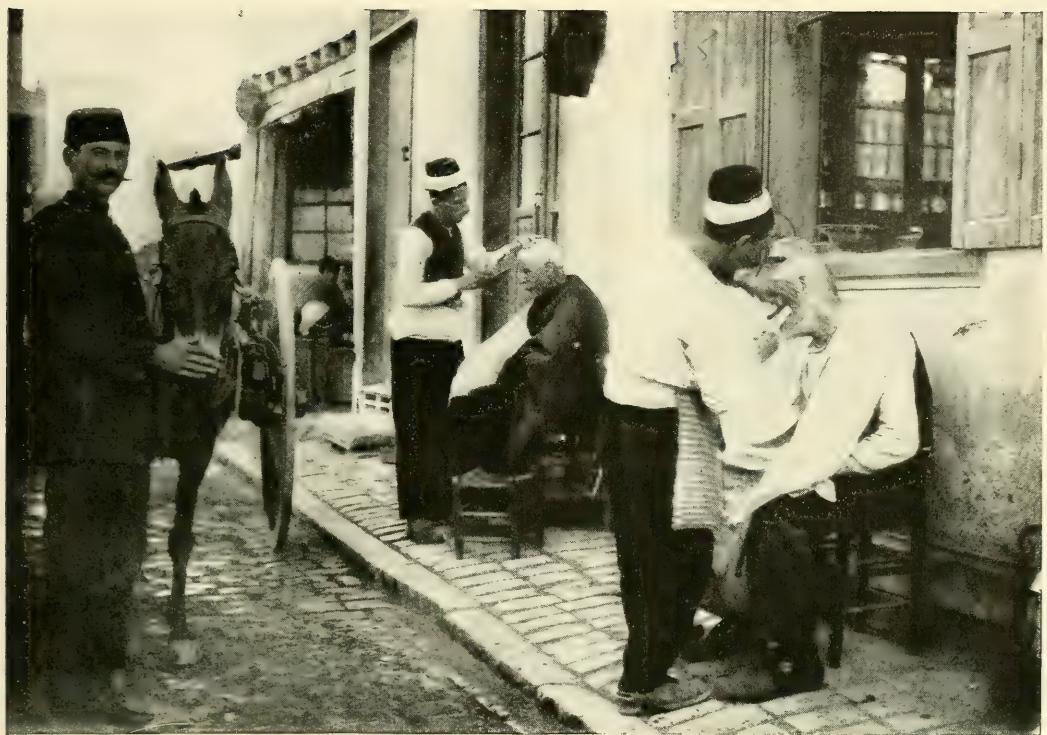
At the tiptop of the hill you are stopped by the old walls, whose crenellations print themselves so decoratively across the sky as you look up the long streets from below. Or at least it was so the last time I mounted to that *Castelloccio* of this Levantine Genoa.

Even then, however, unsentimental crowbars were at work in that ancient masonry. Through the resultant breaches you look northward into a bare country that dips and mounts again to a farther background of heights. One reason why the country is so bare is perhaps that it was so long cut off from the city by the

Photograph by Frederick Moore

JEWS IN THE CITY OF SALONIKI  
"A more striking note is afforded by the numerous dignified old gentlemen taking their ease in bathrobes, as it were, slit a little up the side and tied with a gay silk girdle" (see text, page 222)





Photograph by Frederick Moore

STREET BARBERS IN THE TURKISH QUARTER

"And you keep discovering little squares where a plane tree or two make shadow, where water is sure to trickle, and where grave persons sit on rush-bottomed stools, sipping coffee, smoking water-pipes, and listening, it may be, to a naturalized gramophone" (see text, page 229).



Photograph by H. G. Dwight

A SCENE IN THE VEGETABLE MARKET: SALONIKI

walls. It is, of course, well for the town that it should have room to grow, as for the country that it should be reclaimed from the abomination of desolation.

But, being an irresponsible and sentimental tourist, I was sorry to see those old stones dislodged. I was sorry, too, for the storks. They congregate so picturesquely among the battlements of Yeni Kapou that one wishes Saloniki might take a tardy lesson from Florence and save at least her gates.

#### THE VIEW REMAINS

However, no one can ever take away the view, and that is the best reason for climbing to this storied hilltop. They say that Xerxes of Persia, to whom blue water was a rare enough sight, sat here long and admired the spectacle of the underlying gulf, set jewel-like between its hills, with Olympus towering white at the end of the vista.

If he did, I think better of him than he otherwise deserves. I also highly approve the taste of the Turks in preferring this part of Saloniki. Its hanging coffee-houses are not so popular, to be sure, as those of Besh Chinar, the quay, or the Street of the Vardar. Yet one of them I remember better than any other in the town. Under its plane trees I had the pleasure of hearing a certain famous Turkish singer. The famous singer was called Kara Kash Effendi, otherwise Mr. Black Eyebrow.

Mr. Black Eyebrow sat in a small krosk, surrounded by a chosen company of players on lutes and tambourines, who attended respectfully the descent upon their master of the divine afflatus. When the divine afflatus descended, Mr. Black Eyebrow put his hand to his cheek, as Turkish singers do—I know not whether to aid their strange crescendo—and

poured forth the melancholy of his heart in a manner which most westerners profess to find laughable.

Whereby they prove again that what we like is what we are used to, and that few be they capable of taking in a new impression. For myself, having long been used to such singing, I could have listened all day to the melancholy of the heart of Mr. Black Eyebrow. It seemed to form a singular medium of twilight, in which the imagination played easily as a bat.

#### SO THE PERSIANS MUST HAVE SUNG

So I thought the Persians must have sung down there in ancient Therma, as they gathered for their march to Thermopylae. So sang, perhaps, the Moors in Spain. And so the Janissaries sang when they had driven the lion of St. Mark out of that blue bay.

As I listened to Mr. Black Eyebrow, looking about me at the red fezzes, the white skullcaps, the fur robes, and all the other variants of the Saloniki scene, I suddenly realized for the first time in my life why it is that a *macédoine* in a French bill of fare is a dish with a little of everything in it. And I began to understand, what no outsider can in his own country, why the equilibrium of races in Macedonia is so difficult to bring about, and why any final equilibrium must necessarily be in part an artificial one. I could not help hoping that that particular *macédoine* has been served for the last time.

At any rate, no one can deny that the Greeks have an older claim to Saloniki than any one else. Yet I could not help feeling a little sorry for Mr. Black Eyebrow and appreciating that not without reason did he pour forth melancholy from his heart.





Autochrome by Franklin Price Knott

#### AN ARAB BLACKSMITH

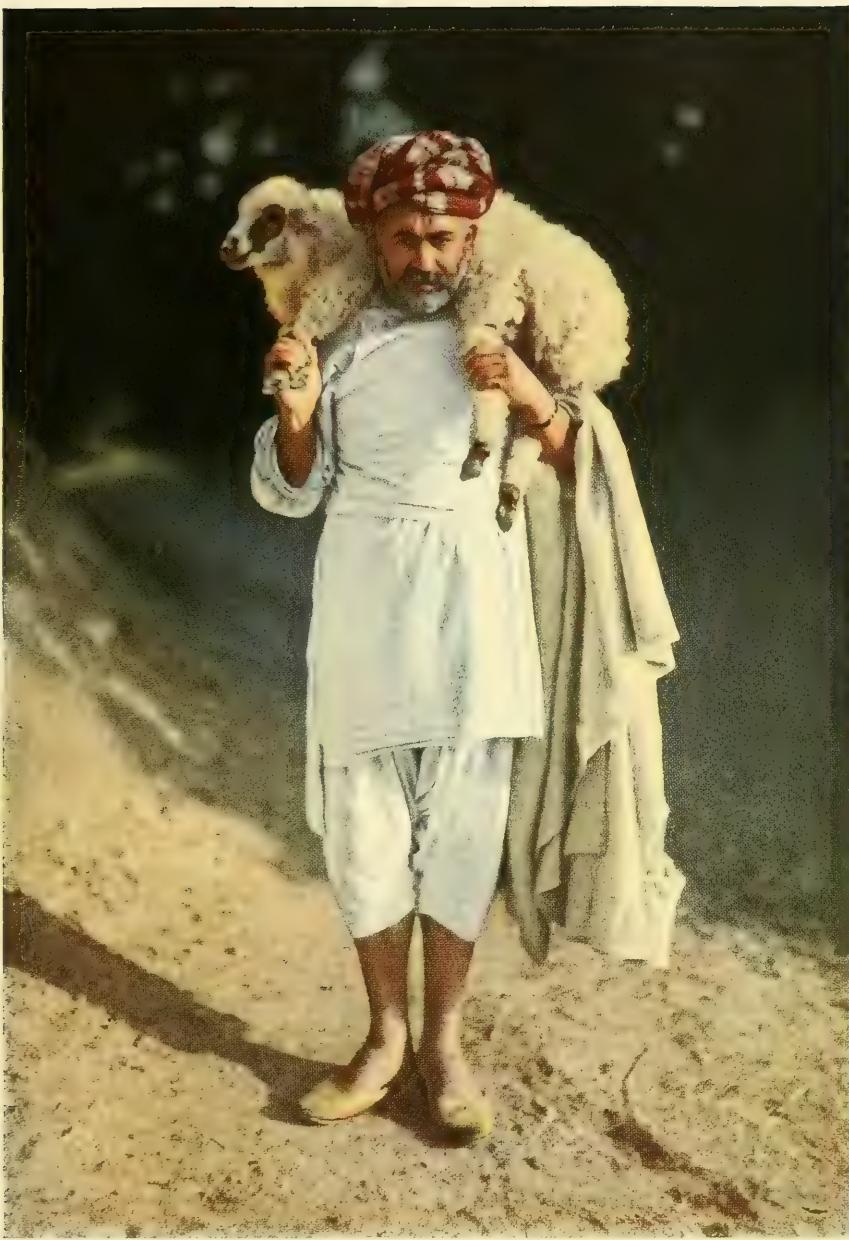
Except for his multi-colored turban, this strong-visaged native of Sfax, Southern Tunisia, looks as if he might have posed for one of Rembrandt's immortal masterpieces. From father to son the blacksmith's occupation is handed down, each leaving to his successor the heritage of a reputation for skilful workmanship, even though his implements be primitive and his wage meager.



Autochrome by Franklin Price Knott

#### A SHY KABYLE BEAUTY

There would seem to be no feminine reason why this picturesque young woman in her brilliant costume should object to standing as a model before the color camera, but she, like the other girls in the neighborhood of Michelet, Tunisia, eluded the artist for many days. As fleet of foot as a gazelle, she would have made her escape had not the Mother Superior of the Government hospital persuaded her to pose for the stranger, which she did with unconscious grace.



Autochrome by Franklin Price Knott

A LAMB'S WOOL BOA

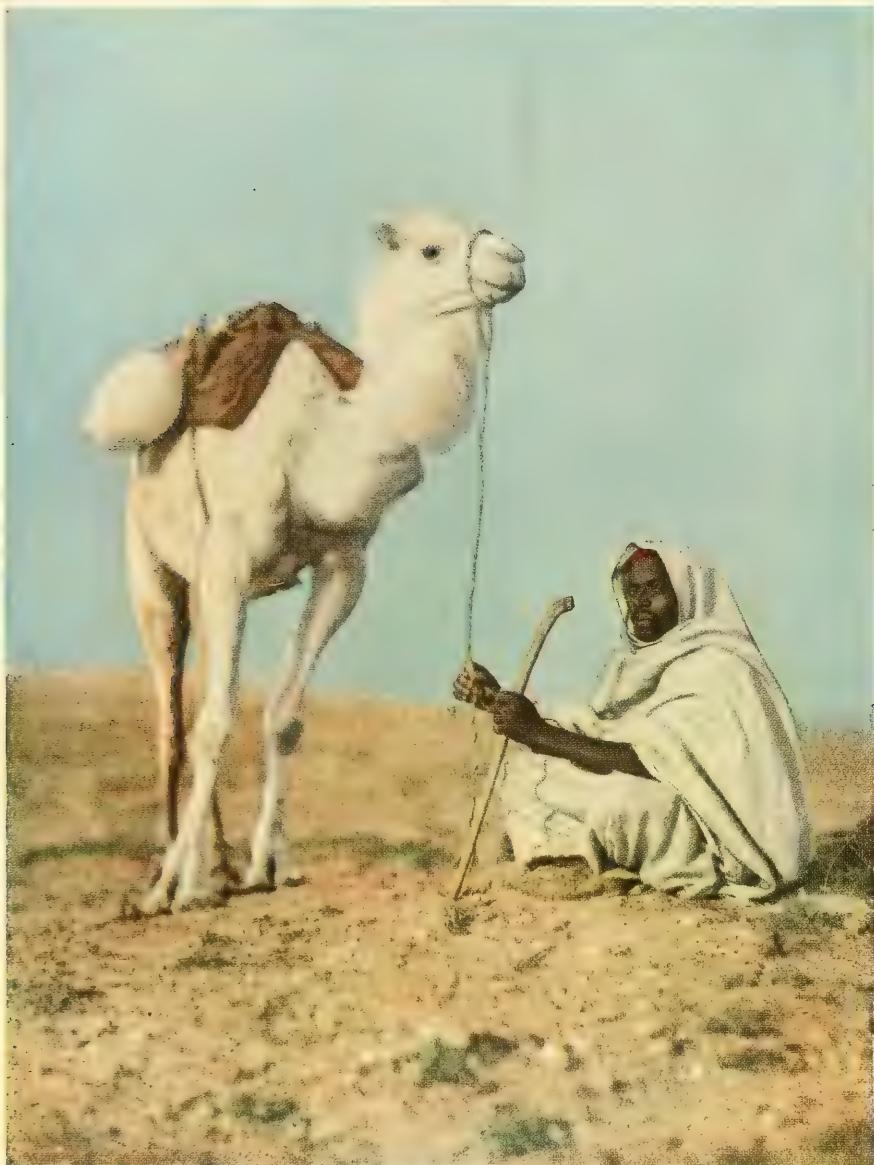
So closely attached to his flock is the shepherd of the East that when necessity compels him to select one of the number for the market, he "tempers the wind to the shorn lamb" by carrying the victim about his neck instead of driving it before him to slaughter. This tawny native of Tunisia has the thoughtful countenance of a Moorish philosopher of the days when Granada was the center of culture in Western Europe.



Autochrome by Franklin Price Knott

#### A DANCER OF ALGIERS

With richly spangled jacket, jeweled headdress, voluminous scarlet trousers, and gold-encircled ankles, the dancer is a more fascinating figure for the color artist than for the motion picture photographer, and as a still study requires no censorship.



Autochrome by Franklin Price Knott

#### A SUDANESE AND HIS RACING CAMEL

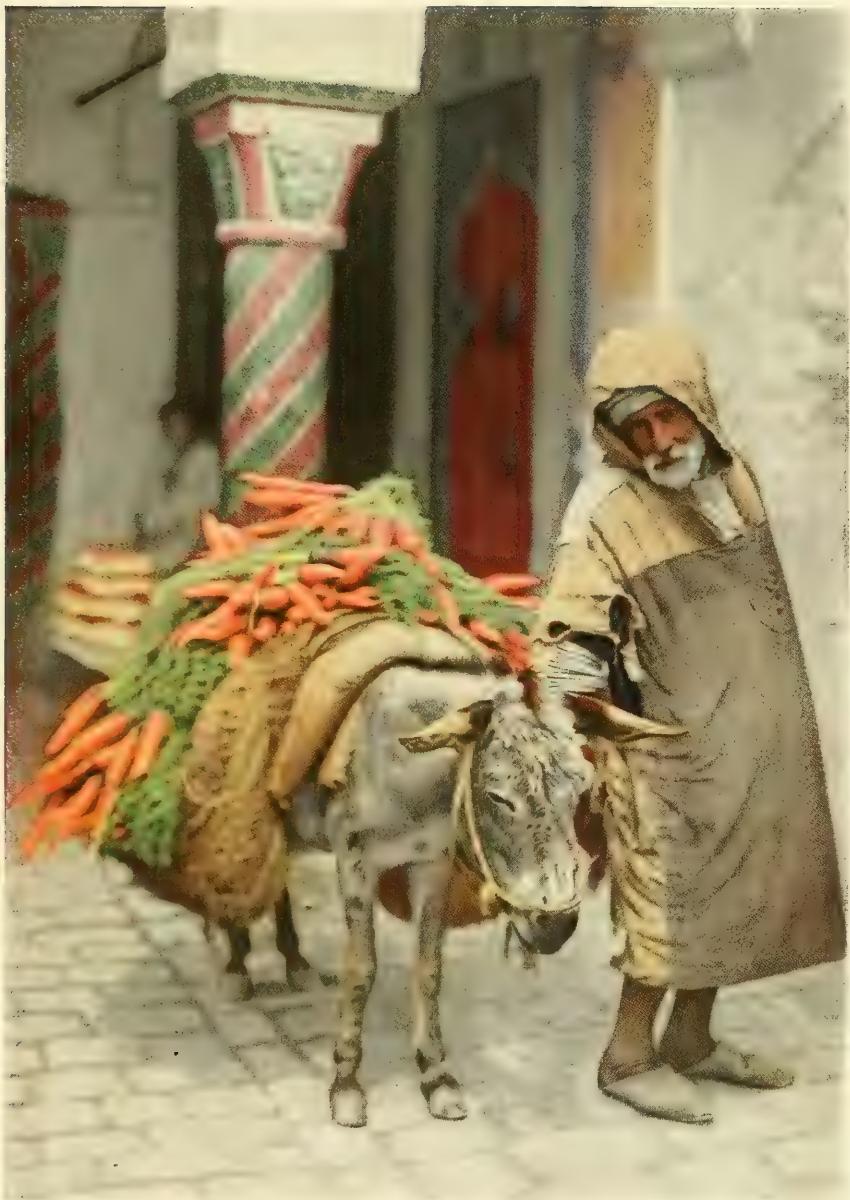
While not so rare as the white elephant or the white rhinoceros, white camels are a novelty to American eyes for they seldom find their way into circus caravans. This clipper-rigged "ship of the desert" and his swarthy skipper were photographed near El Djem, in southern Tunisia. A hundred miles a day is not an extraordinary distance feat for the mehari, as the racing camel is called.



Autochrome by Franklin Price Knott

#### WHEN AGE COMES ON IN ALGERIA

The women of the Kabyle tribe, living in the Djurdjura Mountains, Northern Algeria, show the footprints of time early in life, as do the native women in all tropical climes and especially among semi-civilized peoples. This burden-bearer is a picture of poverty.



Autochrome by Franklin Price Knott

A CARROT PEDDLER AND HIS PACK BEARER

Master and beast in a Tunis street appear the personification of lassitude. The peddler is as oblivious of the colorful beauty of the Moorish column in the background as is the donkey of the juicy provender on its back.



DANCING GIRLS OF THE OULED NAILS

These desert devotees of Terpsichore affect brilliant costumes and glittering ornaments not only through their love of finery but because such personal adornment increases their earning capacity as dancers in the bazaars of Algerian towns, thereby hastening the day when, with dowry amassed, they can return to the tents of their tribe and there find eager suitors among the young fortune hunters of their own people.

Autochrome by Franklin Price Knott

TAJ MAHAL: AGRA, INDIA

The transcendent grace and symmetry of this monument of a pagan emperor to the memory of his favorite wife, have, like the inscrutable smile of the Mona Lisa, baffled the descriptive powers of poets of every clime. It is as if Shah Jahan had "thought in gold, dreamed in silver, imagined in marble and in bronze conceived." For three hundred years it has dazzled pilgrim nations and of all the wonders of the world created by the hand of man it seems the very soul of beauty—a poem in marble, a symphony in stone.





Autochrome by Franklin Price Knott

#### AFTERNOON COFFEE IN KAIROWAN

In Tunisia the thick, almost viscous Turkish coffee supplants the English tea and the American grape-juice as a social stimulant. At frequent intervals during the day work is suspended long enough for a brief sip and an exchange of news. In the picture the improvised coffee-house is the doorway of a carpenter shop.

### *AN ORIENTAL TAXICAB*

Seated in this canopied vehicle with wooden springs, and drawn by stately white oxen, which are guided by means of nose bridles, these daughters of Delhi seem to find the world a joyous place in which to live. Not so the somber master of the retinue who is evidently considering the traffic laws concerning speed.





Autochrome by Franklin Price Knott

#### THE TOWER OF JEWELS

A blaze of coruscant splendor at night and a graceful pinnacle of rainbow tints by day, this structure was the color climax of the Panama-Pacific Exposition. In the foreground is a carpet of riotous hues from Nature's flower loom, which weaves more brilliantly and luxuriantly in California's sunshine than under any other skies. The musical play of many fountains delighted the ear while the eye feasted upon the beauties so abundantly realized by architect and landscape gardener.

Autochrome by Franklin Price Knott

#### THE GREATEST ARTIST OF HER TRIBE

This is Nanpeo, the famous Hopi pottery maker, now nearly blind. But her gift for ceramic decoration is to be transmitted through her daughters, who have been carefully instructed in the use of designs which have a religious symbolism as well as esthetic qualities. Nanpeo is wearing a typical Hopi costume.





Autochrome by Franklin Price Knott

HIER HOME IS VOLENDAM, HOLLAND

And the face of this Dutch girl reflects efficiency, sturdiness and thrift, qualities which make the women of her country among the best housewives in the world. So quaint are the costumes of the fisher-folk of this village that a colony of English and Dutch painters has been established here, and artist models are as numerous as the inhabitants. On Sundays the natives are seen in their most striking attire.



Autochrome by Franklin Price Knott

#### A MASTER'S MODEL

Franz Hals would have made this Dutchman immortal by transferring to enduring canvas his striking features, quizzical and highly individual. His bearskin cap, vivid neckerchief and flaming blouse would tax the skill of any master of pigments who tried to reproduce them with the fidelity and freshness which have been accomplished here by the allied arts of natural color photography and color-printing.

Autochrome by Franklin Price Knott

#### WEATHER PROPHETS

Constantly facing death not only on the storm-swept waters of the North Sea but in every ocean on the face of the earth, the hearty Dutch sailors have learned to predict fair weather or foul with an accuracy of which any scientific meteorological bureau would be proud. Upon their knowledge of the elements depend the peace and plenty of those residing in the quaint cottages which border this picturesque canal "Somewhere in Holland."



# THE HOARY MONASTERIES OF MT. ATHOS

By H. G. DWIGHT

EXTENDING out into the *Æ*gean Sea from the mainland of Chalcidice, in northeastern Greece, like the prongs of a trident, are three peninsulas. They leave the mainland some forty miles southeast of Saloniki and look as though they might be the fork with which Neptune planned to throw the island of Chios, on the Smyrna coast, out of the sea. The easternmost of these peninsulas is that of Athos, named from the great terminal peak which rises like a pyramid out of the sea at its *Æ*gean end. The peninsula is about forty miles long, varying in width from four to seven miles, and it is entirely owned and controlled by a group of monastic communities, which govern it under a republican system (see map, page 271).

Mt. Athos chose to make its first appearance to us in the melodramatic light of a midnight moon—a pale pyramid looming vaguely above a high black ridge, where a few lamps glimmered far apart. Such a light was needed to lend interest to Daphne, the port of the peninsula. In the less romantic clarity of a March morning it appeared a dingy little hamlet enough, consisting of a custom-house, a postoffice, an inn, and the quarters of the few residents so unfortunate as to be stationed there.

## WHERE NO WOMAN MAY TREAD

In normal times of peace a weekly Russian steamer and occasional Greek ones constitute the sole incidents of their lives, deprived, as they are—shall I say of what is for other men the great interest of life? For I must reveal to you, O feminists, suffragists, suffragettes, and ladies militant of the western world, that here is a stronghold secure against your attacks.

To put it more plainly, an ancient law forbids any female creature to set foot on the soil of the Sacred Mount. As one might expect, of course, in a world inhabited by descendants of Eve, that law has been broken. There are legends of

inquisitive empresses who were miraculously prevented, at the door, from defiling certain monasteries by their intrusion. There are other legends of monasteries subjected to fasting, humility, and purification by reason of some such uninvited guest.

Moreover, a monk confessed to me in whispers that during the terror of the Greek War of Independence his mother spent several months in asylum at the monastery of St. Paul. And I have seen water-colors of several of the monasteries painted by Miss Canning, daughter of the famous British Ambassador, Lord Stratford de Redcliffe, who boldly accompanied her father to Mt. Athos in the uniform of a midshipman of the Royal Navy. But no such blinking of the law is possible to an inn-keeper or unhappy officer of customs.

Even the furred and feathered colonists of Mt. Athos are supposed to leave their harems at home. Neither cow nor hen wakens the echoes of the monastic community, and the monks' kitchens are supplied with milk, butter, and eggs from their distant farms on the mainland. The dispiriting effects of celibacy are nowhere so visible as among the army of tomcats that haunt the cloisters. I must confess, however, that I more than once had reason to suspect a shameless *bayadère* of a tabby of having secretly stolen across the border.

And our mules had not borne us far from barren Daphne before we perceived other indications that the monks had not altogether succeeded in eradicating the eternal feminine from their midst. We presently turned from the rocky seashore into a gorge with a stone bridge at the bottom of it and a waterfall hanging half way from the top, where birds called so cozeningly to each other that I can never believe only bachelor birds were there.

## "SPRING WILL BE SPRING"

Then as we zigzagged up a roughly paved trail that looked from a distance



Photograph by H. G. Dwight

#### THE MONASTERY OF IVÍRON : MT. ATHOS, GREECE

Ivíron disputes with Vatopéthi the honor of being the second oldest monastery on Mt. Athos. Ivíron was founded in the tenth century, under the Empress Theophano. It was later restored and enlarged by a Georgian prince; hence the name, for the Georgians of the Caucasus were known to the Greeks as the Iberians.

like a coil of rope dropped at random on the mountain side, up and up past terraced olive trees, past a white monastery looking pleasantly at the sea from a high green shelf, past reaches of budding wood, to a dip on top of the ridge, we came upon great shrubs and fair-sized trees of holly, so plenteously burdened with big red berries that the monks should have destroyed them, root and branch, had they properly studied their botanies. We also saw blossoming heather, broom, violets, anemones, spikes of classic asphodel, and I know not how many other proofs that spring will be spring in spite of all the monks in the world.

And amid them all two great crosses stood black on either lip of the hollow against a far-away sea. So we dropped at last, through what must once have been a magnificent wood, to the village of Karyés.

Karyés, otherwise The Walnuts, is the capital of the community. It lies just under the crest of the peninsula, about midway of its long eastern slope. An ignorant newcomer runs fresh risk of incurring displeasure, even when he has left his wife behind; for in the streets of this other-worldly capital may no man ride, smoke, sing, or otherwise comport himself in too self-satisfied a manner.

Dismounting, accordingly, at a stone block provided for that purpose, we had the more leisure to admire Karyés—its crooked alleys, its broad eaves, its omnipresent crosses, its running water, its hanging gardens, its sudden visions of white-capped Athos or the underlying blue of the *Aegean*, and its grave, bearded black-gowned inhabitants, with uncut hair tucked under black stove-pipes; true stove-pipes they were, too, having neither



Photograph by H. G. Dwight

#### THE MONASTERY OF PANTOKRATOR: MT. ATHOS, GREECE

This small but picturesque monastery, standing near the edge of the sea on the east side of the peninsula, enjoys a wide view of the *Ægean* and of the peak of Athos. Founded in the fourteenth century, it is the seventh of the monasteries in point of age.

the brim of the West nor the upper flare of the Greek clergy (see page 270).

Not all the inhabitants were gowned, however. Some wore white Albanian ballet skirts, tasseled garters below a tight white knee, and a pompon at the turned-up tip of each red slipper. These, we learned, were members of a local pretorian guard. Others were less amply kilted or trousered in different degrees of bogginess; and not a few looked as prosaic as ourselves.

#### WHERE VISITOR IS GUEST

Our muleteer was a little surprised that we preferred to put up at an inn instead of at one of the monastic establishments in the suburbs of Karyés. The reason of his surprise lay in the fact that for many travelers the true beauty of a pilgrimage to Mt. Athos is that not only do you lay up credit for yourself on high, but that you do it for next to nothing. Any one belonging to the worse half of humanity may visit the monasteries and be gratui-

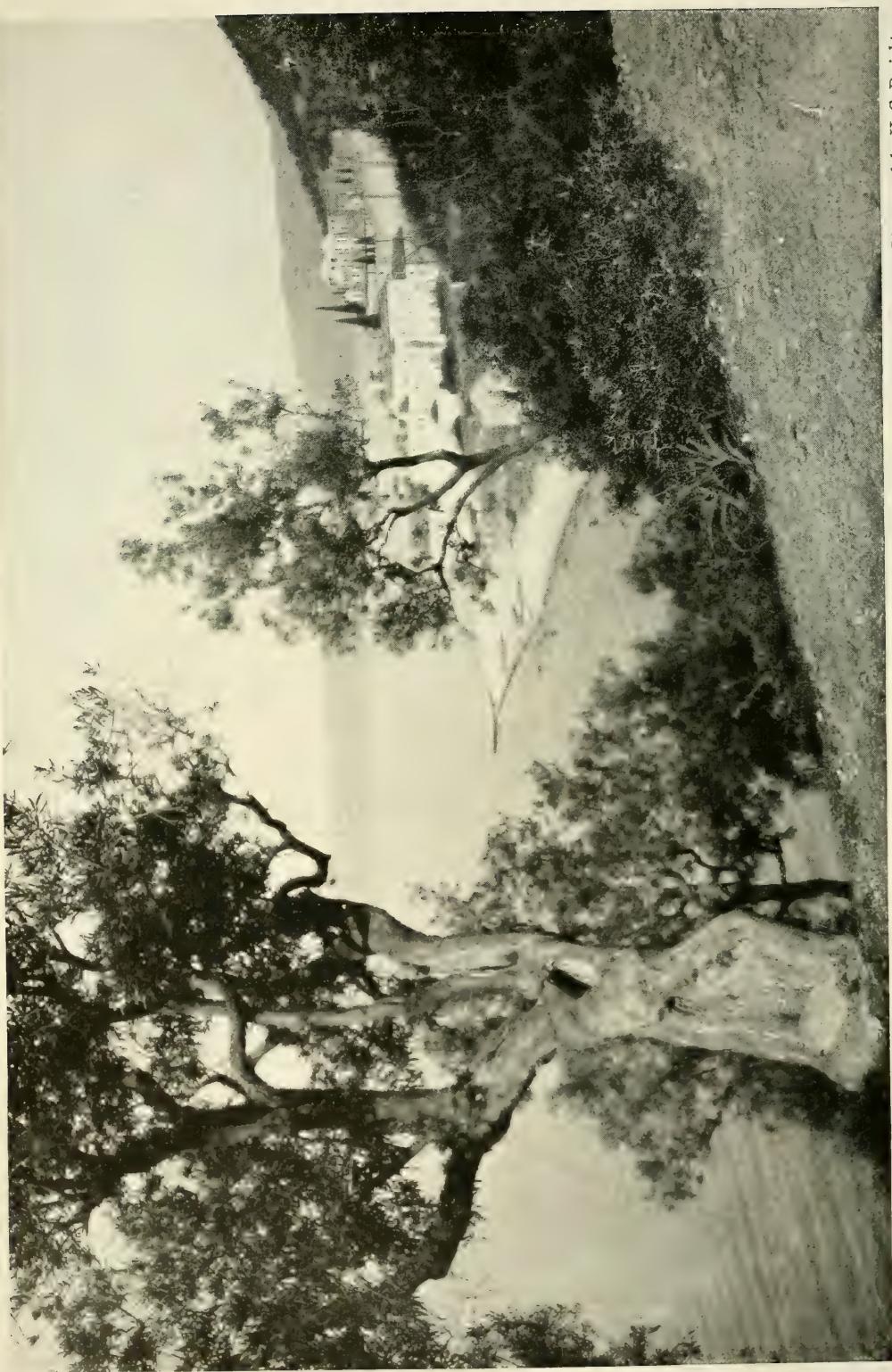
tously entertained so long as he cares to stay.

So many avail themselves of this hospitable privilege, however, that there are degrees in the welcome extended by the monks. If, for instance, the pilgrim bring a letter from known ecclesiastical authorities, he will receive more consideration, and may even receive money for his own purposes or for others commended to the generosity of the fathers. We were not happy enough to possess a letter of that particular kind; but we did bring a letter from the highest of all ecclesiastical authorities in the Greek world, namely, the Patriarch of Constantinople. In theory, therefore, we were entitled to the best the monasteries had to offer and transportation from one to another by mule or boat. For ourselves, we found this scheme of things more embarrassing than otherwise, and in most cases it either increased the expense of our sojourn or caused us unwillingly to hasten our departure.

Photograph by H. G. Dwight

THE MONASTERY OF XENOPHÓN : MT. ATHOS, GREECE

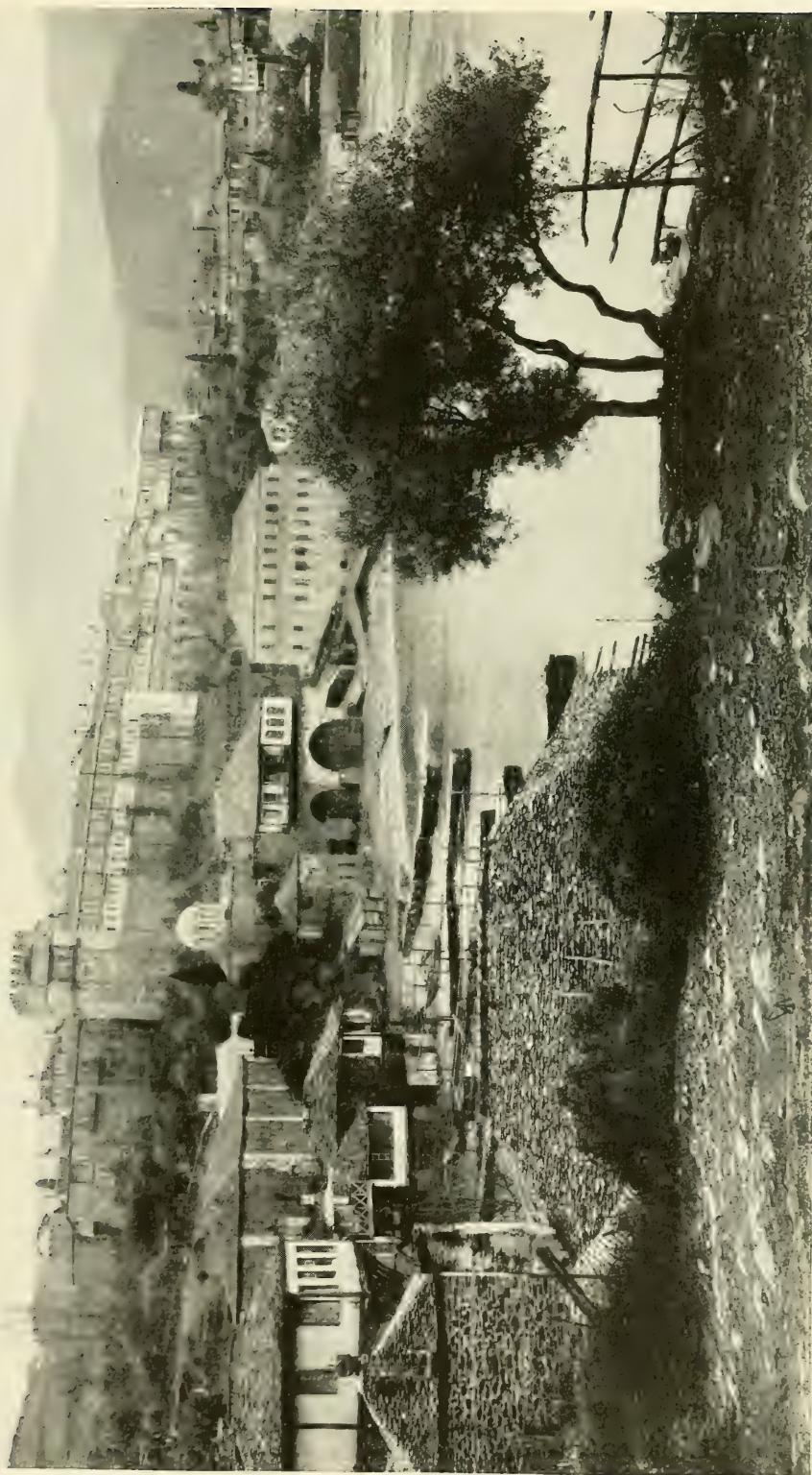
There are few landscapes more picturesque and few seascapes more restful and charming than those of the inlets and coves of Athos, 40 miles from Saloniki



Photograph by H. G. Dwight

THE MONASTERY OF VATOPETHI: MT. ATHOS, GREECE

This large, rich, and ancient monastery stands second in the hierarchic order of the peninsula. Its greater wealth, size, and accessibility give it an influence on the peninsula second to none. According to local legends, Vatopethi was founded by the Emperor Constantine the Great. Julian the Apostate is said to have destroyed the monastery of Constantine, which was rebuilt and enlarged by Theodosius the Great in gratitude for the miraculous escape from drowning, in Vatopethi Bay, of his young son Arcadius. Arcadius himself, after mounting the throne, is credited by local tradition with many benefactions toward the monastery. In 802 it was sacked and burnt by Saracen pirates.





Photograph by H. G. Dwight

#### THE MAIN STREET OF KARYÉS: MT. ATHOS, GREECE

"Karyés, otherwise the Walnuts, is the capital of the community. It lies just under the crest of the peninsula. An ignorant newcomer runs fresh risk of incurring displeasure even when he has left his wife behind; for in this other-worldly capital may no man ride, smoke, sing, or otherwise comport himself in too self-satisfied a manner" (see text, page 250).

But we made it our first duty in Karyés to deliver our credentials, very soundingly worded and wound about with a long strip of paper stuck to the flap of the envelope, to the Most Blessed Assembly of the Sacred Mount, whose address it bore.

#### OLDER THAN WESTMINSTER

The Most Blessed Assembly of the Sacred Mount—or, more briefly, the *Kinótis*—is a very interesting body. Mt. Athos has always enjoyed special privileges, whether under Byzantine emperors, Turkish sultans, or its present suzerain the King of Greece; and the monasteries have always ruled their own peninsula. Of these there are now twenty, and they administer their common affairs through a parliament even more venerable, I believe, than Westminster. Each monastery annually elects a representative to this

parliament, who occupies at Karyés a house belonging to his abbey.

These houses preserve the memory of the long Turkish régime, in that they are known by the Turkish name of *konák*—mansion. Always roomy and substantial, and sometimes handsome, they and the gardens in which they stand add not a little to the appearance of the diminutive capital. In addition to the *Kinótis*, which is a deliberative, legislative, and judiciary assembly, there is a smaller executive council of five, called the *Epistasia*. The members of this smaller council may or may not be members of the *Kinótis*, being elected by groups of four monasteries for a term of five years.

The parliament house of Karyés is not a very imposing structure, but it makes a picturesque group in the center of the town, with the cathedral of the commu-



Photograph by H. G. Dwight

ON THE RIGHT IS THE GUEST HOUSE OF VATOPÉTHI: MT. ATHOS, GREECE

According to Riley, whose book, "Athos the Mount of the Monks," is an authority, more than 250 tons of grapes are made into wine at the Vatopéthi Monastery annually, and each monk and servant gets a daily allowance of wine.

nity and the square old tower beside it. Far more imposing was the pretorian guardsman, who stood at the gate. Four of these, we later learned, are attached to the service of parliament, while a larger standing army of 20 men, called *serdárs*, scour the lonely trails of the peninsula.

THE ETIQUETTE OF THE TRAY

Having sent in our letter by the hand of the white-kilted warrior, we presently had the honor to be received by the Council of Five, in a long, bare room almost entirely surrounded by a low divan. Two of the councilors spoke French, it appeared, which comforted us not a little in discharging the formidable compliments of the occasion. Then, while the secretary prepared the circular, which we were to have in exchange for our patriarchal missive, one of the guardsmen ap-

peared before us with a tray. Its bewildering multiplicity of spoons, saucers; glasses, and refreshments presented well-nigh insoluble problems. I am not sure that we solved them with perfect correctness then; but since we never paid a visit on Mt. Athos without meeting the counterpart of that tray, I am now prepared to expound its etiquette to any prospective traveler in the Levant.

You choose a spoon; you dip it into a jar of preserves; you put it into your mouth and turn it gracefully over, in order to lose nothing of its sweetness; you drop it into a glass of water provided for that purpose; you drink a little water from another glass; you raise a third glass, containing a heady liqueur, with as handsome a speech to the company as your knowledge of strange tongues will devise; you drink—if you choose—more water, and you end with a cup of Turk-



Photograph by H. G. Dwight

#### THE KITCHEN OF THE GUEST HOUSE AT VATOPÉTHI: MT. ATHOS, GREECE

Covel, who also seems to have made his pilgrimage during Lent, says of this kitchen: "They gave us Limpets there thrice as big as oysters in England, and yellow, all cover'd with a fat yellow mosse, which they eat either alone or with oyl."

ish coffee, which you sip as noisily as possible in order to express your appreciation of it.

#### A WELL-SEALED INTRODUCTION

Upon this ceremony followed that of sealing our circular. Each of four councilors produced a quarter of the seal, while the fifth, the secretary, locked them into a handle in his own possession. Our letter was then formally stamped, the resultant image of the Virgin was sanded in the good old way, and we were ready to begin the more serious part of our pilgrimage.

First, however, one of the French-speaking councilors very courteously offered to show us the sights of Karyés. Chief among these was the neighboring cathedral, known on the peninsula as the *Protáton*. It is a cruciform church of the tenth or eleventh century, containing a famous icon of the Virgin and deco-

rated with some of the most interesting Byzantine frescoes that remain. Whether they were or were not painted, as the monks affirm, by the half-mythic Athomite master, Pansélinos, who flourished at the end of the fifteenth or the beginning of the sixteenth century, it is not for me to say. But they certainly preserve the tradition of another time. A St. John in particular, painted so high on the wall that I could not photograph it properly, recalls the noble Byzantine mosaics of Cefalù.

Our venerable guide also took us to visit the small monastery of Koutloumousí, on the outskirts of Karyés, where the problem of spoons and glasses was again presented to us. And we encountered it a third time in the councilor's own *konak*, a big, bare, clean house commanding magnificent views of mountain and sea. He furthermore insisted that we should move our traps there from the



Photograph by H. G. Dwight

A VIEW OF VATOPÉTHI: MT. ATHOS, GREECE

Some idea of the extent of this monastery may be gathered from the statement that it covers four acres, contains sixteen churches, large and small, and has so many buildings that it resembles a fortified town.

rather grubby little establishment—half shop, half inn—where we had deposited them.

A LESS FORMAL SOCIETY

We were happy to accept the hospitality of this kind and intelligent father, who showed us many other courtesies during the course of our pilgrimage, and who interested me the more because he happened to be an Albanian. But truth compels me to add that I also returned with pleasure, more than once, to that same inn. Perhaps it was because our pilgrimage fell in Lent, when monks fast more strictly than laymen. Perhaps it was because I have a leaning toward low company.

At all events, quite as characteristic as the more formal society to which our letter introduced us, I found the society at the inn, where shopkeepers, muleteers, laborers from monastery farms, pilgrims of the poorer sort, hermits, itinerant

monks, and other wanderers gathered daily and nightly in the public room or in the court of flower-pots and budding vines behind it.

We had had interesting glimpses of two or three monasteries and had become acquainted with a number of their inmates; but it remained for us to have our first real taste of monastic life at Vatopéthi. I write the name hesitatingly, knowing that my choice of letters will not please the more learned of my readers. No monk, however, would have any idea what you meant if you spoke of Batopedion. I therefore persist in attempting to convey the local pronunciation, which accents the penult and hardens the *th*.

A MEMORABLE JOURNEY

Not the least memorable part of the experience was the journey from Karyés, which we performed by mule in some three hours. The trail—for so narrow



Photograph by H. G. Dwight

#### THE CLOCK TOWER OF VATOPÉTHI: MT. ATHOS, GREECE

"When the representatives finally dismounted from their gaily caparisoned mules there was a universal embracing, while the white-kilted escort burned more powder. Then, as the fathers entered the court, the bells of the clock tower pealed their welcome" (see text, page 267).

and stony a road was never meant for wheels—led us almost all the way through lonely woods that were just beginning to be aware of spring, first slanting up the steep backbone of the peninsula and giving us romantic views of the Ægean and certain gray monastery towers at its edge; then winding down a long amphitheatrical slope to the bay, where Vatopéthi stood like a medieval castle.

Its distant air of grimness changed as we came down through the olive yards compassing it about. Windows pierced the upper part of the massive stone walls and high balconies leaned out on curved

wooden corbels. Substantial outbuildings were scattered picturesquely among trees, their old slate roofs tinged with yellow lichen and tipped with crosses. The gay mountain water flashed past us in orderly little stone canals. The very mules we met had an air of mildness, well-being, and dignified superiority to their bony brethren from Karyés, which was not unnatural of mules belonging to one of the oldest, largest, richest, and most interesting monasteries on Mt. Athos.

Before the great gate, on an irregular stone bridge above a noisy mill-race, stood a cupola which shelters an icon of the Virgin. Here all who pass in or out stop and cross themselves; and here the gate-keeper shook hands with us, took our circular letter, and reverently kissed its seal. Then we were inducted through a vaulted passage guarded by two more massive

gates into the interior court of the monastery.

I could have spent the rest of the afternoon in this wide irregular sloping place, overlooked by open galleries, where a domed church, a white bell-tower, and sundry smaller buildings were set down at random among orange and poplar trees. But we were shown up an outside stair, roofed with slate, to the guest-house. The old gentleman in charge thereof, in a rusty black gown and a brown felt fool's-cap, made us welcome in his own room, served us the refreshments of rigor, and finally took us to a



Photograph by H. G. Dwight

#### A CLOISTER AT VATOPÉTHI: MT. ATHOS, GREECE

"The cells of the monks are big, clean, bare apartments, furnished chiefly with endless sofas. There they lead a sort of family life, each elder keeping house with one or more spiritual sons" (see text, page 263).

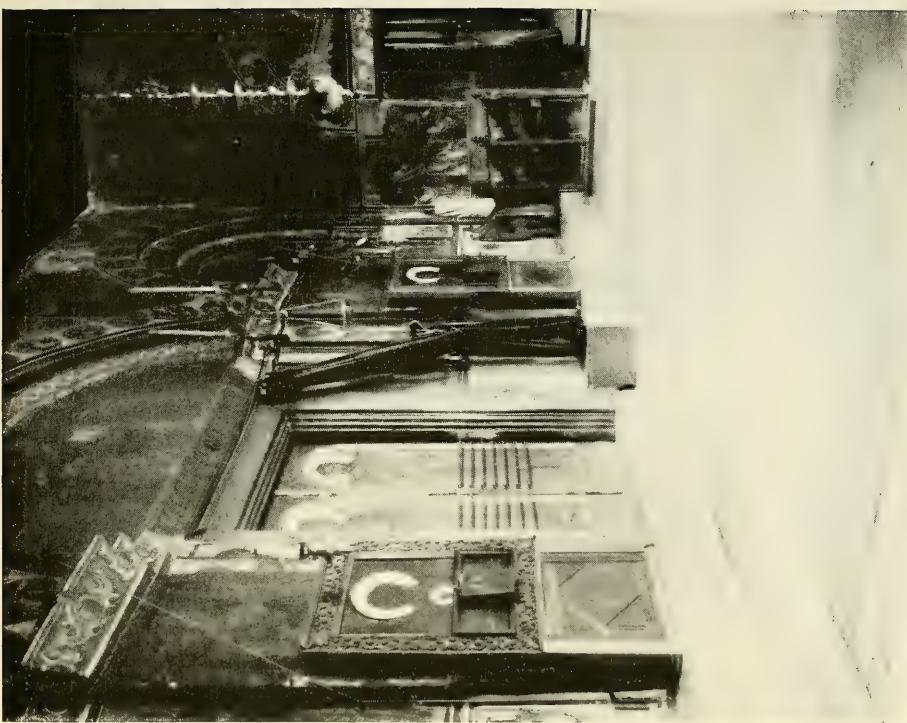
wide marble corridor—with a delightful balcony at the end—out of which opened the guest-rooms of state.

#### EATING THE OCTOPUS

We owed it to the size and prosperity of Vatopéthi that ours was furnished *alla franca*. It contained, that is, two iron beds arranged like sofas, a monumental stove of brick and plaster, and an electric bell. Toilet arrangements it had none, these being situated in the hall outside and consisting of a tap set over a small marble basin without a stopper. The room had, however, a very superior view across a sluice of quick water, an orange garden, and a collection of lichenized roofs, to the blue bay. And in it, shortly after sundown, we were served to such a meal as an orthodox monastery may provide during Lent. We lived to learn, sooner or later, how to thrive on snails.

This time, however, the piece of resist-

ance was a stew of octopus. That toothsome creature, being bloodless, escapes the ban which bars out fish and flesh, not to mention eggs, milk, butter, and oil. We also had a vegetable soup, a mixture of leeks and rice, salad, good black bread, a heavenly compound of caviar, lemon, parsley, and—can I believe that mere elbow grease completed that Lenten substitute for butter?—and more of the famous red wine of the peninsula than we could drink. The old gentleman, the two novices under him, and the cook waited on us, always entering the room without knocking. We found that to be the general etiquette of Mt. Athos. The monks built us a comfortable fire, they smoked cigarettes with us after coffee, they asked us wonderful questions about our country, and they finally brought us thick quilts with a sheet sewn to one side of them, wherein to wrap ourselves for the night.

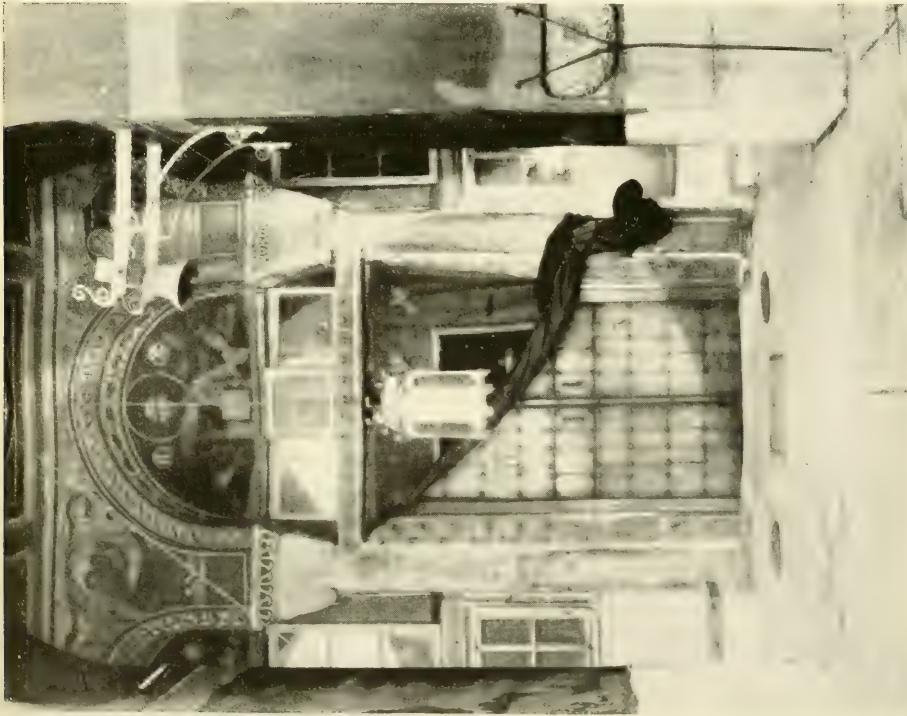


Photographs by H. G. Dwight

THE INNER NORTHEX OF THE CHURCH OF VATOPÉTHI:

MT. ATHOS, GREECE

THE CHURCH DOOR AT VATOPÉTHI: MT. ATHOS, GREECE  
The door is covered with engraved plates of brass, and before it hangs a heavy curtain of what must have been an earlier portiere. Covel says: "Before the entrance into the *Norther* hang'd a very rich embroidered Antiport, given by Andronicus."



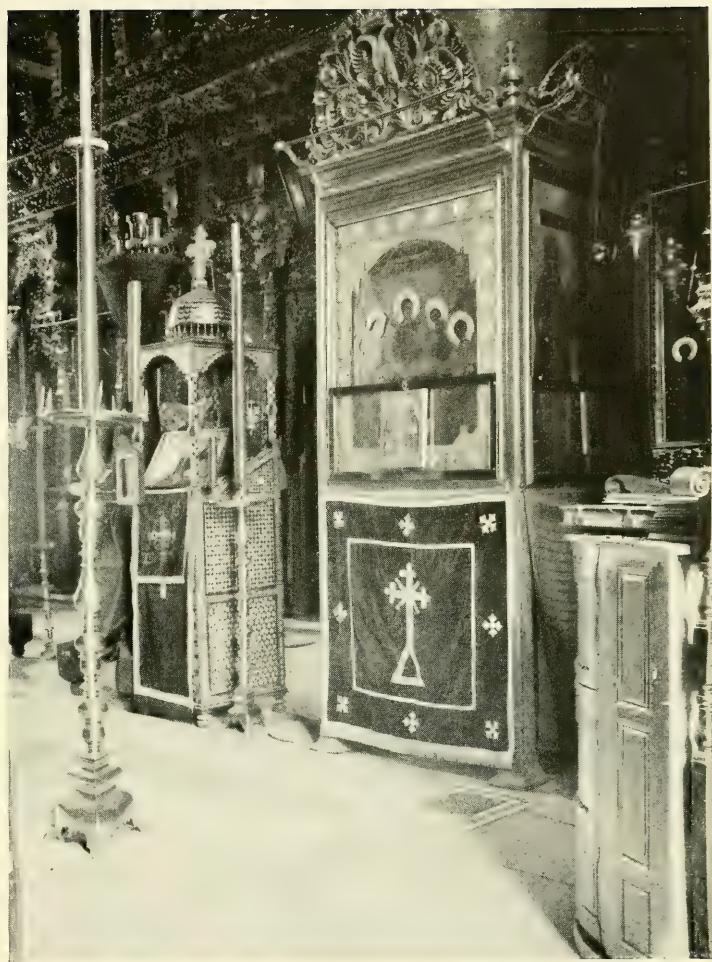
This ancient building was first constructed in the tenth or eleventh century. Its interior is completely decorated with frescoes first painted in 1312, but unfortunately restored in 1739. The Adrianopolitan founders of the monastery are buried in a chapel opening out of the northex. Else, too, is to be seen almost the only example of mural mosaic on Mt. Athos—at the left of the door.

I spare the reader a chronicle of our successive risings up and lyings down at Vatopéthi. He may, however, be interested to hear of the way in which they were regulated. The first time I became conscious, in the watches of the night, of that all-pervasive hammering, I thought pirates must be upon us, as in days of old.

#### WHERE BELLS ARE TABOO

Then I remembered that Greek monks are called to prayer in a fashion of their own. Bells are not regarded with too much favor in the Levant. The fact that they are an innovation borrowed, albeit in the tenth century, from schismatic Venice makes the orthodox doubt their appeal, while the Turks object to them even more strongly, lest they disturb wandering spirits. For all ordinary purposes the monks use in their stead a hanging wooden plank, or sometimes a smaller metal bar, of which the necessary concomitant is a stout mallet. The rhythmic echo of these instruments is the most characteristic sound of Mt. Athos, the voice, as it were, of its loyalty to other times. Twice a day, or every eight hours during seasons of fasting, it calls the monks to church.

And the stranger within their gates divides his hours accordingly. His breakfast is ready, if he is not, at the close of the night service. Shall I add that we were a little dismayed to be presented, in lieu of this meal, with the inevitable tray? I must confess that I am not fond of a



Photograph by H. G. Dwight

#### IN THE CHURCH OF VATOPÉTHI: MT. ATHOS, GREECE

In the rear is seen part of the richly carved and gilded screen which in a Greek church divides the altar from the chancel. The large icon at the right is one of the more highly prized treasures of the monastery, having been saved from the Church of St. Sophia in Saloniki just before that city was first captured by the Turks.

beefsteak breakfast, and that I have no scruple against a liqueur; but I don't care for it the first thing in the morning, with nothing to go with it but a spoonful of jam and a thimbleful of black coffee. We had to beg the astonished cook for a bite of bread, and to lay in a secret stock of chocolate from Karyés, in order to keep us going till lunch. This came early, either just before or just after the morning service, while dinner is always served at dark, to give the fathers time for a nap before the night office.



Photograph by H. G. Dwight

#### THE REFECTION OF VATOPÉTHI: MT. ATHOS, GREECE

The story of the founding of Vatopéthi is to the effect that on a voyage from Rome to Constantinople the imperial trireme, having Arcadius, son of Theodosius, aboard, was caught in a storm, in which Arcadius fell into the sea. The next day the trireme made the bay of Vatopéthi, and there the boy was found asleep under the trees. Vatopéthi was built by Theodosius as a thank offering for his son's rescue.

#### MUCH LIBERTY PERMITTED

For the rest, the ascetic life did not strike us as being too severe at Vatopéthi. The Eastern church contains no such variety of religious orders as the Western, all Greek monks following the canon of St. Basil. They have a choice of two forms of government, however, the cenobite and the idiorrhythmic (each member permitted to regulate his own manner of life). Mt. Athos is almost equally divided between the two, and Vatopéthi is one of the second. There is no abbot, the government being in the hands of two or three *epitropi*, annually elected by the council of elders. The goods of the monastery are owned in common by the brothers, who live separately, according to their tastes or means, and are allowed considerable latitude in

their religious observances. The cenobite monasteries, on the other hand, are governed by a hegumen elected for life, who controls the policy and property of the brothers. They occupy uniform cells, take their meals in refectory, are disciplined for not attending offices, and otherwise follow a more rigorous régime.

We took early occasion to pay our respects to the *epitropi*, being received by those grave and reverend signors with some state and asked questions not a few. They were kind enough to express the honor they felt in entertaining learned strangers, telling us that they had lately received with pleasure the visit of two hundred French lords, who had stopped at Vatopéthi in a white ship of their own.

When we said that six hundred American lords had recently visited Constan-



Photograph by H. G. Dwight

#### ONE OF THE SACRED RELICS OF VATOPÉTHI: MT. ATHOS, GREECE

Vatopéthi is extremely rich in relics and church treasures of all kinds. One of the most interesting of these is "a beautiful communion cup, of a reddish translucent stone supported by two gold dragons, which was the gift of the Emperor Manuel II Polæologus" (see text, page 264).

tinople in a black ship, the fathers were filled with sorrow at having been passed by. That black ship, alas, will never cruise in the Levant again, for it was the *Arabic*, of recent unhappy renown. We also had opportunity, through the friendliness of the monks, to see how some of them lived—in big, clean, bare apartments, furnished chiefly with endless sofas. There they lead a sort of family life, each elder keeping house with one or more spiritual sons—*younger monks*, novices, and boys devoted by their families to the monastic life—maintaining them and sometimes even sending them away to school.

#### HAD HE MOMENTS-OF REGRET?

We had the good fortune to become especially well acquainted with two such members of "families." One of them was the assistant librarian, and the other the keeper of the bema and of the precious furniture of the church. The latter took the more trouble for us because he had a brother in New York. Both peasants by birth, for whom Mt. Athos probably represented a rise in the social and intellectual scale, they had come as young

boys to Vatopéthi. The latter, in particular, made me wonder if he ever had moments of regret. He was a powerful young islander of the Marmora whom one could more easily imagine in a uniform than in monastic skirts. But the only trace of bitterness I found in him was when he spoke of his lack of learning. Promised an education by his "father," he had been kept year after year in the service of the church—I suspected on account of his good looks and good voice—until it was too late for him to go to school.

Thanks to our acquaintance with this very kind and intelligent monk, we were free to prowl about the church at our leisure. I might speculate with an air of erudition—cribbed from French and German Byzantinists—about the date of this cruciform structure, the character of its domes, the period of its frescoes, and I know not how many other exact and intricate points of archaeology. For myself, however, I was rather pleased that the fathers, always a little romantic about their own chronicles, assured us that it was reared by the emperor Theodosius the Great, whose son Arcadius they al-



Photograph by H. G. Dwight

THE ARRIVAL OF THE PARLIAMENT OF KARYÉS AT VATOPÉTHI TO CÉLEBRATE THE  
FEAST OF THE ANNUNCIATION OF THE VIRGIN: MT. ATHIOS, GREECE

leged to have been shipwrecked as a boy in their bay—some six hundred years before Vatapéthi was founded.

THE DIGNITY AND SPLENDOR OF  
BYZANTINE CHURCHES

And I took no less pleasure in the frescoes because the monks have a trick of touching them up whenever they begin to look rusty. The whole interior of the church might have been painted by an early Tuscan with a decorative sense and a certain dark nobility that you do not always see in Florence or Siena. These frescoes, with the great carved and gilded altar screen, the tessellated marble floor unencumbered by seats, the carved stalls, the rich shrines, the innumerable icons, the shining lamps and candelabra, reproduce more completely than can now be seen elsewhere the dignity and splendor of a Byzantine church.

The illusion of the past is the more perfect at Vatopéthi, because it contains

so many treasures identified with the pious princes of the East. In the body of the church are a throne inlaid with ivory and a beautifully chased silver icon of Andronicus II Palæologus. Among the smaller and more precious objects preserved in the bema are a fragment of the True Cross, set in gold and studded with big pale stones, in an ancient gold case, with engraved compartments for the blood of saints, presented by that King Lazar of the Serbs who was beheaded in 1389 on the field of Kossova by Sultan Mourad I, himself dying of a dagger-thrust inflicted by a Serbian prisoner.

We were also shown a beautiful communion cup, of a reddish translucent stone, supported by two gold dragons, which was the gift of the Emperor Manuel II Palæologus; and two icons of exceedingly fine mosaic, in repoussé silver-gilt frames, attributed to an imperial lady of the name of Theodora. Since Vato-



Photograph by H. G. Dwight

#### THE FEAST OF THE ANNUNCIATION AT VATOPÉTHI MONASTERY: MT. ATHOS, GREECE

A crowd of pilgrims, monks, and hermits from all parts of the peninsula attends this feast. Huge caldrons of rice and other food are prepared for them, and they are served in the courtyard, seated in long rows on the flagstones.

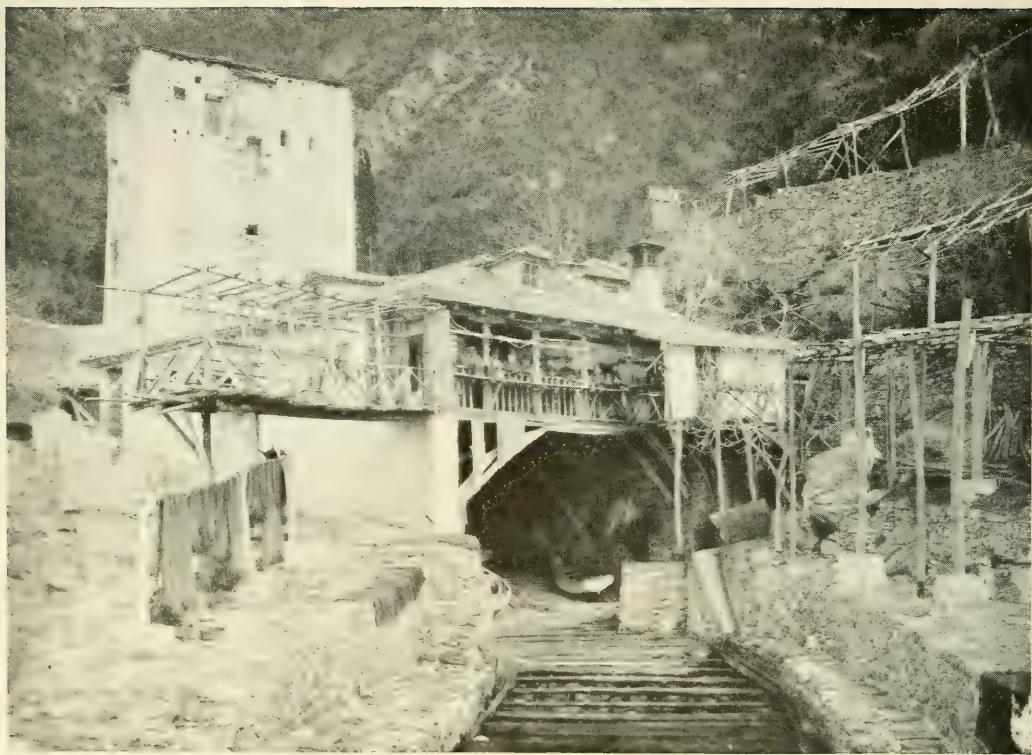
péthi did not exist at the time the consort of Justinian was passing through her checkered career, those saintly objects perhaps came from the last of the Macedonian dynasty, sister to that famous Empress Zoe, who, having spent the greater part of 48 irreproachable years as a nun, suddenly blossomed forth on the throne into excesses that astonished even Constantinople.

#### THE GIRDLE OF THE VIRGIN

The relic which Vatopéthi cherishes most tenderly is the girdle of the Virgin Mary. Our friend, the assistant librarian, gave us the entire history of it, from its presentation by the Queen of Heaven to doubting Thomas until its recovery during the Greek revolution from a European consul, to whom the Turks had sold it. If the earlier stages of the story are involved in some obscurity, the last

six or seven hundred years of it are unquestionable. The girdle has now been divided into three parts, one of which is never allowed to leave Vatopéthi. It occupies a little domed chapel in the courtyard. The other two parts often go out on tour, especially when invited by the faithful; and many are the miracles reported to have been performed by them. The assistant librarian himself had recently returned from such a tour, when he and an older monk traveled for nine months in Thrace and Macedonia with the sacred relic, bringing back some 14,000 francs for the monastery.

I fear I was profane enough to take a deeper interest in certain other treasures the assistant librarian showed us. These were opened, on top of a tower at an angle of the sea-façade, by an old librarian with a beard so long and so white that he might have walked out of a By-



Photograph by H. G. Dwight

#### THE SEA TOWER OF SIMÓPETRA: MT. ATHOS, GREECE

The monastery to which this tower belongs is romantically situated on a crag a thousand feet above the Aegean

zantine fresco. From the ceremony with which this visit was invested and the slowness with which the huge library key turned in its wards, I seemed to gather an impression only strengthened by subsequent experiences. The librarian of another monastery was also its representative at Karyés, and he had to be brought down from the capital by express mule before we could see his books.

#### ILLUMINATED MANUSCRIPTS BADLY HANDLED

A third library was unlocked by three several keys, whose holders had been collected from as many points of the compass. At a fourth monastery I asked one of the presiding elders if they had any illuminated manuscripts. He said he did not know; he had never been into the library. And we felt an air of mistrust about us whenever we asked to see books. Sometimes we were not allowed to touch them ourselves. It was the

more exasperating, because a dreadful habit is almost universal on Mt. Athos of turning rare vellum pages by pinching them up between a licked, but not too clean, thumb and forefinger.

Yet we saw holes enough cut in pages where illuminations had been to realize that the monks are not suspicious without reason. Nor have all collectors, I fear, been so scrupulous to make return for the spoil they have carried away as that spirited and human traveler, the Hon. Robert Curzon, Jr., who visited the Sacred Mount in 1837, bought a ship-load of precious manuscripts, and in his "Visits to Monasteries in the Levant" wrote an account of his adventures that I, for one, infinitely prefer to "Eothen."

#### A MYSTIFYING MAP OF MACEDONIA

At Vatopéthi they luckily refused to sell him anything. The consequence is that they have today a very rich collection of medieval books. One of the most



Photograph by H. G. Dwight

THE PORT OF LAVRA: MT. ATHOS, GREECE

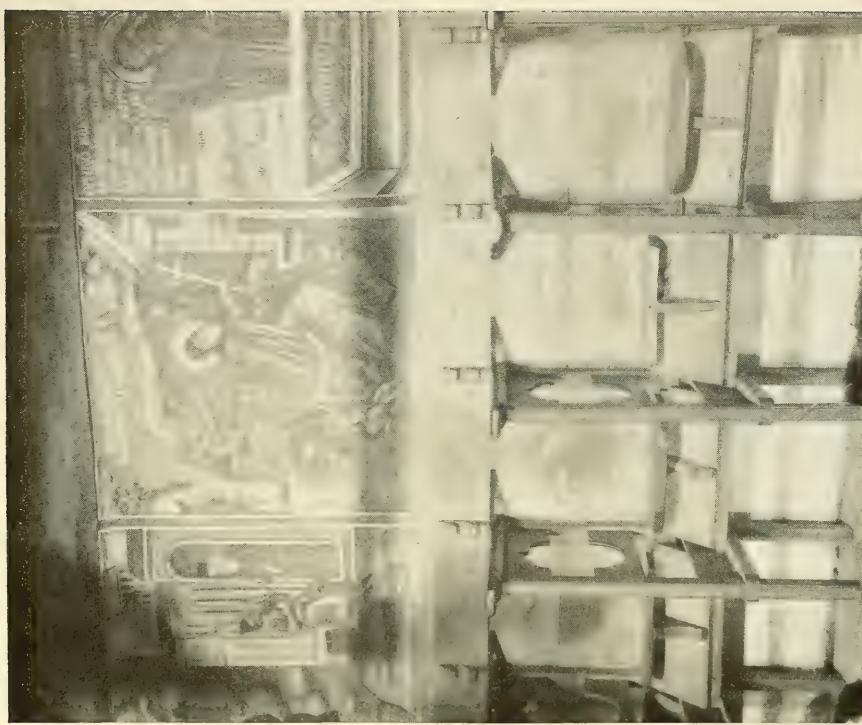
curious is a geography of the eleventh century, after Strabo and Ptolemy, containing the most extraordinary maps. I photographed one of Macedonia, out of which no human being could make head or tail; and on top of it I carefully proceeded to photograph a beautifully illuminated liturgy of St. Basil.

We prolonged our stay at Vatopéthi, at the kind instance of the monks, in order to see a characteristic piece of local color. This was the fête day of the monastery, which is dedicated to the Annunciation of the Virgin. The festival was celebrated with the more enthusiasm, I fancy, because it happened to fall in Lent. From all parts of the peninsula, and even from farther away, guests gathered in honor of one of the chief distractions of the Mt. Athos year.

The Parliament of Karyés, especially invited, arrived in a body the day before the fête. Their approach was heralded by gunshots among the hills, at which signal the elders of the monastery assembled at the gate. When the representa-

tives finally dismounted from their gaily caparisoned mules, there was a universal embracing, while the white-kilted escort burned more powder. Then, as the fathers entered the court, the bells of the clock-tower pealed them welcome, and they all went into the church for a brief office.

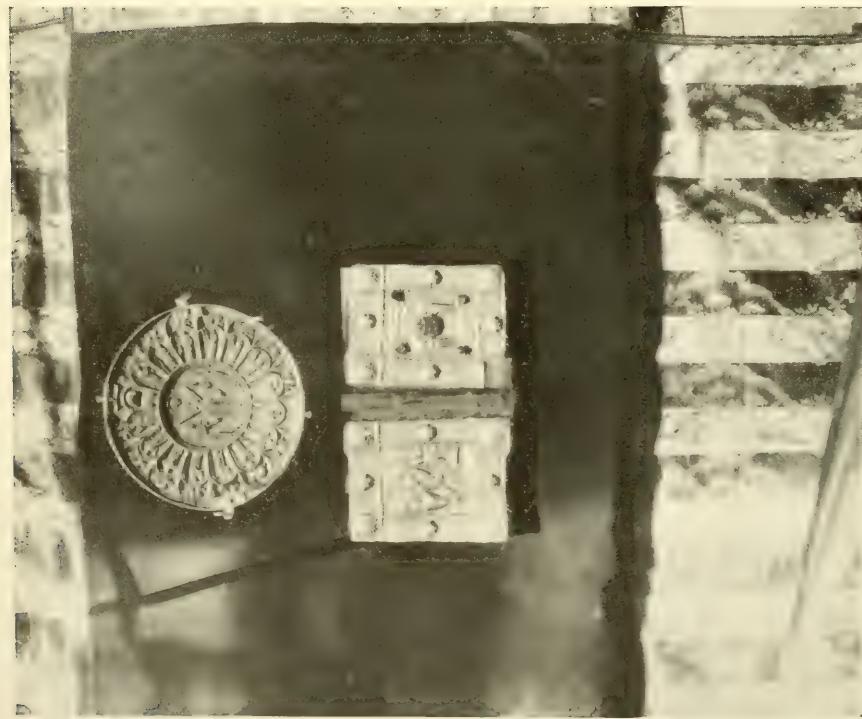
The religious event of the occasion was the vigil in the church, which began before sundown on the eve of the great day. We found the two narthexes and the nave packed with monks and peasants, all standing, as the Greek custom is. Six tall white guardsmen picturesquely kept the transepts clear. We had the honor to be shown to transept stalls, among the higher clergy and invited guests; but, although this honor conferred the privilege of hanging by one's elbows from the high arms of one's stall, even of perching on a little shelf adjusted to the edge of a turned-up seat which it is not etiquette to use, I must confess that I weakly withdrew before midnight.



Photographs by H. G. Dwight

A GOSPEL BOUND IN BEATEN GOLD AND A JADE COMMUNION CUP  
BELONGING TO THE MONASTERY OF XIROPÓTAMO:  
MT. ATHOS, GREECE

Local tradition ascribes the foundation of this monastery to the Virgin Empress Pulcheria, who reigned in Constantinople in the fifth century. Profaner annals attribute it to the fourteenth century, but the cup of this illustration, beautifully cut out of jade, bears an inscription of the Empress Pulcheria, and it may well be a veritable relic of that older time.



FRESCO REPRESENTING THE TEMPTATION OF ST. ANTHONY, IN  
THE CHURCH OF THE SKITI, OF KAVSOKALYVIA:  
MT. ATHOS, GREECE

A *skiti* is an industrial community living under monastic rule and dependent upon a monastery. This *skiti* is composed of painters and wood-carvers, affiliated with the monastery of Lavra.

## STILL CHANTING AT

4 A. M.

My friend, the assistant librarian, kindly saw to it that I did not miss the climax of the ceremony. It was strange, at 4 o'clock in the morning, to come out of the cool starlight of the court into the heat and press and splendor of the church, to find the good fathers chanting on as I had left them, as monks had chanted before them for a thousand years. The responses passed from transept to transept in the antique Byzantine monotone.

First at one lectern and then at the other a young deacon intoned from an illuminated missal. His pale, serious face and the red glint in the hair waving about his shoulders made me think of a Giorgione. Others, in magnificent brocades, swinging censers, came and went. The officiating bishop, an old man bowed down by his jeweled miter and his cloth - of - gold vestments, sat on a carved and gilded throne, holding an emerald cross in one hand and in the other a tall gold crozier. And lights were everywhere—in brass and silver candalabra, in a fantastic silver tree bearing oranges of gold, in votive lamps and chandeliers before dim images, and in the great brass coronal, with its double-headed eagles of Byzantium, swinging from the central dome.

The focus of the ceremony was an ancient icon of the Virgin. It stood on a sort of easel draped with rich stuffs, under a parasol of flowered white bro-



Photograph by H. G. Dwight

## THE PHIAE OR FONT OF LAVRA: MT. ATHOS, GREECE

This beautiful and interesting church fountain stands in front of the monastery Church of Lavra. The *phiae* was originally built in 1060, although the brickwork of the present structure dates from the sixteenth or seventeenth century. But the fountain itself and the marble panels surrounding it are, no doubt, original. The fountain built in Constantinople by Emperor William II, in commemoration of his two visits to Sultan Abd-ül-Hamid, was inspired by this Byzantine design.

cade. As the office proceeded, the breast of the figure was hung with old Byzantine jewelry and strings of gold coins. Among them I afterward saw a Roman stater, two beautiful Alexanders, and any number of Venetian ducats and besants of Constantinople.

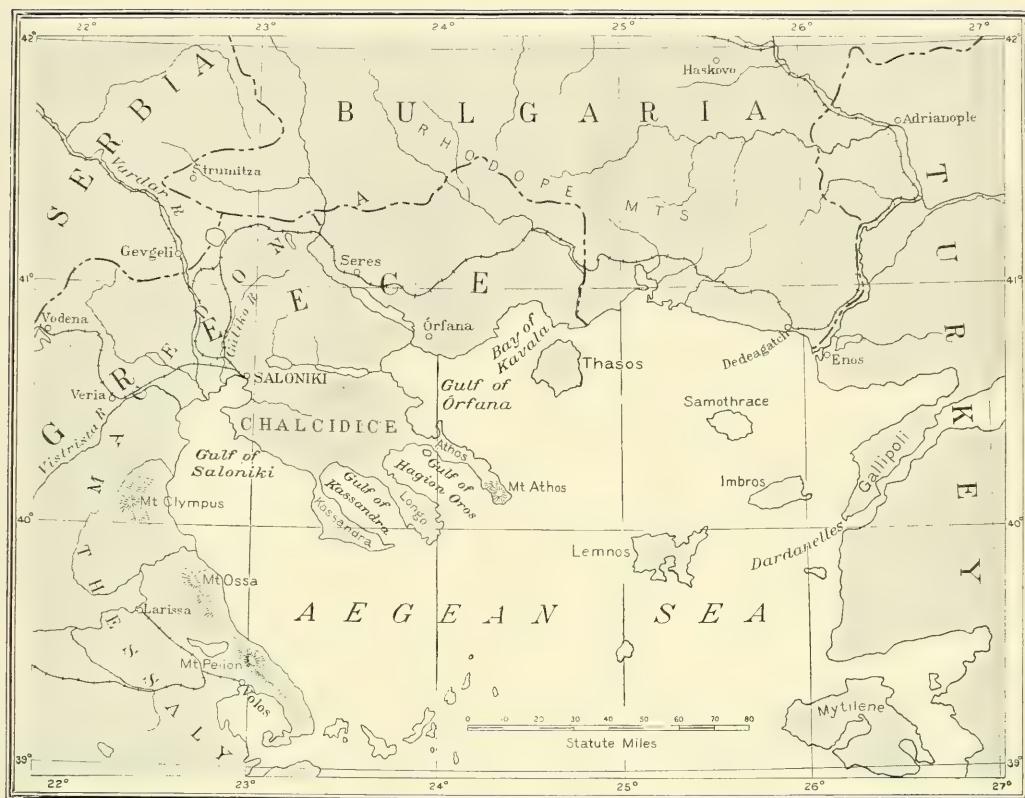
## BLESSING THE BARLEY CAKE

At sunrise the Virgin was divested of her more precious finery and carried out of the church under her parasol. Pre-



MONKS AND LAYMEN OF MT. ATHOS, GREECE

Photograph by H. G. Dwight



OUTLINE MAP OF SALONIKI AND ADJACENT COUNTRIES

ceded by banners and gilded lanterns on staves, escorted by a motley retinue of monks and peasants, she made the circuit of the monastery, without the walls, while the bells jingled and the bearded guardsmen shot off their pistols like boys into the early sunlight. At the return of the procession the liturgy was celebrated. Picturesque details of it, peculiar to the day, were the progress through the church of twelve sacred relics, each borne by a priest in gorgeous vestments, and the bringing in by guardsmen and blessing of two huge barley cakes frosted with sugar and colored candies. Then those present, in hierarchic order, crossed and prostrated themselves before the parasoled icon, after which the communion was administered, the barley cakes were cut, and the vigil of the Annunciation, 15 hours long, came to an end.

I did not wonder at the speed with which the church emptied itself into the refectory. This interesting cruciform structure, frescoed like the church and

furnished with tables of one rough slab of marble, is now used only on such occasions. Guests of the humbler sort overflowed into the court, where they were served in long rows on the flagstones.

The higher dignitaries soon withdrew to the apartments of the *epitropi*. They sat down to a more elaborate banquet there at nightfall. Fish of many kinds, prepared in many ways, made up the chief feature of the menu—an exception allowable on this one day of Lent. While the black-gowned guests enjoyed this respite from the rigors of their long fast, they were entertained by the more famous choristers of the peninsula. After each had displayed his proficiency in the Byzantine chant, the Elders poured him out a glass of wine and dropped a napoleon into it.

I must not forget, however, the fair that established itself at the monastery gate, where the general effect of color and costume was more notable than the



THE BEST PRESERVED GREEK TEMPLE IN THE WORLD, THE THESEUM : ATHENS, GREECE

objects offered for sale. And there was one more office in the church, to which I fear I would not have gone if a kind father had not hunted me up. The Virgin under her parasol, the silver orange tree, and other precious furniture had disappeared. The afternoon sun streamed through the high transept windows, bringing out the pattern of the marble floor, the rich carving of the altar screen, details of the pictured walls.

#### THE NIGHT-LONG VIGIL'S END

It brought out, too, the faces of the fathers under their black veils, worn and haggard after the night-long vigil. At a moment of the office one after another lighted a wax candle from that of his

neighbor. The two semicircles twinkled pallidly enough at each other across the sun-touched splendor of the church. The incense, that had been so heady the night before, somehow missed its effect, like the candles. A swallow flashed across the opposite window.

I thought of the green hill I had climbed that afternoon, blossoming with asphodel, and how the sea looked through the leaning olive trees. I wondered what the fathers thought, chanting so gravely in the spring afternoon—if they, too, saw hills, or seas, or faces other than haggard ones under black monastic veils. With the sound of their chant an unsanctified crooning of pigeons suddenly began to mingle from the court without.

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# THE NATIONAL GEOGRAPHIC MAGAZINE



## INEXHAUSTIBLE ITALY

BY ARTHUR STANLEY RIGGS

AUTHOR OF "THE BEAUTIES OF FRANCE," IN THE NATIONAL GEOGRAPHIC MAGAZINE

OME parts of the world are renowned for their beauty. We visit them to satisfy our inherent love for the picturesque. Some, again, are famous as the scenes of great and stirring events which have made history; them we visit to stand enthralled in the presence of the great spirits of old. Still other parts attract us strongly because of the vivid kaleidoscope of their modern life and customs.

But what shall we say of Italy, at once exquisitely beautiful, glowing with life and contemporaneous interest; and, above all, quick with the memory of her glorious past? One writes of her in despair of giving more than a bald sketch of the character and attributes that endear her to all mankind. Richly—lavishly!—she returns love for love, and they who most tax her find her the most inexhaustible, ever giving, ever repaying, with boundless interest, the affection of her children of the entire world.

### WE ARE ALL HER CHILDREN

The compulsion of Italy is based upon the deep, pervasive humanity of soul she shares with no other in degree and with but few in kind. That humanity, with its essential heights and depths of spirituality and grossness, glows in the grandest art the world has ever seen and been inspired by; it pulsates lustily in literature that to this day is the envy and despair of mankind; it dominates us who

still live in the closing era of the Renaissance that only the splendid individualism and genius of the lustrous Florentines could make possible.

Italy is not of the Italians; she is of the world. We are all her children, and some of the most sublime lessons life has to teach us have been learned of her wisdom and accumulated experience.

### THE GEOGRAPHICAL POSITION OF ITALY

Indeed, in considering the great epochs of civilization, we often overlook the fact that more than half of them developed in Italy. Classifying history, we find five periods: the Culture of the Ancient East; Hellenic Civilization; the vast Roman Organism; the Domination of the Roman Catholic Church; and, last of all, the "emancipation of Europe from medieval influences" in what we usually speak of as the Renaissance. In a word, therefore, we owe to Italy three of the five periods—the three which have exercised the world most potently in both practical things and the things of the spirit.

Geographical position is not sufficiently recognized, except by the special student, in its influence upon the character and achievements of a nation. This is peculiarly true in the case of Italy. A single glance at the map (see page 360) discloses its position as one of the chief sources of the country's individuality.

From the beginning Nature set Italy apart. Every boundary is perfectly clear.



Photograph by A. W. Cutler

#### PEASANTS OF SOUTHERN ITALY

The donkey seizes the opportunity to snatch a few moments' slumber

The historic seas enfold it to south, east, and west. On the north the terrific Alps sweep around in a great semicircle from Mediterranean to Adriatic, closing the circuit.

To be sure, from the time of Augustus the boundary of each side of northern Italy has been juggled, now to the east, now to the west, by politics; but the physical boundary is still definitely there. So thoroughly did the ancient chroniclers recognize these natural limits that long before the name Italy had any political significance or entity the writers applied it to the country thus inclosed. The peninsula, with its tremendous Apennine backbone, makes a huge boot which thrusts out practically into the center of the great Midland Sea.

Necessarily, then, Italy was exposed to attack and invasion from three sides. Indeed, it was the invading, or rather colonizing, Greek who combined with the aborigines to form the population that stocked the peninsula. Taken in a smaller

way, geographical site or position exercised no less distinct an effect upon some of the foremost Italian cities; and in shaping their affairs and men it also influenced the entire world.

#### NATURAL DIVISIONS OF THE COUNTRY

Italy is generally regarded as lying in three parts—northern, central, and southern. Nature has set no boundary between central and southern Italy; but from the southernmost point of the Alps, at the French frontier, the Apennines swing across to the eastward, leaving in the arc they cut a huge U-shaped basin, drained by the river Po and its tributaries, open to the Adriatic.

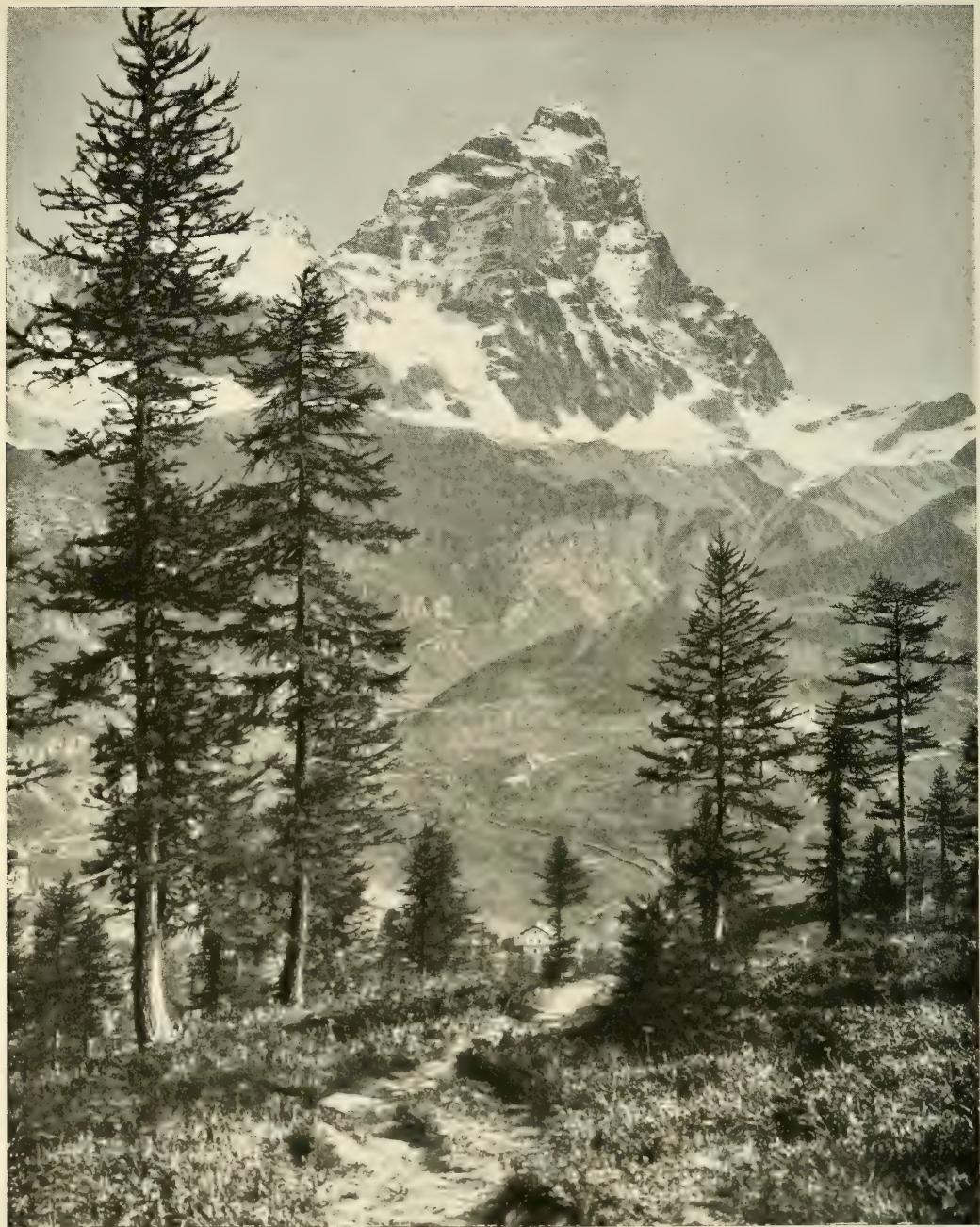
After forming this basin—northern Italy—the Apennines sweep southward in a rugged backbone which determines the whole internal geography of the country as definitely as the Alps do its outline northward. The Apennines are not, however, merely a backbone, but a broad mass with several minor ranges and



Photograph by Donald McLeish

"ON THE NORTH THE TERRIFIC ALPS SWEEP AROUND IN A GREAT SEMICIRCLE FROM MEDITERRANEAN TO ADRIATIC, CLOSING THE CIRCUIT"

A pasture above Breuil, Italy. In the background, four miles distant, is the Dend d'Herens, 13,715 feet, an elevated outpost of the Swiss-Italian frontier.



Photograph by Donald McLeish

THE MATTERHORN, THE MOST WONDERFUL MOUNTAIN IN THE ALPS, 14,785 FEET,  
FROM THE FOREST OF BREUIL: ITALIAN SIDE

This formidable peak long remained unconquered. No less than eight attempts were made by Mr. Whymper alone. The ninth was successful, but was marred by a terrible catastrophe. While descending, soon after leaving the summit, Mr. Hadow, one of the party, slipped, dragging four others with him. The remaining three were well placed and able to save themselves by holding firmly to the rocks. The rope between them, however, broke, and they saw their unfortunate comrades disappear over the edge, to fall a depth of one mile to the glacier below. This was two generations ago. Now scarcely a summer day passes in times of peace when a dozen mountaineers, men and women, do not reach its summit.



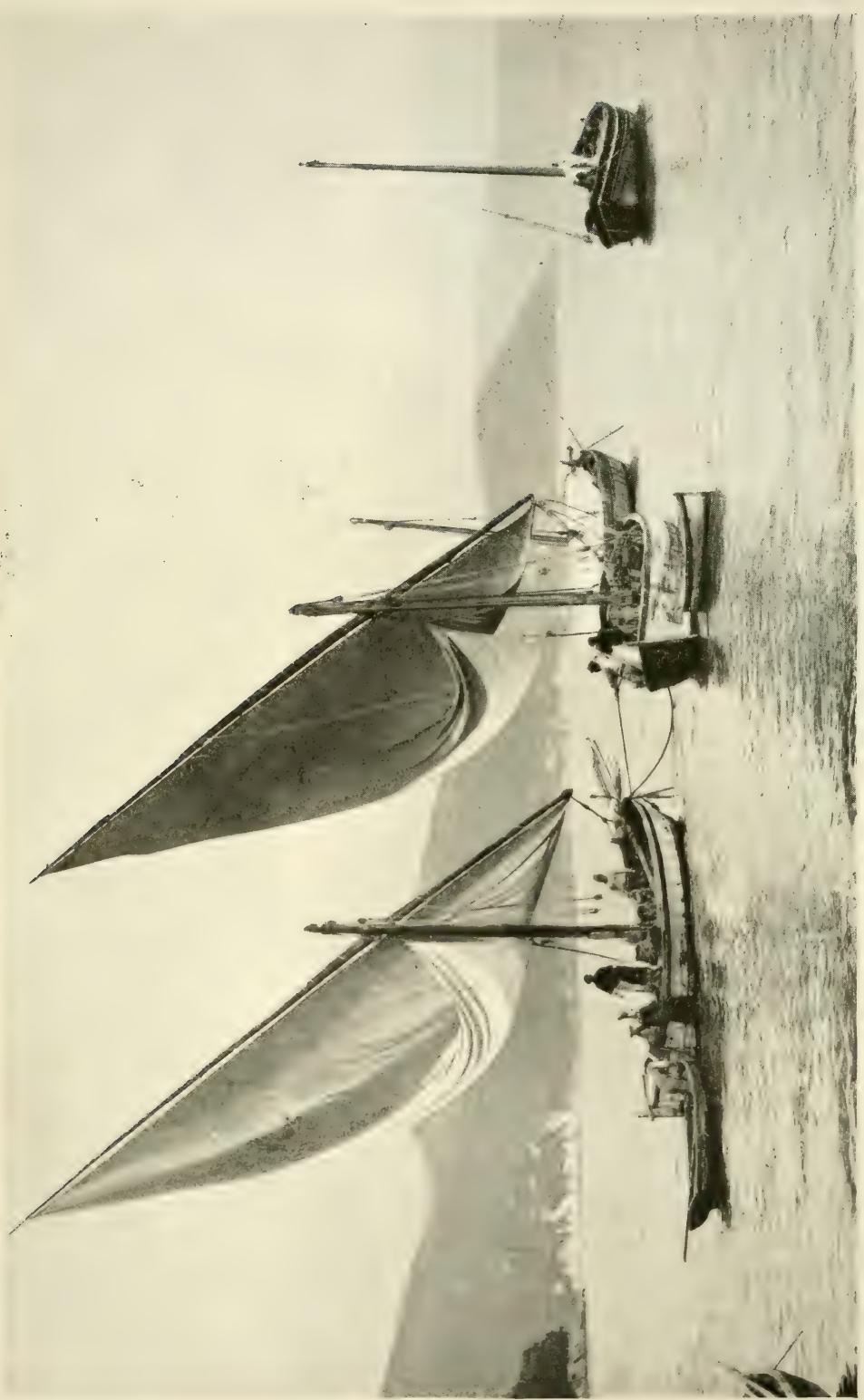
Photograph by Donald McLeish

THE GRIVOLA, ONE OF THE MOST BEAUTIFUL OF THE ITALIAN ALPS, 13,022 FEET,  
FROM THE NORTH: TAKEN FROM THE PUNTA ROM, 10,250 FEET

North of the Apennines nothing will grow that cannot withstand sharp frosts, yet in virtually the same latitude the strip of coast called the Riviera di Genova sports luxuriant palms and cactus and olives, while oranges and lemons are the most important of crops.

#### RIVIERA FISHING BOATS

Photograph by G. R. Ballance



groups of peaks, generally separated by high upland valleys, one of whose plateaux, the Piano di Cinque Miglia, at a height of 4,298 feet above the sea, is the wintriest and bleakest spot in all Italy.

This upland region is bordered everywhere by lowlands of luxuriantly fertile character, prolific in fruit and verdure and of a genially warm and sunny climate. In central Italy, west of the mountains, the valleys of the Arno and Tiber—the only streams of importance—give the keynote to any geographical study of the region. Over on the eastern coast no rivers of importance can exist, because the mountains there approach too close to the sea, though the tortuous, mostly dry beds of the *torrenti* scar every height.

In this connection it is interesting to note that nowhere is the peninsula more than 150 miles wide, and generally not more than 100, while down in Calabria the width dwindles in two places to 35 and 20 miles respectively. One of the most inspiring views in the whole length of the country also displays this narrowness strikingly when, on a clear day, from the Gran Sasso, the highest point in the bleak Abruzzi Range, central Italy, at nearly 10,000 feet, one may look not only eastward over the Adriatic to far Dalmatia's rocky shores, but also westward over mountain and moor, city and sandy coast, to the dim and misty blue of the Tyrrhenian Sea. In volcanic southern Italy, likewise barren of any great waterways, the Apennines break up into groups of hills and peaks, not usually so lofty as farther northward.

#### THE RIVERS AND LAKES

Italy is fairly provided with deep-water seaports—Naples, Genoa, Spezia, the naval base, and Leghorn, on the western coast, and Venice, Ancona, and Brindisi, on the east. The rivers—except the Po—as may have been inferred already, are of little or no importance for navigation—a fact the Romans cleverly disposed of by building those beautiful and enduring military roads which to this day vein the whole length and breadth of the country—though the rapidity of their currents and the flashing, dashing cascades and

*torrenti* that come swirling into them make them highly picturesque and delightful as features of the landscape.

What human being with a single spark of soul could fail to expand under the magic of that wonderful chain of lakes along her northern border—Garda, Idro, Iseo, Como, Lugano, Maggiore, Orta? These remarkable and exquisite sheets of water, formed by the tributaries of one single stream—the Po—sprawl about in tremendously deep valleys among towering hills of solid rock, while scattered among them are shallow little lakes, entirely different in both character and aspect.

Adjectives and imagination alike fail before them, and inarticulate emotion robs the beholder of any power of expression. And what of Trasimeno and Chiusi? What of those littler lakes which smile up at us from ashen, volcanic cups throughout central and southern Italy? What of Matese, Fusino, Lucrino, Averno—all those many that dimple the pages of history and brighten or glower through the yet more ancient myth and song of bard?

#### THE ISLES OF THE WEST

Beside defining the limits of the country so clearly, Nature also bulwarked the long and tortuous Italian peninsula on the west with a host of rocky defenses in the sapphire waters of the storied Tyrrhenian Sea—Gorgona, of the suggestive name; rocky Capraia; Elba, of Napoleonic fame; the stony fleet of the little Ponzas; bold and rugged Ischia, with its castle on a big boulder; Procida likewise; humpbacked Capri, where "that hairy old goat," as Suetonius called the Emperor Tiberius, held his revels; the Æolian or Lipari Isles, black monsters that spout fire and sing weird music to terrify the superstitious argonaut; magnificent Sardinia, with its little sister Corsica clinging to its coat-tails a step behind. Both belong to Italy by every right of Nature—as a bright lad in a Sicilian school told me: "Sardegna, *si!* But Corsica—no! She belongs to Italy geographically, but politically to France." And the greatest of all these outworks is Sicily.



A MACARONI FACTORY

Italy without macaroni would be Hamlet without the ghost. Macaroni is made of a special variety of hard wheat. The paste is forced through a press full of holes, which brings it out in long strings. These are cut into about six-foot lengths and hung on poles in the open air to dry, with a nonchalant disregard for germs and dust. By the time it has collected sufficient of both to make it nicely stiff it is cut into commercial lengths, boxed, and sold.

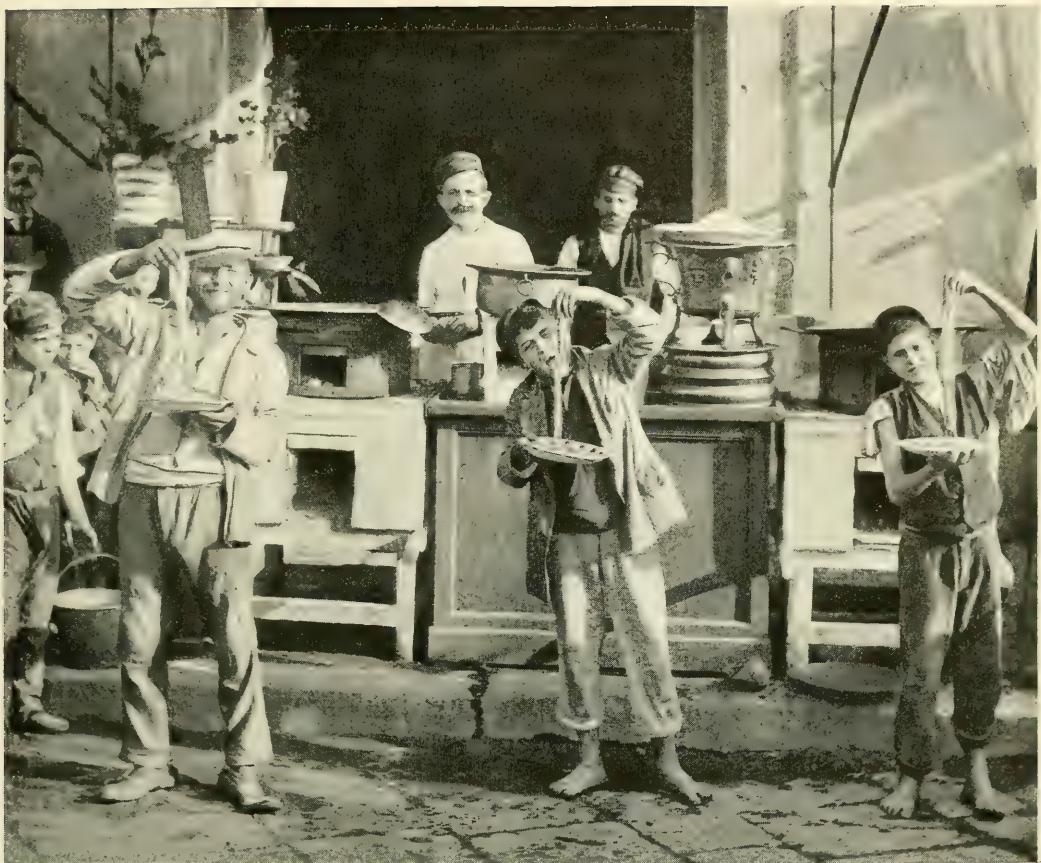
#### SICILY, THE GARDEN OF EDEN

Geographical location was the deciding factor of the life of this loveliest of all Mediterranean islands. Here we have neither time nor place for Sicily beyond the merest hint of a long series of vivid pictures, which begin with the misty traditions of the Garden of Eden and carry us through the evolution of civilization right to the present. Every State of ancient Europe falls into a place in the enduring pageant. Greek and Roman, Carthaginian and swart Moor, Spaniard and French and Italian fight and retreat, build and demolish, create and undermine.

Nature itself, now in the guise of the misunderstood gods of old, now in convulsions or in quiet fertility that science has made plain to us, weaves its mysterious shuttle through and through the

highly colored fabric. And men—such men!—tower above their fellows in the story like Titans: Pindar, Æschylus, Theocritus, Thucydides, Archimedes, the two great Hierons, Cicero, Verres, Diodorus, Hamilcar and Hannibal, Roger the Count and Roger the King, Belisarius, the great Crusaders—Richard of the Lion Heart and Louis the Saint of France—Charles of Anjou, Frederick II, the “Wonder of the World,” and Garibaldi. Even this partial list reads like a compendium of ancient and medieval romance and chivalry.

Sicily's history is as vivid and picturesque, as ferocious and creative and destructive, as mythical and intensely practical, as the stories of all the rest of the world put together. And in beauty of nature, of climate, of man, and of beast, the island is a paradise today, whether or



#### THE LAND OF THE MACARONI-EATERS: NAPLES

"Maccheroni" eating is a trade with the street beggar, and apparently a satisfying one to men and boys gifted with copper interiors immune to heat. One of the most familiar cries of the beggar is, "*Signore, dame cinque soldi, mangia maccheroni!*" Mister, gimme a nickel for macaroni!" And usually the plea ends with a lugubrious whine, "*Oh, muori di fame! Oh, I'm dying of hunger.*"

not it was ever the workless, painless, passionless elysium where our first ancestors enjoyed all the good things of life without having to toil. All this, alas, must wait a more opportune moment for description.

#### CLIMATE AND VEGETATION

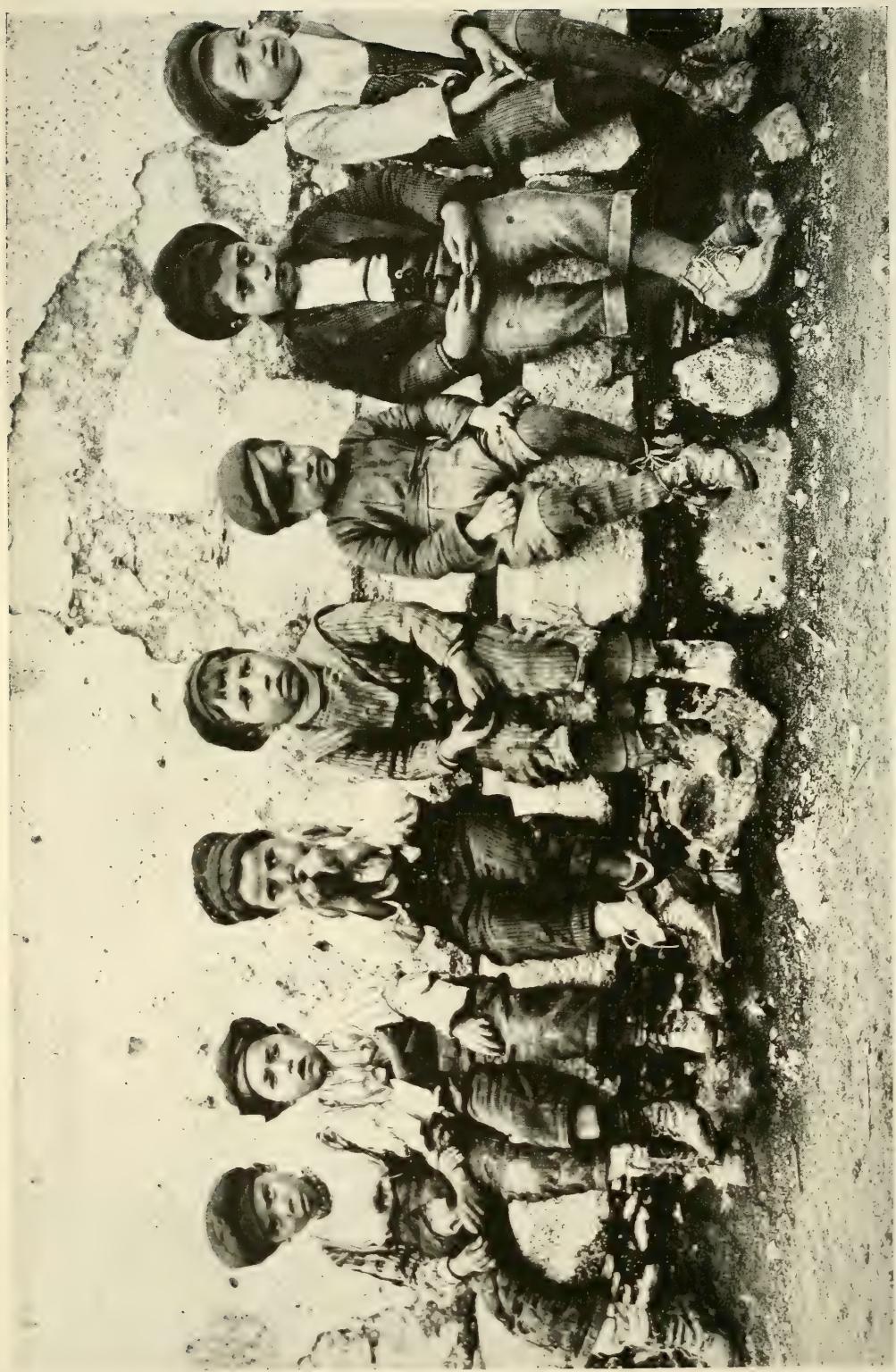
As in the case of Japan, the surrounding sea makes a vast difference in the Italian climate. Judged by its position alone, the peninsula should be about the hottest part of Europe—it is only 90 miles from the southern shore of Sicily to Africa. But the twin seas and the ever snow-capped mountains temper the heat, and the regional peculiarities are such that we find Turin, for instance, colder in

winter than Copenhagen, and Milan as warm in summer as Naples. These same striking differences characterize the vegetation also. North of the Apennines nothing will grow that cannot withstand sharp frosts, yet in virtually the same latitude the strip of coast called the Riviera di Genova sports luxuriant palms and cactus and olives, while oranges and lemons are the most important of crops.

A large part of the beauty of the verdure and forest that attracts the visitor's attention was unknown in the olden times and is not properly Italian at all, but imported. The favored groves of orange and lemon, with their golden fruit glinting among the rich and sappy foliage, breathe of the Levant and the dark-

Photograph by A. W. Cutler

MISCHIEF BREWING: BOYS OF AN ITALIAN MOUNTAIN VILLAGE





Photograph by A. W. Cutler

#### A SMALL PAINTED VEGETABLE CART DRAWN BY A SARDINIAN DONKEY: PALERMO

When the size of the donkey is compared with the height of the man and the boy, some idea may be formed of its diminutiveness

skinned Saracenic invaders from the East. The cactus, with its prickly pear fruit, called the "Indian fig," and the aloe came straight from Mexico on the heels of the Spanish adventurings into the unknown in the sixteenth century. So did the American corn or maize. Even the eucalyptus is an importation—a modern one—and the great groves of chestnuts that clothe the shaggy mountain sides so verdantly, and give occupation to so many vendors of the hot and pasty boiled nut, are believed not to be native.

Evergreens still form a large proportion of the foliage and make a great difference in the appearance of the winter landscape, which conspicuously lacks the nakedness of regions clothed only with deciduous growths. The brown slopes of the mountains, the milky roads that wind and wind through rolling upland and flat campagna, or around the startlingly abrupt shoulders of mountains, and the sparkle of stream or lake or inlet, give

the Italian country side a vivacity and charm lacking in both its Latin neighbors—a special quality of brightness and life.

#### THE PEOPLE AND THEIR CONDITION

Province by province the country manifests a varying charm, and the people differ as widely as their surroundings. The hot-blooded southerner observes a different standard of morals and hygiene, fires to anger or interest more quickly, and is generally less dependable and industrious than his northern brother. Both are gifted with the black eyes and hair and the swarthy complexion, as a race, that is a general characteristic of the Latin peoples. But the Italian is, broadly speaking, like his country, endowed with a physical beauty and charm beyond that of most of his fellows.

In the north, however, there are exceptions—fair-haired and reddish men and women, who seem strangely out of place

among their dark neighbors. Cool, temperate exotics they are among the higher colored growths that somehow seem so tropical, with their sultry smiles and fathomless, mysterious eyes, in which forever broods the shadow of the purple mountains that always and everywhere dominate all Italy, even to the delightful Carabinieri, or Rural Guards, those Napoleonic-looking officials who parade always solemnly in pairs, hangers at their sides, cockades on their black beavers, the majesty of the law in every line and footstep.

#### A TALE OF REMARKABLE PROGRESS

Suggestive of comic opera though the Carabinieri seem, they are nevertheless most devoted fellows and absolutely essential to the maintenance of order. The condition of the mass of the Italian people is still far from happy and disorders are frequent, though rarely fatal when the paired guards are within range. Italy, it must not be forgotten, is largely an agricultural country, with the farm hands making up a third of the total population. Their lot is hard because of the agricultural conditions and the ignorance of the masses.

Nevertheless, since the Italians became a nation, half a century ago, there has been amazing progress in every direction. Agricultural methods have vastly improved, agricultural production doubled, and manufacturing to a most gratifying extent taken the place of importation. In fact, Italy is now among the exporting nations, and the rapid growth of her industrial enterprises bids fair to make her, as an English writer points out, as highly organized and efficient, in a manufacturing sense, as was Belgium prior to 1914.

Italian emigration is due largely to overpopulation, and the consequent over-supply of labor at very low rates, rather than to the agricultural conditions, while the progress made in public education has been so wonderful as to give sound basis for the hope that within a reasonable time illiteracy will be as negligible in Italy as it is in the United States. Public schools maintained by the communes, with State help where necessary, have already diminished illiteracy from 73 per cent in 1871 to about 44 per cent in 1911

(the last official census). Despite the brilliant progress achieved in only forty years, this figure is appalling.

Notwithstanding, the poorest Italian has the sun in his eyes and the geniality of the gods in his smile, while his fatalistic stoicism and keen sense of humor are something never to be forgotten. I remember, after the Vesuvian eruption of 1906, seeing a man whose home had been destroyed and the work of a lifetime obliterated calmly cooking a meal of potatoes and chestnuts over a hot spot in the lava stream that had overwhelmed his place. "*Già!* I have a *fine* stove now!" was his dry comment.

#### THE BEGINNINGS OF ITALY

So far as general world interest is concerned, the story of Italy begins its importance with the period made historic by the advent of the Greeks in the vicinage of what is now Naples. This was a neighborhood doomed at the very beginning to be fatal to every race that spread about the shores of its exquisite bay. The beauty of the scenery, with the vast black and green Vesuvius gemming it ominously; the mild and sunny climate of *dolce far niente*; the soft and perfumed airs, all strongly predisposed the sternest men to languor and voluptuousness. Not a single one of the nations who have left us memories of their sojourns about the dimpling bay could withstand these lethal influences, or became sufficiently acclimated in all the long centuries to leave us one great and enduring monument.

To find "the glory that was Greece," one must go southward for 60 miles along the scalloped green and silver strand that borders the azure sea to Paestum, the Poseidonía of Greek days. The same dazzling sunshine the worshipers of Poseidon, or Neptune, knew pours down its glorious flood upon temple ruins so majestic and sublime, so quick with the austere loftiness of soul that marked their builders, we wonder that anything ever could have happened to obliterate the city which Herodotus tells us flourished five centuries and a half before our era began; a garden city, a city still, in the time of the great Latin poets, wreathed and



Photograph by A. W. Cutler

A RISING FRUIT MERCHANT OF NAPLES

Photograph from Gertrude Whiting

WHAT HUMAN BEING WITH A SINGLE SPARK OF SOUL COULD FAIL TO EXPAND UNDER THE MAGIC OF THAT WONDERFUL CHAIN OF LAKES ALONG HER NORTHERN BORDER—GARDA, IDRO, ISEO, COMO, LUGANO, MAGGIORE, ORTA?

Lago Maggiore, Isola Bella e Isola Superiore. Note the clearness of Lake Maggiore's limpid water and the glorious Swiss Alps in the background.



garlanded with the "twice-blooming roses of Paestum."

But brooding silence has fallen over these magnificent Doric remains and their flattened city. We may study undisturbed the subtle refinements the architects adopted to give grace and elegance to structures of so heavy a type: the swell and slant of the massive fluted columns, the curving line of foundation and entablature, the perfect coherence and simplicity that has made the Greek form the only one perfect in appearance without regard to size.

Even the hardy Roman who met and imbibed the softer culture of the polished Greek in southern Italy here went to pieces mentally and gave history only Lucullan feasts and sybaritic indulgence of every sort. The most lavish and profligate of all the watering places of imperial days grew up at Baiæ, named for Ulysses' helmsman, to the west of Naples, along the Gulf of Pozzuoli. No beauty, convenience, or luxury the Roman world could produce to give the region added charm was lacking. The foundations of many of the magnificent villas and baths were thrown far out into the warm, inviting bay.

#### THE CRUMBLED GLORIES OF BAIAE

But with the decline of Rome, Baiæ and its district crumbled; and all we have today as means for the interpretation of that gay and splendid era are shattered remains of masonry, colonnades, passageways, mosaic pavements, and statuary dotting the hillsides; and in the water huge blocks of concrete vaguely tracing the lines of those baths where the gilded youth and corrupt old age of Rome idled away the sunny hours and occupied their minds with the devising of new sorts of indulgence.

One of the ancient Roman towns near by is still very much alive—Pozzuoli. Founded by the Greeks, it was captured by the Romans, and at one time was the most important commercial city in the Empire. Its harbor was a focus of traffic with Egypt and the East. Spices and perfumes from the Nile, copper and gold from Tarshish (Spain), slaves and weapons and other commodities in popular

demand landed here. And St. Paul, in those comfortable, letter-like chapters of the Acts, that describe his adventures on the way up to Rome and martyrdom, says: "And we came the next day to Puteoli, where we found brethren and were desired to tarry with them seven days." The modern town is an attractive manufacturing community, much of its prosperity based on the cement made of the *puzzolana*, or volcanic earth, named after it.

"NAPOLI LA BELLA!"

Naples, aside from its amazing local beauty, is a dirty south Italian seaport, full of fleas and beggars, noisy as pandemonium day and night, without a really distinguished edifice, and peopled by a conglomerate mass as strikingly beautiful physically as they are notoriously untrustworthy. From the storied heights that sweep in a magnificent amphitheater around the brilliant bay the old city straggles downward in a picturesque huddle of densely packed houses and other buildings, tortuous streets full of color and bubbling with the nervous activity of the south, black canyons of stone stairs, slippery with damp and dirt, across which the teeming houses gossip and quarrel in neighborly wise.

Nowhere are fisherfolk more picturesque in habit and costume; nowhere is there so salty a dialect, spiced with such myriad quaint and startling phrases and exclamations. Bare and brown of leg, dressed in ragged, parti-colored motley, a stout canvas band about each sinewy body for hauling in the net without cutting the hands to pieces, they bring ashore their shimmering silver quarry right along the widest, finest promenade in the city—the handsome Via Caracciolo. Across that broad street the charming Villa Nazionale, not a house, but a public park, wholly conventional in design, contains an aquarium which may fairly be considered the most remarkable in the world for both the variety and interest of its finny and monstrous exhibits and the thoroughness of its scientific work. To it many of the great universities of the world contribute annually for the privilege of sending special investigators in zoölogy.



Photograph by A. W. Cutler

BUT ONE THOUGHT FILLS THE MIND OF HALF THE MOTHERS AND CHILDREN IN THE WORLD—TO MAKE SOMETHING THAT WILL KEEP FATHER AND BROTHER WARM IN THE TRENCHES

During the afternoon drive, which is an institution throughout all Italy, an endless procession flashes past the park, to the pistolering of whips, the running obligato of chatter and exclamation, shout of encouragement, and execration for careless driving. Everybody drives. The lofty drag of their Royal Highnesses the Duke and Duchess of Aosta rolls solemnly along behind magnificent bays in stately silence; tourists "rubber" by in hired hacks; a motley array of shabby-genteel carriages contains a nobility too proud to omit the drive if they have to go to bed supperless, and snappy little gigs and carts, brilliant with paint and varnish, dance along behind fiery miniature barbs decked out in all the toggery of feathers and bells and fancy leather that Italian ingenuity can suggest. Nowhere are there such experts at extracting frightful explosions from a whiplash as in this happy-go-lucky Naples; nowhere such a tumult of sound and color; nowhere such light-hearted irresponsibility.

The commercial activity of this largest city and second seaport of Italy clings close about the skirts of the enormous royal palace—800 feet long on the bay side and 95 feet high—and the naval basin and dockyard. Every smell and sound of a thriving seaport may be smelt and heard, multiplied generously; every flag seen on the ships that ride at anchor near the stone wharves.

#### BABEL LESS CONFUSED

On the streets men of every race mingle tongues and costumes and manners; Babel itself was only mildly confused compared with this jumble of Naples; and throughout all the throng play the beggar, the street musician, the macaroni-eater—that is a trade, and a satisfying one, apparently—the piratic cabman, the guide, and the baggage-smasher—all seeking whom they may plunder with a gracious twinkle of humid black eyes and a smile that makes the being robbed a pleasure.



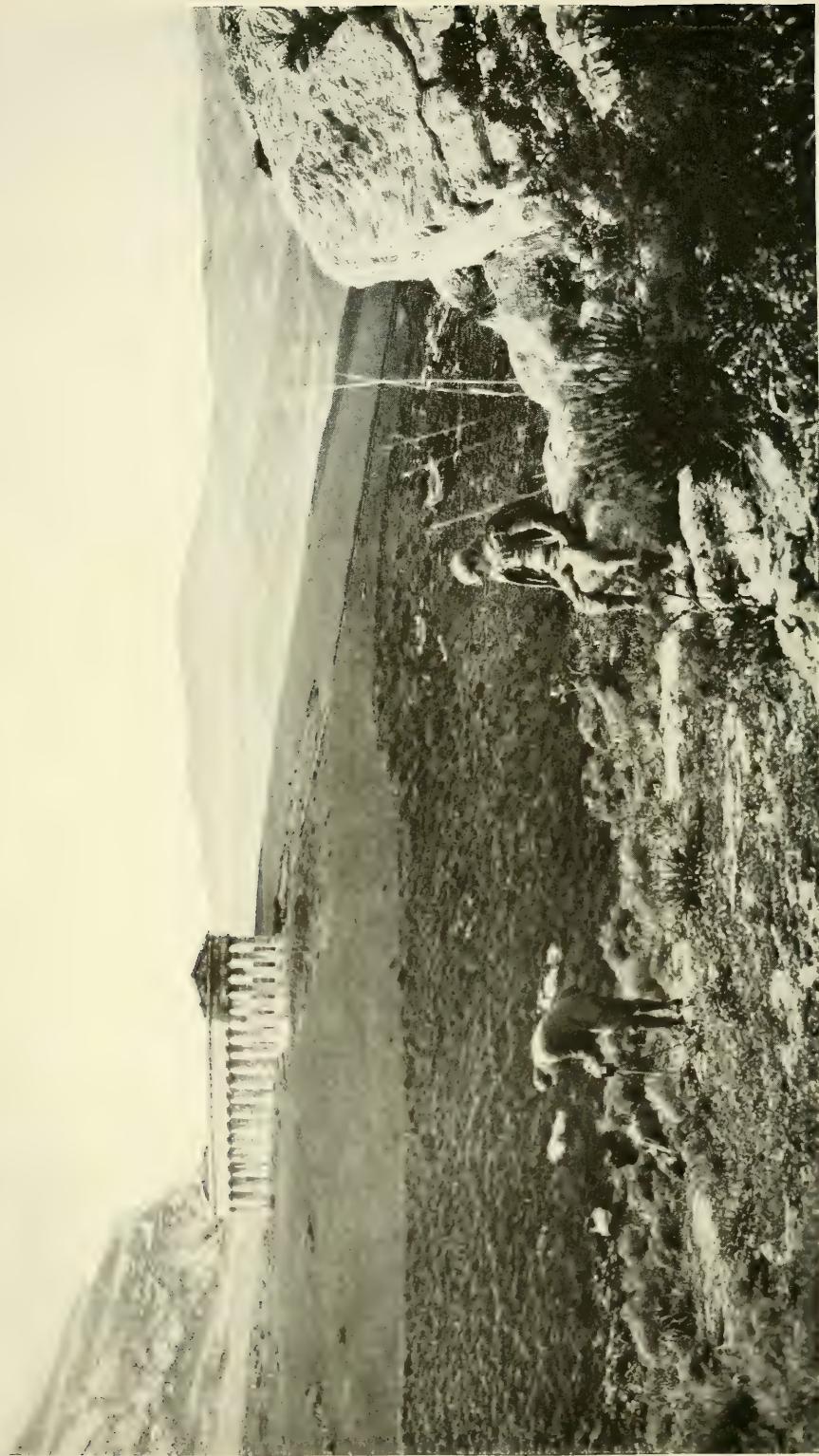
Photograph by Von Gloeden

CLASSIC MODELS IN MODERN SICILY

The present-day descendants of the early Greek colonists of Syracuse retain the grace of pose and the symmetry of form which distinguished their ancestors of two thousand years ago. Here is a youth who might have been the original for one of the matchless marbles of Praxiteles or for a figure in a Phidian frieze.

Photograph by A. W. Cutler

A DISTANT VIEW OF THE OLD GREEK TEMPLE AT SEGESTA, A VERY WILD SECTION OF SICILY  
Situated in a desolate spot, surrounded by mountains, this ancient Greek temple is not less imposing from its remarkable isolation than for its striking proportions. It was never completed, but it is one of the best preserved relics of the Greeks in Sicily. The structure is 200 feet long, 85 feet wide, with columns 6 feet in diameter at the base and 29 feet high, including their capitals. The Greeks believed the Egestans were descendants of the Trojans.



Street singing is an especially Neapolitan institution, and when for the first time one hears beneath his windows the more often than not off-key versions of the snappy, lilting, inexpressibly infectious Neapolitan songs, he is enchanted, and throws pennies freely. After a week or so of it as a steady diet, day and night, he inclines much more toward heavy crockery!

#### VOLCANOES BIG AND LITTLE

The entire Neapolitan littoral is volcanic, from Vesuvius on the east to the storied tufa heights of Cumæ on the west. Between Cumæ's ruins and Naples lie those famed and mystic Phlegræan fields of our school days, which nobody remembers anything about. They have always been a theater of tremendous volcanic activity, but the disturbances here have no connection, curiously enough, with Vesuvius; also, the two areas are wholly different in geological character and formation.

The spongy nature of the rock of the Phlegræan fields allowed the internal steam and gases to escape with relatively little resistance at numerous points; so, instead of one tremendous peak being formed, as in the case of Vesuvius, many little craters wart the ground. Thirteen still exist, among them Solfatara, bellowing out a vaporous combination of sulphur, hydrogen, and steam, and producing startling little special eruptions when teased with a lighted stick; dried-up Lake Agnano, with its famous, or infamous! "Dog Grotto," where about 18 inches of warm, bluish, fetid carbonic acid gas snuffs out torches even more quickly than it used to the poor dogs kept there for show purposes; and somber Lake Avernus, in ancient times surrounded by dense forests and dark traditions, one of which declared no bird could fly across it because of its poisonous exhalations.

#### VESUVIUS: DESTROYER AND RENOVATOR

The Cumæan Sybil was supposed to inhabit a gloomy cavern in the south bank. Her room and others in the rock are probably part of the remarkable harbor works built by the Emperor Augustus. In this same region is the Monte Nuovo,

455 feet high, thrown up in three days in 1538.

On the east Vesuvius dominates the whole splendid region. He is the Cyclops standing, blind and massive and treacherous, in the midst of his rich vineyards, olive groves, and vegetable gardens; for, though he spreads destruction in his blind rages, the fact is that this entire *piana* is the marvelously fertile soil that disintegrated lava and volcanic ashes make. It bears huge crops, far greater and finer than ordinary good soil can produce. Among other things, it yields the grapes whose spicy juices are so precious their wine is termed *Lacrima Cristi*—Tears of Christ. Is it any wonder that the native returns again and again to repair the damage and risk his life to produce such wine and olives and fruit?

#### BURIED HERCULANEUM AND POMPEII

After the great eruption of A. D. 79 there were occasional eruptions which varied in intensity, until 1500, when the volcano became quiescent. The crater walls grew up thick with trees and scrub, while cattle and wild boars roamed the grassy plain inside—all but an ominous lower level of ashes and pools of hot, gaseous water. Then, in December of 1631, the whole interior was blown violently out, and 18,000 people are said to have perished. Since then Vesuvius has never been entirely quiet. During the eruption of 1906 the column of smoke and ashes rose to a height of about two miles, and some of the ashes were carried as far as observatories in France and Switzerland.\*

It was horrible hot mud that overwhelmed fashionable Herculaneum in 79, belched from the crater as torrents of steam, boiling water, and scoriæ. It raised the level of the entire countryside 65 feet, filled up the harbor, and wiped out practically all the townsfolk. The elder Pliny, who commanded the Roman squadron in the roadstead, went to his death near Stabiæ, like the gallant sailor he was, trying to assist some hapless refugees.

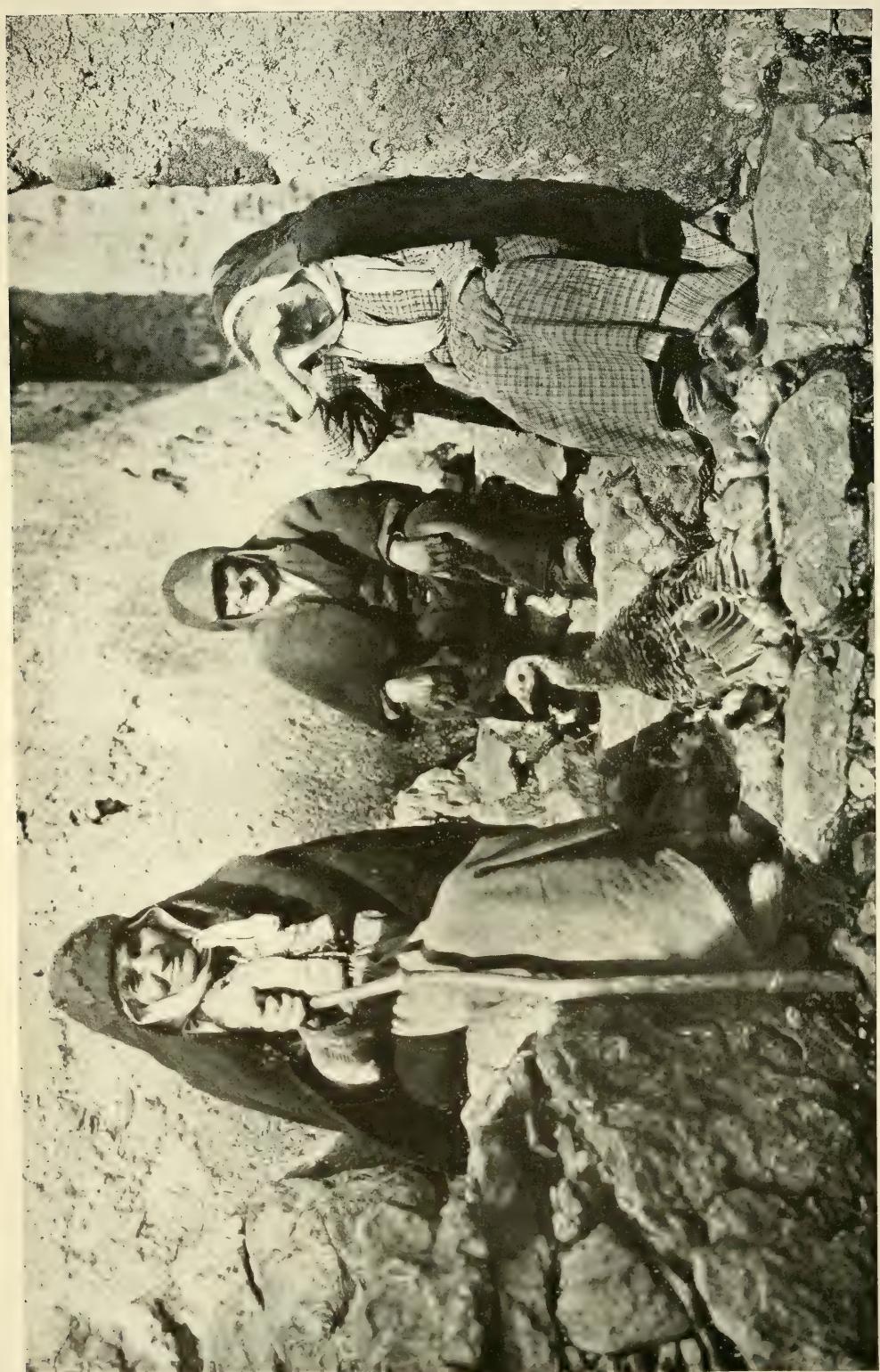
Herculaneum is more a misty memory than anything else, for the mud turned

\*See article by Thomas A. Jaggar, Jr., in the NATIONAL GEOGRAPHIC MAGAZINE, June, 1906.

Photograph by A. W. Cutler

AN AFTERNOON SUN BATH SHARED BY A MOTHER TURKEY AND HER BROOD

Sicily is a little larger than Vermont, yet it has nearly ten times as many people as the Green Mountain State. Even with the tens of thousands of its sons and daughters who have come to America, and who keep a constant stream of gold flowing homeward, poverty's pitiable pinch is widely felt, and homespun and hungry mouths are found everywhere.



into solid stone and made excavations almost impossible. The town is a rich and tempting bait to the archaeologists, however, for from a single one of the ruins came most of those exquisite bronzes in the Naples Museum, and 3,000 rolls of papyrus, part of the owner's private library.

What a contrast is Pompeii, destroyed at the same time, but by ashes! Though these gradually hardened into something like cement, they are much more easily removed than the stone at Herculaneum, and most of what we know of the details of ancient Latin life we have learned from the stark, scarred, roofless lower stories spread out before us in deathly panorama within the old city walls. Sixteen years before the eruption Pompeii was badly damaged by an earthquake and practically rebuilt in the new Roman style, the town laid out four-square, with streets crossing at right angles.

Architecturally, therefore, Pompeii represents one definite epoch of antiquity. It had the usual Roman forum, with its temples, baths, colonnades, etc.; but far greater interest attaches to the private houses and shops because of the intimate knowledge they give us of the domestic life of an ancient people.

#### UNCHANGING COMMERCE

We see their bakeries, in whose ovens quantities of bread were discovered; their wine shops, with casks labeled as holding different qualities—all connected by one pipe; a bank, with its waxen records of loans, receipts, and the like; shops of dyers, jewelers, sporting-goods dealers, potters, and so on indefinitely. Spirited frescoes decorate stuccoed walls, intricate mosaics make handsome pavements, and houses and courts yield up statuettes, images, jewelry, and all the impedimenta of a rich and varied culture. And in the little museum, inside the old Sea Gate, we see even casts of the bodies of the luckless inhabitants as they were found, after eighteen centuries of ashen interment.

Where the pretty little modern watering place of Castellammare di Stabia, with its cooling sea baths and strong mineral waters, lies snugly in a little bight

on the neck of the Sorrentine peninsula, Stabiæ once stood. It is one of the very loveliest parts of Italy, a region of tumbled hills clothed with luxuriant groves of orange and lemon, whose golden fruit adds luster to the gleaming foliage. Enticing roads of milky white wind and wind, now between high-walled grove and vineyard; now along open, skyey heights, with the blue sea as a background hundreds of feet below, and the beetling cliff rising straight behind; now beside villa gardens, where every brilliant color on Nature's palette seems to have been poured out with prodigal fullness.

The air is perfumed, the skies are soft and balmy, the roads superb.

#### BEAUTIFUL CAPRI

Capri, a great, twin-humped camel of an island, kneels in the blue just off the tip of the peninsula. From the sway-backed huddle of white, pink, blue, cream, and drab houses along the large harbor, up the breakneck road to the fascinating town nestling among the hills, white-roofed and Moorish, and on, still higher, by the winding road or up the nearly perpendicular flights of rock stairs, which furrow the frowning crag with their sharp, zigzag outlines, to Anacapri, 500 feet or so above, every step of the way breathes the pride and splendor and degradation of the island's greater days.

Here a cyclopean mass of shattered masonry in the warm emerald water tells of a Roman emperor's bath; yonder on a chimney-like cliff the sinister ruins of a stout castle keep whispers of ancient garrisons and pirates, not armed with automatic rifles or high-powered artillery; and here, overlooking the sea, the vast ruins of a villa recall "that hairy old goat" Tiberius and his wastrel voluptuousness that turned fair Capri into satyrdom.

Capri today is richly dowered for sightseer, artist, historian, antiquary, and geologist. On every hand are shaded walks and sequestered bowers in the thick groves of orange and lemon, laurel and myrtle; wild backgrounds of tumbled rock; titanic rifts in the coast, into which the sea has thrust long, insidious blue fingers.



AMALFI, FROM THE CONVENT OF THE CAPUCHINS

Few cities of Italy have more frequently taxed the descriptive vocabularies of artists and travelers than Amalfi. Yet this gem among seaside resorts remains undescribed, for its beauty is indescribable (see page 296).



Photograph by Von Gloeden

#### SICILIAN FISHERFOLK

The deep-sea fisheries of Sicily afford a livelihood for more than 20,000 natives of that historic island. These hardy seamen in their sturdy smacks oftentimes cross the Mediterranean to let down their nets in the waters off the North African shore. The tunny fish alone yields an annual revenue of more than half a million dollars.

From high in air to below the water-line the island is scarred and pitted with myriad vast pock-marks, some pillared with stalactites and stalagmites, some through which the never-quiet sea moans and sobs with the agonized wail of an hurt monster; one white, with little pools of pure, sweet water on its floor, only a few inches above the sea; one greener than emerald; one blue as heaven, with row upon row of delicate pink corals and tiny scarlet jelly-fish studding the water-line like jewels, while the refraction of the sunlight tints everything with the most marvelously diaphanous color, through which the silvery ripples of the bottom sand, about 40 feet below, seem within arm's length.

Driving up over the crest of the Sorrentine peninsula, the Siren Islands loom in the distance, too far away for even the echo of the charmers' song to be heard. At Positano the road divides into two white ribbons, binding the town to the

green hillside. Farther along great hollyhocks burn in somber flame beside the road, and the tallest olives imaginable crane their necks upward from the seaside of the drive to watch what is passing on the King's Highway.

On by the caves of troglodytes, who have all the comforts of home—little patches of garden, amiable goats, olive groves, and grape-arbors—the road winds in and out, up and down the stern face of the cliffs, rising and sinking in great billowy sweeps, plunging hastily through short, black tunnels, racing around big and little bends. Now it skirts the shoulder of a cliff, with only an 18-inch wall between the wheels and the boulders hundreds of feet below.

Furore flashes up at one like a rainbow as he dashes, blinking, out of an inky little tunnel upon a soaring viaduct in the blinding sunshine. A little group of fishermen's houses, clinging to the bare rock—huge gray cliffs beetling up be-

hind—a tiny strip of gleaming beach, and gaily painted fishing boats beside the dazzling emerald sea—that is Furore! Almost before the details can be grasped one is swallowed up by another inky little tunnel.

Picturesque watch-towers stud the shore, ancient defenses against the Barbary corsairs. And then presently Amalfi, once the brave little maritime republic that maintained its independence so long in defiance of princes and emperors. In a low cleft of the hills the houses fairly pile upon one another, as though there were not room for them all on the hill-side. Back on the mist-veiled crags loom other towns, and all day long, down the road that winds dizzily among the peaks, come old women and young girls, staggering under heavy loads of fagots gathered in the woods above the clouds. And when they are not carrying fagots they are always knitting—even when there is no war!—on the streets, in shops, gardens, fishing boats on the beach, gossiping by the fountain before the long stair that leads to the stately black and white and mosaic Cathedral of St. Andrew.

#### DESERTED HARBOR OF MIGHTIER DAYS

On the road goes, through Atrani of the gloomy arches over the sea beach, past Minore (the Little), where bare-legged fishwives in bright, tucked-up skirts help their men to haul home the nets; around the brilliant lemon gardens of Maiore (the Big); to and through the towns of Raito and Vietri, before reaching Salerno, where, clinging stubbornly to the hillsides like limpets, the houses rise from the rock between sea and sky, some of them standing half upon the hill and half upon tall buttresses that reach down to the harbor sands.

It was Salerno, the deserted harbor of mightier days, that forty Norman gentles, returning from the Holy Sepulcher in Jerusalem, "simply for the love of God" delivered from its Saracen besiegers. Later these gentlemen adventurers came back, simply for the love of the beautiful country, and with naught but their keen two-handed swords and their manhood hewed out a brilliant kingdom for themselves. One of them, Robert the

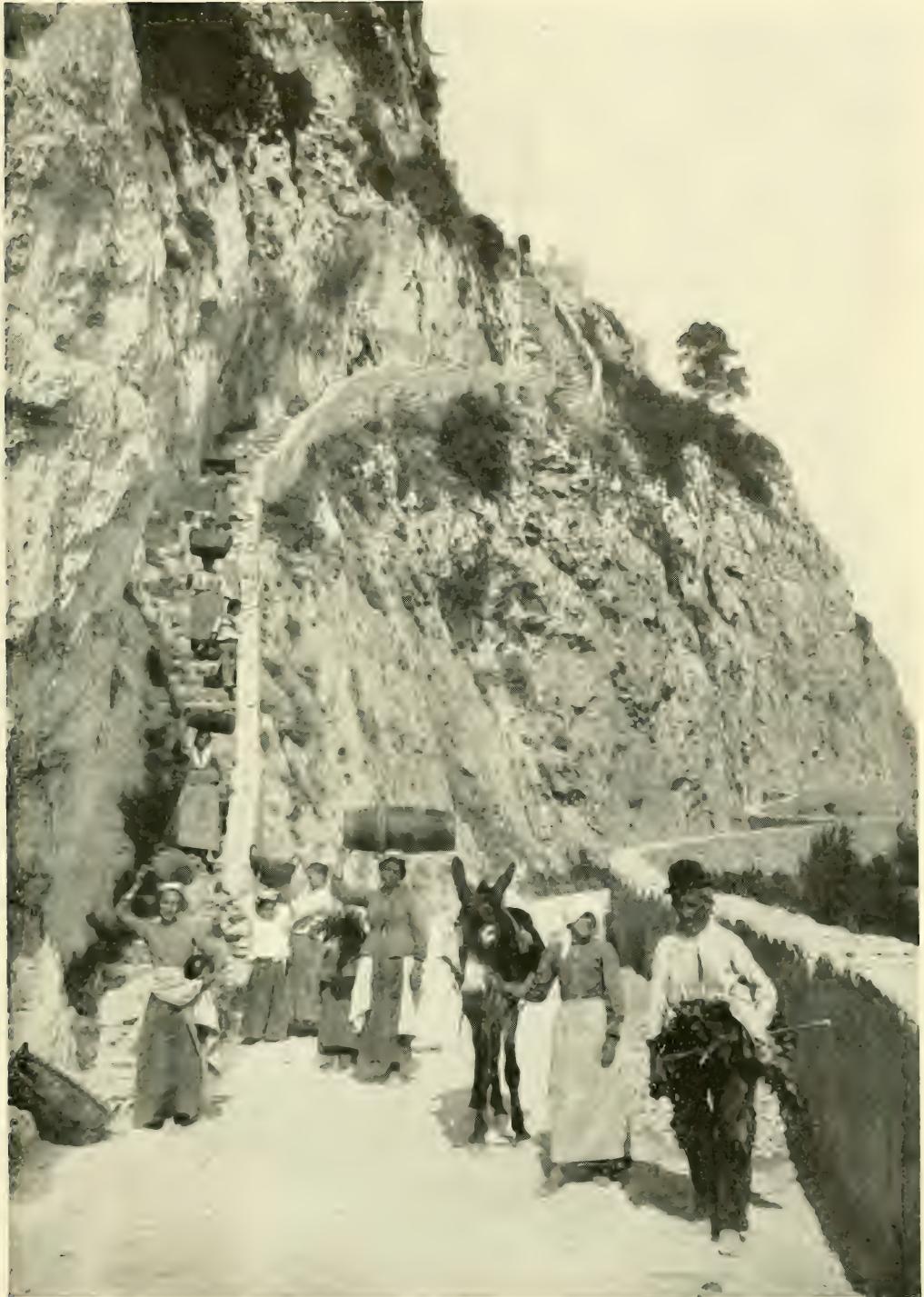
Shrewd, built the gaunt eleventh century cathedral, whose two magnificent amboines, or reading desks, of snowy marble, richly embellished with Cosmato mosaics, stand forth like jewels in the barrenness of the badly restored, whitewashed, railroad-station-like interior.

#### OTHER GEMS OF SOUTHERN ITALY

Reggio the lovely, overlooking the Straits of Messina, thrown into a heap of ruins by the earthquake of 1908; Palmi of the superb old olive groves and orangeries, with its feet on the slopes of Monte Elia and its sunny face looking away over the sparkling Tyrrhenian Sea toward peevish Stromboli; Catanzaro, fat and rich and important, given to displaying its beautiful Calabrian costumes of a pleasant Sunday for all the world to admire; Taranto, a carnelian gem set between the two blue seas—the gulf on the west and its own magnificent naval harbor, the Little Sea, on the east—a quaint, out-of-time town, whose narrow, swarming streets of insignificant little houses clamber up the splendid rocky islet, once the citadel of ancient Tarentum; Brindisi, Tarentum's colony, famous from antiquity to the days when the Crusaders' fleets lay in its harbor, and today a quiet, orderly, busy railway and steamship terminal; and Bari, with a picturesque castle and park and its rugged little peninsula, all neatly carpentered into prosaic regularity down one side—these and scores of others are but some of the facets of the exquisite jewel of southern Italy, which glows and flashes with a different luster for every one.

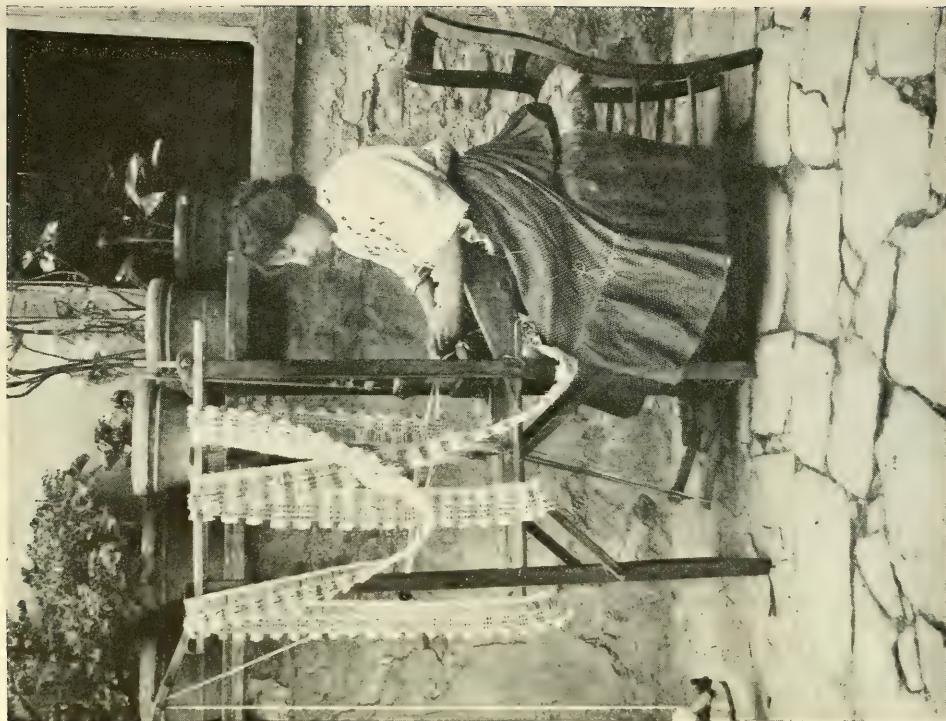
#### CENTRAL ITALY AND ROME

Yet with all its charm and beauty and romance, southern Italy has never forced ahead the progress of the world. Central Italy has. That whole vast historic region has taken a part in world history that achievements of the future can neither dim nor lessen. In some definite and lasting way practically every phase of the life of central Italy has influenced the world for progress—religious, political, scientific, intellectual, humanitarian. The most vital forces that actuate our twen-



THE STAIRS TO ANACAPRI

Originally Anacapri had only this precipitous flight of stairs to connect it with the world, yet the sturdy peasants made nothing of clambering up and down its wearying heights with heavy loads of their native wines, great bundles of provisions, and other supplies that now come more easily by the winding road (see page 293).



MAKING THE EXQUISITE LACE FOR WHICH VENICE IS FAMOUS,  
ON THE ISLAND OF BURANO



A STRAW-PLAIT WORKER AT FIESOLE (NEAR FLORENCE), THE  
CENTER OF THE INDUSTRY

Photographs by E. M. Newman



Photograph by Von Gloeden

CALABRIAN TYPES

The olive skin, the ebon eyes, and hair of the native-born son of Italy are as characteristic as his temperament

tieth century thoughts and activities are developments of the purpose, ideals, and philosophy of the central Italians, from the days when Roman school-boys scratched caricatures of Christians on the walls of public buildings upon the Palatine to the beginning of the decadence that followed hard upon the Renaissance in Florence and her compeer cities.

First of all the Italian cities to shake the world was Rome, imperial center of civilization, culture, politics, and religion. Two of civilization's five periods developed in her and bear forever her stamp and sign. Her first period gave to the world lessons in discipline, centralized government, colonial policy and control, civil law, military science, hygiene, and water supply. The very persecutions of that age stimulated the primitive Christians throughout the Empire into banding together until the early Church took definite shape. The succeeding Roman Cath-

olic Church was the tireless conservator of all learning and culture during the perilous Dark Ages—the inspirer, the civilizer, the sustainer. And after that black night had passed, and men began out of the wreck of the old to build the new, it was still the Church which was able to remodel civilization.

GEOGRAPHY'S PART IN ROMAN HISTORY

Though the situation of Naples, with its enervating charm, worked nothing but evil to that city, the location and physical character of Rome—hills for defense, a river for navigation, broad surrounding fields for grazing—proved the greatest asset of her people. It had so many natural advantages that every warring tribe which captured it was itself captured and quickly became Roman, thus making the city always the strongest in the peninsula, because it was the home and fortress of the strongest people.



Photograph by Donald McLeish

A METAL-WARE SHOP IN AOSTA, NORTHERN ITALY

The windows are filled with the glitter of cow-bells and metal-studded collars, while milk churns and the huge copper cauldrons used in cheese-making gleam in the dark interior and encroach on the pavement, where the mistress sits at the receipt of custom.



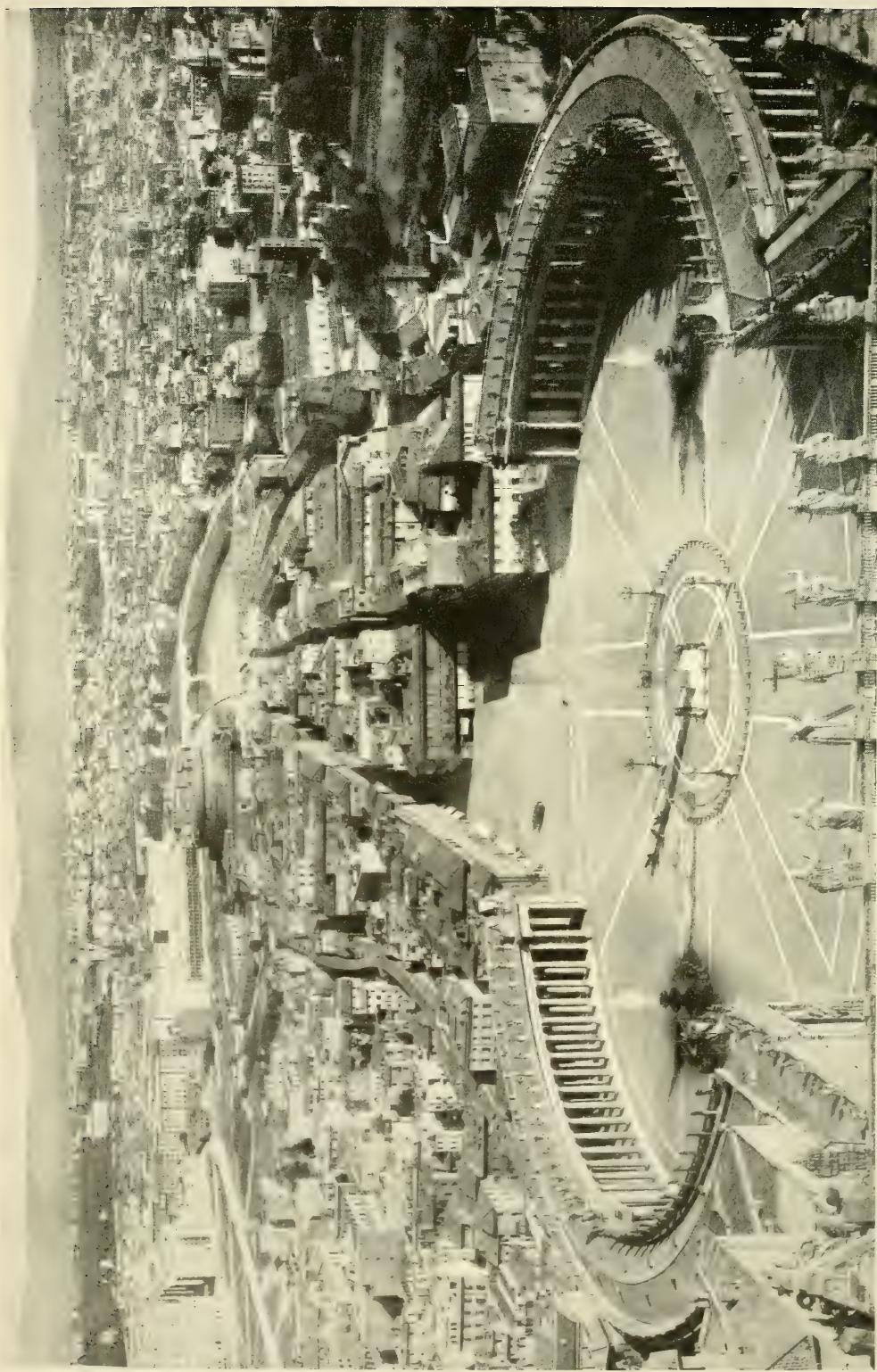
Photograph by Donald McLeish

A VALLEY IN THE GRAIAN ALPS ON THE ROAD TO COGNE: ITALY

Cogne is the center of a favorite hunting ground of Italy's royalty. The beauty of the deep-wooded valleys and climbing bridle-paths, presided over by the rugged grandeur of the Gran Paradiso, La Grivola, and the Tour du Grand St. Pierre, makes this a royal region in more than one sense. Some aspects of La Grivola are hardly inferior to the boldness of the Matterhorn.

PANORAMA OF ROME FROM ST. PETER'S DOME

The huge colonnade of St. Peter's reaches out its tremendous arms to receive and welcome the endless procession of the worshipping nations. In the middle distance looms the Castle of St. Angelo (Hadrian's Tomb), with the river at its feet; on the horizon, the blue hills guarding the ancient capital.



And from being the strongest city of her district, and then of her whole country, Rome naturally expanded until she dominated all the world of her time. One of her mightiest weapons was her malleability, her willingness to learn of others, even though her inferiors. So she progressed swiftly, irresistibly, originating here, improving there, experimenting yonder, with the result that the ichor flowed from her sturdy veins throughout the whole world in inspiration and example.

The charming legend of the beginnings of Rome is quaintly illustrated by the famous bronze figure known as the Capitoline Wolf. For the benefit of visitors to the museum, let me say that the wolf is a very ancient beast, but the twins so naively attached to her are modern additions. The archæologists, alas, no longer permit us to believe the legend, or that the town took its name from one of the twins.

Tiber has always been an unruly and turbulent stream; but the sophisticated descendants of the early Romans—who sought to appease his anger by sacrifices and rich gifts—have restrained him within massive walls. From a height the river looks a huge walled fosse, as if one-half the city were protecting itself against the other. The bridges that leap the tawny flood in noble arches of gleaming limestone and ruddy brick and dark metal—throbbing by day with pedestrians and vehicles and sparkling of an evening with their golden lights—give a curiously different effect: that of stitches binding together the edges of the great gash.

At first Roman genius concerned itself only with useful works, such as sewers, bridges, viaducts. The Cloaca Maxima, the great sewer that still drains the Forum into the Tiber, is probably the oldest true arch in Europe, and testifies both to the Romans' study of Etruscan models and to their skill as architectural engineers. And what aqueducts they built—simple, grand, splendid! Witness the towering Acqua Claudia, 45 miles long, that comes striding over the low, flat Campagna like a giant on stilts—a hundred feet high in places. Water was something every Roman community enjoyed by right of citizenship.

Ancient Rome is said to have consumed no less than 340,000,000 gallons of water a day; and one of the most noticeable features of the modern town is the prodigal effervescence of its water, gushing from fountains of every conceivable size and design. The Trevi is the most magnificent in the city, its water—called Acqua Vergine, Virgin Water, because of its purity—the finest. The old Roman baths took a lot of water. The splendid Thernæ built by the degenerate Emperor Caracalla had accommodations for sixteen hundred bathers. Beside the baths proper, the establishment included within its area, of about a quarter of a mile square, a gymnasium, athletic field, library, and even a race track. Its ruins tower above the plain today like some mountain blasted by Nature.

#### "ALL ROADS LEAD TO ROME"

The time, the skill, the money the Romans put into their highways—among the most remarkable of all their engineering works—are almost incredible. No less than eleven of these great arteries radiated from the city—"all roads lead to Rome," runs the ancient proverb. The most famous, the Via Appia, was built in 312 B. C. It was kept in constant repair until the Middle Ages, and still connects Rome and Brindisi, a distance of 366 miles (see page 306).

Though no burials were permitted in Roman cities, it comes as a surprise to find the finest roads lined with the ruins of all sorts of tombs; stranger yet to find that in medieval times the most magnificent of the tombs were turned into strongholds and crowned with battlements. The oldest and handsomest of the tombs on the Appian Way is the enormous circular mausoleum of the Lady Cæcilia Metella—more than 90 feet in diameter—with a frieze of flowers and skulls of oxen.

Equally impressive, though not a stronghold, is the slender, graceful, pyramidal tomb of Sir Caius Cestius, 116 feet high, which stands just outside the Ostian Gate, whence St. Paul emerged on his way to martyrdom. We probably never should have heard of Sir Caius but for this pyramid; the egotism of men sometimes lives after them.

Rome's greatest historic and traditional interest centers in the Forum Romanum, once a deep and marshy little valley between the Capitoline and Palatine Hills. In the beginning it probably looked something like one of the present-day open-air markets. But it did not look like a market long, for temples and imposing public buildings were added more and more to the shops and stalls until the whole Forum was a blaze of gilded bronze and marble, a magnificent show place worthy of the center of civilization (page 307).

And today? Ghosts and ruin! Here in a somber file are the stumps of the columns of the Colonnade of the Twelve Gods. That heavy basement of brick and mortar, with bits of cracked marble still bravely shining on it, was the Orators' Platform, where Antony came "to bury Cæsar, not to praise him." Across the Holy Way all there is left of murdered Cæsar's Basilica Julia is its brick foundation; beyond, the crumbling fragments of the palace of the Vestal Virgins, where a few melancholy, shattered statues of the high priestesses of this pure and lovely cult stand tranquilly amid the desolation.

#### STIRRING THE POETS' IRE

Every foot of ground in the Forum has interest, much of it tragic—like the barren spot where, tradition says, Virginius snatched a knife from a butcher's block and slew his beautiful daughter Virginia, while Appius Claudius raged in impotent fury; or the Vicus Tuscus (Tuscan street), where the shopkeepers stirred the poets to ire by using their precious manuscripts as wrapping-paper!

And hither and yon, from Palatine to Capitoline, from Tabularium to Colosseum, only ruin—brick, mortar, marble, columns, arches, statuary—all desolate and forlorn and broken. And the lamentable part of it all is that it was not the northern barbarian who accomplished the greatest ruin, though he did his share. For a thousand years any Roman who wished to build church or palace simply came here, tore down and carried away whatsoever he would. Worse yet, contractors actually demolished whole structures—to burn their marble for lime—and eventually peasants turned the buried waste into a vegetable garden and a cow-

pasture. It was not until 1870 that the Italian Government began systematic excavation and unearthed the present panorama of destruction.

#### ARCHITECTURE THE KEYNOTE OF ROMAN CHARACTER

The Romans were late in developing artistic genius, for first of all they were men of action: fighters, strategists, politicians—imperialists. Their work reflects them—their vast strength, their love of lavish adornment, their lack of true refinement, and their carelessness of subordinate detail. Simpson points out in his *History of Architectural Development* that had they possessed the artistic sense of their Greek neighbors their architecture would have been the grandest the world has ever seen. The greatest significance of the Roman gift to art lies in its universal distribution, for while the Romans laid their heavy yoke upon all nations, at the same time they disseminated their laws and art—perhaps I had better say the art of Greece, adapted and generalized, made fit for cosmopolitan acceptance.

For all the destruction and modernizing that has transformed the Eternal City, its ancient magnificence crops out in unexpected places: in the blank wall of the Stock Exchange, eleven columns of Neptune's temple; in a narrow street, twelve arches of the Theater of Marcellus, filled with workshops; again, a few forlorn survivors of the once splendid Porticus of Octavia, and so on. At the end of one of the massive stiches that span the Tiber the gleaming solid marble of the exquisite little round temple of Mater Matuta—or whatever it may have been called—gems the bank like a great pearl.

A few paces farther along, thrusting indomitably up from the level of older days, all the beauty of pure Ionic ideals is crystallized in the so-called Temple of the Fortune of Men, soft-hued tufa and weathered travertine. The two stand almost intact, because of the early Christians whose eye for beauty—or was it their practical sense?—seized upon and preserved them as churches when the old gods ceased to call.



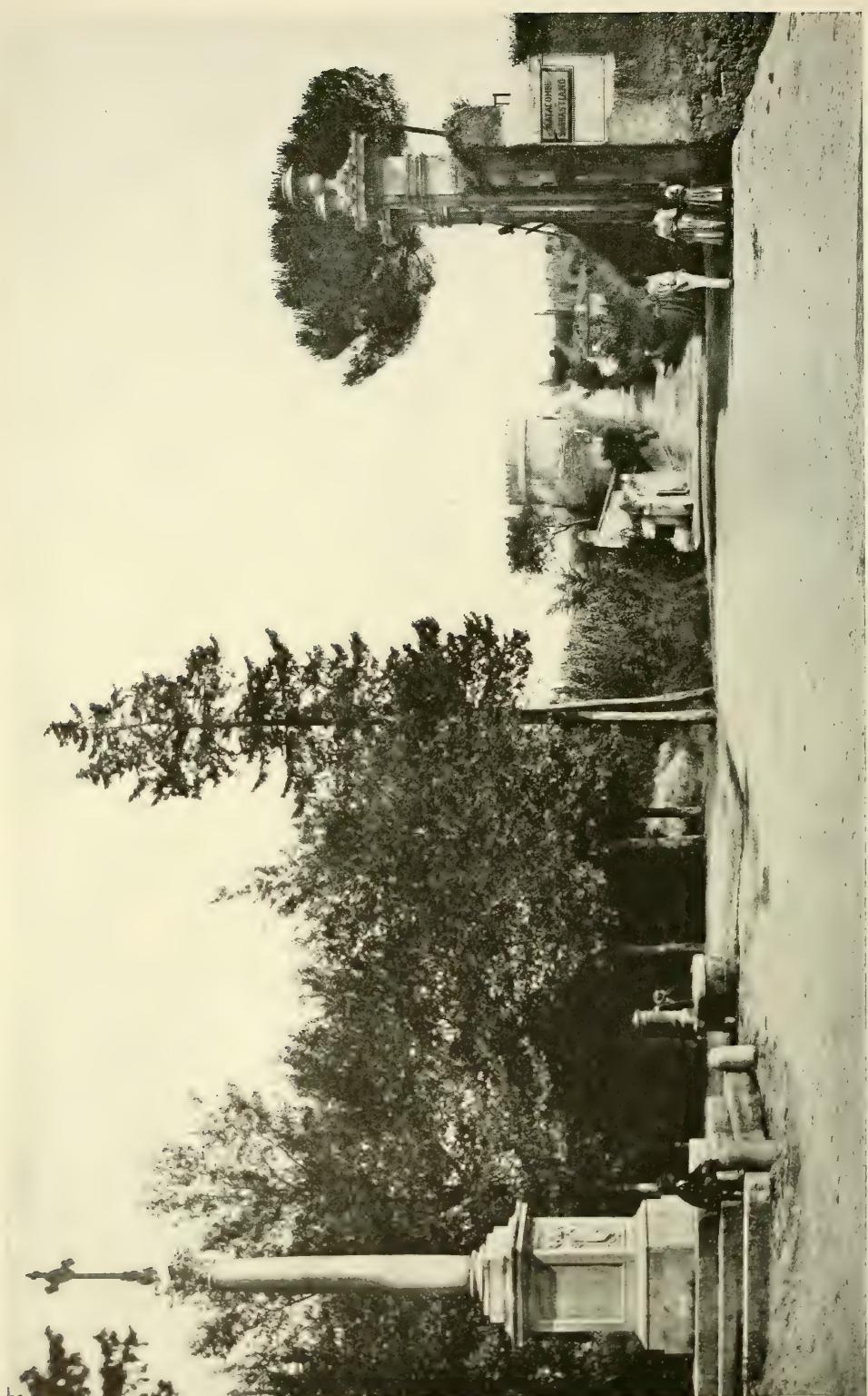
Copyright by Keystone View Co.

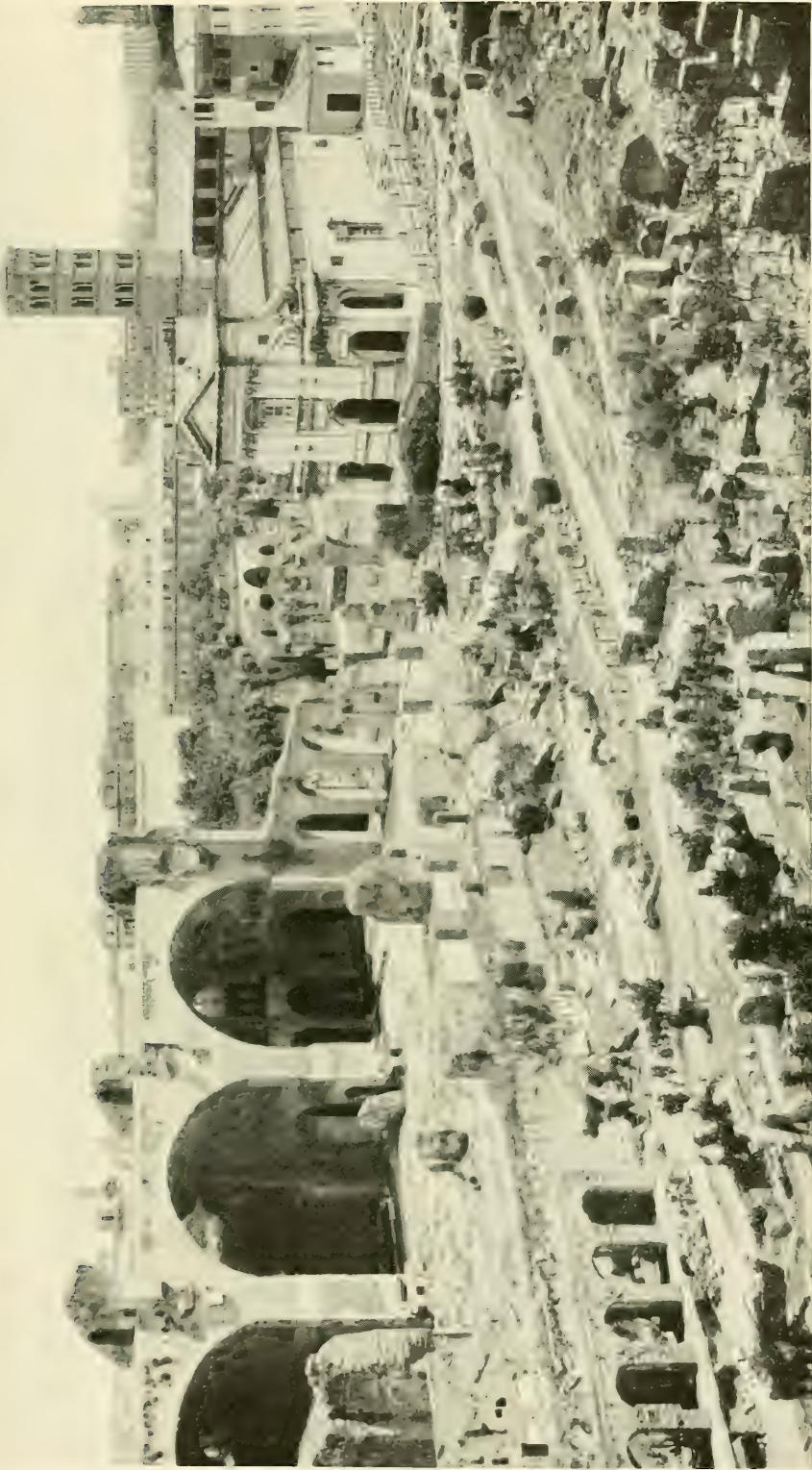
A CROWD IN THE CONCOURSE OF ST. PETER'S WATCHING THE SMOKE FROM THE  
CHIMNEY OF THE SISTINE CHAPEL

In choosing the Pope, the cardinals, who are the electors, are locked in the Sistine Chapel, which stands between St. Peter's and the Vatican. None of them may leave and no person may enter. If a cardinal is obliged by illness or accident to leave the conclave, he cannot return. After the ballots are cast and counted, they are burned, if no choice has been reached. The smoke issuing from the chimney above (to the left of the obelisk) is evidence that the ballot just taken has failed to elect. It is said that two years of balloting were required to elect Gregory X, who was absent in the Holy Land as a crusader at the time of his elevation, 1270.

THE APPLIAN WAY BEYOND SAN SEBASTIANO, WITH THE TOMB OF CÆCILIA METELLA IN THE DISTANCE

The Appian Way was constructed in 312 B. C. as a military road to Capua, whence it was afterward extended to Beneventum and Brindisi. No one can so well visualize the history of Rome as he who travels by this great highway across the Campagna, with its ruins of aqueducts, the mountains in the distance, and the innumerable tombs that border it (see page 303).





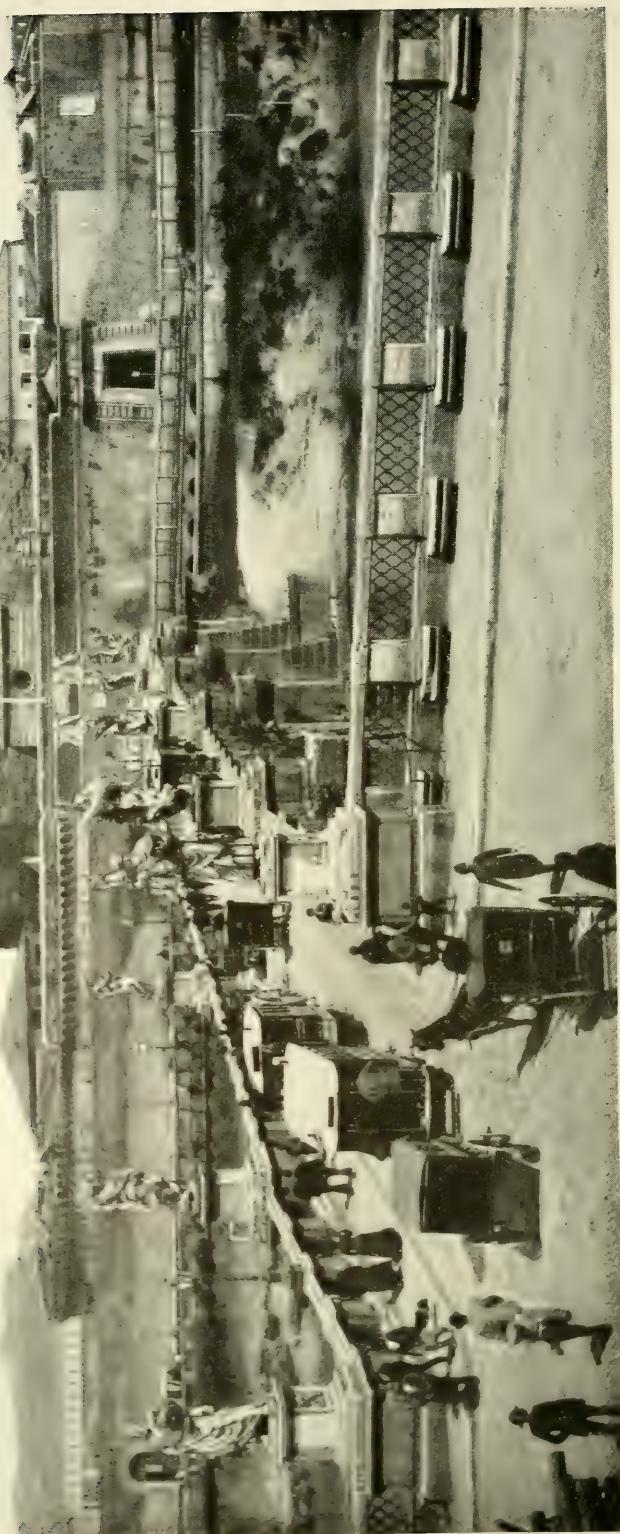
THE ROMAN FORUM FROM THE PALATINE HILL; A ONCE MARSHY VALLEY, 22 FEET ABOVE THE TIBER, BETWEEN THE CAPITOLINE, AND ESQUILINE HILLS.

Photograph by Emil P. Albrecht

To drain the little streams that once flowed here, the Cloaca Maxima was constructed, a channel that still serves the city after twenty-four hundred years. The great arches on the left belong to the Basilica of Constantine, 300 feet by 201 feet. The nave-vaulting of St. Peter's has the same span as these arches. The church with the beautiful belfry is Santa Francesca Romana, originally Sancta Maria Nova. The church was restored in 1210, but the facade is by Maderna, 1615. It covers the site of Hadrian's magnificent Temple of Venus and Roma, a double temple, the apses back to back, built according to Hadrian's own plan, 135 A. D. (see page 304).

THE BRIDGE AND CASTLE OF SANT' ANGELO (FORMERLY HADRIAN'S TOMB) : ROME

This bridge was originally built by Hadrian to connect his tomb with the city. It has ten colossal statues of Angelo and also statues of Saints Peter and Paul. The castle, built by Hadrian as a tomb for himself and successors, was completed in 139 A. D. (see text, page 309).



The largest and most wonderful of all Roman temples was Hadrian's Pantheon, with its carelessly attached but splendid portico from a century-older temple of Agrippa. What walls—20 feet thick, and highest on the outside, to weight down the haunches of the concrete dome that covers the building like a huge shell! One hundred and forty-two feet six inches the rotunda stands, and 142 feet 6 inches the structure measures in diameter, so subtly designed that although the walls are half-domed and half-vertical inside it looks as if the dome began right at the floor. The beautiful and subtle effect of the lighting, from the single eye in the top of the dome, has never been excelled (see page 308).

#### THE PANTHEON'S DESPOILMENT

Though the Pantheon has been a Christian church since the seventh century, it has suffered most at the hands of Christians: the dome stripped of its gilded bronze tiles to decorate Constantinople—incidentally, the Saracen pirates rifled the bronze en route, and it never saw the Byzantine city—and the portico robbed of its ceiling and bronze girders to make cannon for the Castello Sant' Angelo, Hadrian's transformed tomb. Not much remains of the exterior grandeur of this once most magnificent mausoleum in the world.

But nowhere else can the history of ancient and medieval Rome be read more vividly than in its battered remains. Within and about it Roman and barbarian, Pope and Emperor, struggled and fought for 1,500 years. On top of the castle still lie piles of cannon-balls made, in time of stress, from the beautiful marbles with which Hadrian adorned his lavish memorial.

#### THE MILITARY MONUMENTS

Magnificent columns and arches to commemorate their military exploits appealed strongly to the pomp-loving Emperors. Trajan obliterated a hill 142 feet high to build a private forum, the most splendid architectural achievement of the Golden Age of Rome. The sole majestic survivor of all that lavish display is his superb column, on which every phase of

war—triumph and defeat, whirlwind charge and stubborn combat—is depicted with brilliant realism in the broad band of dashing, vigorous reliefs that wind from top to bottom.

The most perfect example of the colossal type of triumphal arch is that of Titus, destroyer of Jerusalem. Erected in 81 A. D., it stands near the end of the Sacra Via, beautifully simple, tremendously impressive—one lofty arch between two terrific masses of masonry decorated with pilasters. Superb high-relief panels—a specific creation of imperial Rome—depict the sack of the Jewish capital, the Emperor's triumph, and such historic loot as the great seven-branched Hebrew candlestick.

The Arch of Septimius Severus, though much larger, is not so good, while as for the very finest arch in the Empire, built by Constantine the Great in 312, it is neither the construction nor decoration that most impresses us. It is the fact that close to the Colosseum, that bloodiest and most depraved institution in the Eternal City, Constantine, the first Christian Emperor, defying old gods and degenerate Romans alike, dared record his belief that he owed his victory over the tyrant Maxentius to the Divine power.

#### THE HOUSE OF DEATH

The most imposing theater ever erected by mortal hands, a grim house of death, consecrated by blood and tears, the Colosseum stands today a stupendous monument to Roman pride and degradation. Almost a third of a mile in circumference, it towers 157 feet up into the air, the original and monumental "play to the gallery" of popular approval. In 80 A. D. Emperor Titus opened its history with a tremendous inaugural of a hundred days of "games," in which men fought with other men and with wild animals, and no one knows the exact tale of the lives snuffed out on its bloodied sands "to make a Roman holiday" (see page 311).

In the construction of the Colosseum its builders adhered to their new note of superimposing the three Orders—Doric, Ionic, and Corinthian—an idea that has exerted a greater influence upon the design of monumental works than any other

Roman innovation. But who thinks of that, standing before it today with the golden Italian sunshine glorifying every scar, and conjuring back from the dead past vivid spectacles of Roman holidays full of noise and color, laughter and bloody agonies; or when liquid moonlight transfigures the classic ruin into a magic fabric where stalk the thin ghosts of saint and vestal, slave and Emperor?

#### THE UNDERGROUND CITIES OF THE DEAD

Nature has been kind to the Palatine, that hill where dwelt the shepherd kings and where later rose the tremendous palaces of Emperor after Emperor, by clothing its scanty ruins with lavish verdure. The silence of oblivion broods over the fragments of the halls where Domitian played with his fleas and Caligula bathed in shimmering seas of minted coins. The most compelling thing upon the whole bosky hill is the little stone altar chiseled: *Sei Deo, Sei Deivæ*—to the Unknown God.

This was really the shrine of the protecting deity of the city, the patron god of Rome, and only the priests knew the dread spirit's name. It was never written, but handed down verbally from generation to generation, because, if the common people knew whom they worshiped, any traitor could reveal the sacred name to an enemy, who might bribe the deity to forget Rome.

What a contrast!—the home of the Unknown God on the pleasant hillside, in the sun-sweetened air, and far underground, pent in the damp chill of the Catacombs, the altars—often the sarcophagi of martyrs—of the stout-hearted who worshiped the Known God.

Originally cemeteries, perfectly well known to the pagan authorities, these remarkable vaults and galleries and chapels, 20 to 50 feet below the surface, became hiding places for the faithful in time of persecution. More than forty of these cities of the dead, which extend around Rome in a great subterranean circle, have been explored, and it has been estimated by an Italian investigator that between six and eight million bodies were interred in them.

Not only are the tombs hewn in tiers

along the walls of the galleries, but the galleries themselves are in stories, one above another, in one place seven tiers high. Their decorations range from mere daubs of red paint, telling the name of the deceased in a given tomb, to elaborate frescoes. Above ground there seems a great gap between the temples of the pagan city and the existing churches of Christian Rome, since all the oldest churches have been destroyed. This gap, however, is at least partly bridged over by the Catacombs.

#### ST. PETER'S CATHEDRAL

It would be as impossible to give an adequate idea of Rome's multitudinous churches as it would of the enormous quantity of art treasures in the museums, or an adequate and intelligible idea of the city's unique and marvelous history. The overpowering monument of the Church of Rome is St. Peter's Cathedral—the tangible evidence of the evolution of the early Church into the present-day world-encircling spiritual power.

Many an architect had a share in its building, but all that is admirable may be accredited to two: first, Bramanti, then Michelangelo, who planned that vast dome, floating lightly as a soap-bubble above the roof. What a pity that the last architect should have spoiled its effect by cutting off the view of the whole lower part by a lengthened nave and statues 19 feet high above the façade! (see pages 302-305).

About 80,000 persons—nearly a sixth of the entire population of Rome—can gather in this huge cathedral. The vast nave stretches away tremendously impressive under its magnificent barrel vault, 75 feet in span; yet so perfectly is the building proportioned that only when standing beside a given detail can one grasp its real size. Nothing but a catalogue could describe the great interior, with its lavish mortuary monuments to dead Popes, its magnificent bronze baldachin, its celebrated effigy of the kissing ceremony, its amazingly perfect mosaic copies of the paintings of the old masters, which have been removed.

Nor could any pen picture a tithe of the glory of Michelangelo's frescoes in



THE COLOSSEUM FROM PALATINE HILL: ROME

Could the walls of this great structure speak, what tales of anguish and of debauchery they could give us. The Colosseum was dedicated in 80 A. D. with gladiatorial combats lasting a hundred days, in which 5,000 wild animals were killed; history mercifully is silent as to how many human beings gave their lives for this Roman holiday. For three and a quarter centuries man and beast here were forced to die that a conscience-deadened people might laugh.

Photograph by Emil P. Albrecht

THE TIBER, LOOKING TOWARD THE AVENTINE HILL: ROME

The Tiber has always been an unruly and turbulent stream, but the modern Italians have inclosed it within massive walls. From a height the river looks like a huge walled fosse. While these substantial embankments cannot check the highest floods, as was seen in December, 1900, and again in 1914, they can very decidedly limit and tame them.





Photograph by Von Gloeden

#### THE SERENADE

Music is as necessary to the Italian people as are their mild wine and spaghetti

the Sistine Chapel, of the frescoes and paintings and other treasures in the Stanze and Galleries of Raphael in the adjoining Vatican; indeed, of any of the wonders of either Papal Palace or Cathedral, save only the entralling prospect from Michelangelo's dome, 400 feet above the pavement.

Below, Bernini's huge colonnade, the grandest Doric peristyle since the Parthenon, extends its giant arms to gather the worshiping nations to its heart. The river, guarded by the mighty cylinder of the Castello Sant' Angelo, glistens like a strip of curving asphalt after a summer shower, as it winds between its fortress walls. All about on every hand glows the turbid monotony of orange-brown tiles, broken hither and yon by round dome or square campanile, by the green of gardens and the gray of open squares, with the ancient streets cutting it all into erratic patchwork; and beyond the city, the flat monochrome of the Campagna that tones away into the hazy mountains,

those looming Alban hills whose wandering sons begat all this—Rome!

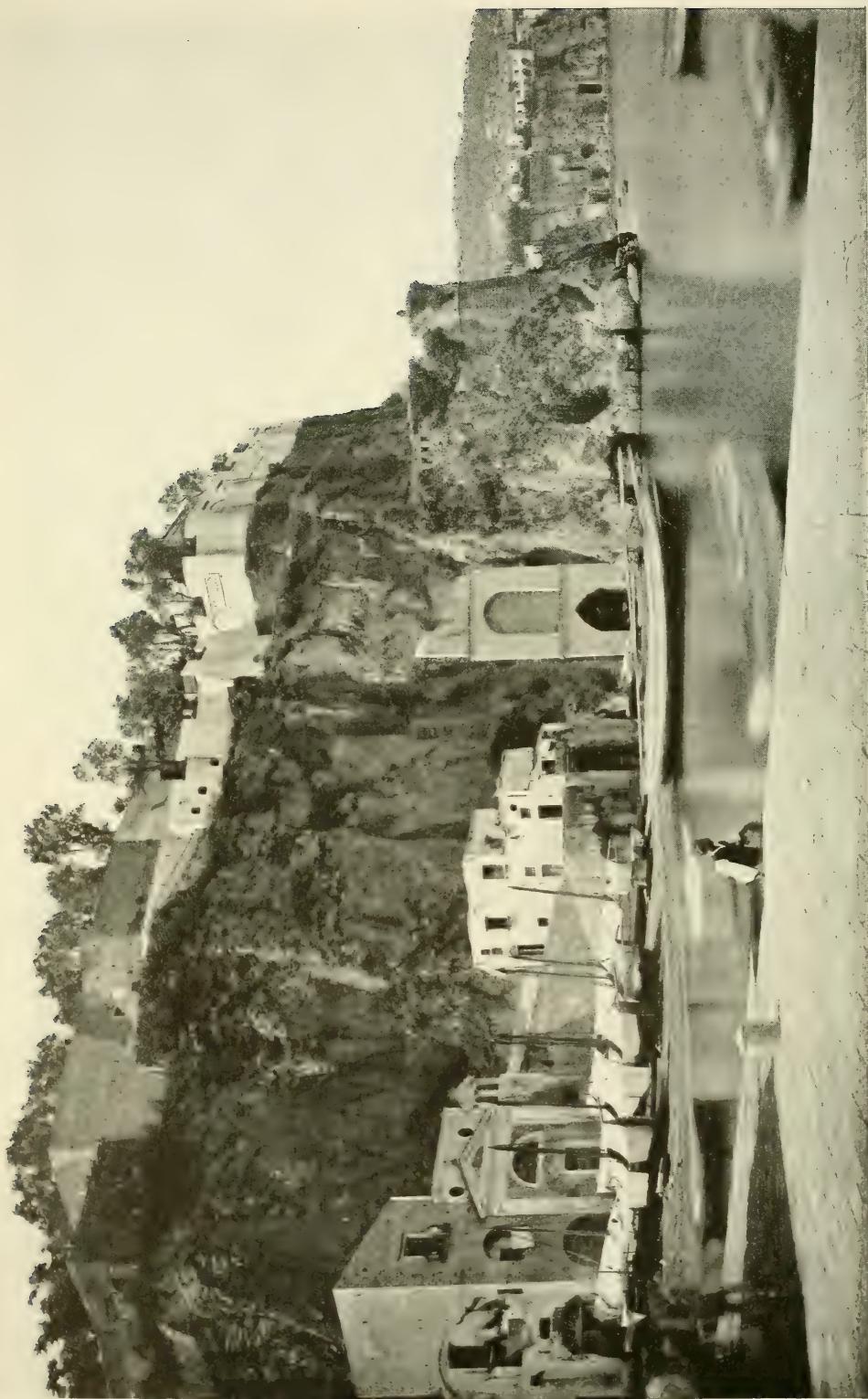
#### ST. PAUL'S-BEYOND-THE-WALLS

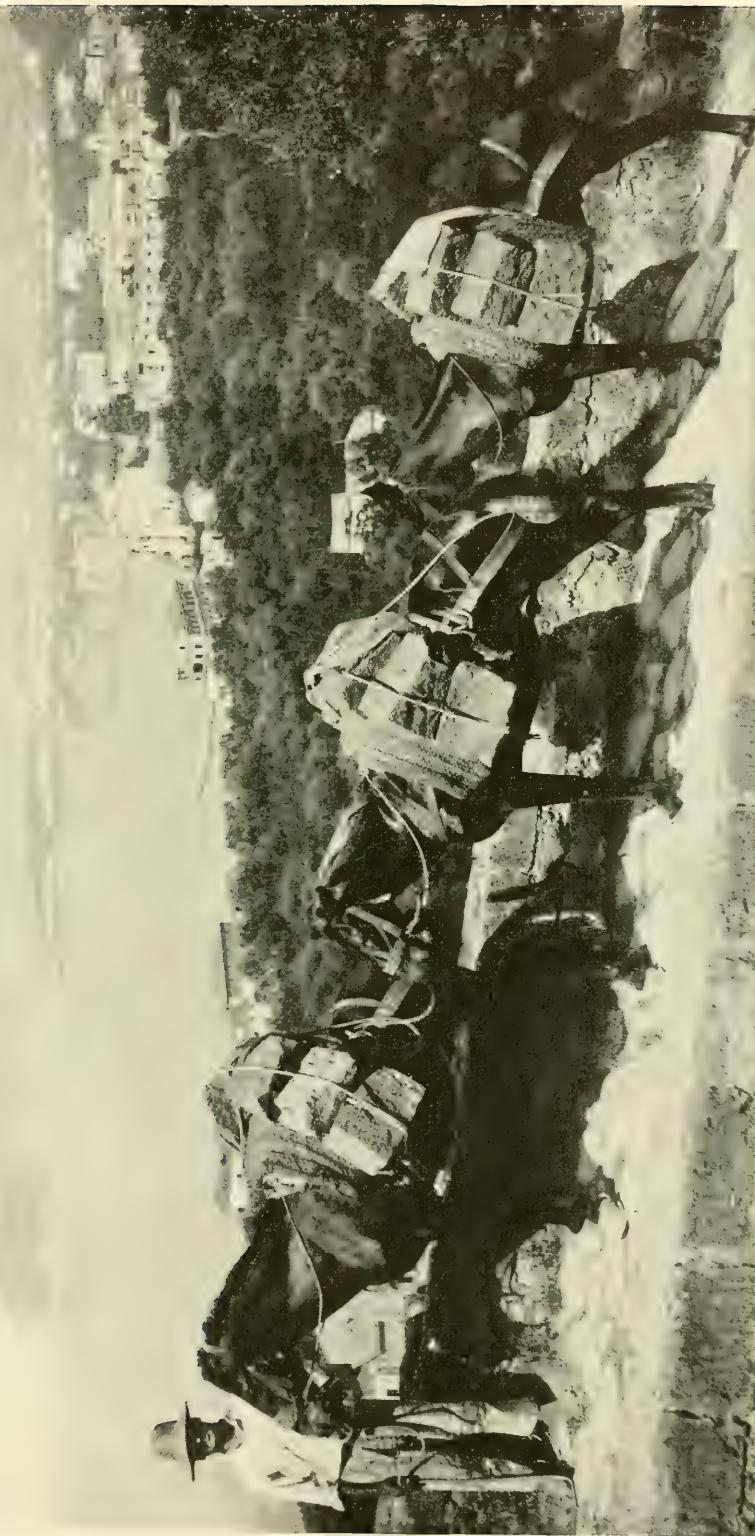
St. Paul, too, has his memorial, on the spot outside the walls where he is said to have been buried, a church that outranks all other basilicas in vastness of size, grandeur of plan, and magnificence of adornment, with eighty granite columns, rich old mosaics, and a frieze of mosaic medallion portraits of every Pope, from St. Peter down to Pius X. Adjoining the church are beautiful cloisters, cool and refreshing after the ornate interior. Graceful columns surround them in couples, here plain, here twisted into fanciful contours, here richly encrusted with Cosmatto mosaics. They give both charm and distinction to the now silent close where the monks of old used to take their sober pleasures.

Modern Rome is as the visitor, and he would be a hardy soul indeed to say how and where the city most interestingly dis-

MARINA PICCOLA, A SMALL HARBOR : SORRENTO

Between the eastern ravine, which terminates in this "small harbor," and the western ravine, ending in the Marina Grande, towers the rock to which clings Sorrento, an iridescent gem among Italian resorts, combining the unsurpassed natural beauties of marine prospects and landscapes of orange and lemon groves with historic memories of Roman occupation.





SORRENTINE MOTOR TRUCKS: MANY OF THE EDIFICES ERECTED ON THE CLIFF AT SORRENTO WERE BUILT WITH BLOCKS OF STONE BROUGHT UP ON THE BACKS OF MULES

closes itself; whether in the surging life of the Via Nazionale or the Corso, each with its restless tide of cosmopolitan hue; the Piazza del Popolo, with its diurnal *passeggiata* winding up the steep slopes of the wooded Pincio and through the formal gardens; the Piazza di Spagna, where the ardent kodaker finds ample quarry among the picturesquely costumed artists' models who loiter about the flower market on the steps leading up to the quaint old church of the Mountain Trinity; the Seven Hills themselves, or the lower quarters where the crowded masses herd in noisy camaraderie. To each who sees it all comes a different impression of the sense and purpose of the ever youthful city of the hills.

#### THE SPIRIT OF MODERN ROME

But equally to all who stand of a sunny day in the garden of the Knights of Malta, on Aventine's crest, and look away through the leafy lane among the trees, comes the sense that here, regardless of the vivid life of the city below, is visible the spirit of the true Rome, of the Eternal City; for off in the near distance, framed by the branches of the little park, floats the dome of St. Peter's triumphant above man and all his works; as proud, as vast, as massive as ever Italian art could make it; sign and symbol even yet of the character and force of the city which for centuries has molded not only her own sons, but stamped an ineradicable impression upon all civilization.

#### THE DESOLATE BEAUTY OF THE CAMPAGNA

The picturesque desolation of the Campagna, dotted with the summer straw and wicker huts of the peasants instead of the villas of the rich and noble ancients, is swept about by mountain, forest, and sea, gemmed with sparkling lakes and pocked with dead craters and splendid ruins. The planting of eucalyptus trees and systematic drainage is working bravely for a reclamation of the marshy plain to its flourishing condition when, as ancient Latium, it gave the Romans to the world.

To the southeast the extinct volcanic Alban Mountains form a striking background for equally striking towns—Castel Gandolfo of papal fame, with its huge

palace dominating the somberly lovely Lake Albano, darkly cupped by the lips of an extinct but forbidding crater; and the serene, pellucid sapphire of the Lake of Nemi, "Diana's Mirror," hardly ever kissed by the faintest breeze. Its lofty lava walls are so precipitous one marvels at the daring, skill, and patience of the peasants who have so wonderfully cultivated them.

On the east the Apennines come down to the Campagna in the abrupt Sabine Range, beautiful, heavily wooded, copiously watered limestone peaks. Tivoli is cradled like an eagle's nest high among these sheltering hills, moated about on three sides by the foaming impatience of the Anio, that bursts violently out hither and yon in long, snowy pennons of flying spume. The precipice is jeweled with the mutilated little temple of the Sybil, the town ragged and twisty and instinct with charming irregularities and contradictions; and the great, gloomy, neglected Villa d'Este is magnificent yet with the saturnine beauty of its dusky cypresses and ilex, gray olives and heavy hedges.

Small wonder that Tivoli and these lovely Sabine hills drew the ancient summer colonists, or that a mile away Hadrian himself should have erected an imperial villa that was a marvel in its day, and now in ours is only a confusing, conglomerate ruin among weedy gardens.

#### THE GRIFFIN CITY OF PERUGIA

Away to the north and west stretches that most delightful and suggestive region, Umbria, well called the "Galilee of Italy" because of its holy men and women. It is a green and brown land of isolated hills, each crowned by its special type of city, and of rolling meads between; a rich and fertile land, full of the quiet, pastoral beauty that infuses the work of the Umbrian School of painters; a land of cities romantically unchanged.

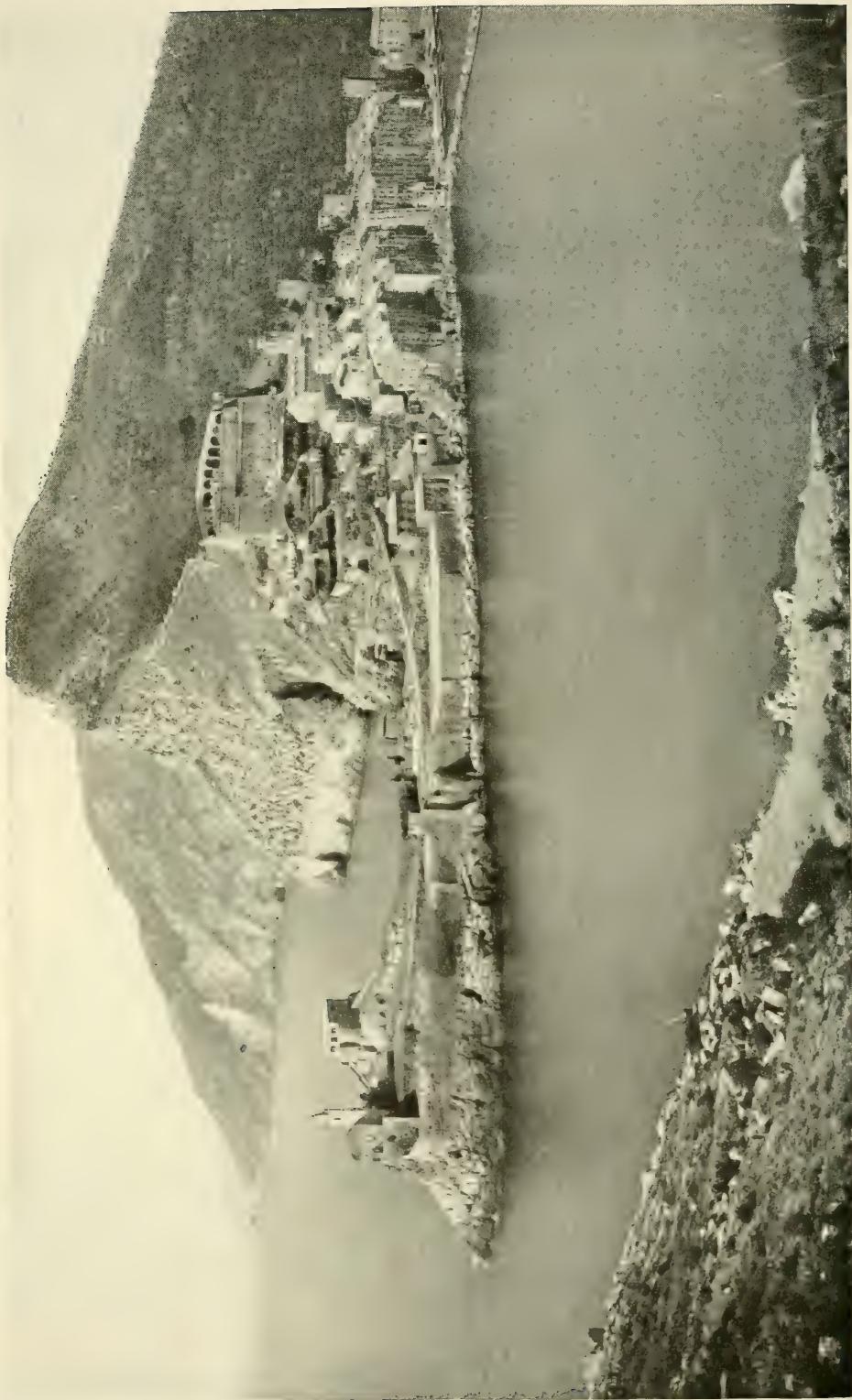
Of all the Umbrian communities, the Griffin City of Perugia is the most interesting, the bloodiest, the most compelling. Here again we have striking proof of the value of geographical location. Much of the power and eminence of the city was due to its situation at the juncture of several long spines of hill, 1,200 feet high, commanding the Tiber, that winds



YOUNG ITALY

Photograph by Von Gloeden

There are nearly one-tenth as many Italians in America today as in Italy itself. The vast sums of gold that hard work and hard living enable the Italian to save up and send home, where a quarter looks as big as a dollar here, is the best immigration stimulant there is. That accounts for the fact that we were increasing our Italian population at an average of 16 per cent a year during the twenty-five years before the European war began.

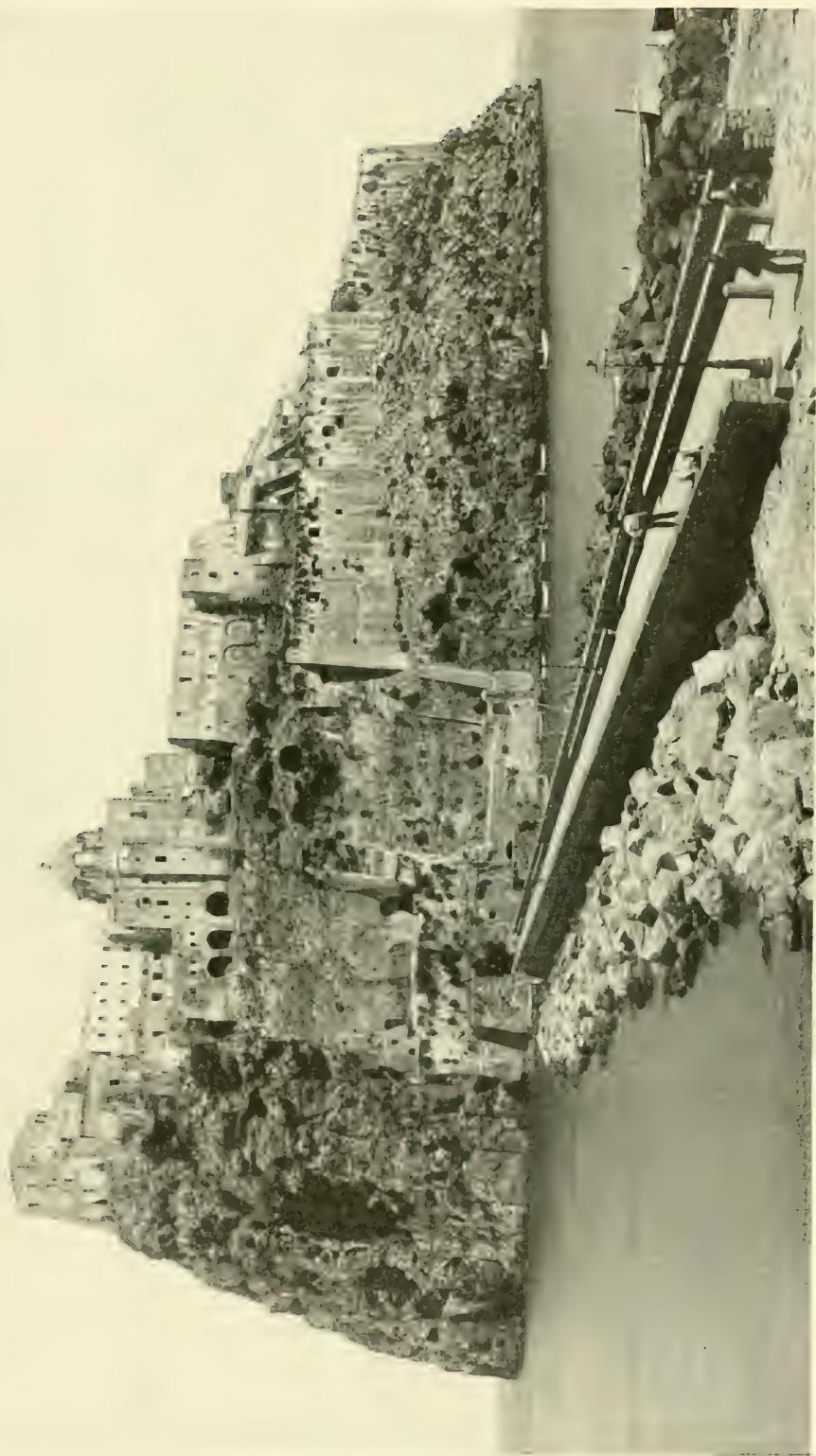


PORTOVENERE, CELEBRATED FOR ITS PORTORO MARBLE.

Seven miles by highroad from Spezia, the chief naval harbor of Italy, this picturesque village is built on the site of the ancient *Portus Veneris*. It is separated from the island of Palmaria by a strait only 160 yards wide. Between two rocks beneath the Church of San Pietro is "Byron's Grotto," where the great poet is supposed to have written much of his "Corsair."

### THE CASTLE OF ISCHIA

In this stronghold, which dominates the island of Ischia off the harbor of Naples, was born the celebrated general Marchese di Pescara, and here lived the general's equally celebrated widow, the beautiful and gifted Victoria Colonna, chief solace of Michelangelo's last years.



at its feet, and two great Roman roads. Today it sprawls about its hilltops, for all the world like some uncouth sea monster with thick, wavy legs and arms flung out in groping search for prey, bolstered up here, braced there, underlaid yonder by tremendous masses of masonry.

The old towers and donjon keeps, once the most distinctive features of its narrow, tortuous streets, have most of them vanished; others have been beheaded; but the whole aspect of the town is even today military and despotic; and many a house still shows traces of the heavy chains that barred the dangerous streets after nightfall, when, if a man forgot his steel undershirt, he came home in a shroud! Even the quaint and beautiful friezes above some of the doors, with Latin inscriptions and mottoes, cannot abate its severity. Here one reads *Pulchra janua ubi honesta domus* (Beautiful the door of an honest house), there *Sollicitudo mater divitarum* (Carefulness is the mother of riches), and over a church lintel the pious *Janua Coeli* (Door of Heaven).

The old, joyous life of the city centered in the Piazza del Duomo. Here the gentle Perugians played at their game of hurling stones at one another until often a dozen were killed and scores wounded. But that was Perugia! And what of the innocent looking iron fence about the central fountain? Many a time its spikes have borne the bloodied heads of nobles, stuck there by other nobles whose turn was yet to come. No wonder Perugia needed *porte del mortuccio*—special “doors of the dead”—tall, arched, narrow; walled up now and easily passed unseen.

At one side of the Piazza is the big, unfinished Gothic Cathedral of San Lorenzo, with its beautifully carven choir stalls and that graceful little open-air pulpit, leaning slightly toward the sun, where St. Bernard preached to an unregenerate people and watched the books on necromancy and the ladies' false hair burned.

#### THE HOLY CITY OF ASSISI

Across the fertile vale softly colored Assisi, the Holy City, the town of the Saints, the mystic heart of Umbria,

stands upon its hills, and high above all, like a Titan smitten by the thunder, rises the grim, austere old ruin of the Rocca, that castle the Assisans regretted as bitterly as they had longed fervently for its protection. In the plain below, the little river Tescio winds and twists in burnished zigzags that flash the golden sunlight up against the oak and vine, corn and olive clad slopes of the hills.

There is hardly a more medieval city in Italy in aspect than Assisi, and this quaint idea is intensified by the burrows that run in a perfect labyrinth beneath the level of the twisty, narrow, shut-in streets—hiding places into which, before the city was fortified, the frightened citizens could pop at the first sign of an approaching enemy.

It is a city of churches and confraternity buildings, held even yet in the spell of St. Francis. And not of St. Francis alone. His ideals and work so moved the rich and lovely Clara Scifi that she forsook everything in life to be his co-worker and inspirer. Like him, she founded an Order—the Poor Clares—and lies today in the simple church that bears her saintly name, embayed among the soft gray olives on the hillside.

#### THE PREACHER OF POVERTY'S MAGNIFICENT CHURCH

It was the glorification rather than the spell of St. Francis that inspired the genius who, at the very tip of the wedge-shaped town, gave his mighty vision play in the amazingly strong and beautiful Church of San Francesco, the first Gothic church in Italy—a vast double pile, one church above another—with a magnificent monastery sweeping down its side. It stands solidly upon massive substructures among the gnarled old olive trees of the slope, so perfect in design and location that from every vantage point and in every light it is new and different.

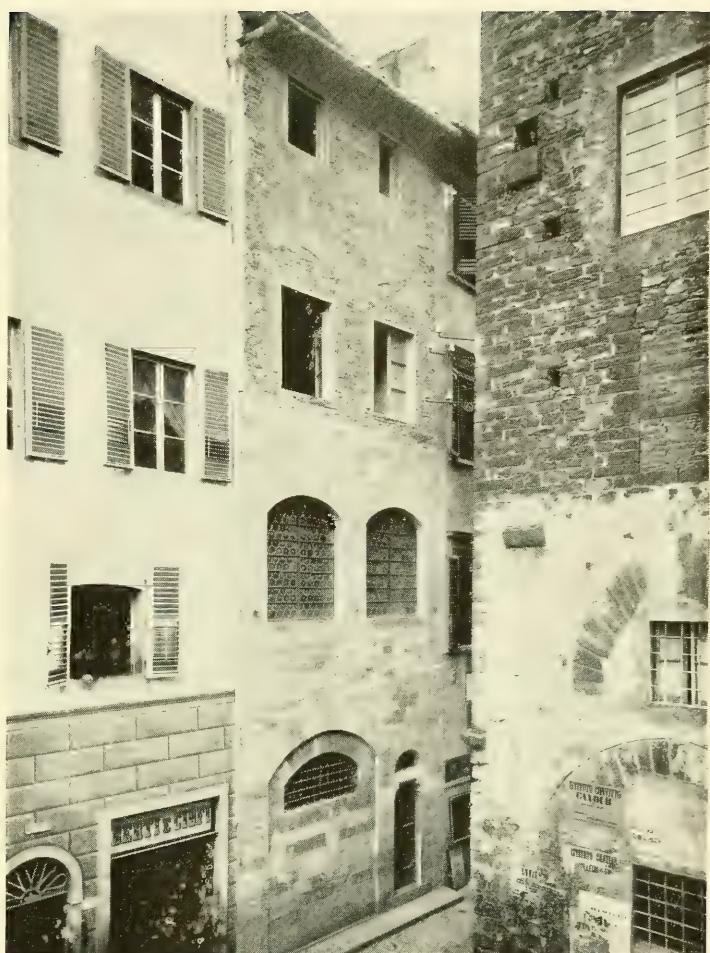
But what a church, what a monastery for the preacher of poverty! Within, from floor to arches, Italian painting was reborn in wondrous frescoes that “spoke to men who could not read . . . but whose hearts received . . . teaching through the eye.” Cimabue, Gaddo Gaddi, Giunta, and the greatest of all,

Giotto, covered these walls with pictures that had far more than mere decorative significance. For the first time in the story of Christian art the whole Christian belief was summarized in such a lifelike, natural way upon these acres of walls that it sufficed for both the spiritual and material education of the age, and indeed even for ourselves.

Far nearer to the Franciscan ideal is the desolate hermitage of Le Carceri, far out beyond the town in a bleak, wild gorge, where the eye can hardly distinguish man-made walls from natural rock. St. Francis loved to retire to this barren solitude for meditation when the battle he fought against worldliness and sin impaired his physical and spiritual vigor. About the Carceri grow somber ilex trees, beneath which he preached his sermon to the birds, and above all rises the jagged peak of Subasio, gray as the monkish habit. It is the abode of silence and of peace and memory. Indeed, that is Assisi—memory, silence, peace!

#### THE QUEEN CITY OF TUSCANY

Northwest of Umbria, Tuscany unrolls a panorama of surpassing beauty and contrast, from the grim Apennine crags on the east, downward in a gentle slope dotted with hills, watered by innumerable streams on every side, to the blue Tyrrhenian Sea. It is a region sharply marked and richly diversified, the dry beds of prehistoric lakes near certain of its cities and toward the coast forming little plains that serve to intensify the



THE PIAZZA DI SAN MARTINO AND THE HOUSE (IN CENTER)  
WHERE DANTE WAS BORN: FLORENCE

more rugged charm of its hilliness. Tuscany's three great cities—Florence, Siena, and Pisa—stand opposed in every respect: in character, appearance, history, and interest today.

The story of Florence is the story of humanity: the broad, deep, moving epic of the awakening of man to his own divine power; the story of wonderful self-made men who had but one idea in common—the thirst for free activity of soul. So the tale of the New Birth, the Renaissance, is the record of individual spirit so free, so subtle and elastic, so profoundly penetrating to the springs of human purpose, that it has furnished the motive power of the world ever since; and Florence, as its source and focus, because of



A PANORAMA OF ASSISI, SHOWING THE MONASTERY OF ST. FRANCIS ON THE LEFT

Assisi is generous to all kinds of travelers. The architect finds at least five excellent Gothic churches to study; the artist delights in the frescoes of Giotto and Cimabue; the historian recalls the part played by the city in the struggles of the Guelphs and Ghibellines as he views the medieval castle that dominates the region; and everybody, however out of sympathy with asceticism and religious devotion, must find in the memories of St. Francis and the wonderful idealism that guided his life in those crude, cruel times, a beauty and sweetness of which the saint's thornless roses, blooming at Assisi, are a fitting symbol (see page 320).



A WINE MERCHANT OF FLORENCE

The wine of the country is put up in these two-quart flasks and sent all over Italy, with very little breakage

the conditions then obtaining in the city and throughout Italy, was the one spot in the world capable of producing such an epoch-making upheaval of human consciousness.

#### WHY THE RENAISSANCE BEGAN IN FLORENCE

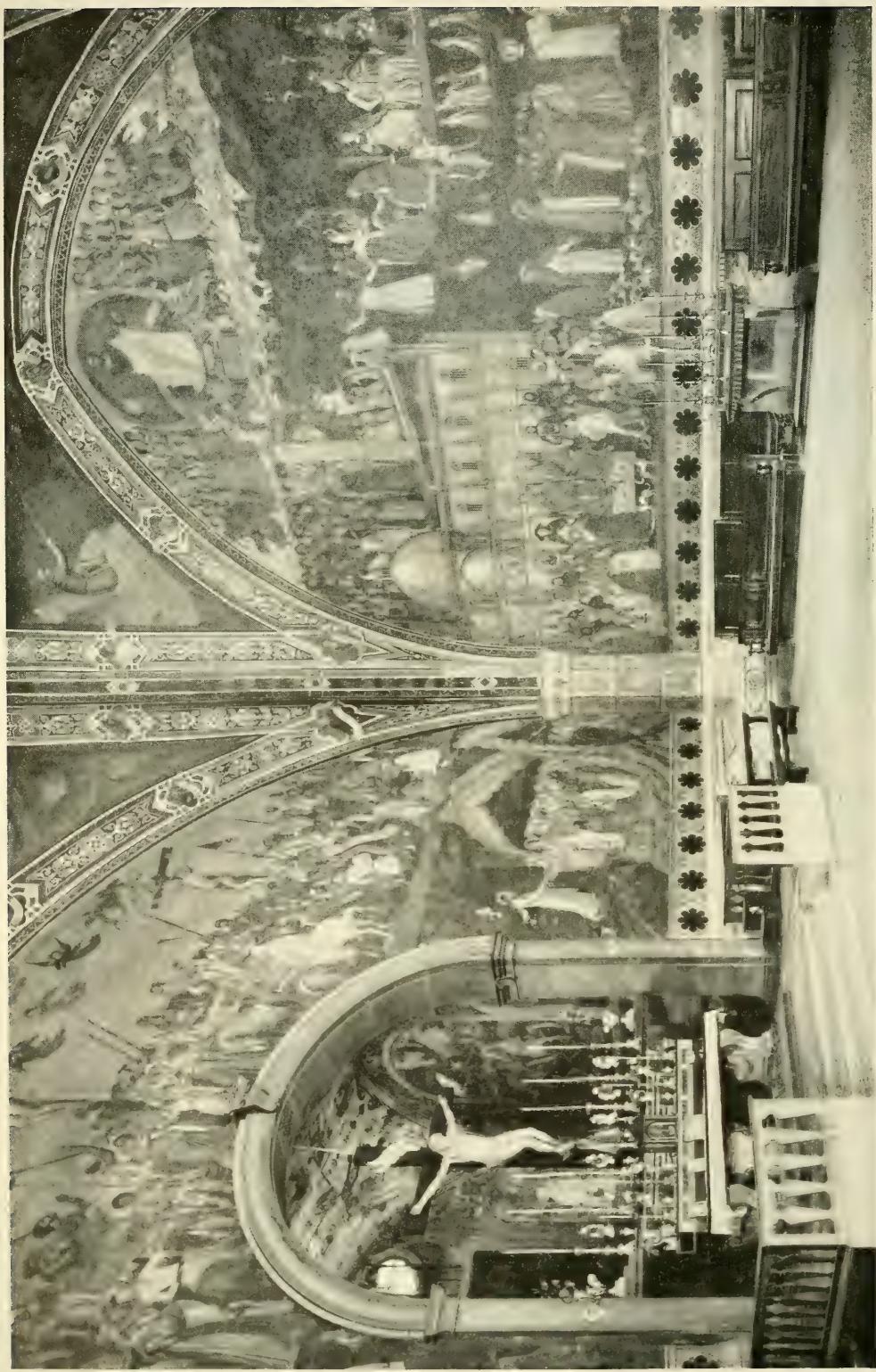
And all this astonishing genius grew directly out of—business! The city was peopled by men who manufactured the necessities of life, by merchants, speculators, bankers, tradesmen, artisans, handicraftsmen of every type. Business, work, was a condition of active participation in the life of the State, and because they did not work, the nobles were debarred from this. It was the burghers, the people, who ruled; and even when evil chance laid the State under the heavy hand of a despot, he was forced to develop his own character to the uttermost, because his rule depended entirely upon his capacity as a man. The aristocracy, accordingly, was that of intelligence, of

men who became eminent because, first of all, they were the best in their own individual work.

Under the practical inspiration of these mental giants, Florence was recreated and learned to view life from within instead of superficially; she learned that the individual is the soul of the State, and that the State can succeed only when it is true to the best interests of its individuals. And the Renaissance, the new creation—was it merely a wonderful revival of learning? It was infinitely more: it was the freeing of the human spirit from shackling bonds of medieval tradition, superstition, and misconception; it was the dawning of the mental liberty we enjoy today; it was the beginning of the third distinct period Italian genius gave to civilization, the greatest period and the greatest gift of all; it was the launching of man's greatest and most heroic adventure.

The severe grandeur of medieval Florence still gives a specific character to the

THE INTERIOR OF THE CHAPEL DEGLI SPAGNOLI IN THE CHURCH OF SANTA MARIA NOVELLA: FLORENCE  
This church is regarded as the finest example extant of the Tuscan Gothic architecture. Most artists believe the frescoes in the picture to be the work of Andrea da Firenza.



town of the Guilds. Its palaces, its bridges, the sweep of its Lung' Arno, its embattled visage with the souls of the houses peering from behind their iron bars at the blue hills, are still the same. The proudest jewels in its crown are the three great buildings in the Piazza Duomo. Oldest of these is the beautiful octagonal Baptistry, with Ghiberti's perfect bronze doors. "They are fit to be the gates of heaven!" young Michelangelo cried when he saw them.

The cathedral, Sta. Maria dei Fiori—as much a feature of the Florentine landscape as a man's nose is a part of his face—looms large from any vantage point, its buoyant dome floating airily above the marble paneling of the soft-colored walls. It fills one with admiring astonishment for its symmetrical dimension, its perfect poise, its grandeur, its everlasting strength. Fit companion to it is Giotto's Campanile, slender and strong and graceful as a young maid beside her portly mother. Richly ornamented with bas-reliefs and statues, the superb bell-tower is a marble history, left standing open for the delight of appreciative readers (see page 326).

#### THE CHURCH OF THE BROKEN HEARTS

As a general thing the intellectuals of Florence went calmly on with their creative work, unmindful of the tumult about them. Not so Dante. With all the fervor of his artistic temperament, he plunged into the thick of politics, in the endeavor to save his beloved city from being torn to pieces, and was exiled before he reached the zenith of his powers.

Broken-hearted and bitter, he died at Ravenna in 1321, and his ashes are still there; but in the old Franciscan church of the Holy Cross rises one of the two monuments disdainful Florence condescended to give her greatest poet, whose greatest honor lies in his gift to the world at one splendid sweep of a pure and recreated Italian language—until his time halting and feeble—in that immortal masterpiece of literature, the *Divina Commedia*.

This church might well be known as the Broken Hearts, instead of Santa Croce, for near Dante's cenotaph lies the body of that other terrific genius,

Michelangelo, who, broken in spirit, died gladly when the city so dear to his heart fell once more upon dark and tyrannous days. And Galileo is here, too, and Alfieri, and Machiavelli, and many another, a brilliant train.

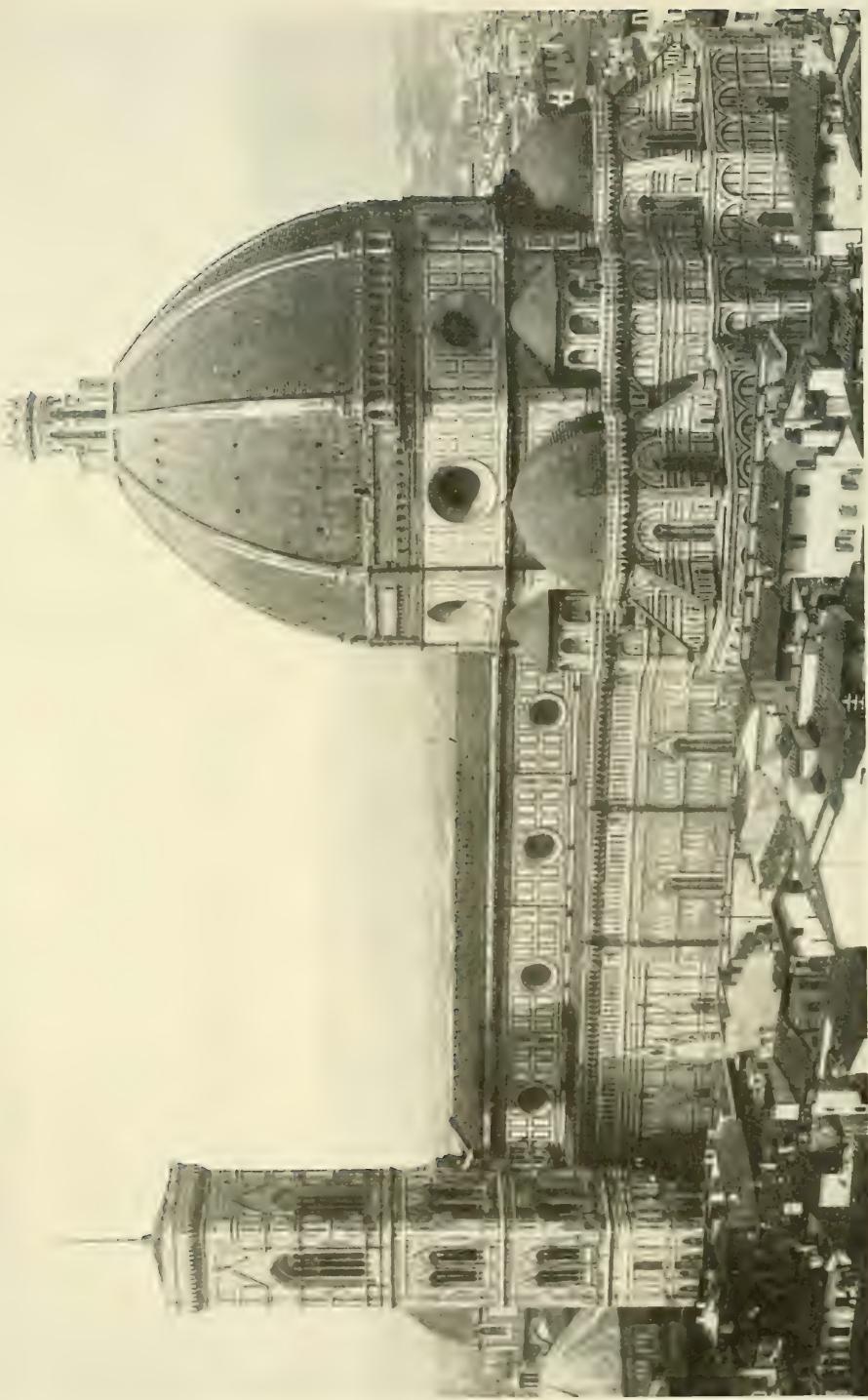
Michelangelo's last work is in the Church of San Lorenzo, in the mortuary chapel of the Medici—the great house which deigned to favor him with its patronage or its enmity throughout his life. He did not make portraits of the statues over the tombs of Giuliano and Lorenzo, son and grandson of the Magnifico. When some one remonstrated, he replied with haughty carelessness that he did not suppose people a century later would care much how the Dukes looked. Most probably they didn't!

While he was working in the mausoleum the Medici, who had been expelled for the third time, came thundering at the city's gates. Always a strong republican, Michelangelo engineered the fortifications by day and worked stealthily on his statues by night. Florence fell; her sun had set; and the tombs became less a monument to the tyrants for whom they were reared than to his cherished city. And so he wrought, not the still beauty of the Greeks, but the symbols of his own desperation in the marvelous Twilight and Dawn, and Day and Night upon the tombs.

#### THE UFFIZZI AND PITTI PALACES

In the two great palaces of the Uffizzi and Pitti are gathered the most inspiring collections in the world of the works of the geniuses who made Florence the peerless city of art transcendent, and left behind them models for all time, not merely of material beauty and perfection in painting and sculpture, but of thought as well—Fra Angelico of the sexless, radiant angels; Lippo Lippi of the daringly human Madonnas; visionary Botticelli; del Sarto of the soulless, exquisite technique as smooth as Nature; emotional, precocious Correggio; and Raphael, greater than all, summing up in his swift, apparently effortless mastery more than the genius of all the rest—color, proportion, beauty, intellect, spirituality, and rare human kindness.

Florence wears a splendid living girdle

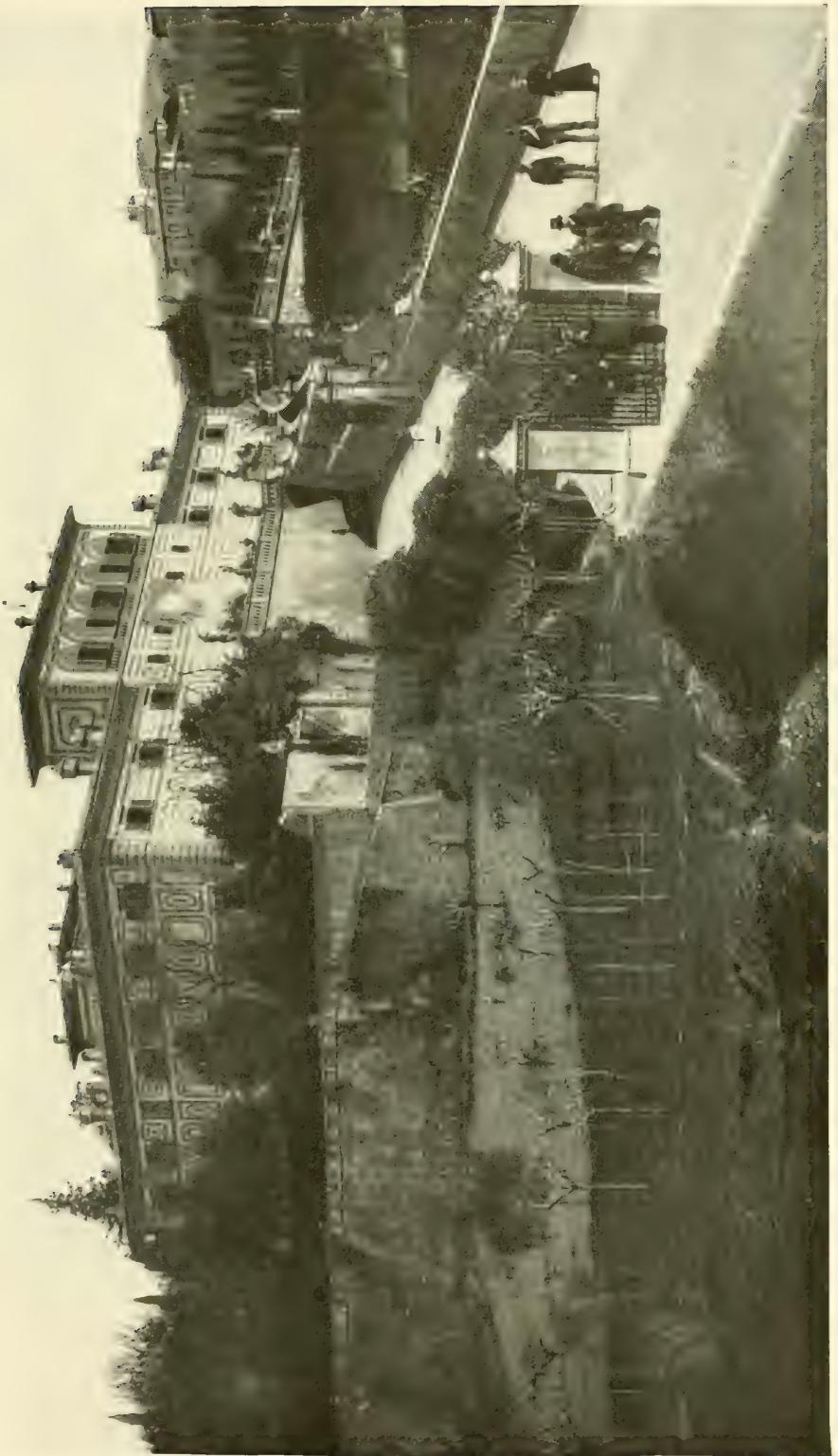


THE CATHEDRAL OF OUR LADY OF THE FLOWERS: FLORENCE

"Seen from any vantage point, it looms large and fills one with admiring astonishment, with a sense of its symmetrical dimension, its perfect poise, its grandeur and everlasting strength. Fit companion to it is Giotto's Campanile, slender and strong as a young maid beside her portly mother" (see text, page 325).

THE VILLA PALMIERI: FLORANCE

Here Boccaccio and his companions took refuge when the Black Plague swept Europe in 1348 and destroyed more lives than the present European war has taken. For five months, with suffering and death all about them, they strove to lighten the horror of the days with their music and dancing, their feasting and story-telling—the stories being those that took permanent shape in the famous *Decameron*.



in the silvery Arno, barred with many a stately bridge, bordered on either hand by the broad, plain edging of the Lung' Arno promenade. With the measured tramp of the soldiers and the squeal of their angry-sounding bugles—and the soldier is always in evidence in Florence, even in times of peace—we may well imagine ourselves back in medieval times. The illusion of the medieval is even greater by night, when the bridges set twinkling coronets over the sparkling stream, and the mysterious military figures marching past might be the halberdiers and pikemen of Lorenzo Il Magnifico, instead of the Bersaglieri of Vittorio Emmanuele III.

#### THE GREAT GUILDS

The Ponte Vecchio, with its queer, covered, second-story passageway between the two palaces, is a pure delight, its little houses looking so insecurely slapped against its sides that they seem always threatening to come off and drop into the stream (see page 330).

The inside of the bridge is equally curious, with its beguiling shops of jewelry and precious stones. Since the fourteenth century it has been occupied by the Guild of the Goldsmiths, one of the original societies of Florentine labor and science. These guilds were the prototypes of our labor organizations and played a prominent part, not only in politics, but in the artistic development of the city as well. This interest of the working people was one of the great reasons for the supremacy of Florence in the field of art.

#### THE PALAZZO VECCHIO AND SAVONAROLA

In the old, battlemented Palazzo Vecchio, which still rears its created head in the pride of militant beauty, we may say that Florentine history was made from the beginning of the fourteenth century down to the unification of Italy under Victor Immanuel II of Sardinia. It stands on the Piazza of the Signoria, the great forum of the people. To one side is the Loggia dei Lanzi, a splendid, open, vaulted rostrum or platform, now an open-air museum of sculpture. Among the figures is the beautiful, if somewhat affected, Perseus of Benvenuto Cellini, a master work that has been copied all over

the world. It was in this piazza that the austere monk, Girolamo Savonarola, who towers above the most splendid figures who have peopled Florence, gallantly died by fire.

The most charming and attractive mural decorations in Florence are the figures and groups of glazed white terracotta, usually on a blue ground, largely the work of the della Robbia family. They star the walls of churches, palaces, chapels, with their sympathetic, floating figures, and from the spandrels of the battered, grimy old Hospital of the Innocenti—the first real Renaissance structure—a lovely band of Andrea della Robbia's swaddled infants gaze out, extending tiny hands in mute supplication to the hard-hearted. Luca della Robbia worked well in both bronze and marble before he began his work in clay, as his exquisite singing and dancing boys, panels once on the choir screen, and now in the cathedral museum, attest (see page 329).

#### SUNSET IN FLORENCE

Though the sun of the Florentine republic set nearly four centuries ago, the sun of Nature still continues to set over the city as it did in the days of her glory. Cross the river, and wind slowly up the lovely, rose-hedged, tree-embowered Viale dei Colli to the Piazza Michelangelo, high above the city, to see the Master Painter spread his wonder-palette at the close of day. The sun steals down toward his cool bed in the silent Arno above the bridges and the dusty town. The bluish green of the river fires with molten gold—bridges and towers and roofs are etched sharply black under the flaming canopy of the heavens. For a moment Florence glows and darkens with the spell of a more than earthly transformation.

Then the shadows lengthen, deepen. The dim and distant hills fade into obscurity. The Genius of the Dark throws his azure mantle over city and plain, and Florence lies wrapped in the subtle integument of night. Out in the gardens the sparrows twitter sleepily, a chill little wind ruffles the smooth cheek of the Arno, the edges of the clouds are tipped suddenly with silver, and a flood of

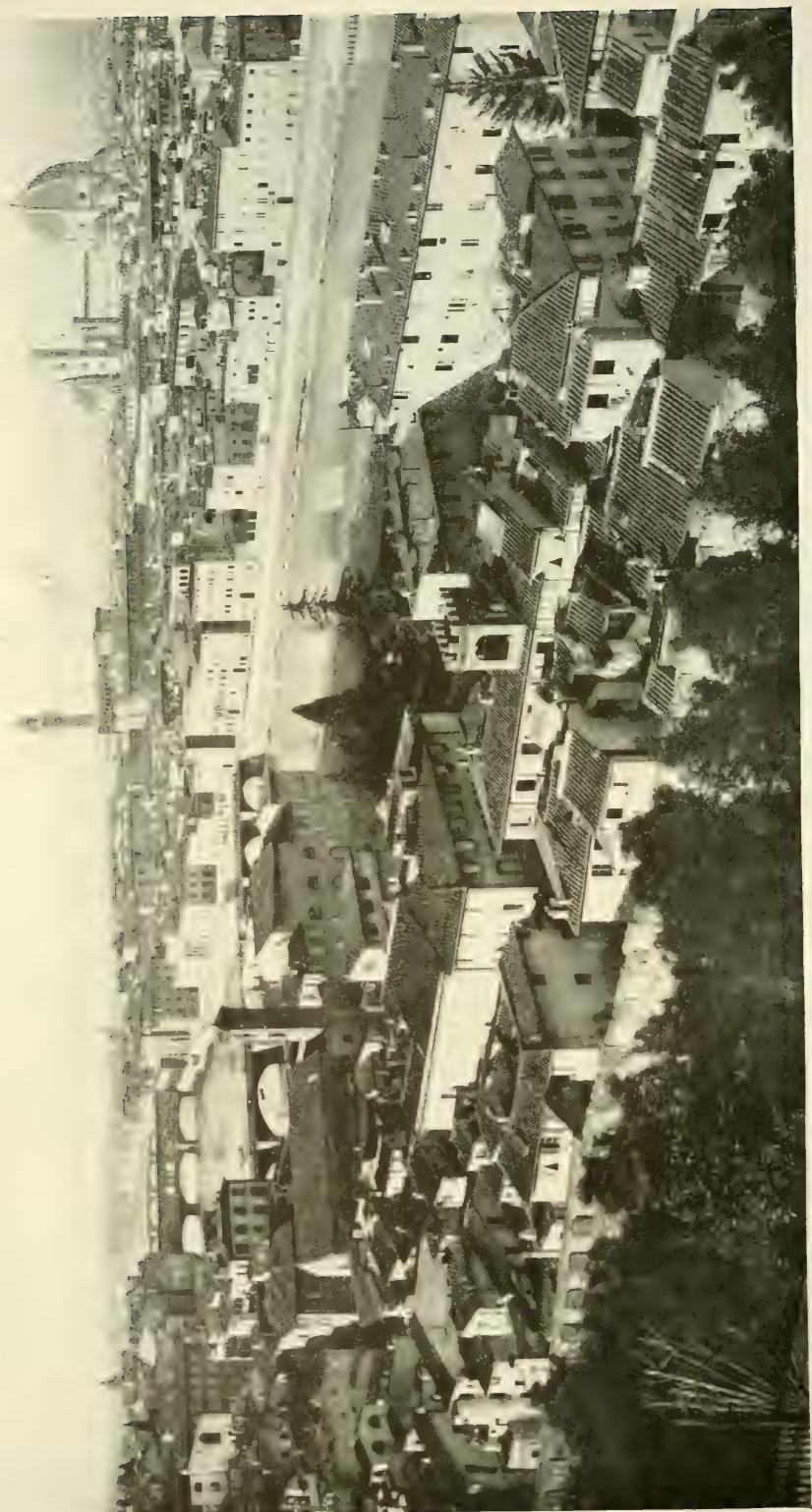


THE DANCING, SINGING CHILDREN, BY LUCIA DELLA ROBBIA, IN THE MUSEUM OF  
THE CATHEDRAL: FLORENCE

Authorities agree that "the naive charm of childhood" never has been portrayed better than in the ten groups of reliefs of which this one is represented. They are regarded as unequalled alike for the naturalness and truth of the figures and for the grace of movement and form they possess (see page 328).

A GENERAL VIEW OF FLORENCE

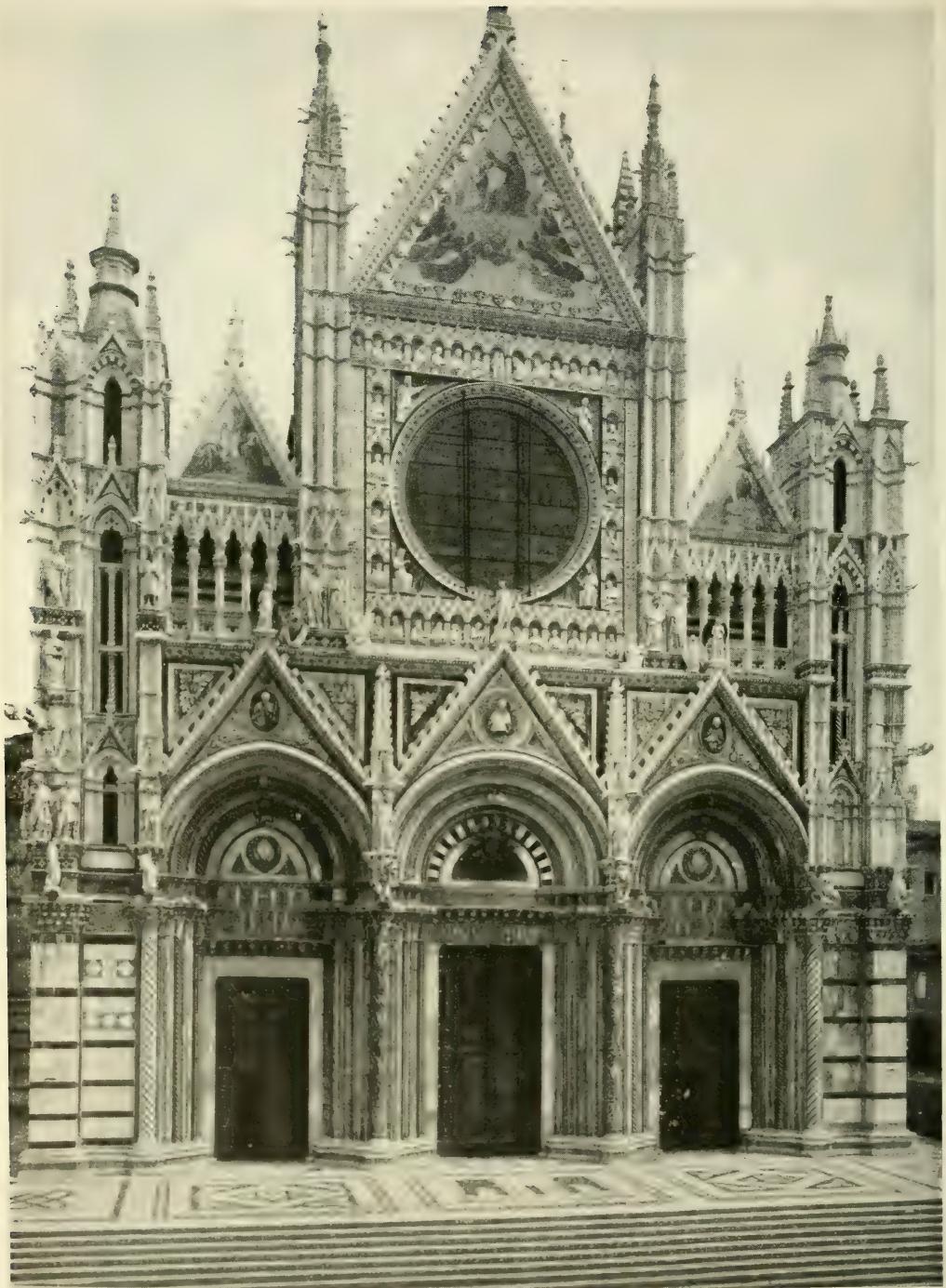
This view, showing at once the magnificent dome of the beloved Cathedral of Florence, the stately Campanile, with its exquisite Italian-Gothic tracery, the imposing Palazzo Vecchio, with its reminiscences of the Florentine Republic, and the River Arno with its many bridges, some of them old and some of them modern, is one of the most striking city panoramas that may be seen in Italy (see pages 326 and 328).



THE RIVER ARNO AND THE PONTE VINCENZO WITH ITS COVLED UPPER PASSAGEWAY CONNECTING THE CITIZZI WITH THE PITTI PALACE  
ACROSS THE RIVER : FLORENCE

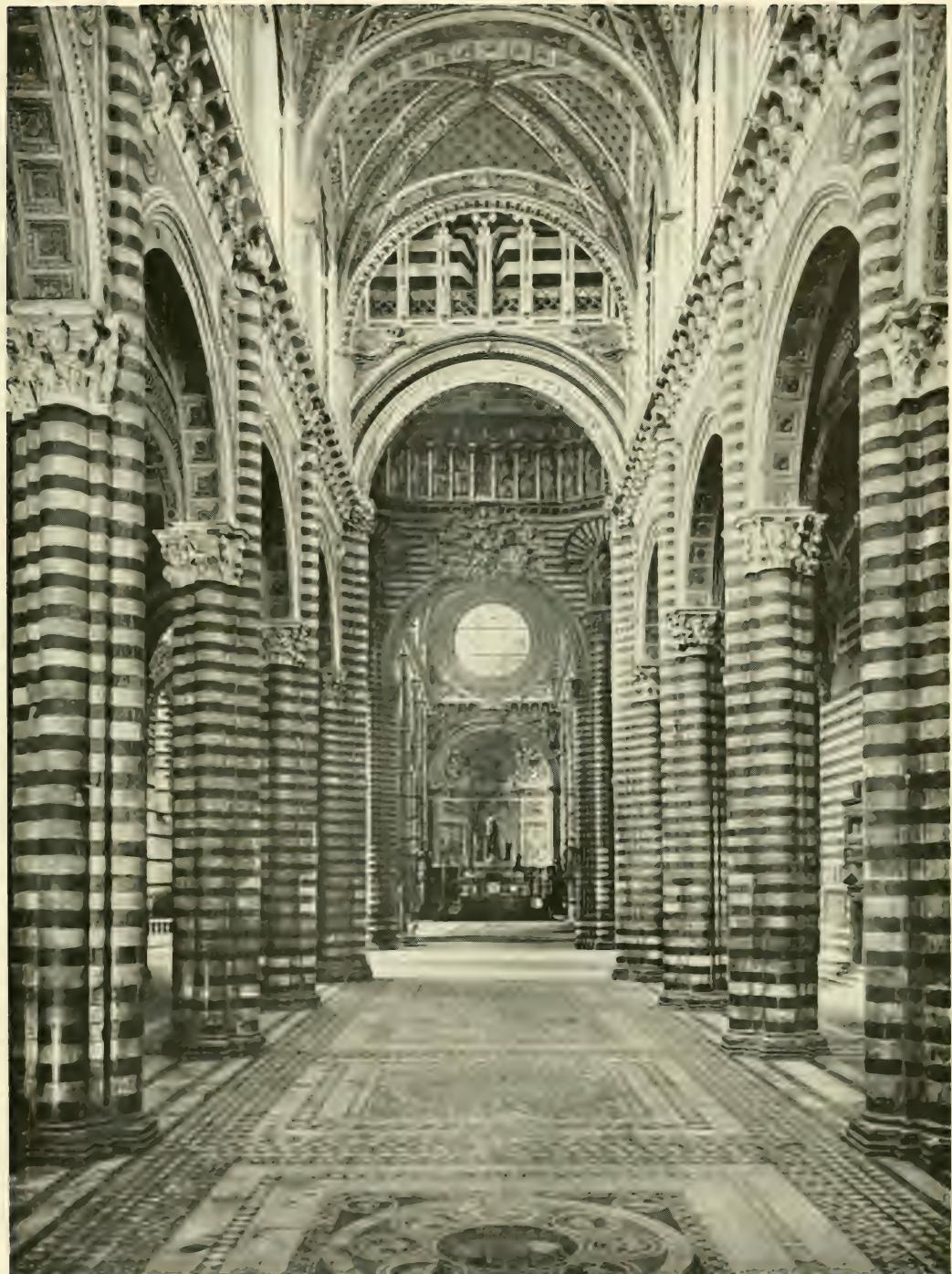
The houses come in closely along to the sides of the quaint old bridge that they give one the impression of being in danger of falling into the stream at any moment. The second floor (or portamento) between the two palaces was built for the wedding of one of the Medicis, and is still the shortest way between the great art collection. Beyond the Ponte Vecchio are two more modern bridges (see page 368).





THE FAÇADE OF THE CATHEDRAL: SIENA

The design of this cathedral, had it been completed, would have produced one of the largest churches in the world. But the plague of 1218, wars at home and abroad, and, most of all, the native variability of the Sienese temperament, interrupted its construction so often that it finally remained "unfinished and bizarre." But "it is incongruous with genius, not with stupidity" (see text, page 339).

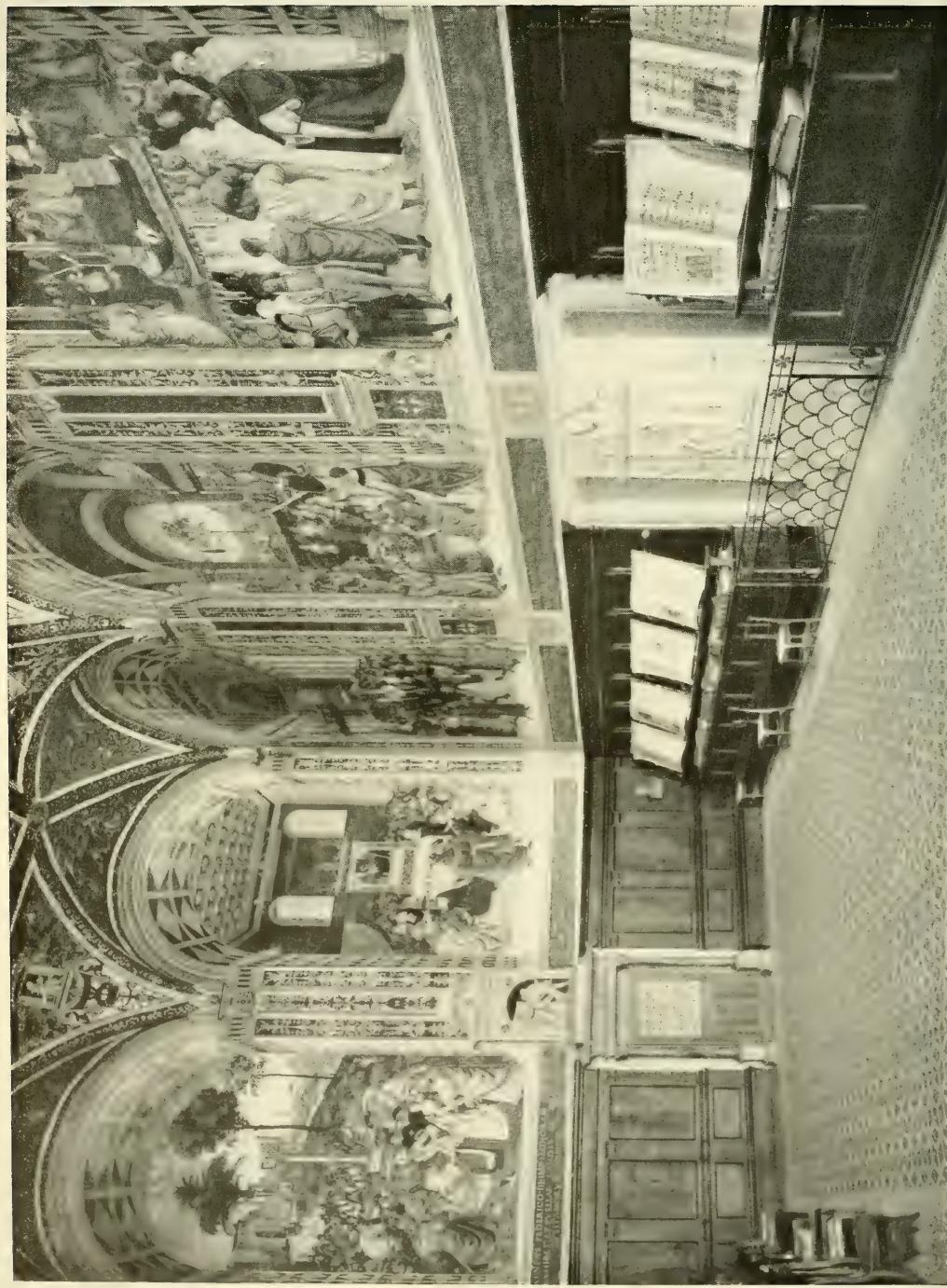


THE INTERIOR OF THE CATHEDRAL OF SIENA

The striped effect of this interior was obtained through the employment of alternate white and black blocks of marble in the upbuilding of the supporting columns

THE LIBRARY OF THE CATHEDRAL: SHONA

This celebrated library is of the early Renaissance period and well preserved. Raphael is said to have made his first studies of the antique from a "Group of the Graces" found at Rome, and now to be seen here.



argent glory bathes the scene. Again the river awakens. Lights twinkle gaily throughout the city and gem the bridges with diamond sparklets of fire. Florence that lived and died is alive again, the city of unforgettable glories, the city of art transcendent, the city that gave so much to make life worth while today.

#### ON THE SLOPES BEYOND

Everywhere about Florence milk-white roads wind out through gardens along undulating slopes dotted with cypresses, up through olive groves that glisten a gray green in the sun, past white villas, where bright-eyed lizards bask on the shimmering walls.

One of the most attractive is the great Palmieri Villa, where Boccaccio and his companions are said to have fled when the Black Plague of 1348 swept Europe, and, to pass the weary hours, told those stories which took permanent shape in the Decameron. Farther out, on the slopes of Fiesole, Lorenzo the Magnificent built his favorite villa of Careggi, in whose spacious halls and gardens he gathered a court of artists and poets, magicians and sculptors.

On these same lovely green and white slopes, where Nature has so lavished her floral gifts, the peasant lads are still the same simple, unaffected children of the sun and the soil that Giotto was when Cimabue found him sketching his sheep; and the great milk-white Tuscan oxen, mild and patient, toil steadily through the powdery white dust with their primitive, lumbering carts, probably the same as the ones used in his day.

#### DREAMING IN THE SUNSHINE

High among the rich vines and olives of the farthest slope Etruscan Fæsulæ, or Fiesole, that gave Fra Angelico to the world, dreams in the mild sunshine. It is not much of a town today, this little settlement of straw-weavers, with its houses so tightly shuttered against both heat and cold they look like robber strongholds. But Fiesole was old and important before the shining city beside the Arno was born. Bits of its cyclopean Etruscan walls still stand, and one may sit on the grass-grown steps of the Roman amphitheater on the

slope below the medieval cathedral with its stalwart campanile.

Velathri, or Volterra, of magnificent views, on a commanding, olive-clad eminence in the province of Pisa, was another great Etruscan city—one of the most powerful of the Twelve Confederated Cities of Etruria. It is medieval today, with picturesque towers and houses, and a beautiful thirteenth century cathedral and baptistery of black and white marble.

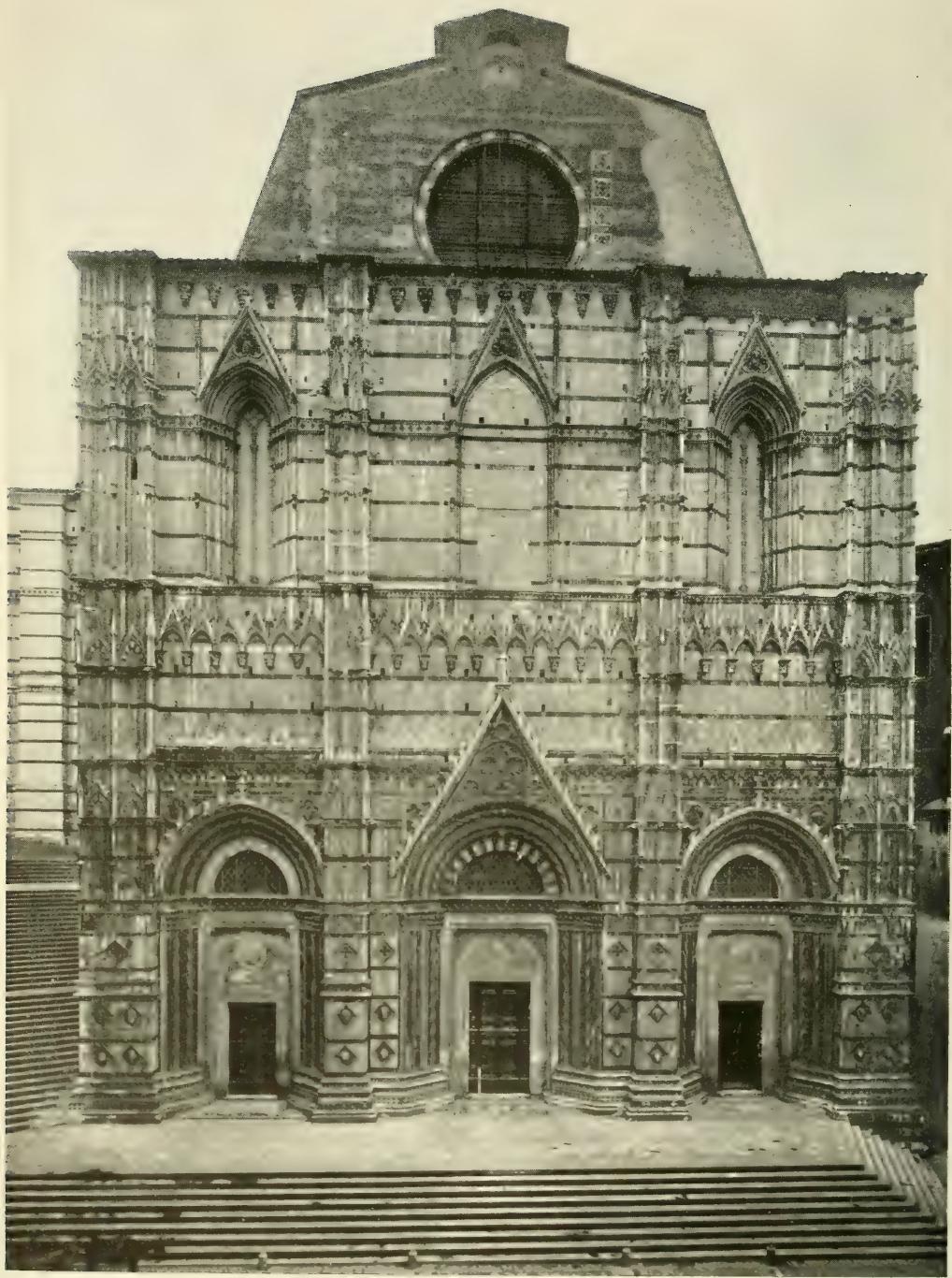
But the everlasting megalithic Etruscan walls, 40 feet high and 13 feet thick, are still largely standing along their 4½ miles of teapot-shaped circumference, their most important feature the Porta dell' Arco, an archway of dark-gray stone 20 feet high, with corbels on which are still dimly visible chiseled heads, possibly the stern gods this vanished people worshiped.

We have learned much of the life and customs of the Etruscans from their tomb-paintings and the articles that now fill the museums—we know the ladies used mirrors and curling-irons; we have seen the children's toys—but though we have found long inscriptions, no one has as yet been able to decipher more than their letters; the words still veil the story in them.

#### THE "FRIVOLOUS GENTRY" OF SIENA

As in the cases of Rome and Perugia, Nature provided for Siena a position that was the commanding center of all her region: a lofty tripart ridge, dividing the network of streams that flow to both north and west; but she withheld the one further thing needed—water. Not only were the near-by streams mere brooks, affording no means of communication with the surrounding country, but there was not even enough water for the city's supply.

Patiently engineers searched the hills for any trace of the precious fluid, and with remarkable skill brought the flow of every available spring into subterranean conduits that still move us to admiration by their cleverness. Once, when they found an extra drop—enough to furnish a thin stream for a new and lovely fountain—the whole city carni-



THE PARISH CHURCH OF SAN GIOVANNI: SIENA

Built after 1317, and formerly a baptistery forming a sort of crypt to the cathedral, San Giovanni is distinctly medieval. The unfinished Gothic façade is another monument to the instability of the Siennese. The most interesting art treasures of the interior are works of Ghiberti and Donatello.



THE WELL HEAD IN THE MONASTERY OF MONTE OLIVETO MAGGIORE: NEAR SIENA

This Benedictine monastery is one of the most famous in Italy. It was founded in 1320, and although the lands surrounding it had a sterile chalk soil, the monks converted them into a veritable oasis of fertility.



THE PALAZZO PUBBLICO: SIENA

This striking structure, built of brick and travertine, was completed in 1305, being now more than six centuries old. The tower is regarded as one of the finest in Europe. William Dean Howells says of it: "When once you have seen the Mangia, all other towers, obelisks, and columns are tame and vulgar and earth-rooted; that seems to quit the ground, to be, not a monument, but a flight."

valed for two solid weeks in joyous abandon, and named their new treasure the Fonte Caia!

It was a typical celebration of this kindly, simple, provincial folk whom Dante patronizes a little sorrowfully as "frivolous gentry." With the natural gaiety and mercurial temperament of impulsive youngsters, gaily they began, and as gaily forsook an object.

Their very cathedral, unfinished and bizarre, is one of their most characteristic records, incomplete as the men who stopped building at it when adverse circumstances damped their juvenescent enthusiasm. It is a building of contradictions and excesses, neither Romanesque nor Gothic, but of both schools, tinctured with Lombard and Pisan peculiarities; a tremendous pile of black and white marbles; mostly wrong in its fundamentals, and yet, in some intangible way despite all its shortcomings, it makes as distinct an impression as a Roman triumphal arch, for it is incongruous with genius, not with stupidity (see page 332).

Not all Siena's children merited the great Florentine's epithet; certainly neither Pope Pius II nor St. Bernardino could be accused of frivolity, and the mystic Ste. Catharine, greatest, perhaps, of them all, despite her humble origin in a dyer's family, lived a short, beautiful, tremendously effective life, and left her impress upon both her Church and her city for ages to come.

#### SIENA AN ART CENTER

With its many beautiful palaces and churches, loggias and fountains, Siena ranks immediately after Rome, Florence, and Venice in the importance of its art during the thirteenth to the sixteenth centuries. The whole city is instinct with character—a maze of fascinating streets winding and twisting about behind stout stone walls that rise and plunge down over the rough and broken hillsides. It is the Middle Ages personified, its palaces of a later date merely adding a touch of Renaissance méringle to the solid medievalism that finds its most vivid expression in the Piazza del Campo, that unique, almost semi-circular, *square* in a pocket at the juncture of Siena's three hill-spurs.

Here the hot-headed Sienese used to revel in bloody, joyous, free-for-all fights, first with staves and stones, later—because of too numerous casualties—with their bare fists. Today the citizens content themselves with a pageant and horse-races, in which for the moment the campo is gay with reminiscent glories.

Siena makes rather a pathetic figure in history. While the Florentines possessed enough imagination, initiative, and determination to accomplish whatever they set their hands to do, the Sienese, lacking their mental discipline, developed to a certain medieval standard and stopped growing. Even during the Renaissance, when all the rest of Italy was striking boldly out under the inspiration of Florence, Siena contented herself with outworn traditions and a fierce, passionate jealousy of her mighty neighbor that ended with her own eclipse; and once the Florentine supremacy was established, Siena became what she is today, merely a fine old provincial town full of glorious art and memories.

It is of interest to note that the underlying cause of all the jealousy and the bloody wars between Siena and Florence was pure commercial rivalry.

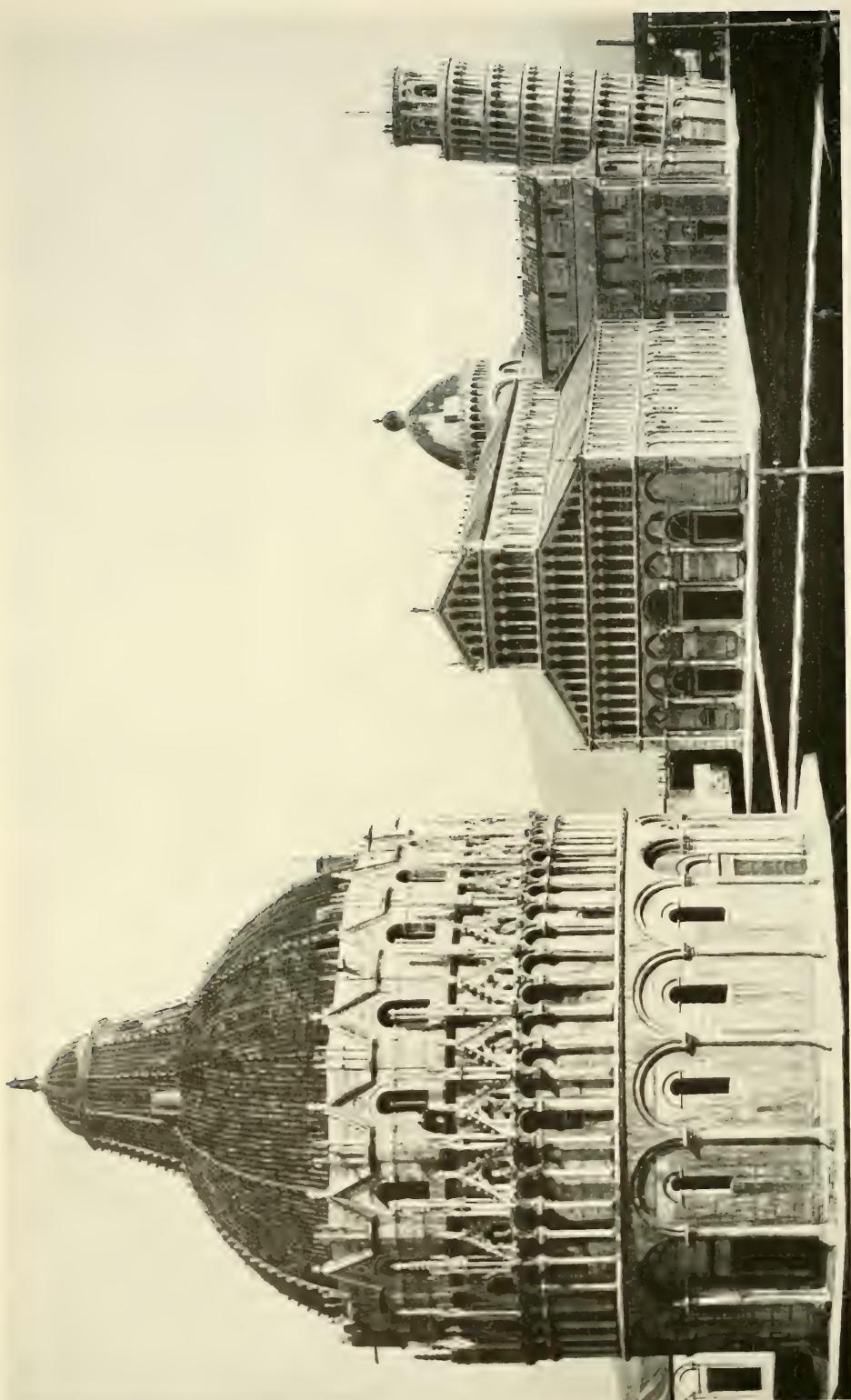
#### THE FIRST OF THE MARITIME REPUBLICS

The first of the north Italian States to be mistress of the seas was Pisa, a river town, then only two miles from the sea upon which she so gloriously proved her strength in the troubrous days of the eleventh, twelfth, and thirteenth centuries. Her monumental buildings, though they are within the circuit of her ancient walls, stand clear of the city proper, happy in their isolation; and no one who is drawn to Pisa today by the fame of their dazzling splendors can fail to read in each and every one—cathedral, campanile, baptistery, and Campo Santo—the record of her maritime successes.

The cathedral was founded in a burst of popular enthusiasm after the great naval victory over the Saracens at Palermo, Sicily, in the eleventh century, and the Pisans brought home no less than six whole shiploads of loot—bronzes, columns, gold, and marbles and precious stones—for its decoration. Inside and out it rises in layers of black and white

THE BAPTISTERY, CATHEDRAL, AND LEANING TOWER OF PISA

The cathedral was built in commemoration of Pisa's great naval victory in 1163. It is constructed almost entirely of white marble. The Baptistery (in the left foreground) dates from 1153. It is 100 feet in diameter. The Leaning Tower, or Round Campanile, was completed in 1350. Galileo availed himself of its oblique position in his studies of the laws of gravity. It is now generally accepted that its out-of-plumb position is the result of sinking foundations rather than of intention on the part of the architect. It is 14 feet out of the perpendicular, 8 inches of this being due to subsidence since 1800 (see page 339).



marbles; masses of rich Corinthian columns and arcades, colored mosaics and ornaments of antique pattern, diversify its wonderful façade—the crowning glory of the edifice—and from the crossing springs a huge dome that adds both dignity and height to its basilican form.

Within, swinging pendulously among the red granite columns that support the roof, is a beautiful and famous old bronze lamp, whose fame is based upon the gentle oscillations that set Galileo to thinking out the pendulum. Incidentally, this is not *the* lamp; it was an older one. Not only did the cathedral mark the naval and maritime achievements of Pisa, but it also stood for a magnificent beginning of medieval Italian architecture—a beginning and a promise which, unfortunately, were never fulfilled.

#### THE INDIVIDUALITY OF ITALIAN GENIUS

How strange it seems to us today that the great city-republics of Italy never seem to have thought of permanent confederation, but only of conquest! When a temporary alliance was formed, as was often the case, it was invariably for the destruction or subjugation of some sister city, and dissolved as soon as its purpose was accomplished. This lack of Italian unity in politics explains perfectly the failure to develop a national style in architecture. Such a development requires the coöperation of a whole people, working together sympathetically toward a common end, as was the case



Photograph by Von Gloeden

#### VIRILE YOUTH AND WRINKLED AGE

The folklore stories of the peasant patriarch stir the lively sense of humor of the younger generation

in France during the development of the Gothic.

This never occurred in Italy, and so whatever great architecture we find there is the work of individual genius. But however much architecture suffered from the general disunity, exactly the opposite occurred in painting and sculpture. These are always the result of special personal ability. Accordingly, the Italians, because of their strong individuality and their political systems, which made them, as individuals, able and eager to think for themselves, rank as the foremost painters the world has ever seen.

About a century after the cathedral was begun the baptistery was founded, a

Photographs by Von Gloeden

### THE BEAUTY AND STRENGTH OF ITALY

Were the United States as densely populated as Italy, we would have a billion mouths to feed, more than twice as many as the whole continent of Europe. And yet Italy keeps on growing, adding two million to the population every decade!



magnificent circular structure surrounded completely with arcades and crowned with a soaring dome of majestic proportions and height. Splendid adjunct to the cathedral as it is externally, it is the dazzling interior we can never forget, with its wonderful mosaics of colored stones and its glorious hexagonal pulpit in which Niccolà Pisano foreshadowed the Renaissance.

Most remarkable of all the superb group, however, is the exquisite, colonnaded, white marble campanile or bell-tower. It was intended to be perfectly erect, but by the time the third story had been built the foundations of the south side had subsided and the structure leaned heavily. To prevent it from falling when completed, the Pisans inclined every story above the third slightly toward the north, and the flag-pole and the heaviest bells were placed on the safe side. Yet, despite the correction in its inclination, it leaned 14 feet out of plumb a few years ago, and because of further subsidence of the foundation grave fears are felt for its safety (see page 340).

#### PISA OF TODAY

Alongside the cathedral, to the north, is the Campo Santo, or cemetery, every inch of whose sepulchral soil is holy ground, brought from the Holy Land. Its cloisters are now a museum decorated with the trophies of antiquity and research, the walls covered with remarkable frescoes.

The city offers little of its once picturesque fame as a town without houses, but full of mighty defensive towers. Most of them have lost their heads, but some remain to hint of the desperate internecine struggles that raged betimes in the dark and airless streets. The old battlemented walls that hemmed them in still stand, lofty and scarred and patched.

Outside the rich plain waves with whispering grain and vines, and is odorous with the aromatic, balsamy breath of the pine forests that reach down toward the sea, whose ungentle winds have tortured the ancient trees into uncouth gnomes. Near by, about the royal domain of San Rossore, the fields and roads are picturesquely dotted with camels—the only herds in Italy—and the royal race horses.

It is impossible to express in a few words the charm of northern Tuscany, with its wealth of walled towns, its medieval architecture, its luxurious and stately villas and gardens, and the fresh, clean, joyous greenery of the countryside. In such a setting as this the thorny outcrop of factory chimneys would move a Ruskin to cry "Detestable!" The chimneys are detestable, as landscape, but the industries of which they are the symbol are the life of the region.

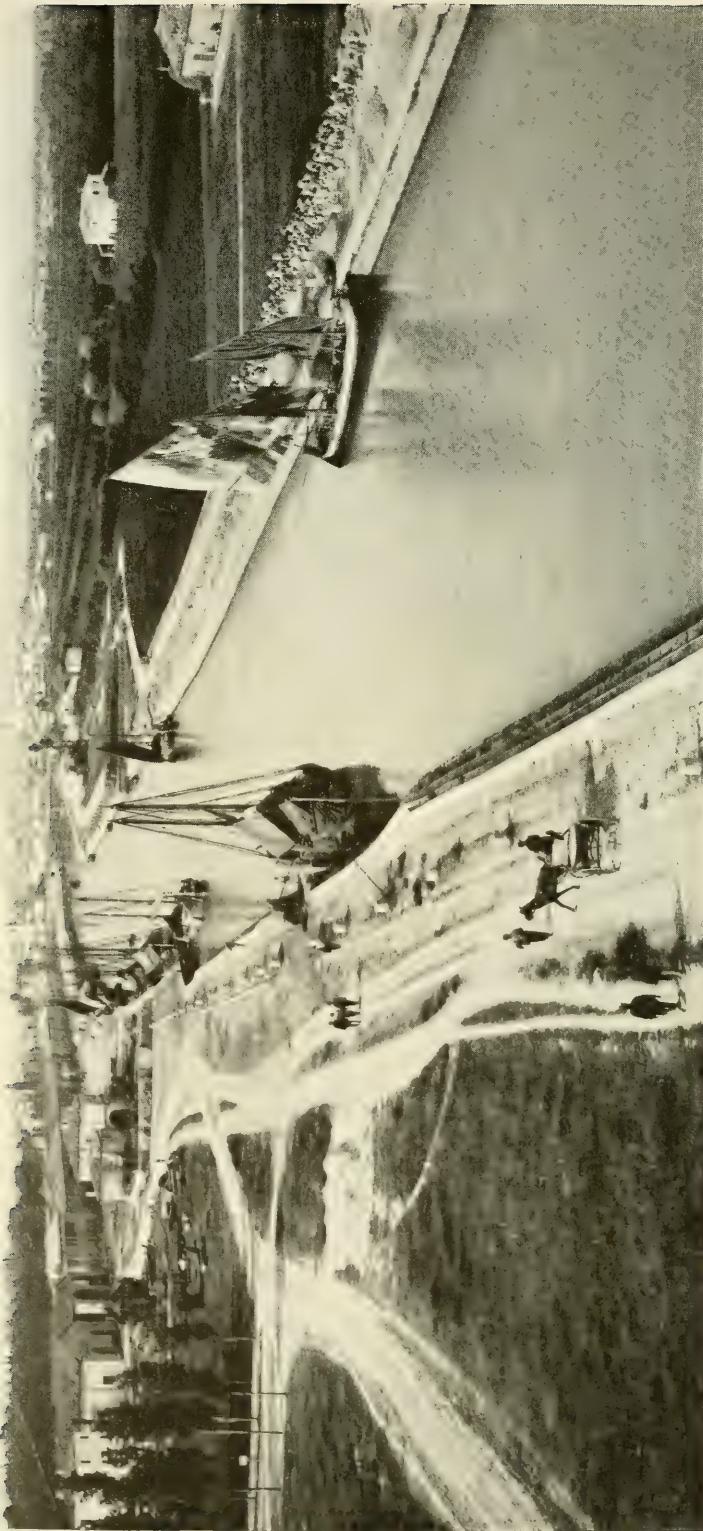
#### AMERICA IN ITALY

No less surprising is the fluent Americanese that everywhere greets the ear, tripping gaily from the tongues of countless *americani*, as those Italians who have been to either of our continents are jocularly called by those who have not. Incidentally, many of the chimneys are the property of those repatriated *americani*.

In every town that amounts to anything at all the neat factory girls and men give the morning and the evening a distinctly American sense of rush and scurry—in sharp contrast to their leisurely neighbors—as they obey the big whistles that cut through the melodious appeal of the bells with their imperious summons: "Come! Plunge into my noise of loom and machine, my roar of furnace and grinding of gears, my smoky plumes that are the aura of gold. Forget your *dolce far niente* of the past. Look to the future. Work—hurry—make progress or die. Be independent—and happy!"

#### THE BIRTHPLACE OF RAPHAEL

To the east of Tuscany is the province of The Marches, high and rugged ground with a narrow strip of coast along the Adriatic furrowed by little river valleys. Its one large seaport, Ancona, is magnificently situated on the slopes of Monte Conero, with its citadel on a peak to the south, the cathedral on a similar height to the north. Between spreads the busy town, fringed by its harbor full of shipping. Hundreds of vessels of all the flags afloat discharge great merchandise of coal and timber, jute and metals, and take in exchange the black and smelly asphalt and the white and odorless calcium carbide.



A VIEW OF RIMINI, SHOWING ONE OF NORTHERN ITALY'S IMPORTANT CANALS

Northern Italy has many canals connecting its rivers, thus giving that section of the country some two thousand miles of navigable inland waterways, with correspondingly low transportation rates and superior military advantages in war times

The town is full of dark, narrow, crooked, very medieval-looking streets—just the ideal place to stimulate the imagination and fire the talents of its greatest son, Raphael, the greatest painter who ever set brush to canvas.

Not far away, on the Adriatic, is the birthplace of the composer Rossini, the town of Pesaro; and then, farther along-shore, between two brawling streams, Rimini the beautiful and historic, terminus of the Roman Via Flaminia. Here, too, the Via *Æmilia* starts to the northwest. The pedestal commemorating Cæsar's passage of the near-by Rubicon, the great and elegant triumphal arch of Augustus, and his superb, five-arched bridge over the Marecchia—one of the noblest works of its class in the Roman world—still remain to give us the flavor of the brilliant and constructive Roman era.

#### RIMINI'S ARCHITECTURAL GEM

But Rimini's grip upon the imagination is due to a love story that came much later, as the beautiful Church of San Francesco so eloquently testifies. It is an astonishing little gem of an unfinished Renaissance temple, built in the middle of the fifteenth century around a Gothic church two centuries older, by the tyrant Sigismondo Malatesta, a great prince, a great patron of the arts and letters—himself no mean poet—a great warrior, and a man of wild passions who loved fiercely and often.

His church was built ostensibly as a thank offering for his safety during a dangerous campaign, but it actually celebrates his mad love for the beautiful Isotta degli Atti. The architect gave expression to his patron's passion by various ingenious and effective devices: the ceaseless repetition of the initial monogram *I S*, the arms of the pair—an elephant and a rose—and the figure of the archangel upon the altar—a portrait of the lovely Isotta. Six years after the strangling of his second wife, Sigismondo leisurely made Isotta his new consort.

The story of Francesca da Rimini, one of the tragedies of the ill-starred house, so many of whose members perished by

violence, was immortalized by Dante in his *Inferno*.

#### RAVENNA OF THE BYZANTINE ARCHITECTURE

Originally "a city in the sea," like Venice, and well-nigh impregnable, Ravenna stands today in a marshy plain six miles away from the coastline. Once a mighty capital, the city also maintained a commanding position in art and letters during the Middle Ages. According to Professor Ricci, Italian Director General of Fine Arts, "the most beautiful, the most complete, and the least impaired monuments of so-called Byzantine art are preserved" here.

Mosaics might be called Ravenna's distinguishing feature. In one of the city's earliest and most interesting buildings, the fifth century tomb of the Empress Galla Placidia, they stand sharply out from a wonderfully blue background. They are still more beautiful in the cathedral's baptistery of the Orthodox, and full of a clearly Roman spirit of stateliness and unaffected simplicity, while in the handsome octagonal Church of San Vitale they glow with a superbly rich and gorgeous coloring, especially of the costumes.

Church after church is adorned with them, and with exquisitely translucent alabaster—behind which lamps were set—rare cipollino columns, and panels, statues, and screens of other precious marbles.

Ravenna itself has been stripped of much of its beauty and importance by the withdrawal of the sea, but none of its significance, for its grand and stately buildings link the Roman and Byzantine styles of architecture perfectly and give the art-lover of the present both inspiration and delight.

#### A ROAD 2,100 YEARS IN USE

Exactly 2,103 years ago Marcus *Æmilius Lepidus* assured his fame forever by building the long, broad, straight road from Rimini through the cities that are now called Bologna, Modena, Reggio, Parma, and Piacenza. The road was named for him, and it still traverses the district of *Æmilia*, a favored region of natural fertility of land and intelligence



#### WHERE THE CONCORD OF SWEET SOUND IS A RELIGION

When Music was young, her abode, according to the poet, was Greece; but long since she was lured by golden-throated sopranos and soulful tenors to the more congenial clime of Sunny Italy, where every street urchin is an embryo opera star. Perhaps some inglorious—but not mute—Verdi or Puccini, Tetrazzini and Trentini, may here be pictured, lifting their voices in joyous song to the accompaniment of the idolized accordion.

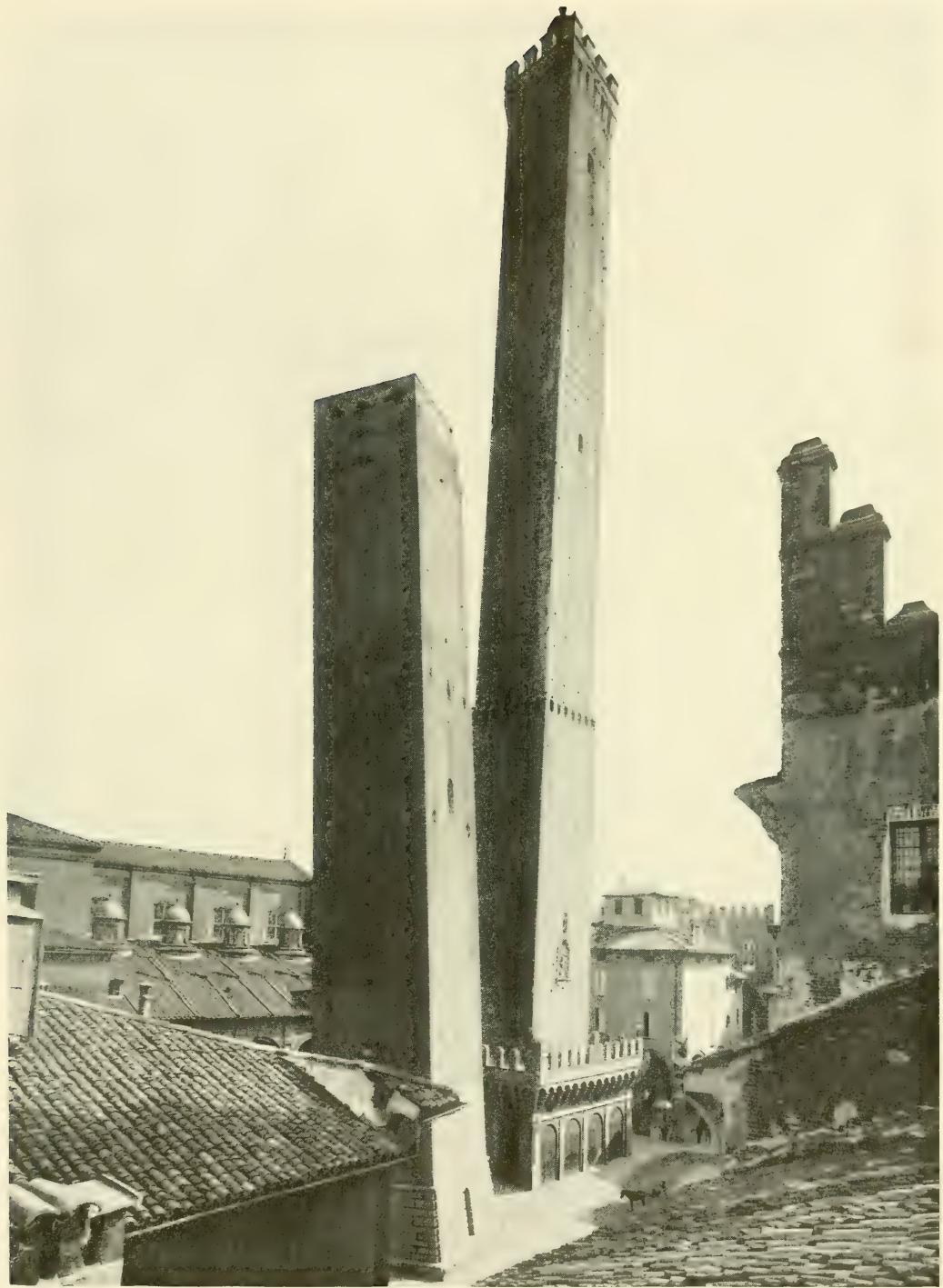
of inhabitants. Perhaps its prosperity may be assigned as much to the tide of life and commerce that flowed along the Roman road—its work is largely done today by the railroad that parallels it—as to its natural resources; but whatever the basis, the fact remains that *Æmilia* is full of cities of artistic, social, and manufacturing importance, rich in painting, architecture, and sculpture, and gifted in innumerable other ways; for, unlike some other provinces, *Æmilia* has never concentrated all its abilities in the greatest towns, but diffuses its energies so that all centers, of whatever degree, have an interest and importance that is almost unique.

Bologna, as important a railway center today as it once was a halt on the Roman roads, is a remarkable and interesting town. The old Roman section, of which nothing remains above ground, is the heart of the city, easily recognized because its streets run at right angles and all form a big rectangle.

Neither sun nor rain nor snow, nor even wind, bothers one much in Bologna, for many of the streets—most, in fact—are beautifully arcaded, and one may go, untouched by varying weather, under the shady overhangs of shop and palace, mansion and public edifice, as they make aisles beside the nave of the sky-roofed highways. The big, solid piers shadow the pave like a modern awning-stripe gown, and the pleasant afternoon and evening life of the Bolognesi, gossiping and taking their refreshments at little tables in these endless galleries, is very delightful.

The arcades originated as snow-sheds to shelter the houses from the blizzards that sweep down from the northern slopes. Many of them are very beautiful Renaissance structures, with elaborately carved capitals.

The queerest things in town are the two square brick leaning towers, Garisenda and Asinelli—intoxicated obelisks, one complete, the other unfinished. They



THE LEANING TOWERS OF GARISENDA AND ASINELLA: BOLOGNA

These columns are distinguished as the most extraordinary structures in one of the most venerable and important cities in Italy. The taller is Torre Asinelli, 320 feet high and 4 feet out of the perpendicular; Torre Garisenda was never completed and is only 156 feet high, but 8 feet out of the perpendicular. There is something unnatural and sinister in their appearance, quite different from the effect of the leaning tower of Pisa. Dante in the "Inferno" compared a giant bending toward him to Torre Garisenda in a cloud (see page 346).



THE CHURCH AND MONASTERY OF SAN GIORGIO MAGGIORE: VENICE

This is the view of San Giorgio Maggiore from the Piazzetta. The prospect of Venice from the Campanile of San Giorgio Maggiore is unequalled even by that from the Campanile of San Marco. One here recalls the splendid ceremony of long ago by which Venice each year became the "bride of the sea," when the Doge solemnly cast a ring of gold into the waves as an emblem of the city's rightful and perpetual dominion over them.



Photograph by E. M. Newman

A MODERN MERCHANT OF VENICE

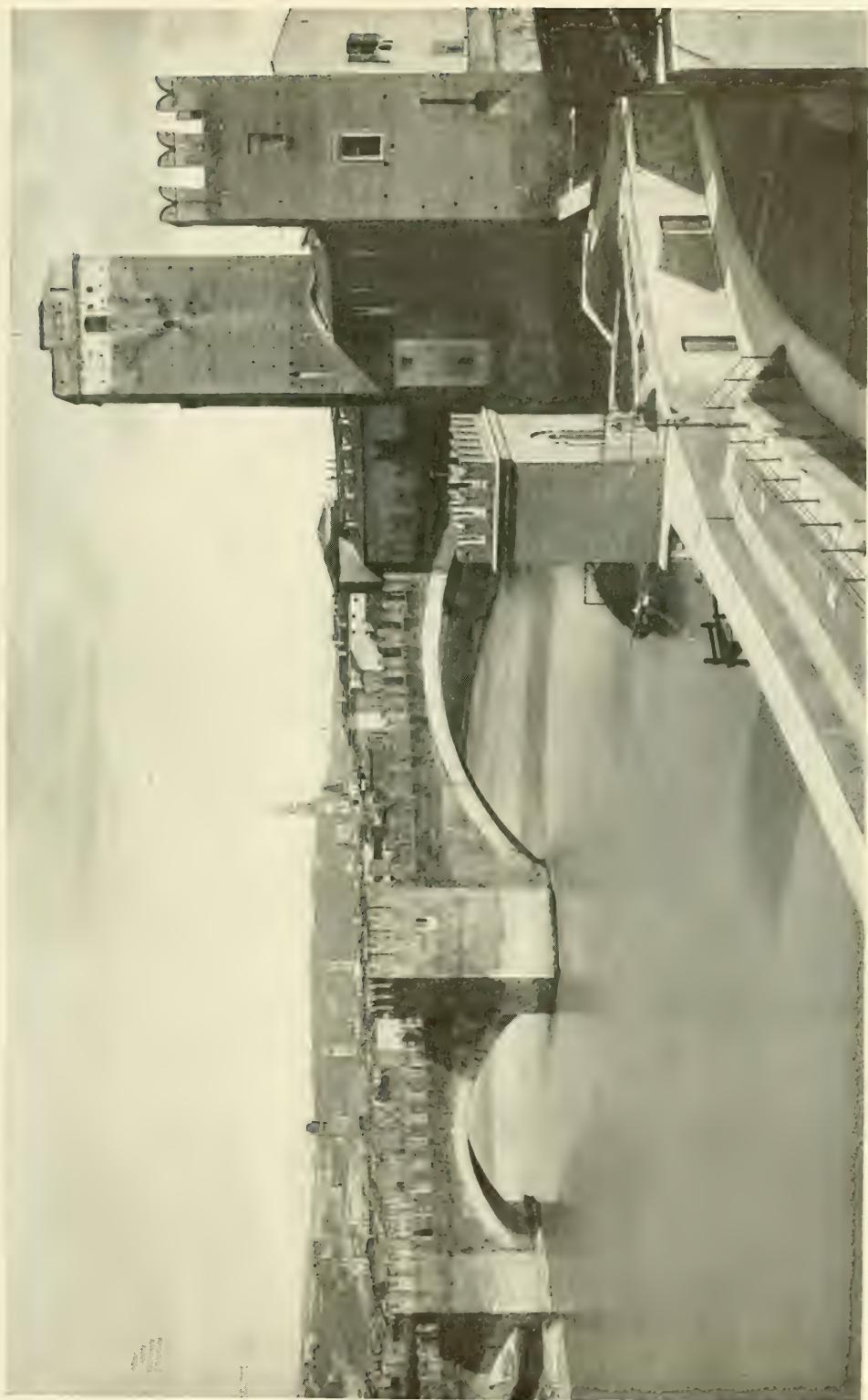
Most people would be less successful than this housewife in resisting the salesmanship of a grocer who comes gliding to the door in a noiseless, graceful gondola, and who is master of an endless variety of soft Italian importunities.



DESCENDANTS OF A NOBLE, CIVILIZATION-BUILDING RACE, WHO STILL SHOW TRACES OF THE DIVINE FIRE

Photographs by Von Gloeden





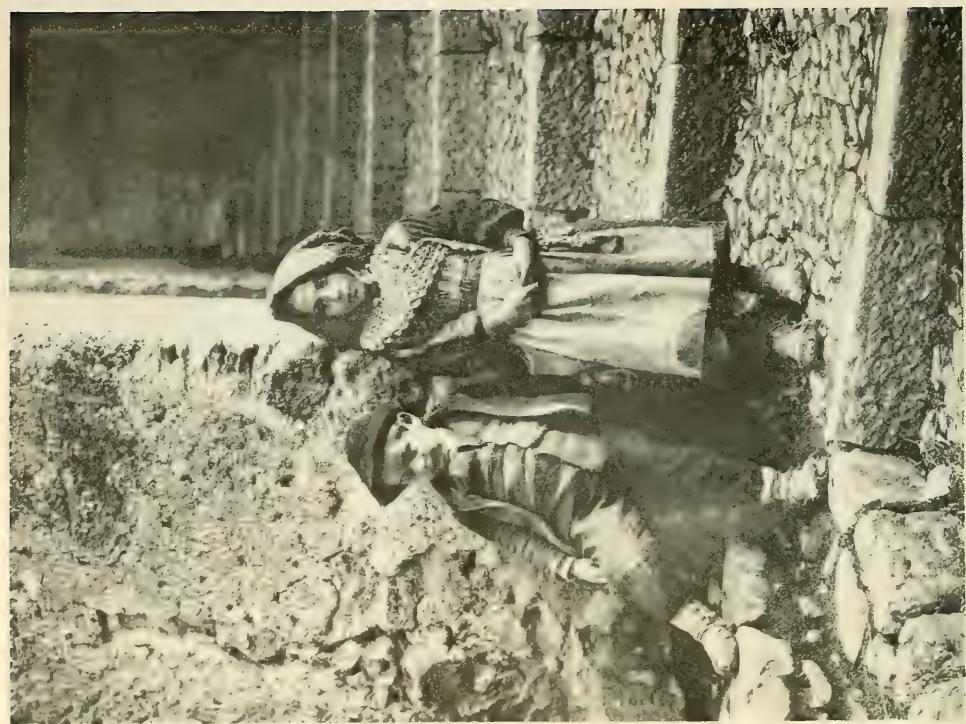
THE BRIDGE FROM CASTEL VICCINO: VERO

A slight impression of the embankment works along the Adige, which now preclude any possibility of another such disastrous flood as that of 1882, can be gained from this picture. The imposing, battlemented bridge is the most picturesque of those which cross this river.

A STREET CORNER IN SOUTHERN ITALY  
Boys and men wear a soft, round black hat; women and little girls, a small shawl folded into a square

Photographs by A. W. Cutler

QUITE CHEERFULLY POSED FOR THEIR PICTURES  
Note that the boy on the right wears two pairs of trousers. Some of us have known the time when we had only one pair.







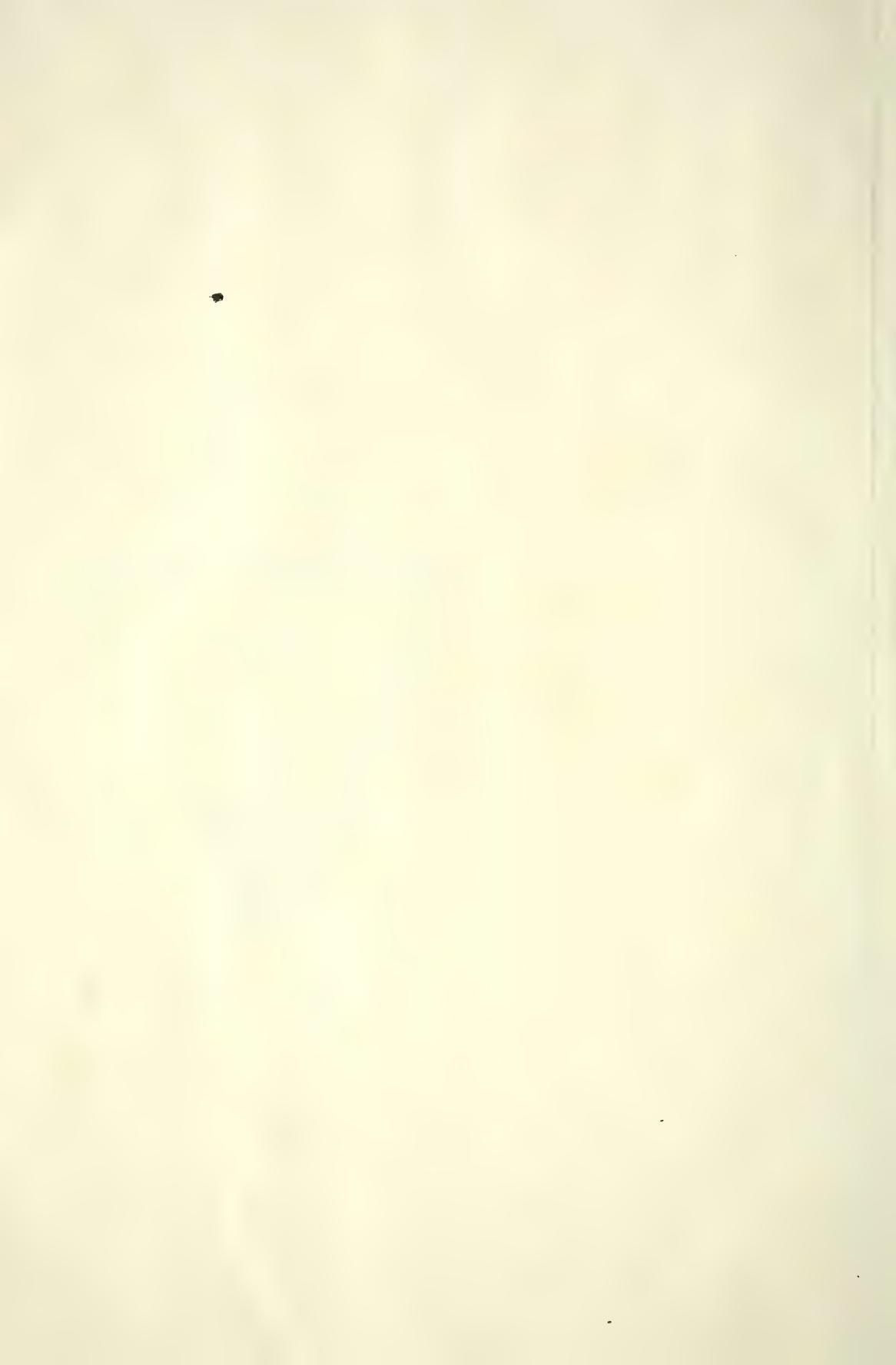


From a drawing by Louis Agassiz Fuertes

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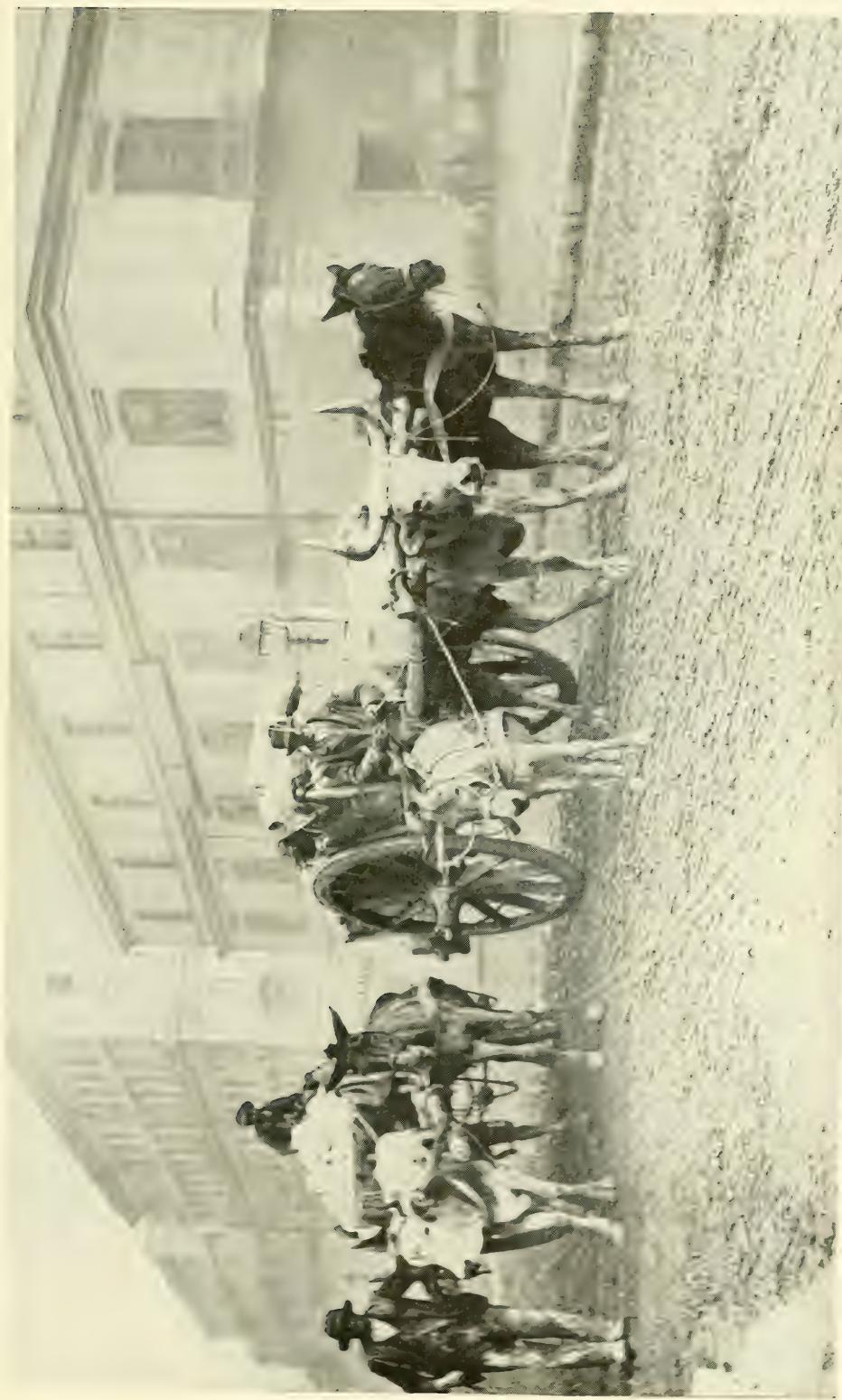
THE LARGEST CARNIVOROUS ANIMAL EXTANT  
THE ALASKA BROWN BEAR

The great brown bear of the Alaska peninsula, *Ursus grypus*, and his cousin, *Ursus middendorffii*, of Kodiak Island, are the largest of all bears, as well as the largest carnivorous animals in the world. While sometimes attaining a weight of 1,500 pounds, they are, as a rule, inoffensive giants, taking flight at the first sight of man. But when wounded, or surprised at close quarters, they give battle, and their enormous size, strength and activity render them terrific antagonists. The world did not know of the existence of these bears until 1898. During the spring the Alaska brown bear lives upon the salmon which come up the rivers and creeks to spawn, while in the summer and fall they eat the sedge of the lowland flats, grazing like cattle, and varying their diet with small mammals and berries which they find in the hills. The comparatively limited and easily accessible territory in which they live renders their future precarious unless reasonable means for their proper protection are continued.



Photograph by A. W. Cutler

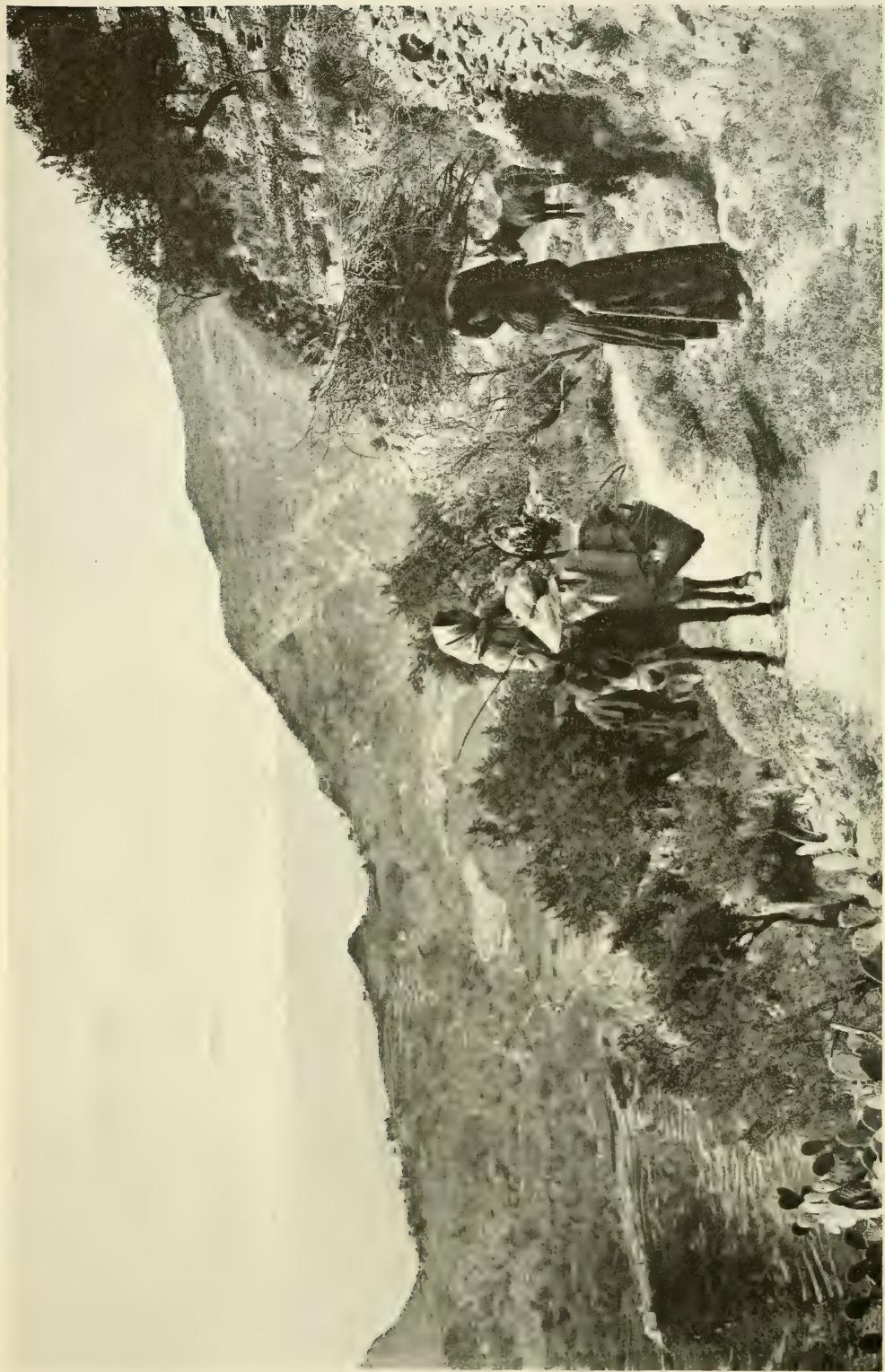
THIS PICTURE PROVES THAT BIRDS OF A FEATHER DO NOT ALWAYS FLOCK TOGETHER: A STREET SCENE IN NAPLES



Photograph by A. W. Cutler

ALONG A MOUNTAIN PATH NEAR MOLA, MT. ETNA IN THE DISTANCE: SICILY

With much of its territory rough and mountainous, Sicily yet must afford a living for three and three-quarter millions of people. What wonder that poverty is general, and that hundreds of thousands of Sicilians have come to America and find even its slums a paradise of plenty as compared with conditions at home!

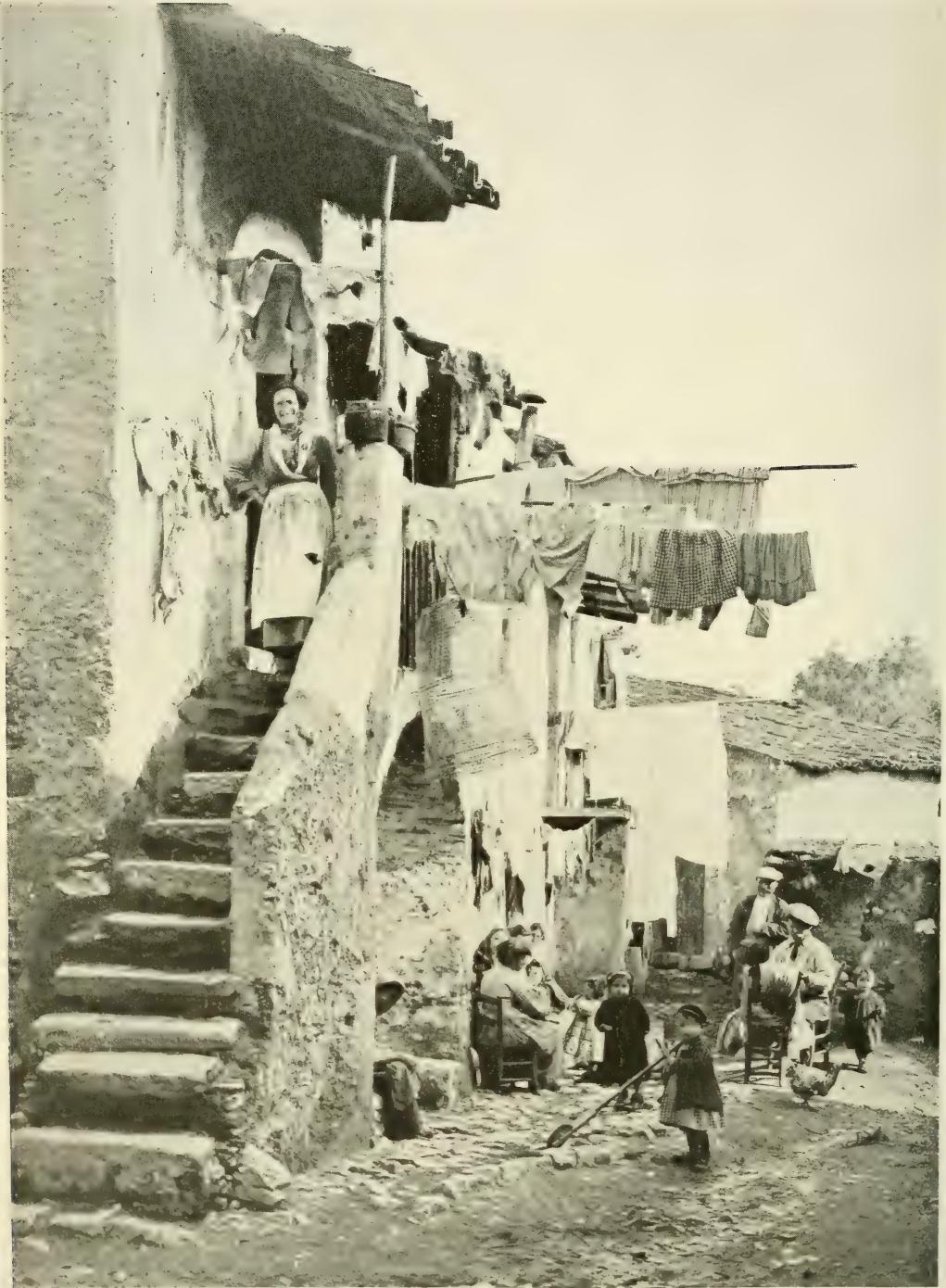


Photograph by A. W. Cutler

PEASANTS OF THE MOUNTAIN VILLAGE OF CASALVACCILLO; SICILY

The shawls worn by the men around their shoulders are typical of the peasants' dress throughout the winter. To such folk as these a dollar a month for pleasure would be supreme luxury.





Photograph by A. W. Cutler

A FISHERMAN'S HOME: TAORMINA, SICILY

Note the fish-trap slung over the balcony and the washing suspended from horizontal sticks. The fisherman may be seen below mending his nets, while his wife, at the top of the steps, smiles approval at the operations of the camera man.



Photograph by A. W. Cutler

SICILIAN MOUNTAIN PEASANTS

The jars in the panniers of the donkey contain water. All water has to be brought in this way to these mountain villages. Note the elephant-like feet of the old lady on the right. She is wearing goatskin shoes, tied about with thongs of leather.

would not look so queer if they both leaned at the same angle; but Torre Asinelli, 320 feet high, leans four feet out of plumb, while its unfinished companion, only half so high, swings out 8. At one time there were more than 200 towers of this freakish, fortified-home class in Bologna (see page 347).

In contrast with these highly imaginative products, the tall, graceful, exquisitely proportioned campanile of San Francesco, one of the finest and most beautiful in Italy, covered with a delicate network of decoration in terra-cotta, seems all the more lovely.

#### FERRARA'S PALACES

Peaceful Ferrara may justly claim to be the first modern city in Europe. It was the court and home of the great Estè family during the Renaissance, and Hercules I, with a foresight and spirit remarkable in even that period of awakening and enlightenment, transformed his cramped and crowded capital by plowing it through with broad, straight streets that let the air and sunshine in, and gave the people—they probably grumbled bitterly at the change—room and health. The most striking feature of the city architecturally is the great, square, moated, heavily battlemented brick castle of the Estè, defended by a massive tower at each corner, on top of which some genius in 1554 clapped absurd little square, two-storyed cupolas like bird-cages.

Not far away is the hospital where the poet Tasso was confined seven years while out of his mind—and also out of favor. Another famous character in Ferrara's story is Savonarola, born here in 1452.

#### THE RIVER PO

Three miles north of Ferrara the country is ridged with the levees or embankments that control the Po, which here marks the boundary between Æmilia and Venetia. The river is 417 miles long, navigable for 337 miles for light-draft vessels, and practically all of northern Italy is included in its tremendous basin. The great dikes hem it in on both sides from Cremona to the delta, more than 300 miles. A Paleolithic race who dwelt in the swampy lowlands beside the stream,

in houses reared on stilts, were the first dike-builders. This construction continued, until at the present time in several places along its lower reaches the riverbed, through silting up, is actually above the level of the surrounding country. The Po is also the main artery of an interesting and complicated system of canals which connect it with some of its own tributaries, which are connected in turn with one another by other canals, all of which carry off water for irrigation purposes.

#### THE BEGINNINGS OF VENICE

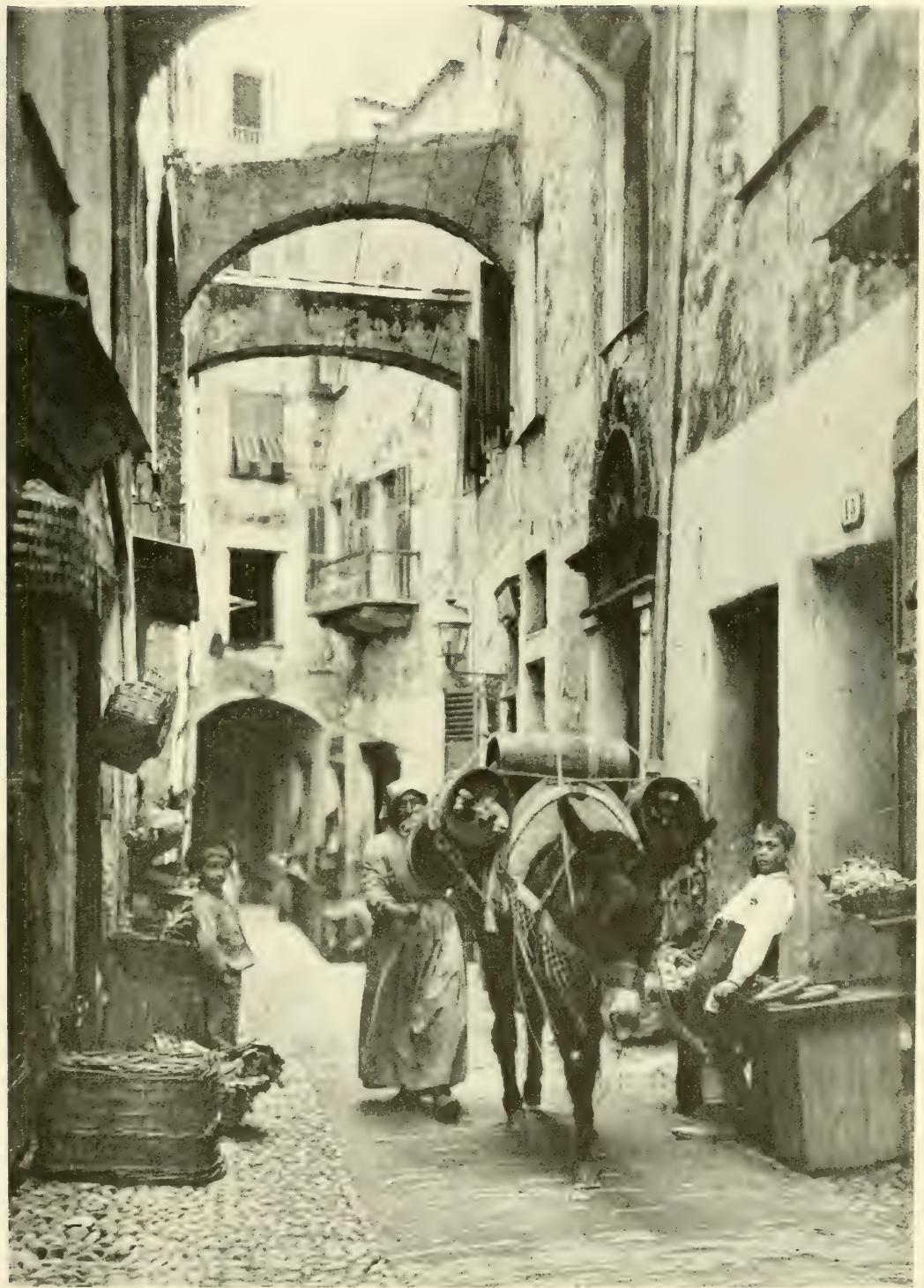
We have already seen something of the splendor of Pisa as mistress of the seas, but her power could not last forever. Genoa, growing fast, sprang at her throat in the battle of Meloria in 1284, and the Pisan rule was over, so far as the seas were concerned. *La Superba*, Genoa called herself. Her flag swept its way into port after port, until the whole Levant knew its ominous beacon. Genoa's progress, however, was far from smooth sailing. Across the Italian peninsula an active and increasingly powerful rival was scouring the Adriatic; and if Genoa could call herself The Superb, Venice was growing into a city-kingdom which merited the title of The Magnificent. Within a century after the maritime supremacy had been wrested from Pisa by Genoa it was unwillingly passed on to Venice.

From her very beginnings Venice prospered beyond all proportion to her size; and before the end of the fifteenth century was more than shadowed she owned city after city to the west, vast colonial empire by sea, held undisputed control of the waters, and was the focus of the whole world's trade, with a population of nearly a quarter million.\*

#### EUGENIC SILKWORMS

Not another province of Italy can show so many and such diversified and profitable features as Lombardy. It is at once an agricultural and a manufacturing region, the focal point of the peninsular railway system into other countries, the

\*See "Venice," by Karl Stieler, with 45 illustrations, in the June, 1915, NATIONAL GEOGRAPHIC MAGAZINE.



Photograph by G. R. Ballance

A STREET IN SAN REMO

San Remo is a favored spot as to climate and has long been a health resort. However, among the twisted, narrow lanes and gloomy, moldering walls of the older, crowded sections of the town such matters as sanitation and fresh air will always be regarded with the lofty indifference that the two dirty youngsters in the picture no doubt feel for them (see page 368).



OUTLINE MAP OF ITALY

From the Beginning Nature Set Italy Apart. See pages 273, 274, and 279.

setting of one of the world's largest and most remarkable cathedrals, a battle-ground of the past, with many a stirring and bloody field to remember, the most beautiful lake district in the world. It has also been a mighty force throughout Italian history.

Geographically speaking, the Lombard plain, bounded partly on the south by the Po, in part on the west by its large affluent, the Ticino, is a rich and fertile agricultural country, very hot in summer, but exposed in winter to bitter cold and fierce mountain storms. Below the mountains there is very little rain in summer, but, thanks to the medieval system of irrigation, which has no superior anywhere in Europe, it is almost impossible for the crops to fail.

They grow in three tiers in Lombardy—pastures in the mountain regions, vines and fruit trees and chestnuts on the lower slopes, and shining acres of cereals and grapes and innumerable spreading mulberries in the plain itself.

But it is not quite the same Lombardy now that it used to be, for the medieval sheep for which it was so celebrated have all turned with the centuries into—silkworms; eugenic worms at that! The greatest care is taken in crossing and breeding the native worms eugenically with perfect Chinese and Japanese stock, with the result that the Italian worms are steadily improving and producing more and better silk.

Beside its agriculture and silk industries—Milan is the principal silk market of the world—Lombardy is perhaps the most important manufacturing region in the whole country, with great factories turning out hats, rope, paper, iron and steel, cannon, linens, woolens, and what-not; mines from whose depths come copper and zinc and iron ores; quarries that yield ample marbles and delicate alabaster and the sturdier granite.

#### MILAN AND ITS CATHEDRAL

The first thing to strike one in Milan is its air of cosmopolitan—I might almost say Yankee—shrewdness and bustle in business. The commonplace streets are lined with good shops, and the energetic people give them the appearance of the

streets of a big American manufacturing city with a large foreign element.

Milan was built in a fairly regular polygon, surrounded by walls, and the walls by a moat. The former have moved out into the country a bit, but the moat is still there, inclosing thoroughfares that turn and twist like cowpaths, though from the Piazza Duomo radiate some that are newer and broader.

But one does not consider streets when he reaches the piazza, for there, white as salt and delicate as a gigantic filigree jewel fresh from the hands of the silversmith, the Cathedral of the Nascent Virgin, a miraculous stalagmite, yearns upward toward heaven with every slender, arrowy spire and shaft and pinacle (see pages 362-363).

In many ways it is not good architecture, and inside it is monotonous and barren; yet notwithstanding every criticism, despite obvious faults, the Cathedral of Milan is a marvel. More than 4,000 statues poised and hover about it; its lines tend upward as resistlessly as the spears of a field of wheat; the very number of them adds to the illusion—a great work of Nature about whose feet the human ants in the piazza have dug themselves in, reared their tiny hillocks, and gone bustling and struggling about their tiny affairs in its protecting shadow.

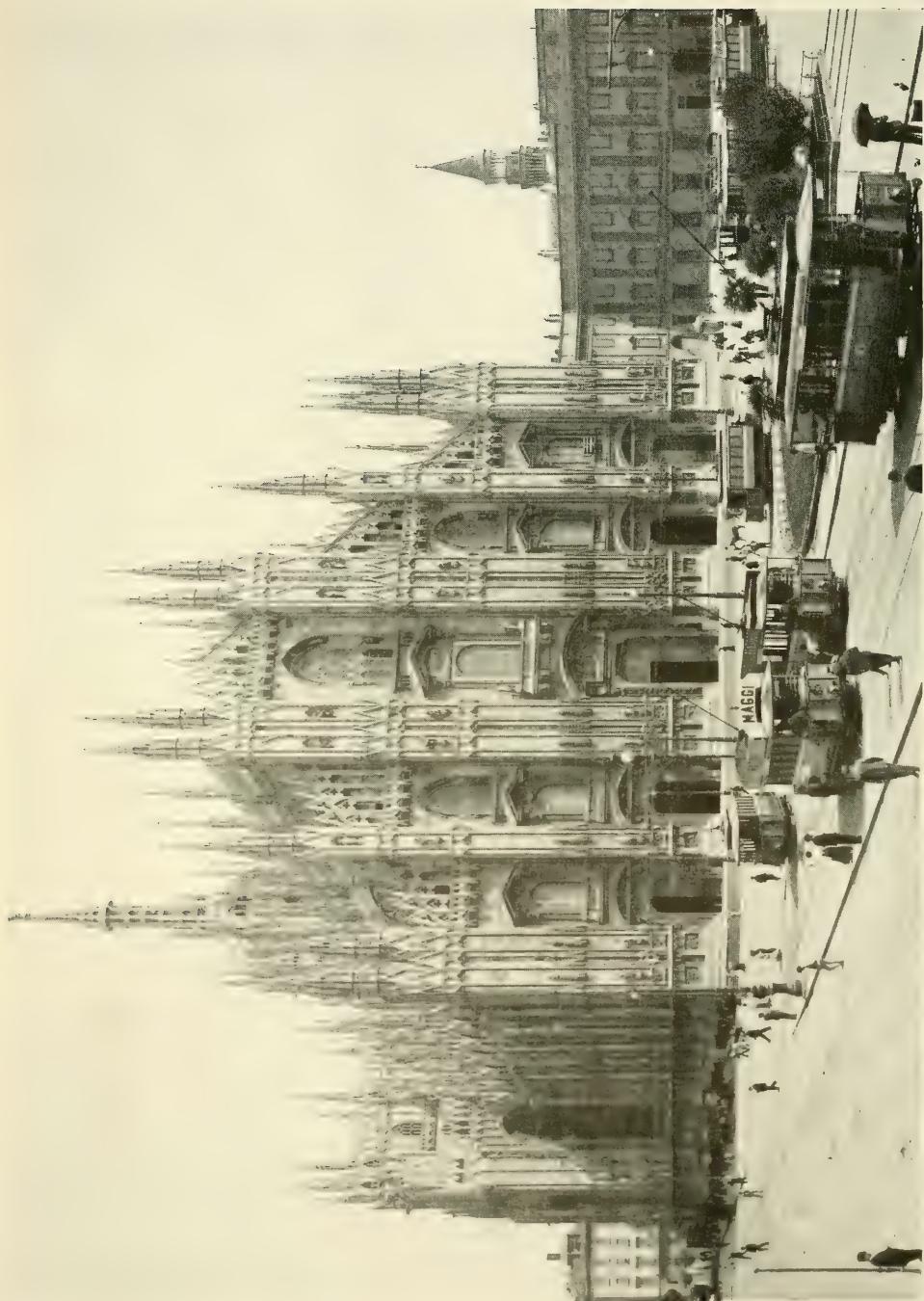
#### THE BATTLEFIELDS OF LOMBARDY

The plain of Lombardy is as dotted with battlefields as most other plains are with ordinary cities, and whichever way one looks from Milan some famous day is almost in sight—Solferino, Magenta, Rivoli, Lodi, Pavia, Novara—fights that were not the mere bickerings of bloodyminded local despots, but combats that shaped or shook international affairs. Beside or upon almost every field rises a city either lovely to look upon or fascinating to read about.

Many other towns there are, too, of beauty and interest—Bergamo, gifted with an acropolis and old walls turned into promenades loved of lovers; Brescia, beautifully situated at the foot of the frosty Alps; quiet Cremona of the silk-mills and palaces; little Tavazzano, where the whole plain is grooved by

THE CATHEDRAL AND PIAZZA DUOMO : MILAN

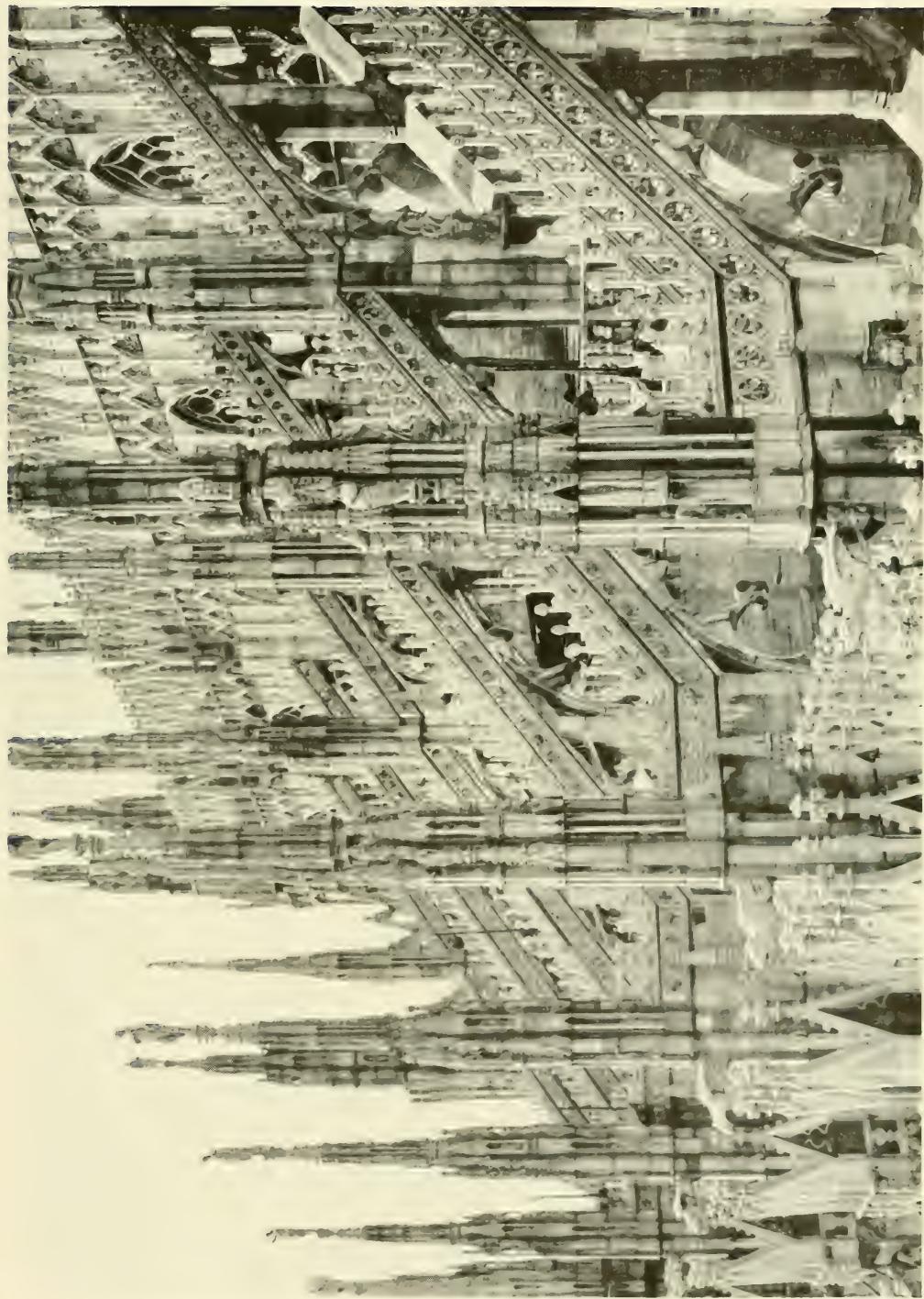
With its forest of pinnacles, its 2,300 exterior statues in marble, its magnificent stained-glass windows, the Cathedral of Milan, in which 40,000 people may gather in the worship of the Most High, stands today as one of the most beautiful of man's temples to his Maker. Italian, Gallic, and Teuton architects labored to make it a mosaic of Europe's architectural ideals.



Photograph by Emil P. Albrecht

A SECTION OF THE ROOF OF MILAN'S WONDERFUL CATHEDRAL

The traceries of buttress and pinnacle have all the delicacy of lace, all the glistening whiteness of polished marble, all the finished grace of the sculptor's dream, all of the harmonious blending that makes architecture worthy of its famous description—"Frozen Music."



© Paul Thompson

ITALIAN MOUNTAIN BATTERY ON ONE OF THE ALPINE MILITARY ROADS



countless and endless little irrigation ditches; Monza, where King Humbert I's crown was snatched from him by the assassin's bullet.

Garda, Idro, Iseo, Como, Lugano, Maggiore, and Orta! How can any pen give a true picture of these exquisite sheets of water, now sapphire, now emerald, now iridescent as opals in the sun; here bound by wild, irregular shores, here by luxuriant gardens; splashed with the color of countless sunny villas, red-roofed and tinted of wall; guarded by old castles that molder in grim beauty upon their grimmer heights!\*

#### SUPERB VISTAS

The islands afford superb vistas of shore and mountain, but the climax is the panorama from the top of bald, windy old Monte Mottarone. From its bleak crown the eye includes in one splendid sweep the lovely lakes and the whole vast plain of Lombardy and Piedmont, with the white, glistening, pinnacled jewel of Milan Cathedral resting lightly as a white dove in the center—the genius of Man complementing the glorious works of Nature.

It would be difficult indeed to find two other contiguous regions so entirely different geographically as the two northwestern provinces of Italy, Piedmont and Liguria: one a vast bowl, into which are gathered the slender little blue threads that unite in the greater cable of the mighty Po, thus once again emphasizing the geographical dominance of that remarkable stream; the other almost all straight up and down—mountain piled upon mountain, with a narrow strip of littoral which takes tribute from all the world—the Riviera (see map, page 360).

Around three sides of the Piedmontese bowl the Alps fling a towering barrier, leaving the fertile, rolling plain open only toward the valley of the Po on the east. One feature that attracts attention inevitably is the way it is settled. The people live in villages or communes almost entirely—a condition due to the unfortunate insecurity which

\*For a description of the Italian lakes and Verona and other towns of northern Italy, see "Frontier Cities of Italy," by Florence Craig Albrecht, with 44 illustrations, in the June, 1915, NATIONAL GEOGRAPHIC MAGAZINE.

for ages made the peasantry huddle together for mutual protection.

#### GENOA "LA SUPERBA"

Piedmont never touches the coast, and what it has left, mostly mountains and beach, makes up the narrow province of Liguria, whose boundary leaps along the mountain tops like a frightened chamois. It is a region at once remarkably favored and hindered by Nature.

Near the middle of the strip is Genoa, the only great community on this rugged coast, a wonderful crescent city climbing the hills which protect that magnificent harbor the Greek adventurers of 2,500 years ago discovered and settled. Behind the town, now close to the houses, now in wide open spaces, a mighty defensive wall runs along over hill and dale for nearly 12 miles, defended by the great fort called the Spur and by many a stout little battery and fortress.

The ancient part of the town huddles, cramped and crowded, in many-storied houses on the steepest, crookedest, most Dark - Ages - looking streets imaginable, some of them mere flights of stairs up stiff acclivities, others mere bridges over menacing miniature chasms. In brilliant contrast to all this, the newer city develops broad, handsome thoroughfares and solid, well-constructed modern buildings.

Genoa is the chief seaport and commercial city of Italy, with a harbor and port facilities which have been extended and expanded again and again in the effort to keep pace with the steady growth of the city's enormous maritime commerce. One of her most public-spirited sons, the wealthy Duke of Galliera, gave no less than \$4,000,000 out of his own pocket to help provide the facilities needed 40 years ago—and that was only the beginning. Trade and port have been growing rapidly and steadily ever since.

Genoa has always been busy, and even when she lost the maritime supremacy to Venice she did not fall asleep, as did Pisa, but kept on sending out her ships and men into every sea. One of these sturdy sailor sons we have cause to know—Columbus. In the Piazza Acqua-verde—Greenwater Square—Columbus's laggard fellow-townsmen have reared him a colossal statue, with America

© Paul Thompson

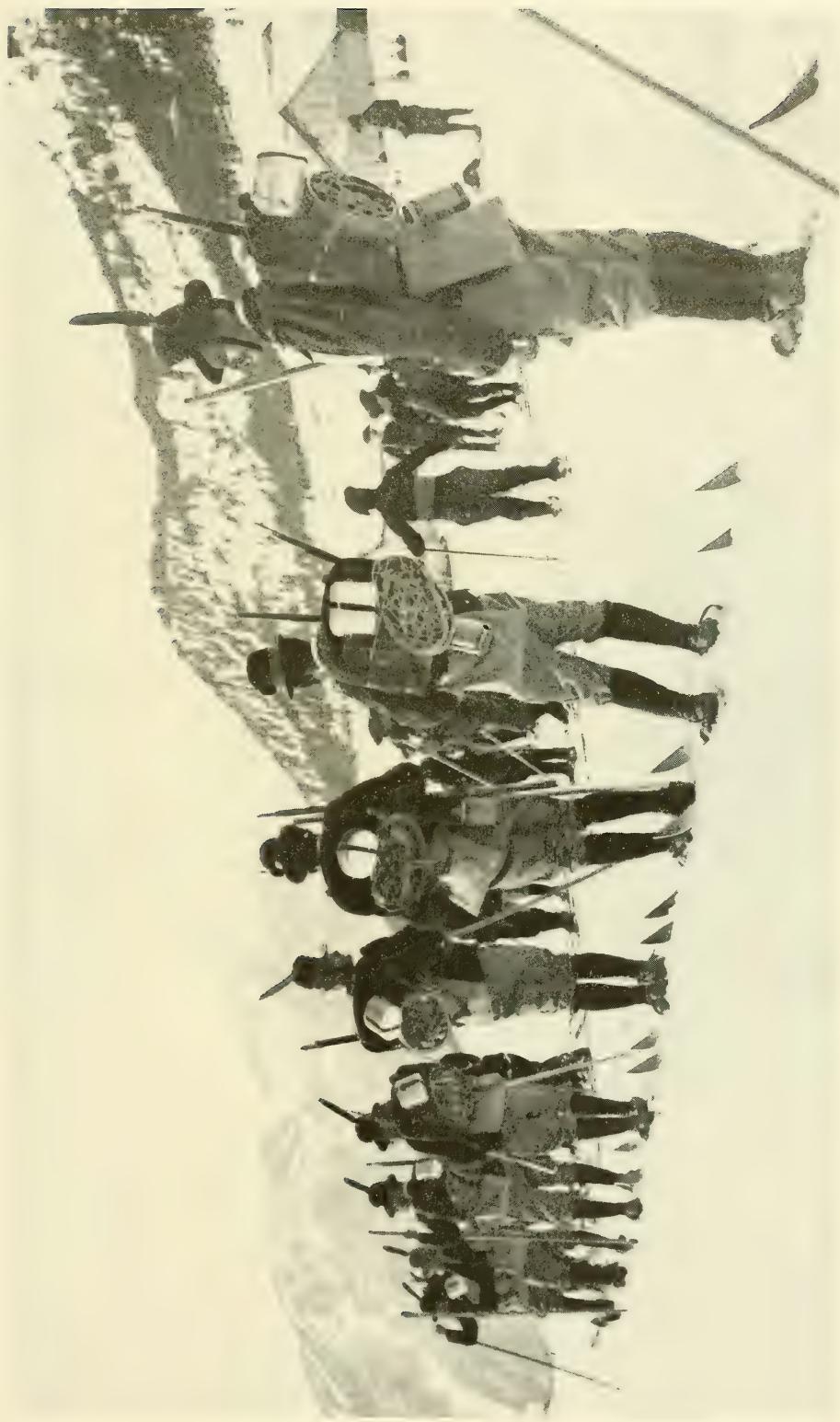
ITALIAN TROOPS IN THE ALPS

The soldiers of King Victor Emmanuel are waging a double warfare—against Austrian armies and against the Alps. Here, truly, “the infantry of the snow and the cavalry of the wild blast” are as hard to face as steel bullets and shrapnel.



ITALIAN ALPINE CHASSEURS ON THE MARCH IN THE ALPS

If the shades of Hannibal's warriors who perished in the snows of the Alps could watch the part these men are playing in the awe-inspiring European struggle, would they envy them more the heroic proportions of the history they are making, or the comforts of their efficient, up-to-date equipment?



kneeling at his feet—but they allowed 370 years to go by before they could bring themselves to honor the intrepid mariner whose real monument is no bit of lifeless stone, but a living, breathing, creative New World.

#### THE "GARDEN WALL OF EUROPE"

Along the coast in either direction from Genoa runs the sunniest, loveliest, most popular strand in the world, the "garden wall of Europe," the Riviera, place of a thousand delights. It is a sinuously seductive shore, whose iron ribs, pierced through and through with innumerable smoky little tunnels, curve down to the sea; a coast of inexpressibly beautiful indentations, bays and inlets whose shores rise in sheer rock or gleam with the rich verdance of heavy foliage, relieved by the color of myriad blossoms.

Quaint towns gem it like beads of parti-colored glass upon a silver thread. Sheltered behind by their granite hills from the tempestuous and icy Mistral that goes roaring out to sea far overhead, and warmed by the generous southern sun, these towns—most of them, like Genoa, half old, half new—are favorite resorts of pleasure and health seekers from every clime.

And to the west, looking away toward the blue shore of beautiful France, for miles one superb vista after another unfolds of the intervening coast-line, with its ragged contours. Olive groves and old castle ruins, picturesquely situated towns and tenth century pirate watch-towers, make preparation for San Remo, upon terraced slopes whose gray-green olives shade into the differing hues of the agaves, oranges, and pomegranates at the edge of the bay (see page 359).

#### THE GIFTED MOTHER OF MEN

Beyond lies Bordighera of the exquisite flowers and the date palms, and at the French frontier, hilltop Ventimiglia, walled about loftily, as if to keep it from being blown into the sea by the first mischievous zephyr. They are all so lovely, all so rich with one or another gift, so mild, so perfumed—with the thousands of acres of flowers of every description raised for sale and to supply the perfume distillers—so productive, that here, in-

deed, is "Paradise enow." And all along the coastal hills are dotted with the bold and striking ruins of mighty castles and strongholds, tombstones of the great and noble families who once upon a time dwelt here in lordly state.

As we stand at this western end of the Riviera and look back and down through Nature and the years at all the loveliness and wisdom and fascination of Italy, what does it all mean; what does it convey? To what extent is the modern the product of those great periods developed in "Italia . . . who hast the fatal gift of beauty"? History and education answer alike: Italy has pioneered and passed on her discoveries for the benefit of all mankind. Within her borders developed the two greatest forces of civilization: that Christianity to which, more or less directly, we owe all our material and spiritual progress, and the liberation of human thought and spirit in the tremendous uplift of the Renaissance. Had Italy never produced aught but these, the world would still owe her an incalculable and unpayable debt of gratitude.

If Italy failed to go on with the great work so nobly begun, our debt is none the less great. She gave the impulse that others were able to carry on. And after a period of quiescence, what is she doing today? Ask of the bitter, bloodied snows of the southern Alp; peer into those mist and cloud-shrouded heights where, as one man, united Italy is fighting with desperate valor for what she and her allies conceive to be their duty, not merely to themselves, but to all civilization for all posterity.

And in peace, as in war, she is alert, full of high purpose and the conviction of service. In her civil life and domestic affairs we must recognize in her again those beauties and qualities and charms, those stern, enduring virtues, as well as those bewitching coquettices, that so pre-eminently characterize her as a noble mother of men, winning as her own brilliant skies, patient with the maternal patience that neither swerves nor falters, and progressive once more in the endeavor to reach the ideals she herself promulgated so many centuries ago, or even to go beyond the limits her apparently inexhaustible genius set.

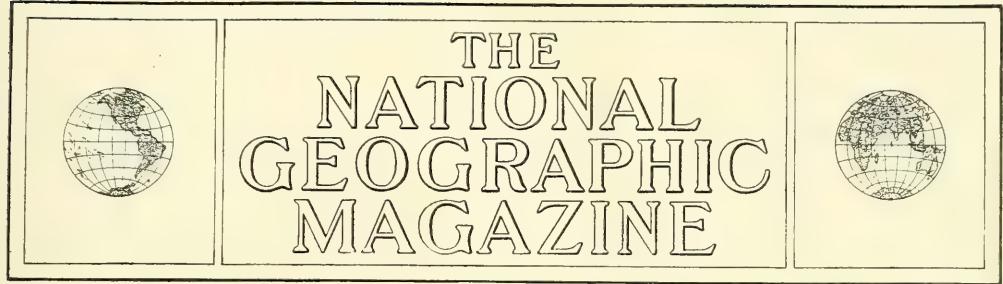




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# THE NATIONAL GEOGRAPHIC MAGAZINE

## THE LARGER NORTH AMERICAN MAMMALS

BY E. W. NELSON

ASSISTANT CHIEF, U. S. BIOLOGICAL SURVEY

*With illustrations from paintings by Louis Agassiz Fuertes*

Readers of THE GEOGRAPHIC will be glad to learn that this number is the forerunner of another by Messrs. Nelson and Fuertes to be devoted to the portrayal and study of the smaller mammals of our continent. So great is the potential as well as the practical value along educational lines of this remarkable series of animal studies that THE GEOGRAPHIC has not hesitated to expend \$40,000 in its publication. We congratulate our readers who have made such an achievement possible by their enthusiastic interest and support.

**A**T THE time of its discovery and occupation by Europeans, North America and the bordering seas teemed with an almost incredible profusion of large mammalian life. The hordes of game animals which roamed the primeval forests and plains of this continent were the marvel of early explorers and have been equaled in historic times only in Africa.

Even beyond the limit of trees, on the desolate Arctic barrens, vast herds containing hundreds of thousands of caribou drifted from one feeding ground to another, sharing their range with numberless smaller companies of musk-oxen. Despite the dwarfed and scanty vegetation of this bleak region, the fierce winter storms and long arctic nights, and the harrying by packs of white wolves, these hardy animals continued to hold their own until the fatal influence of civilized man was thrown against them.

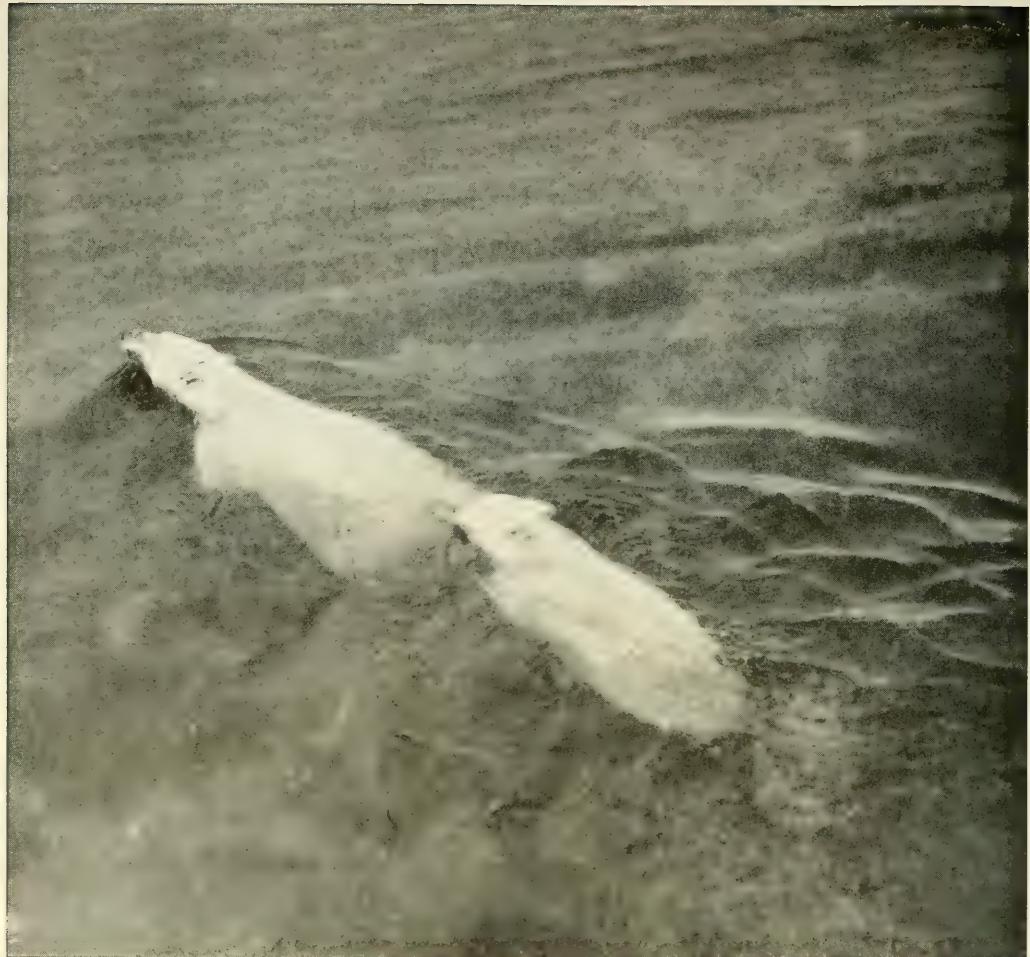
Southward from the Arctic barrens, in the neighboring forests of spruce, tamarack, birches, and aspens, were multitudes

of woodland caribou and moose. Still farther south, in the superb forests of eastern North America, and ranging thence over the limitless open plains of the West, were untold millions of buffalo, elk, and white-tailed deer, with the prong-horned antelope replacing the white-tails on the western plains.

With this profusion of large game, which afforded a superabundance of food, there was a corresponding abundance of large carnivores, as wolves, coyotes, black and grizzly bears, mountain lions, and lynxes. Black bears were everywhere except on the open plains, and numerous species of grizzlies occupied all the mountainous western part of the continent.

Fur-bearers, including beavers, muskrats, land-otters, sea-otters, fishers, martens, minks, foxes, and others, were so plentiful in the New World that immediately after the colonization of the United States and Canada a large part of the world's supply of furs was obtained here.

Trade with the Indians laid the foundations of many fortunes, and later devel-



Photograph by Capt. F. E. Kleinschmidt

#### TOWING HER BABY TO SAFETY

When a mother polar bear scents danger she jumps into the water and her cub holds fast to her tail while she tows it to safety. But when no danger seems to threaten she wants it to "paddle its own canoe," and boxes its ears or ducks its head under water if it insists on being too lazy to swim for itself.

oped almost imperial organizations, like the Hudson's Bay Company and its rivals. Many adventurous white men became trappers and traders, and through their energy, and the rivalry of the trading companies, we owe much of the first exploration of the northwestern and northern wilderness. The stockaded fur-trading stations were the outposts of civilization across the continent to the shores of Oregon and north to the Arctic coast. At the same time the presence of the sea-otter brought the Russians to occupy the Aleutian Islands, Sitka, and even northern California.

The wealth of mammal life in the seas

along the shores of North America almost equaled that on the land. On the east coast there were many millions of harp and hooded seals and walruses, while the Greenland right and other whales were extremely abundant. On the west coast were millions of fur seals, sea-lions, sea-elephants, and walruses, with an equal abundance of whales and hundreds of thousands of sea otters.

Many of the chroniclers dealing with explorations and life on the frontier during the early period of the occupation of America gave interesting details concerning the game animals. Allouez says that in 1680, between Lake Erie and Lake



Photograph by Capt. F. E. Kleinschmidt

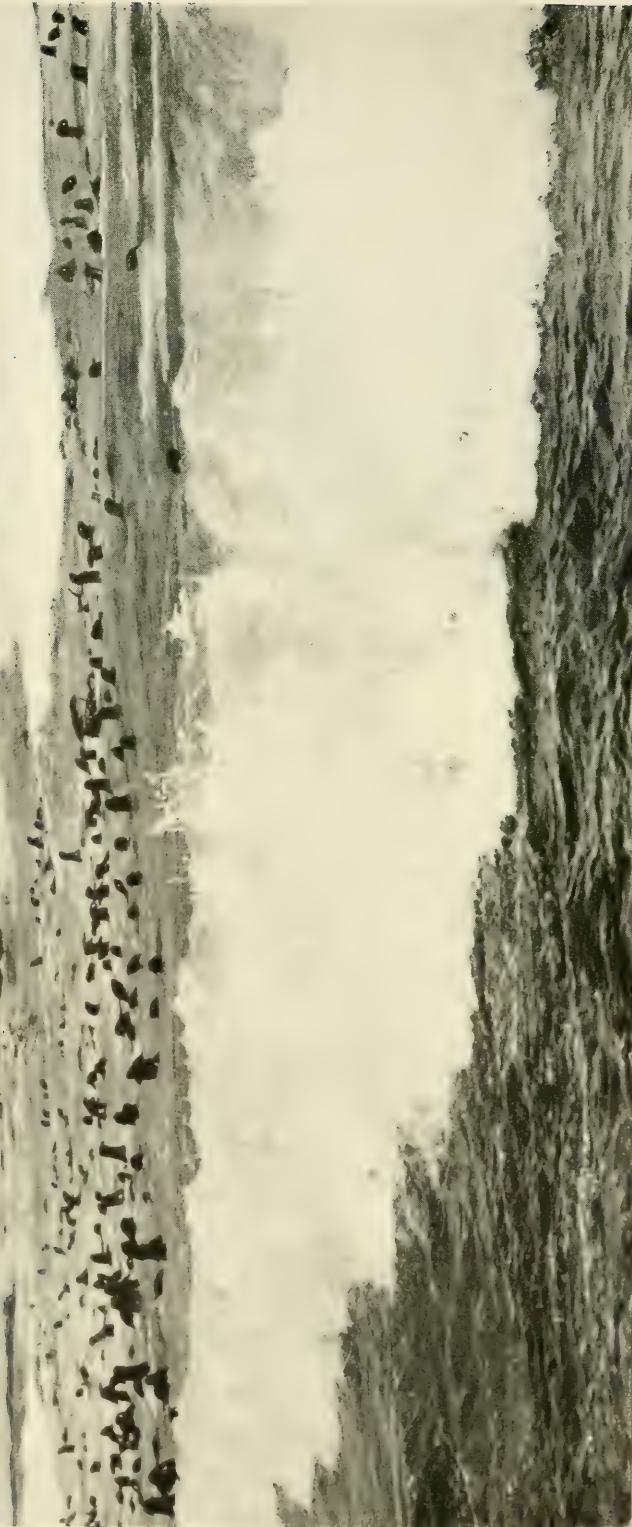
A SWIMMING POLAR BEAR

A polar bear when swimming does not use his hind legs, a new fact brought out by the motion-picture camera

From the ages of one to four years fur seals are extremely playful. They are marvelous swimmers, and frolic about in pursuit of one another, now diving deep, and then, one after the other, suddenly leaping high above the surface in graceful curves, like porpoises.

Photograph by Roy Chapman Andrews

FUR SEAL: FEMALES AND YOUNG PUPS





© Keystone View Co.

#### ROAMING "MONarchs OF THE PLAIN": BRITISH COLUMBIA

A remnant of the veritable sea of wild life that surged over American soil before the dikes of civilization compassed it about and all but wiped it out

Michigan the prairies were filled with an incredible number of bears, wapiti, white-tailed deer, and turkeys, on which the wolves made fierce war. He adds that on a number of occasions this game was so little wild that it was necessary to fire shots to protect the party from it. Perrot states that during the winter of 1670-1671, 2,400 moose were snared on the Great Manitoulin Island, at the head of Lake Huron. Other travelers, even down to the last century, give similar accounts of the abundance of game.

#### TRAINs HELD UP BY BUFFALO

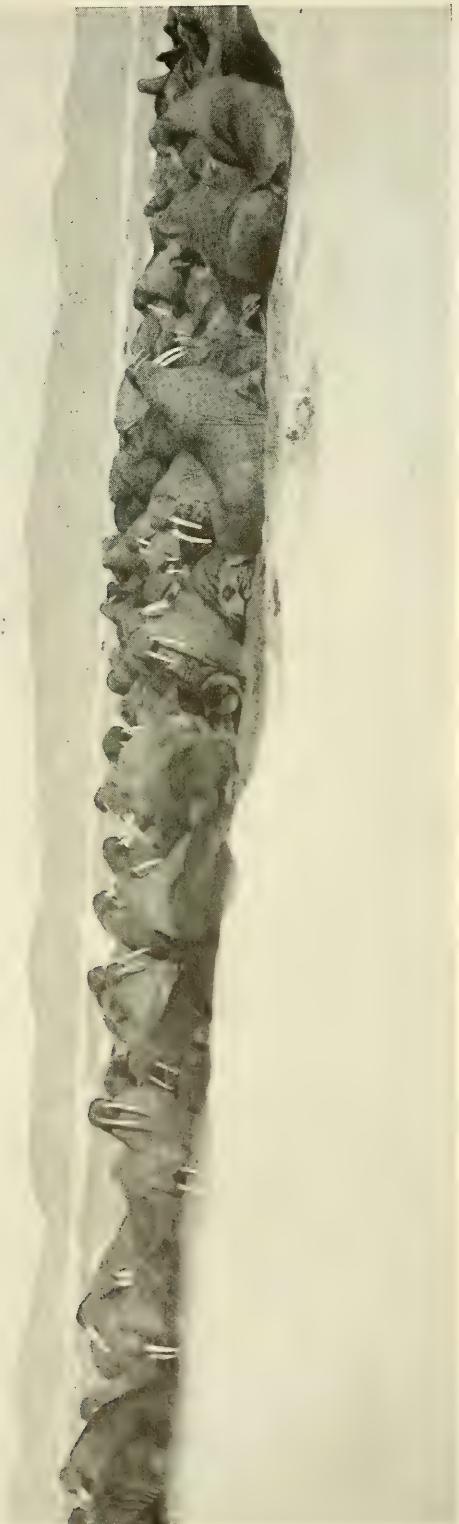
The original buffalo herds have been estimated to have contained from 30,000,000 to 60,000,000 animals, and in 1870 it was estimated that about 5,500,000 still survived. A number of men now living were privileged to see some of the great herds of the West before they were finally destroyed. Dr. George Bird Grinnell writes:

"In 1870, I happened to be on a train that was stopped for three hours to let a herd of buffalo pass. We supposed they would soon pass by, but they kept

coming. On a number of occasions in earlier days the engineers thought that they could run through the herds, and that, seeing the locomotive, the buffalo would stop or turn aside; but after a few locomotives had been ditched by the animals the engineers got in the way of respecting the buffaloes' idiosyncrasies. . . .

"Up to within a few years, in northern Montana and southern Alberta, old buffalo trails have been very readily traceable by the eye, even as one passed on a railroad train. These trails, fertilized by the buffalo and deeply cut so as to long hold moisture, may still be seen in summer as green lines winding up and down the hills to and from the water-courses."

Concerning the former abundance of antelope, Dr. Grinnell says: "For many years I have held the opinion that in early days on the plains, as I saw them, antelope were much more abundant than buffalo. Buffalo, of course, being big and black, were impressive if seen in masses and were visible a long way off. Antelope, smaller and less conspicuous in color, were often passed unnoticed, except by a person of experience, who



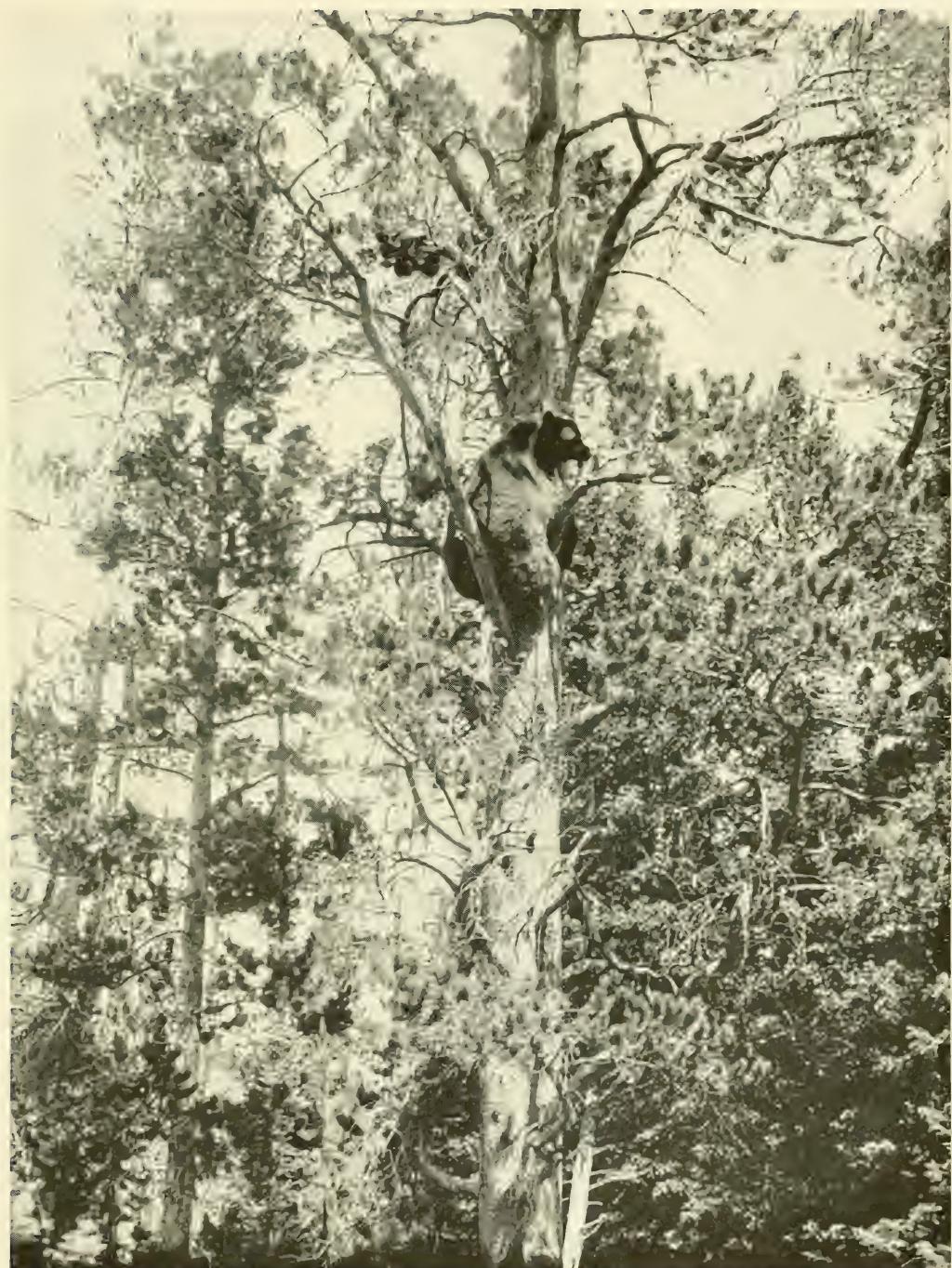
A WALRUS BATTLE FRONT; THOUGH FORMIDABLE LOOKING, WITH THEIR LONG TUSKS, THEY ASK ONLY TO BE LEFT ALONE

might recognize that distant white dots might be antelope and not buffalo bones or puff balls. I used to talk on this subject with men who were on the plains in the '60's and '70's, and all agreed that, so far as their judgment went, there were more antelope than buffalo. Often the buffalo were bunched up into thick herds and gave the impression of vast numbers. The antelope were scattered, and, except in winter, when I have seen herds of thousands, they were pretty evenly distributed over the prairie.

#### ANTELOPES EVERYWHERE

"I have certain memories of travel on the plains, when for the whole long day one would pass a continual succession of small bands of antelope, numbering from ten to fifty or sixty, those at a little distance paying no attention to the traveler, while those nearer at hand loped lazily and unconcernedly out of the way. In the year 1879, in certain valleys in North Park, Colorado, I saw wonderful congregations of antelope. As far as we could see in any direction, all over the basins, there were antelope in small or considerable groups. In one of these places I examined with care the trails made by them, for this was the only place where I ever saw deeply worn antelope trails, which suggested the buffalo trails of the plains."

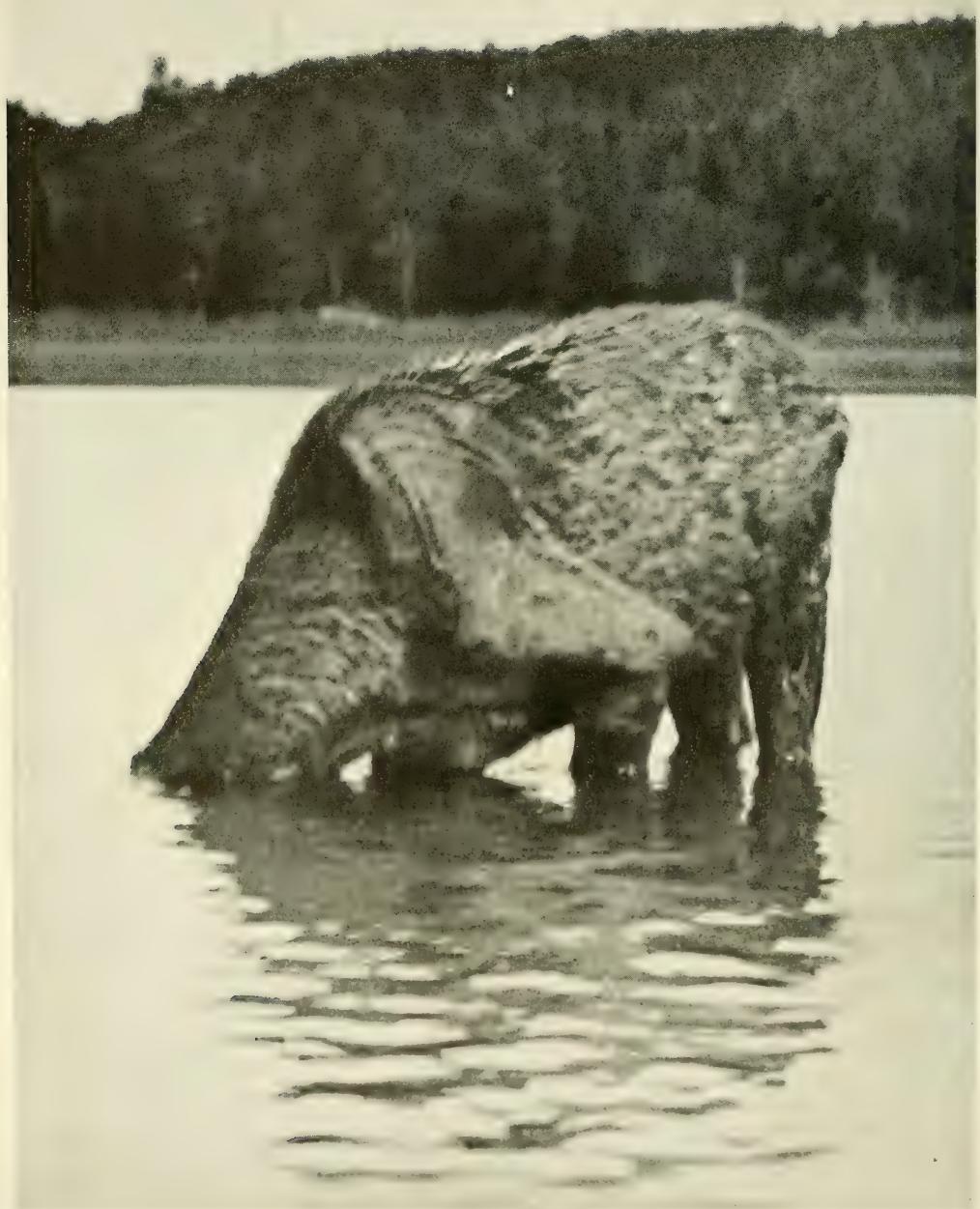
The wealth of animal life found by our forebears was one of the great natural resources of the New World. Although freely drawn upon from the first, the stock was but little depleted up to within a century. During the last one hundred years, however, the rapidly increasing occupation of the continent and other



Photograph by Albert Schlechten

A CINNAMON TREED: YELLOWSTONE NATIONAL PARK

Bruin for the most part is an inoffensive beast, with an impelling curiosity and such a taste for sweet things that he can eat pounds of honey and lick his chops for more



Photograph by E. C. Oberholtzer

**MOOSE FEEDING UNDER DIFFICULTIES**

The moose likes the succulent water plants it finds at the bottom of lakes and sluggish streams, and often when reaching for them becomes completely submerged



Photograph by E. C. Oberholzer

COW MOOSE WITH HER YOUNG

Notice the fold of skin at her neck resembling a bell

causes, together with a steadily increasing commercial demand for animal products, have had an appalling effect. The buffalo, elk, and antelope are reduced to a pitiful fraction of their former countless numbers.

WANTON WASTE OF WILD LIFE

Practically all other large game has alarmingly decreased, and its extermination has been partly stayed only by the recent enforcement of protective laws. It is quite true that the presence of wild buffalo, for instance, in any region occupied for farming and stock-raising purposes is incompatible with such use. Thus the extermination of the bison as a denizen of our western plains was inevitable. The destruction, however, of these noble game animals by millions for their hides only furnishes a notable example of the wanton wastefulness which has heretofore largely characterized the handling of our wild life.

A like disregard for the future has been shown in the pursuit of the sea mammals. The whaling and sealing industries are very ancient, extending back for a thousand years or more; but the greatest and most ruthless destruction of the whales and seals has come within the last century, especially through the use of steamships and bomb-guns. Without adequate international protection, there is grave danger that the most valuable of these sea mammals will be exterminated. The fur seal and the sea-elephant, once so abundant on the coast of southern California, are nearly or quite gone, and the sea otter of the North Pacific is dangerously near extinction.

The recent great abundance of large land mammals in North America, both in individuals and species, is in striking contrast with their scarcity in South America, the difference evidently being due to the long isolation of the southern continent from other land-masses, whence it



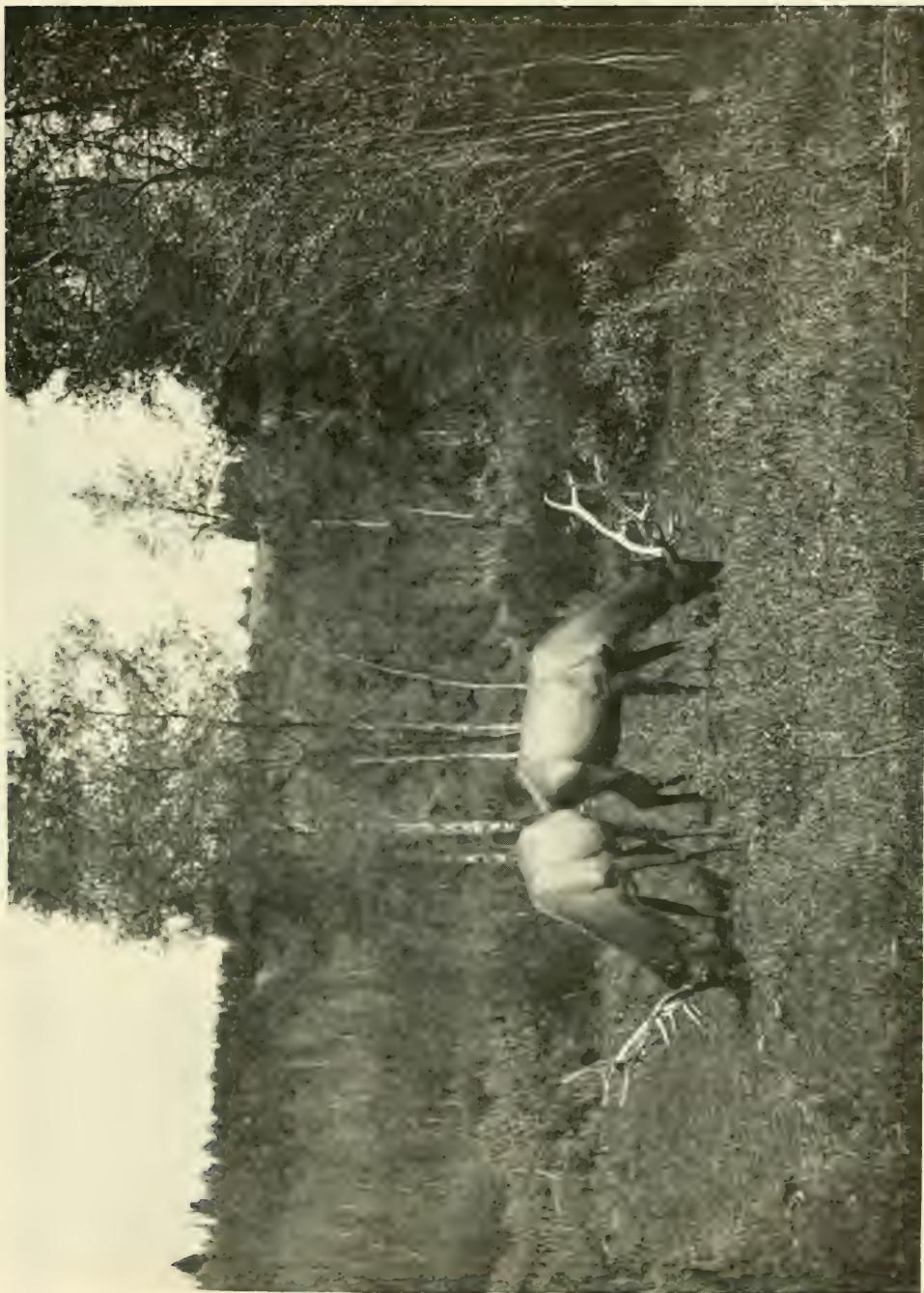
Photograph by W. J. Strong

ROCKY MOUNTAIN ELK

They can hold their own in the mountains in summer, but when the deep snows come they are compelled to go down into the valleys. Just before they leave the big bulls travel the mountains from one end to the other, driving old and young before them into the lower country. In case of a hard winter the elk are thin and weak, and then the dreaded wolf makes havoc among them, especially the little calves,

Photograph by W. J. Stroud

AN UNUSUAL ELK PICTURE





Photograph by Charles E. Johnson

THE MOOSE IS A POWERFUL SWIMMER



Photograph by F. O. Seabury

PART OF A HERD OF SIXTY MOUNTAIN SHEEP

They are fed hay and salt daily at the Denver and Rio Grande Railway station at Ouray, Colorado. This picture was taken at a distance of about 10 to 15 feet from the wild animals, which grow quite tame under such friendly ministrations.



From a drawing by Charles R. Knight

#### A MOOSE THAT LIVED IN NEW JERSEY IN PLEISTOCENE TIMES: CROVALCES

A primitive moose-like form, a nearly perfect skeleton of which was found in southern Jersey some years ago. In size and general proportions the animal was like a modern moose, but the nose was less developed, and the horns were decidedly different in character.

might have been restocked after the loss of a formerly existing fauna.

#### SPECIES COME AND SPECIES GO

The differences in the geographic distribution of mammal life between North and South America and the relationships between our fauna and that of the Old World are parts of the latest chapter of a wonderful story running back through geologic ages. The former chapters are recorded in the fossil beds of all the continents. While only a good beginning has been made in deciphering these records, enough has been done by the fascinating researches of Marsh, Cope, Osborn, Scott, and others to prove that in all parts

of the earth one fauna has succeeded another in marvelous procession.

It has been shown also that these changes in animal life, accompanied by equal changes in plant life, have been largely brought about by variations in climate and by the uplifting and depressing of continental land-masses above or below the sea. The potency of climatic influence on animal life is so great that even a fauna of large mammals will be practically destroyed over a great area by a long-continued change of a comparatively few degrees (probably less than ten degrees Fahrenheit) in the mean daily temperatures.

The distribution of both recent and



Photograph by Gus A. Swanson

#### THEIR LIVING LIES BENEATH THE SNOW

All nature loves kindness and trusts the gentle hand. Contrast these sheep, ready to fly at the slightest noise, with those in the picture on page 396, peacefully feeding in close proximity to a standing express train. Every one appreciates a good picture of a living animal more than the trophy of a dead one!

fossil mammals shows conclusively that numberless species have spread from their original homes across land bridges to remote unoccupied regions, where they have become isolated as the bridges disappeared beneath the waves of the sea.

#### VAST NATURAL MUSEUMS OF EXTINCT ANIMAL LIFE

For ages Asia appears to have served as a vast and fecund nursery for new

mammals from which North Temperate and Arctic America have been supplied. The last and comparatively recent land bridge, across which came the ancestors of our moose, elk, caribou, prong-horned antelope, mountain goats, mountain sheep, musk-oxen, bears, and many other mammals, was in the far Northwest, where Bering Straits now form a shallow channel only 28 miles wide separating Siberia from Alaska.

The fossil beds of the Great Plains and other parts of the West contain eloquent proofs of the richness and variety of mammal life on this continent at different periods in the past. Perhaps the most wonderful of all these ancient faunas was that revealed by the bones of birds and mammals which had been trapped in the asphalt pits recently discovered in the outskirts of Los Angeles, California. These bones show that prior to the arrival of the present fauna the plains of southern California swarmed with an astonishing wealth of strange birds and beasts (see page 401).

The most notable of these are saber-toothed tigers, lions much larger than those of Africa; giant wolves; several kinds of bears, including the huge cave bears, even larger than the gigantic brown bears of Alaska; large wild horses; camels; bison (unlike our buffalo); tiny antelope, the size of a fox; mastodons, mammoths with tusks 15 feet long; and giant ground sloths; in addition to many other species, large and small.

With these amazing mammals were equally strange birds, including, among numerous birds of prey, a giant vulture-like species (far larger than any condor), peacocks, and many others.

#### DID MAN LIVE THEN?

The geologically recent existence of this now vanished fauna is evidenced by the presence in the asphalt pits of bones of the gray fox, the mountain lion, and close relatives of the bobcat and coyote, as well as the condor, which still frequent that region, and thus link the past with the present. The only traces of the ancient vegetation discovered in these asphalt pits are a pine and two species of juniper, which are members of the existing flora.

There is reason for believing that primitive man occupied California and other parts of the West during at least the latter part of the period when the fauna of the asphalt pits still flourished. Dr. C. Hart Merriam informs me that the folk-



Photograph by L. Peterson

#### INTRODUCING A LITTLE BLACK BEAR TO A LITTLE BROWN BEAR AT SEWARD, ALASKA

"Howdy-do! I ain't got a bit of use for you!"  
"What do I care! You'd better back away, black bear!"

lore of the locally restricted California Indians contains detailed descriptions of a beast which is unmistakably a bison, probably the bison of the asphalt pits.

The discovery in these pits of the bones of a gigantic vulturelike bird of prey of far greater size than the condor is even more startling, since the folk-lore of the Eskimos and Indians of most of the tribes from Bering Straits to California and the Rocky Mountain region abound in tales of the "thunder-bird"—a gigantic bird of prey like a mighty eagle, capable of carrying away people in its talons. Two such coincidences suggest the possibility that the accounts of the bison and the "thunder-bird" are really based on the originals of the asphalt beds and have been passed down in legendary history through many thousands of years.

#### CAMELS AND HORSES ORIGINATED IN NORTH AMERICA

Among other marvels our fossil beds reveal the fact that both camels and horses originated in North America. The remains of many widely different species of both animals have been found



A REINDEER HERD AT CAPE PRINCE OF WALES, ALASKA: MANY FAWNS ARE TO BE SEEN IN THE HERD, AS THIS PICTURE WAS TAKEN SHORTLY AFTER THE PAWFING SEASON  
Photograph by Carl J. Lomen

in numerous localities extending from coast to coast in the United States. Camels and horses, with many species of antelope closely related to still existing forms in Africa, abounded over a large part of this country up to the end of the geological age immediately preceding the present era.

Then through imperfectly understood changes of environment a tremendous mortality among the wild life took place and destroyed practically all of the splendid large mammals, which, however, have left their records in the asphalt pits of California and other fossil beds throughout the country. This original fauna was followed by an influx of other species which made up the fauna when America was discovered.

At the time of its discovery by Columbus this continent had only one domesticated mammal—the dog. In most instances the ancestors of the Indian dogs appear to have been the native coyotes or gray wolves, but the descriptions of some dogs found by early explorers indicate very different and unknown ancestry. Unfortunately these strange dogs became extinct at an early period, and thus left unsolvable the riddle of their origin.

Before the discovery of America the people of the Old World had domesticated cattle, horses, pigs, sheep, goats, dogs, and cats; but none of these domestic animals, except the dog, existed in America until brought from Europe by the invaders of the New World.

The wonderful fauna of the asphalt pits had vanished long before America was first colonized by white men, and had been replaced by another mainly from the Old World, less varied in character, but enormously abundant in individuals. Although so many North American mammals were derived from Asia, some came from South America, while others, as the raccoons, originated here.

#### FEWER LARGE MAMMALS IN THE TROPICS

It is notable that the fossil beds which prove the existence of an extraordinary abundance of large mammals in North America at various periods in the past, as well as the enormous aggregation of mammalian life which occupied this continent, both on land and at sea, at the time of its discovery, were confined to the Temperate and Arctic Zones. It is popu-



From Scott's "History of the Land Mammals of the Western Hemisphere": Macmillan Company

THIS REPRESENTS A SCENE AT THE CALIFORNIA ASPHALT PITS, WITH A MIRED ELEPHANT, TWO GIANT WOLVES, AND A SABER-TOOTHED TIGER (SEE PAGE 399)

larly believed that the tropics possess an exuberance of life beyond that of other climes, yet in no tropic lands or seas, except in parts of Africa and southern Asia, has there been developed such an abundance of large mammal life as these northern latitudes have repeatedly known.

In temperate and arctic lands such numbers of large mammals could exist only where the vegetation not only sufficed for summer needs, but retained its nourishing qualities through the winter. In the sea the vast numbers of seals, sea-lions, walruses, and whales of many kinds could be maintained only by a limitless profusion of fishes and other marine life.

From the earliest appearance of mammals on the globe to comparatively recent times one mammalian fauna has succeeded another in the regular sequence of evolution, man appearing late on the scene and being subject to the same natural influences as his mammalian kindred. During the last few centuries, however, through the development of agriculture, the invention of new methods of transportation, and of modern firearms, so-

called civilized man has spread over and now dominates most parts of the earth.

As a result, aboriginal man and the large mammals of continental areas have been, or are being, swept away and replaced by civilized man and his domestic animals. Orderly evolution of the marvelously varied mammal life in a state of nature is thus being brought to an abrupt end. Henceforth fossil beds containing deposits of mammals caught in sink-holes, and formed by river and other floods in subarctic, temperate, and tropical parts of the earth, will contain more and more exclusively the bones of man and his domesticated horses, cattle, and sheep.

#### DESTROYING THE IRRESTORABLE

The splendid mammals which possessed the earth until man interfered were the ultimate product of Nature working through the ages that have elapsed since the dawn of life. All of them show myriads of exquisite adaptations to their environment in color, form, organs, and habits. The wanton destruction of any



From a drawing by Charles R. Knight

A PRIMITIVE FOUR-TUSKED ELEPHANT, STANDING ABOUT SIX FEET AT THE SHOULDER,  
THAT LIVED AGES AGO IN THE UNITED STATES (TRICOPHODON MIOCENE)

of these species thus deprives the world of a marvelous organism which no human power can ever restore.

Fortunately, although it is too late to save many notable animals, the leading nations of the world are rapidly awaking to a proper appreciation of the value and significance of wild life. As a consequence, while the superb herds of game on the limitless plains will vanish, sportsmen and nature lovers, aided by those who appreciate the practical value of wild life as an asset, may work successfully to provide that the wild places shall not be left wholly untenanted.

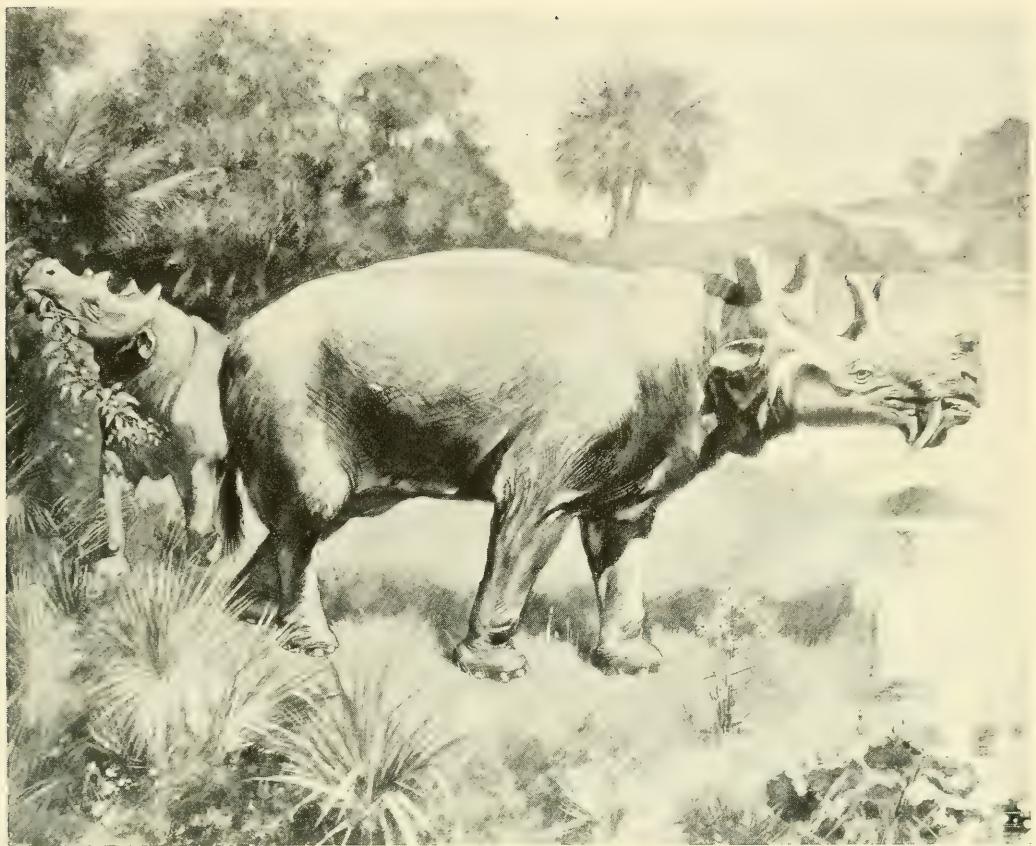
Although Americans have been notably wasteful of wild life, even to the extermination of numerous species of birds and mammals, yet they are now leading the world in efforts to conserve what is left of the original fauna. No civilized people, with the exception of the South African Boers, have been such a nation of hunters as those of the United States. Most hunters have a keen appreciation of nature, and American sportsmen as a

class have become ardent supporters of a nation-wide movement for the conservation of wild life.

#### SAVING OUR WILD LIFE

Several strong national organizations are doing great service in forwarding the conservation of wild life, as the National Geographic Society, the National Association of Audubon Societies, American Bison Society, Boone and Crockett Club, New York Zoological Society, American Game Protective and Propagation Association, Permanent Wild Life Protective Fund, and others. In addition, a large number of unofficial State organizations have been formed to assist in this work.

Through the authorization by Congress, the Federal Government is actively engaged in efforts for the protection and increase of our native birds and mammals. This work is done mainly through the Bureau of Biological Survey of the U. S. Department of Agriculture, which is in charge of the several Federal large-game



From a drawing by Charles R. Knight

A GROTESQUE CREATURE THAT ONCE LIVED IN THE UNITED STATES (*URTATHERIUM EOCENE*, MIDDLE WYOMING)

It had six horns on the head and, in some species, two long canine teeth projecting downward from the upper jaw. The feet were somewhat like those of an elephant, but the skull and teeth resemble nothing on earth today.

preserves and nearly seventy bird reservations.

On the large-game preserves are herds of buffalo, elk, deer, and antelope. The Yellowstone National Park, under the Department of the Interior, is one of the most wonderfully stocked game preserves in the world. In this beautiful tract of forest, lakes, rivers, and mountains live many moose, elk, deer, antelope, mountain sheep, black and grizzly bears, wolves, coyotes, mountain lions, and lynxes.

Practically all of the States have game and fish commissions in one form or another, with a warden service for the protection of game, and large numbers of State game preserves have been established. The increasing occupation of the country, the opening up of wild places,

and the destruction of forests are rapidly restricting available haunts for game. This renders particularly opportune the present and increasing wide-spread interest in the welfare of the habitants of the wilderness.

The national forests offer an unrivaled opportunity for the protection and increase of game along broad and effective lines. At present the title to game mammals is vested in the States, among which great differences in protective laws and their administration in many cases jeopardize the future game supply.

If a coöperative working arrangement could be effected between the States and the Department of Agriculture, whereby the Department would have supervision and control over the game on the national forests, so far as concerns its protection



From a drawing by Charles R. Knight

#### THE PRIMITIVE FOUR-TOED HORSE (EOHIPPUS, LOWER EOCENE, WYOMING)

The so-called four-toed horse, a little creature some 12 inches in height at the shoulder, having four well-defined hoofs on the front foot and three on the hind foot. The animal is not a true horse, but was undoubtedly an ancestor (more or less direct) of the modern form. It must have been a very speedy type, which contributed greatly to the preservation of the species in an age when (so far as we know) the carnivores were rather slow and clumsy.

and the designation of hunting areas, varying the quantity of game to be taken from definite areas in accordance with its abundance from season to season, while the States would control open seasons for shooting, the issuance of hunting licenses, and similar local matters, the future welfare of large game in the Western States would be assured.

Under such an arrangement the game supply would be handled on business principles. When game becomes scarce

in any restricted area, hunting could be suspended until the supply becomes renewed, while increased hunting could be allowed in areas where there is sufficient game to warrant it. In brief, big game could be handled by the common-sense methods now used so effectively in the stock industry on the open range. At present the lack of a definite general policy to safeguard our game supply and the resulting danger to our splendid native animals are deplorably in evidence.



A TRUE HORSE WHICH WAS FOUND IN THE FOSSIL BEDS OF TEXAS: PLEISTOCENE

It is interesting to note that this country was possessed of several species of wild horses, but these died out long before the advent of the Indian on this continent. The present wild horses of our western plains are merely stragglers from the herds brought over by the Spaniards and other settlers. When Columbus discovered America there were no horses on the continent, though in North America horses and camels originated (see text, page 399).



From drawings by Charles R. Knight

THE FOREST HORSE OF NORTH AMERICA (HYPOHIPPOS MIOCENE)

This animal is supposed to have inhabited heavy undergrowth. It was somewhat off the true horse ancestry and had three rather stout toes on both the fore and hind feet.

Photograph by Gus A. Swanson

A MONTANA DOE AND FAWN

Observers of those times believed that at the beginning of the last century there were more deer and antelope in the United States than there were buffaloes. If that be true, they were probably more numerous than any domestic animal we have today.



Photograph by Gus A. Swanson

THE SPIRIT OF THE WILD

"Timorous as a gazelle in the open, brave as a lion when forced to fight, with nerves as quick as lightning and sinews as hard as steel, these denizens of the deep wood match the wind for speed, are unsurpassed for endurance, and yield place to no other species in graceful beauty."



**OPOSSUM, VIRGINIA OPOSSUM (*Didelphis virginiana* and its subspecies)**

The opossums are the American representatives of the ancient order of Marsupials—a wonderfully varied group of mammals now limited to America and Australasia. Throughout the order the young are born in an embryonic condition and are transferred to teats located in an external pocket or pouch in the skin of the abdomen, where they complete their development. The kangaroos are among the most striking members of this group.

Numerous species of opossums are known, all peculiar to America and distributed from the eastern United States to Patagonia. The Virginia opossum, the largest of all the species, is characterized by its coarse hair, pig-like snout, naked ears, and long, hairless, prehensile tail. Its toes are long, slender, and so widely spread that its footprints on the muddy border of a stream or in a dusty trail show every toe distinctly, as in a bird track, and are unmistakably different from those of any other mammal.

This is the only species of opossum occurring in the United States, where it occupies all the wooded eastern parts from eastern New York, southern Wisconsin, and eastern Nebraska south to the Gulf coast and into the tropics. It has recently been introduced in central California. Although scarce in the northern parts of its range, it is abundant and well known in the warmer Southern States.

These animals love the vicinity of water, and are most numerous in and about swamps or other wet lowlands and along bottom-lands bordering streams. They have their dens in hollow trees, in holes under the roots of trees, or in similar openings where they may hide away by day. Their food consists of almost everything, animal or vegetable, that is edible, including chickens, which they capture in nocturnal raids.

The Virginia opossums have from 5 to 14 young, which at first are formless, naked little objects, so firmly attached to the teats in the mother's pouch that they can not be shaken loose. Later, when they attain a coating of hair, they are miniature replicas of the adults, but continue to occupy the pouch until the swarming family becomes too large for it. The free toes of opossums are used like hands for grasping, and the young cling firmly to the fur of their mother while being carried about in her wanderings.

They are rather slow-moving, stupid animals, which seek safety by their retiring nocturnal habits and by non-resistance when overtaken by an enemy. This last trait gave origin to the familiar term "playing possum," and is illustrated by their habit of dropping limp and apparently lifeless when attacked. Despite this apparent lack of stamina, their vitality is extraordinary, rendering them difficult to kill.

While hunting at daybreak, I once encountered an unusually large old male opossum on his way home from a night in the forest. When we met, he immediately stopped and

stood with hanging head and tail and half-closed eyes. I walked up and, after watching him for several minutes without seeing the slightest movement, put my foot against his side and gave a slight push. He promptly fell flat and lay limp and apparently dead. I then raised him and tried to put him on his feet again, but his legs would no longer support him, and I failed in other tests to obtain the slightest sign of life.

The opossum has always been a favorite game animal in the Southern States, and figures largely in the songs and folk-lore of the southern negroes. In addition, its remarkable peculiarities have excited so much popular interest that it has become one of the most widely known of American animals.

**RACCOON (*Procyon lotor* and its subspecies)**

Few American wild animals are more widely known or excite more popular interest than the raccoon. It is a short, heavily built animal with a club-shaped tail, and with hind feet that rest flat on the ground, like those of a bear, and make tracks that have a curious resemblance to those of a very small child. Its front toes are long and well separated, thus permitting the use of the front feet with almost the facility of a monkey's hands.

Raccoons occupy most of the wooded parts of North America from the southern border of Canada to Panama, with the exception of the higher mountain ranges. In the United States they are most plentiful in the Southeastern and Gulf States and on the Pacific coast. Under the varying climatic conditions of their great range a number of geographic races have developed, all of which have a close general resemblance in habits and appearance.

They everywhere seek the wooded shores of streams and lakes and the bordering lowland forests and are expert tree-climbers, commonly having their dens in hollow trees, often in cavities high above the ground. In such retreats they have annually from four to six young, which continue to frequent this retreat until well grown, thus accounting for the numbers often found in the same cavity. Although tree-frequenting animals, the greater part of their activities is confined to the ground, especially along the margins of water-courses. While almost wholly nocturnal in habits, they are occasionally encountered abroad during the day.

Their diet is extraordinarily varied, and includes fresh-water clams, crawfish, frogs, turtles, birds and their eggs, poultry, nuts, fruits, and green corn. When near water they have a curious and unique habit of washing their food before eating it. Their fondness for green corn leads them into frequent danger, for when bottom-land cornfields tempt them away from their usual haunts raccoon hunting with dogs at night becomes an especially favored sport.

Raccoons are extraordinarily intelligent animals and make interesting and amusing pets.



OPOSSUM



RACCOON

During captivity their restless intelligence is shown by the curiosity with which they carefully examine every strange object. They are particularly attracted by anything bright or shining, and a piece of tin fastened to the pan of a trap serves as a successful lure in trapping them.

They patrol the border of streams and lakes so persistently that where they are common they sometimes make well-trodden little trails, and many opened mussel shells or other signs of their feasts may be found on the tops of fallen logs or about stones projecting above the water. In the northern part of their range they hibernate during the coldest parts of the winter, but in the South are active throughout the year.

Raccoons began to figure in our frontier literature at an early date. "Coon-skin" caps, with the ringed tails hanging like plumes, made the favorite headgear of many pioneer hunters, and "coon skins" were a recognized article of barter at country stores. Now that the increasing occupation of the country is crowding out more and more of our wild life, it is a pleasure to note the persistence with which these characteristic and interesting animals continue to hold their own in so much of their original range.

#### CANADA LYNX (*Lynx canadensis*)

The lynxes are long-legged, short-bodied cats, with tufted ears and a short "bobbed" tail. They are distributed from the northern limit of trees south into the Temperate Zone throughout most of the northern part of both Old and New Worlds. In North America there are two types—the smaller animal, southern in distribution, and the larger, or Canada lynx, limited to the north, where its range extends from the northern limit of trees south to the northern border of the United States. It once occupied all the mountains of New England and south in the Alleghenies to Pennsylvania. In the West it is still a habitant of the Rocky Mountains as far south as Colorado, and of the Sierra Nevada nearly to Mount Whitney.

The Canada lynx is notable for the beauty of its head, one of the most striking among all our carnivores. This species is not only much larger than its southern neighbor, the bay lynx, but may also be distinguished from it by its long ear tips, thick legs, broad spreading feet, and the complete jet-black end of the tail. It is about 3 feet long and weighs from 15 to over 30 pounds. As befits an animal of the great northern forests, it has a long thick coat of fur, which gives it a remarkably fluffy appearance. Its feet in winter are heavily furred above and below and are so broad that they serve admirably for support in deep snow, through which it would otherwise have to wade laboriously.

This animal does not attack people, though popular belief often credits it with such action. It feeds mainly on such small prey as varying hares, mice, squirrels, foxes, and the grouse

and other birds living in its domain; but on occasion it even kills animals as large as mountain sheep. One such feat was actually witnessed above timberline in winter on a spur of Mount McKinley. The lynx sprang from a ledge as the sheep passed below, and, holding on the sheep's neck and shoulders, it reached forward and by repeatedly biting put out its victim's eyes, thus reducing it to helplessness.

The chief food of the Canada lynx is the varying hare, which throughout the North periodically increases to the greatest abundance and holds its numbers for several years. During these periods the fur sales in the London market show that the number of lynx skins received increases proportionately with those of the hare. When an epizootic disease appears, as it does regularly, and almost exterminates the hares, there is an immediate and corresponding drop in the number of lynx skins sent to market. This evidences one of Nature's great tragedies, not only among the overabundant hares, but among the lynxes, for with the failure of their food supply over a vast area tens of thousands of them perish of starvation.

The Canada lynx has from two to five kittens, which are marked with dusky spots and short bands, indicating an ancestral relationship to animals similar to the ocelot, or tiger-cat, of the American tropics. The young usually keep with the mother for nearly a year. Such families no doubt form the hunting parties whose rabbit drives on the Yukon Islands were described to me by the fur traders and Indians of the Yukon Valley.

During sledge trips along the lower Yukon I often saw the distinctive broad, rounded tracks of lynxes, showing where they had wandered through the forests or crossed the wide, snow-covered river channel. Here and there, as the snow became very deep and soft, the tracks showed where a series of leaps had been made. Lynx trails commonly led from thicket to thicket where hares, grouse, or other game might occur. Canada lynxes appear to be rather stupid animals, for they are readily caught in traps, or even in snares, and, like most cats, make little effort to escape.

#### BOBCAT, OR BAY LYNX (*Lynx rufus* and its subspecies)

The bay lynx, bobcat, or wildcat, as *Lynx rufus* and its close relatives are variously called in different parts of the country, is one of the most widely distributed and best known of our wild animals. It is about two-thirds the size of the Canada lynx and characterized by much slenderer proportions, especially in its legs and feet. The ears are less conspicuously tufted and the tip of the tail is black only on its upper half. Bobcats range from Nova Scotia and southern British Columbia over practically all of the wooded and brushy parts of the United States except along the northern border, and extend south to the southern end of the high table-land of Mexico.

From the earliest settlement of America the



CANADA LYNX



BOBCAT (Bay Lynx)

bobcat has figured largely in hunting literature, and the popular estimate of its character is well attested by the frontier idea of the superlative physical prowess of a man who can "whip his weight in wildcats." Although our wildcat usually weighs less than 20 pounds, if its reputed fierceness could be sustained it would be an awkward foe. But, so far as man is concerned, unless it is cornered and forced to defend itself, it is extremely timid and inoffensive.

Like all cats, it is very muscular and active, and to the rabbits, squirrels, mice, grouse, and other small game upon which it feeds is a persistent and remorseless enemy. Although an expert tree-climber, it spends most of its time on the ground, where it ordinarily seeks its prey. It is most numerous in districts where birds and small mammals abound, and parts of California seem especially favorable for it. At a mountain ranch in the redwood forest south of San Francisco one winter some boys with dogs killed more than eighty bobcats.

Ordinarily the bobcat seems to be rather uncommon, but its nocturnal habits usually prevent its real numbers being actually known. In districts where not much hunted it is not uncommonly seen abroad by day, especially in winter, when driven by hunger.

The bay lynx makes its den in hollows in trees, in small caves, and in openings among rock piles wherever quiet and safety appear assured. Although a shy animal, it persists in settled regions if sufficient woodland or broken country remains to give it shelter. From such retreats it sallies forth at night, and not only do the chicken roosts of careless householders suffer, but toll is even taken among the lambs of sheep herds.

As in the case of most small cats, the stealthy hunting habits of the bay lynx renders it excessively destructive to ground-frequenting birds, especially to quail, grouse, and other game birds. For this reason, like many of its kind, it is outlawed in all settled parts of the country.

#### MOUNTAIN LION (*Felis couguar* and its subspecies)

The mountain lion, next to the jaguar, is the largest of the cat tribe native to America. In various parts of its range it is also known as the panther, cougar, and puma. It is a slender-bodied animal with a small head and a long round tail, with a total length varying from seven to nine feet and a weight from about 150 to 200 pounds.

It has from two to five young, which are paler brown than the adult and plainly marked with large dusky spots on the body and with dark bars on the tail. These special markings of the young, as in other animals, are ancestral, and here appear to indicate that in the remote past our plain brown panther was a spotted cat somewhat like the leopard.

No other American mammal has a range equal to that of the mountain lion. It originally inhabited both North and South America

from southern Quebec and Vancouver Island to Patagonia and from the Atlantic to the Pacific coasts. Within this enormous territory it appears to be equally at home in an extraordinary variety of conditions. Formerly it was rather common in the Adirondacks of northern New York and still lives in the high Rocky Mountains of the West, where it endures the rigors of the severest winter temperatures. It is generally distributed, where large game occurs, in the treeless ranges of the most arid parts of the southwestern deserts, and is also well known in the most humid tropical forests of Central and South America, whose gloomy depths are drenched by almost continual rain.

A number of geographic races of the species have been developed by the varied character of its haunts. These are usually characterized by differences in size and by paler and grayer shades in the arid regions and by darker and browner ones in the humid areas.

The mountain lion, while powerful enough to be dangerous to man, is in reality extremely timid. Owing to its being a potentially dangerous animal, the popular conception of it is that of a fearsome beast, whose savage exploits are celebrated in the folk-lore of our frontier. As a matter of fact, few wild animals are less dangerous, although there are authentic accounts of wanton attacks upon people, just as there are authentic instances of buck deer and moose becoming aggressive. It has a wild, screaming cry which is thrillingly impressive when the shades of evening are throwing a mysterious gloom over the forests. In the mountains of Arizona one summer a mountain lion repeatedly passed along a series of ledges high above my cabin at dusk, uttering this loud weird cry, popularly supposed to resemble the scream of a terrified woman.

The mountain lion is usually nocturnal, but in regions where it is not hunted it not infrequently goes abroad by day. It is a tireless wanderer, often traveling many miles in a single night, sometimes in search of game and again in search of new hunting grounds. I have repeatedly followed its tracks for long distances along trails, and in northern Chihuahua I once tracked one for a couple of miles from a bare rocky hill straight across the open, grassy plain toward a treeless desert mountain, for which it was heading, some eight or ten miles away.

Although inoffensive as to people, this cat is such a fierce and relentless enemy of large game and live stock that it is everywhere an outlaw. Large bounties on its head have resulted in its extermination in most parts of the eastern United States and have diminished its numbers elsewhere. It is not only hunted with gun and dog but also with trap and poison.

A mountain lion usually secures its prey by a silent, cautious stalk, taking advantage of every cover until within striking distance, and then, with one or more powerful leaps, dashing the victim to the ground with all the stunning impact of its weight. In a beautiful live-oak forest on the mountains of San Luis Potosi I



MOUNTAIN LION



JAGUAR

once trailed one of these great cats to the spot where it had killed a deer a short time before, and could plainly read in the trail the story of the admirable skill with which it had moved from cover to cover until it reached a knoll at one side of the little glade where the deer was feeding. Then a great leap carried it to the deer's back and struck the victim to the ground with such violence that it slid 10 or 12 feet across the sloping ground, apparently having been killed on the instant.

Another trail followed in the snow on the high mountains of New Mexico led to the top of a projecting ledge from which the lion had leaped out and down over 20 feet, landing on the back of a deer and sliding with it 50 feet or more down the snowy slope.

The mountain lion often kills calves, but is especially fond of young horses. In many range districts of the Western States and on the table-land of Mexico, owing to the depredations of this animal, it is impossible to raise horses. Unfortunately the predatory habits of this splendid cat are such that it can not continue to occupy the same territory as civilized man and so is destined to disappear before him.

#### JAGUAR (*Felis hernandesi* and its subspecies)

The jaguar, or "el tigre," as it is generally known throughout Spanish America, is the largest and handsomest of American cats. Its size and deep yellow color, profusely marked with black spots and rosettes, give it a close resemblance to the African leopard. It is, however, a heavier and more powerful animal. In parts of the dense tropical forests of South America coal-black jaguars occur, and while representing merely a color phase, they are popularly supposed to be much fiercer than the ordinary animal.

Jaguars are characteristic animals of the tropics in both Americas, frequenting alike the low jungle of arid parts as well as the great forests of the humid regions. In addition, they range south into Argentina and north into the southwestern United States. Although less numerous within our borders than formerly, they still occur as rare visitants as far north as middle Texas, middle New Mexico, and northern Arizona. They are so strictly nocturnal that their presence in our territory is usually not suspected until, after depredations on stock usually attributed to mountain lions, a trap or poison is put out and reveals a jaguar as the offender. Several have been killed in this way within our border during the last ten years, including one not far from the tourist hotel at the Grand Canyon of Arizona.

Although so large and powerful, the jaguar has none of the truculent ferocity of the African leopard. During the years I spent in its country, mainly in the open, I made careful inquiry without hearing of a single case where one had attacked human beings. So far as I could learn, it has practically the same shy and cowardly nature as the mountain lion. Despite

this, the natives throughout its tropical home have a great fear of "el tigre," as I saw evidenced repeatedly in Mexico. Apparently this fear is based wholly on its strength and potential ability to harm man if it so desired.

Jaguars are very destructive to the larger game birds and mammals of their domain and to horses and cattle on ranches. On many large tropical ranches a "tigrero," or tiger hunter, with a small pack of mongrel dogs, is maintained, whose duty it is immediately to take up the trail when a "tigre" makes its presence known, usually by killing cattle. The hunter steadily continues the pursuit, sometimes for many days, until the animal is either killed or driven out of the district. It is ordinarily hunted with dogs, which noisily follow the trail, but its speed through the jungle often enables it to escape. When hard pressed it takes to a tree and is easily killed.

Few predatory animals are such wanderers as the jaguar, which roams hundreds of miles from its original home, as shown by its occasional appearance far within our borders. In the heavy tropical forest it so commonly follows the large wandering herds of white-lipped peccaries that some of the Mexicans contend that every large herd is trailed by a tiger to pick up stragglers. Along the Mexican coast in spring, when sea turtles crawl up the beaches to bury their eggs in the sand, the rising sun often reveals the fresh tracks of the jaguar where it has traveled for miles along the shore in search of these savory deposits.

In one locality on the Pacific coast of Guerrero I found that the harder natives had an interesting method of hunting the "tigre" during the mating period. At such times the male has the habit of leaving its lair near the head of a small canyon in the foothills early in the evening and following down the canyon for some distance, at intervals uttering a subdued roar. On moonlight nights at this time the hunter places an expert native with a short wooden trumpet near the mouth of the canyon to imitate the "tigre's" call as soon as it is heard and to repeat the cry at proper intervals. After placing the caller, the hunter ascends the canyon several hundred yards and, gun in hand, awaits the approach of the animal. The natives have many amusing tales of the sudden exit of untried hunters when the approaching animal unexpectedly uttered its roar at close quarters.

#### JAGUARUNDI CAT, OR EYRA (*Felis cacomitli* and its subspecies)

The eyra differs greatly in general appearance from any of our other cats, although it is one of the most characteristic of the American members of this widely spread family. It is larger than an otter, with a small flattened head, long body, long tail, and short legs, thus having a distinctly otterlike form. It is characterized by two color phases—one a dull gray or dusky, and the other some shade of rusty rufous. Animals of these different colors were long supposed to represent distinct species, but



RED AND GRAY PHASES OF THE JAGUARUNDI CAT, OR EYRA



TIGER-CAT, OR OCELOT

it has been learned not only that color is the only difference between the two, but also that the two colors are everywhere found together, affording satisfactory evidence that they are merely color phases of the same species.

The eyra is a habitant of brush-grown or forested country, mainly in the lowlands, from the lower Rio Grande Valley of Texas south to Paraguay. In this vast territory it has developed a number of geographic races.

In southern Texas, where it is often associated with the ocelot, the eyra lives in dense thorny thickets of mesquites, acacias, iron-wood, and other semitropical chaparral in a region of brilliant sunlight; but farther south it also roams the magnificent forests of the humid tropics, in which the sun rarely penetrates. It appears to be even more nocturnal and retiring than most of our cats, and but little is known of its life history. The results of thorough trapping in the dense thorny thickets near Brownsville, Texas, indicate that it is probably more common than is generally supposed.

The natives in the lowlands of Guerrero, on the Pacific coast of Mexico, informed me that the eyra in that region is fond of the vicinity of streams, and that it takes to the water and swims freely, crossing rivers whenever it desires. Its otterlike form goes well with such habits, and further information may prove that it is commonly a water-frequenting animal. Its unusual form and dual coloration and our lack of knowledge regarding the life of the eyra unite to make it one of the most interesting of our carnivores.

#### TIGER-CATS, OR OCELOTS (*Felis pardalis* and its relatives)

The brushy and forested areas of America from southern Texas and Sonora to Paraguay are inhabited by spotted cats of different species, varying from the size of a large house cat to that of a Canada lynx. Only one of these occurs in the United States. All are characterized by long tails and a yellowish ground color, conspicuously marked by black spots, and on neck and back by short, longitudinal stripes—a color pattern that strongly suggests the leopard.

In the lower Rio Grande Valley of Texas the tiger-cat is rather common, with the eyra-cat, in areas densely overgrown with thorny chaparral. Like most of the cat tribe, it is strictly nocturnal and by day lies well hidden in its brushy shelter. By night it wanders along trails over a considerable territory, seeking its prey. Birds of all kinds, including domestic poultry, are captured on their roosts, and rabbits, wood rats, and mice of many kinds, as well as snakes and other reptiles, are on its list of game.

Its reptile-eating habit was revealed to me unexpectedly one day in the dense tropical forest of Chiapas. I was riding along a steep trail beside a shallow brush-grown ravine when a tiger-cat suddenly rushed up the trunk of a

tree close by. A lucky shot from my revolver brought it to the ground, and I found it lying in the ravine by the body of a recently killed boa about 6 or 7 feet long. It had eaten the boa's head and neck when my approach interrupted the feast.

The first of these cats I trapped in Mexico was captured the night after my arrival, in a trail bordering the port of Manzanillo, on the Pacific coast. The rejoicing of the natives living close by evidenced the toll this marauder had been taking from their chickens.

The tiger-cat is much more quiet and less fierce in disposition than most felines. It excited my surprise and interest whenever I trapped one to note how nonchalantly it took the situation. The captive never dashed wildly about to escape, but when I drew near sat and looked quietly at me without the slightest sign of alarm and with little apparent interest. A small trap-hold, even on the end of a single toe, was enough to retain the victim. On one occasion, while a cat thus held sat looking at me, it quietly reached to one side and sank its teeth into the bark of a small tree to which the trap was attached, and then resumed its air of unconcern.

The tiger-cat brings within our fauna an interesting touch of the tropics and its exuberance of animal life. It is found in so small a corner of our territory, however, that, despite its mainly inoffensive habits, it is certain to be crowded out in the near future by the increased occupation of its haunts.

#### RED FOX (*Vulpes fulva* and its relatives)

Red foxes are characterized by their rusty red fur, black-fronted fore legs, and white-tipped tail. They inhabit the forested regions in the temperate and subarctic parts of both Old and New Worlds, and, like other types of animal life having a wide range, they break up into numerous distinct species and geographic races.

In America they originally ranged over nearly all the forested region from the northern limit of trees in Alaska and Canada south, east of the Great Plains, to Texas; also down the Rocky Mountains to middle New Mexico, and down the Sierra Nevada to the Mount Whitney region of California. They are unknown on the treeless plains of the West, including the Great Basin. Originally they were apparently absent from the Atlantic and Gulf States from Maryland to Louisiana, but have since been introduced and become common south to middle Georgia and Alabama.

Wherever red foxes occur they show great mental alertness and capacity to meet the requirements of their surroundings. In New England they steadily persist, though their raids on poultry yards have for centuries set the hand of mankind against them. For a time conditions favored them in parts of the Middle Atlantic States, for the sport of hunting to hounds was imported from England, and the foxes had partial protection. This exotic



CROSS FOX

RED FOX

SILVER FOX

The precious black and silver gray foxes are merely color phases occurring in litters of the ordinary red animal (see text, page 416)



ALASKA RED FOX

amusement has now passed and the fox must everywhere depend on his nimble wits for safety.

Since the days of Aesop's fables tales of foxes and their doings have had their place in literature as well as in the folk-lore of the countryside. Many of their amazing wiles to outwit pursuers or to capture their prey give evidence of extraordinary mental powers.

Their bill of fare includes many items, as mice, birds, reptiles, insects, many kinds of fruits, and on rare occasions a chicken. The bad name borne by them among farmers, due to occasional raids on the poultry yard, is largely unwarranted. They kill enormous numbers of mice and other small rodents each year, and thus well repay the loss of a chicken now and then.

Red foxes apparently pair for life and occupy dens dug by themselves in a secluded knoll or among rocks. These dens, which are sometimes occupied for years in succession, always have two or more entrances opening in opposite directions, so that an enemy entering on one side may be readily eluded. The young, numbering up to eight or nine, are tenderly cared for by both parents.

Although they have been persistently hunted and trapped in North America since the earliest times, they still yield a royal annual tribute of furs. It is well known that the highly prized cross, as well as the precious black, and silver gray foxes are merely color phases occurring in litters of the ordinary red animal. Black skins are so highly prized that specially fine ones have sold for more than \$2,500 each in the London market. The reward thus offered has resulted in the development of black fox fur-farms, which have been very successful in parts of Canada and the United States, thus originating a valuable new industry.

By the modern regulation of trapping, foxes and other fur-bearers are destined to survive wherever conditions are favorable. In addition to the economic value of foxes, the location of an occasional fox den here and there on the borders of a woodland tract, the meandering tracks in the snow, and the occasional glimpse of animals cautiously making their rounds add a keen touch of primitive nature well worth preserving in any locality.

#### ALASKA RED FOX (*Vulpes kenaiensis*)

The red fox of the Kenai Peninsula, Alaska, and the adjacent mainland is probably the largest of its kind in the world, although those of Kodiak Island and of the Mackenzie River valley are nearly as large. Compared with its relatives of the United States, the Kenai fox is a giant, with heavier, duller-colored coat and a huge tail, more like that of a wolf than of a fox. The spruce and birch forests of Alaska and the Mackenzie Valley are apparently peculiarly adapted to red foxes, as shown by the development there of these animals—good illustrations of the relative increase in size and vigor of animals in a specially favorable environment.

As noted in the general account of the red foxes, the occurrence of the black phase is sporadic, and the relative number of dark individuals varies greatly in different parts of their range. The region about the upper Yukon and its tributaries and the Mackenzie River basin are noted for the number of black foxes produced, apparently a decidedly greater proportion than in any other similarly large area. The prices for which these black skins sell in the London market prove them to be of equal quality with those from any other area.

Like other red foxes, the Alaskan species digs its burrows, with several entrances, in some dry secluded spot, where both male and female share in the care of the young. In northern wilds the food problem differs from that in a settled country. There the surrounding wild life is the only dependence, and varying hares, lemmings, and other mice are usually to be had by the possessor of a keen scent and an active body. In summer many nesting wild-fowl and their young are easy prey, while heathberries and other northern fruits are also available.

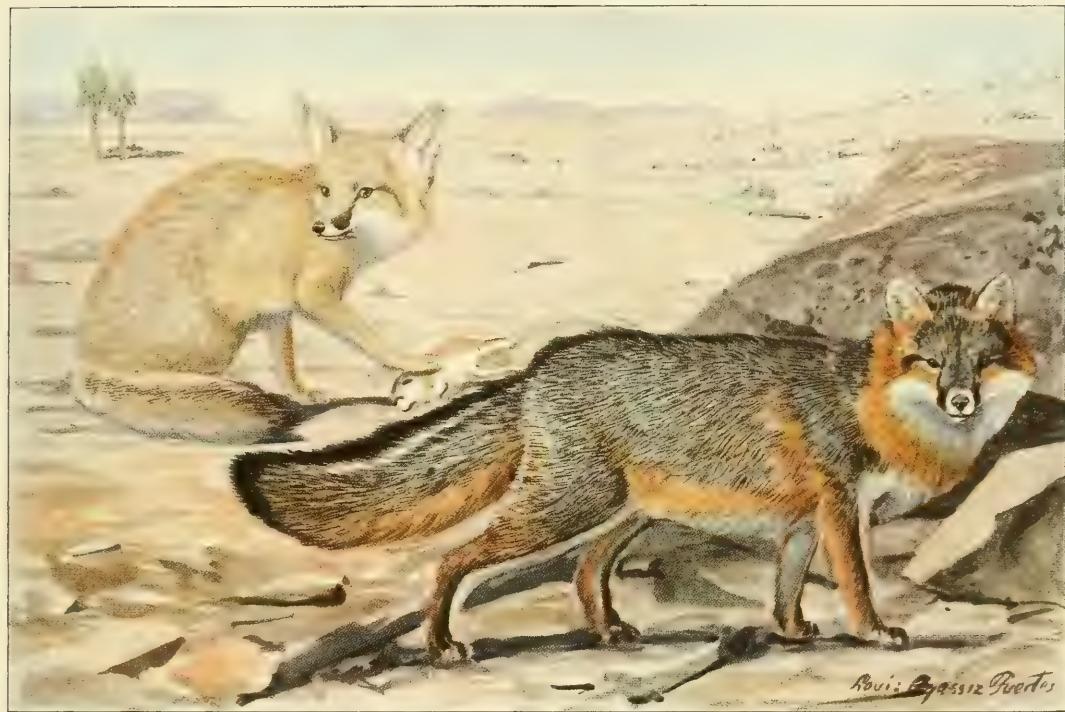
Winter brings a season of scarcity, when life requires the exercise of every trained faculty. The snow-white ptarmigan is then a prize to be gained only by the most skillful stalking, and the white hare is almost equally difficult to secure. At this season foxes wander many miles each day, their erratic tracks in the snow telling the tale of their industrious search for prey in every likely spot. It is in this season of insistent hunger that many of them fall victims to the wiles of trappers or to the unscrupulous hunter who scatters poisoned baits.

Fortunately the season for trapping these and other fur-bearers in Alaska is now limited by law and the use of poisons is forbidden. These measures will aid in preserving one of the valuable natural assets of these northern wilds.

#### GRAY FOX (*Urocyon cinereoargenteus* and its relatives)

Gray foxes average about the size of common red foxes, but are longer and more slender in body, with longer legs and a longer, thinner tail. They are peculiar to America, where they have a wide range—from New Hampshire, Wisconsin, and Oregon south through Mexico and Central America to Colombia. Within this area there are numerous geographic forms closely alike in color and general appearance, but varying much in size; the largest of all, larger than the red fox, occupying the New England States.

Gray foxes inhabit wooded and brush-grown country and are much more numerous in the arid or semiarid regions of the southwestern United States and western Mexico than elsewhere. In parts of California they are far more numerous than red foxes ever become. They do not regularly dig a den, but occupy a hollow tree or cavity in the rocks, where they bring forth from three to five young each spring. As with other foxes, the cubs are born blind and helpless, and are also almost blackish in color, entirely unlike the adults. The par-



DESERT FOX

GRAY FOX



BADGER

ents, as usual with all members of the dog family, are devoted to their young and care for them with the utmost solicitude.

Like other members of the tribe, they are omnivorous and feed upon mice, squirrels, rabbits, birds, and large insects, in addition to acorns or other nuts and fruits of all kinds. In Lower California they are very common about the date-palm orchards, which they visit nightly for fallen fruit. They also make nocturnal visits to poultry yards.

In some parts of the West they are called "tree foxes," because when pursued by dogs they often climb into the tops of small branching trees.

On one occasion in Arizona I saw a gray fox standing in the top of a large, leaning mesquite tree, about thirty feet from the ground, quietly gazing in various directions, as though he had chosen this as a lookout point. As soon as he saw me he came down at a run and swiftly disappeared.

In the same region I found a den in the hollow base of an old live-oak containing three young only a few days old. The mother was shot as she sprang from the hole on my approach and the young taken to camp. There the skin of the old fox, well wrapped in paper, was placed on the ground at one side of the tent, and an open hunting bag containing the young placed on the opposite side, about ten feet away. On returning an hour later, I was amazed to find that all three of the young, so small they could crawl only with the utmost difficulty, and totally blind, had crossed the tent and managed to work their way through the paper to the skin of their mother, thus showing that the acute sense of smell in these foxes becomes of service to them at a surprisingly early age.

#### **DESERT FOX (*Vulpes macrotis* and its subspecies)**

A small fox, akin to the kit fox or swift of the western plains, frequents the arid cactus-grown desert region of the Southwest. It is found from the southern parts of New Mexico, Arizona, and California south into the adjacent parts of Mexico. The desert fox is a beautiful species, slender in form, and extraordinarily quick and graceful in its movements, but so generally nocturnal in habits as to be rarely seen by the desert traveler. On the rare occasions when one is encountered abroad by day, if it thinks itself unobserved by the traveler it usually flattens itself on the ground beside any small object which breaks the surface, and thus obscured will permit a horseman to ride within a few rods without moving. If the traveler indicates by any action that he has seen it, the fox darts away at extraordinary speed, running with a smooth, floating motion which seems as effortless as that of a drifting thistledown before a breeze.

The desert fox digs a burrow, with several entrances, in a small mound, or at times on an open flat, and there rears four or five young each year. Its main food consists of kangaroo

rats, pocket mice, small ground-squirrels, and a variety of other small desert mammals. In early morning fox tracks, about the size of those of a house-cat, may be seen along sandy arroyos and similar places where these small carnivores have wandered in search of prey.

Like the kit, the desert fox has little of the sophisticated mental ability of the red fox and falls an easy prey to the trapper. It is nowhere numerous and occupies such a thinly inhabited region that there is little danger of its numbers greatly decreasing in the near future.

#### **BADGER (*Taxidea taxus* and its subspecies)**

The favorite home of the badger is on grassy, brush-grown plains, where there is an abundance of mice, pocket gophers, ground-squirrels, prairie-dogs, or other small mammals. There it wanders far and wide at night searching for the burrows of the small rodents, which are its chief prey. When its acute sense of smell announces that a burrow is occupied, it sets to work with sharp claws and powerful fore legs and digs down to the terrified inmate in an amazingly short time.

The trail of a badger for a single night is often marked by hole after hole, each with a mound of fresh earth containing the tracks of the marauder. As a consequence, if several of these animals are in the neighborhood, their burrows, 6 or 8 inches in diameter, soon become so numerous that it is dangerous to ride rapidly through their haunts on horseback.

Although a member of the weasel family, the badger is so slow-footed that when it is occasionally found abroad by day a man on foot can easily overtake it. When brought to bay, it charges man or dog and fights with such vicious power and desperation that nothing of its own size can overcome it. It appears to have a morose and savage nature, lacking the spice of vivacity or playfulness which appears in many of its relatives.

Although commonly found living by itself in a den, it is often found moving about by day in pairs, indicating the probability that it may mate permanently. In the northern part of its range it hibernates during winter, but in the south remains active throughout the year. Its shy and retiring character is evidenced by the little information we have concerning its family life. The badger is so destructive to rodents that its services are of great value to the farmer. Regardless of this, where encountered it is almost invariably killed. As a consequence, the increasing occupation of its territory must result in its steady decrease in numbers and final extermination.

The American badger is a close relative of the well-known badger occupying the British Isles and other northern parts of the Old World. It is a low, broad, short-legged, powerfully built animal of such wide distribution that it has developed several geographic races. Its range originally extended from about 58 degrees of latitude, on the Peace River, in



THE PEARY CARIBOU

One of the geographic forms of the Barren Ground Caribou  
(see text, page 460)

ARCTIC WOLF

Canada, south to the plains of Puebla, on the southern end of the Mexican table-land, and from Michigan, Kansas, and Texas west to the Pacific coast. It has now become extinct over much of this area and is everywhere greatly reduced in numbers.

It appears to thrive equally well on the plains of Alberta, in the open pine forests of the Sierra Nevada in California, and on the dry tropical lowlands at the southern end of the Peninsula of Lower California.

#### ARCTIC WOLF (*Canis tundrarum*)

In order to fit properly into a high northern environment, Arctic wolves have developed white coats, which they wear throughout the year. They are among the largest of their kind and have all the surpassing vigor needful for successful beasts of prey in the rigors of such a home. Nature is more than ordinarily hard on weaklings in the far North and only the fittest survive.

The range of the white wolves covers the treeless barren grounds bordering the Arctic coast of Alaska and Canada and extending thence across the Arctic islands to the north coast of Greenland beyond 83 degrees of latitude.

The short summer in the far North is the season of plenty, during which swarms of wild-fowl furnish a bountiful addition to the regular food supply. Young wolves are reared and the pack feeds fat, laying up a needed reserve strength for the coming season of darkness. When winter arrives lemmings and Arctic hares and an occasional white fox furnish an uncertain food supply for such insistent hunger as that of wolves, and larger game is a necessity.

In the northern part of their range they share with the other denizens of that land the months of continuous night. There, amid relentless storms and iron frosts, the trail, once found, must be held to the end. The chase is made in the gloom of continuous night and the white caribou or musk-ox herd is brought to bay, and by the law of the pack food is provided.

White wolves are the one dreaded foe Nature has given the musk-ox and the caribou in the northern wilds. The number of the wolves, as with other carnivores, varies with the abundance of their chief prey, and they will disappear automatically with the caribou and musk-oxen.

#### GRAY, OR TIMBER, WOLF (*Canis nubilus* and its relatives)

Large wolves, closely related to those of Europe and Siberia, once infested practically all of Arctic and temperate North America, excepting only the arid desert plains. This range extended from the remotest northern lands beyond 83 degrees of latitude south to the mountains about the Valley of Mexico.

When America was first colonized by white

men, wolves were numerous everywhere in proportion to the great abundance of game animals. With the increased occupation of the continent and the destruction of most of its large game, wolves have entirely disappeared from large parts of their former domain. They still occur in varying numbers in the forest along our northern border from Michigan westward, and south along the Rocky Mountains and the Sierra Madre to Durango, Mexico, and also in all the Gulf States.

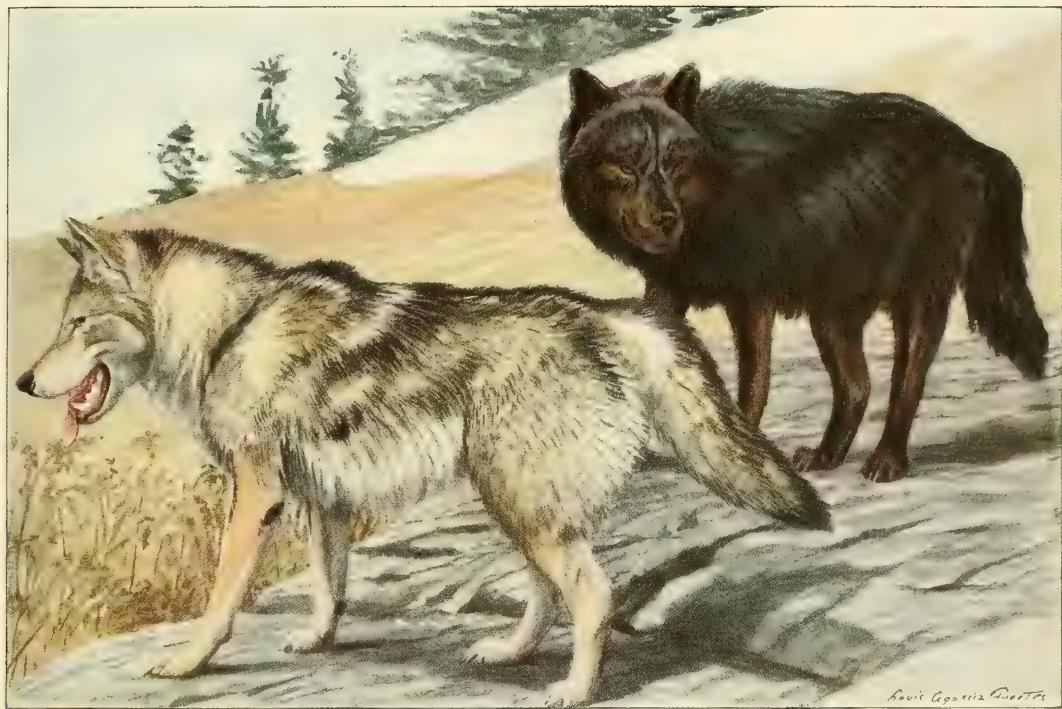
The variations in climate and other physical conditions within their range has resulted in the development of numerous geographic races, and perhaps of species, of wolves, which show marked differences in size and color. The white Arctic wolf, described on pages 422 and 424, is one of the most notable of these, but the gray wolf of the Rocky Mountain region and the eastern United States is the best known.

Since the dawn of history Old World wolves, when hunger pressed, have not hesitated to attack men, and in wild districts have become a fearful scourge. American wolves have rarely shown this fearlessness toward man, probably owing to the abundance of game before the advent of white men and to the general use of firearms among the pioneers. That wolves are extremely difficult to exterminate is shown by their persistence to the present day in parts of France and elsewhere in Europe. This is due both to their fecundity (they have from eight to twelve young), and to their keen intelligence, which they so often pit successfully against the wiles of their chief enemy—man.

Gray wolves appear to mate permanently, and in spring their young are born in natural dens among great rocks, or in a burrow dug for the purpose in a hillside. There both parents exercise the greatest vigilance for the protection of the young. The male kills and brings in game and stands guard in the neighborhood, while the mother devotes most of her time to the pups while they are very small. At other times of year packs made up of one or more pairs and their young hunt together with a mutual helpfulness in pursuing and bringing down their prey that shows a high order of intelligence. Wolves are in fact first cousins of the dog, whose mental ability is recognized by all.

During the existence of the great buffalo herds, packs of big gray "buffalo wolves" roamed the western plains, taking toll wherever it pleased them. Since these vast game herds have disappeared only a small fraction of the wolves have survived. There are enough, however, not only to commit great ravages among the deer and other game in northern Michigan and on the coastal islands of Alaska, but also to destroy much live stock in the Rocky Mountain region.

So serious have the losses in cattle and sheep on the ranges become that Congress has recently made large appropriations for the destruction of wolves and other predatory animals, and these disturbers of the peace will soon become much reduced in numbers. The



GRAY, OR TIMBER, WOLF

Louis Agassiz Fuertes

BLACK WOLF



PLAINS COYOTE, OR PRAIRIE WOLF



ARIZONA, OR MEARN'S, COYOTE

necessity for action of this kind is shown by the recent capture in Colorado of a huge old dog wolf with a definite record of having killed about \$3,000 worth of stock. Interesting as wolves are, filling their place in the wilderness, their habits bar them from being tolerated in civilized regions.

### PLAINS COYOTE, OR PRAIRIE WOLF (*Canis latrans*)

Western North America is inhabited by a peculiar group of small wolves, known as coyotes, this being a Spanish corruption of the Aztec name *coyotl*. They range from northern Michigan, northern Alberta, and British Columbia south to Costa Rica, and from western Iowa and Texas to the Pacific coast. As a group they are animals of the open plains and sparsely wooded districts, ranging from sea-level to above timber-line on the highest mountains. They are most at home on the wide brushy or grassy plains of the western United States and the table-lands of Mexico.

Within their great area coyotes have developed several distinct species and a number of geographic races, distinguished by differences in size, color, and other characteristics. Some attain a size almost equaling that of the gray wolf, while others are much smaller.

They are less courageous and have less of the social instinct than gray wolves, and on the rare occasions when they hunt in packs they form, no doubt, a family party, including the young of the year. They appear to pair more or less permanently and commonly hunt in couples. The young, sometimes numbering as many as fourteen, are born in a burrow dug in a bank, or in a den among broken rocks and ledges. Young animals are readily tamed, and it is entirely probable that some of the dogs found by early explorers among western Indians may have descended from coyotes.

Coyotes are a familiar sight to travelers in the wildest parts of the West. Here and there one is seen trotting through the sagebrush or other scrubby growth, or stopping to gaze curiously at the intruder. If suddenly alarmed, they race away across the plains with amazing speed. At night their high-pitched, wailing howls voice the lonely spirit of waste places.

With the growth of settlement in the West and the steady decrease of large and small game, coyotes have become more and more destructive to poultry and all kinds of live stock. As a result, every man's hand is against them, reinforced by gun, trap, and poison. Despite years of this persistent warfare, their acute intelligence, aided by their extraordinary fecundity, has enabled them to hold their own over a great part of their original range. Their depredations upon live stock have been so great that many millions of dollars have been paid in bounties for their destruction.

This method of control has proved so ineffective, however, that the Federal Government has engaged in the task of suppressing them, together with the other less numerous

predatory animals of the West, and has placed about 300 hunters in the field for this purpose. The complete destruction of coyotes would, no doubt, upset the balance of nature in favor of rabbits, prairie-dogs, and other harmful rodents, and thus result in a very serious increase in the destruction of crops.

The coyote supplies much interest and local color to many dreary landscapes and has become a prominent figure in the literature of the West. There it is usually symbolic of shifty cunning and fleetness of foot. Whatever his faults, the coyote is an amusing and interesting beast, and it is hoped that the day of his complete disappearance from our wild life may be far in the future.

### ARIZONA, OR MEARN'S, COYOTE (*Canis mearnsi*)

The Arizona coyote is one of the smallest and at the same time the most handsomely colored of all its kind. Its home is limited to the arid deserts on both sides of the lower Colorado River, but mainly in southwestern Arizona and adjacent parts of Sonora. This is one of the hottest and most arid regions of the continent, and for coyotes successfully to hold their own there requires the exercise of all the acute intelligence for which they are noted. Instead of the winter blizzards and biting cold encountered in the home of the plains coyote, this southern species has to endure the furnacelike heat of summer, with occasional long periods of drought, when water-holes become dry, plant life becomes dormant, and a large part of the smaller mammal life perishes.

The Arizona coyote, like others of its kind, is omnivorous. In seasons of plenty, rabbits, kangaroo rats, pocket gophers, and many other desert rodents cost only the pleasant excitement of a short stalk. With the changing seasons the flesh diet is varied by the sugary mesquite beans, juicy cactus fruit, and other products of thorny desert plants. Wherever sufficient water is available for irrigation, small communities of Indians or Mexicans are to be found. About such centers many coyotes usually establish themselves and fatten on poultry, green corn, melons, and other fruits provided by the labor of man. Many of them also patrol the shores of the Gulf of California and feast upon the eggs of turtles and other spoils of the sea.

The arrival of men at a desert water-hole is quickly known among these alert foragers, and when the travelers arise at daybreak they are likely to see tell-tale tracks on the sand where one or two coyotes have walked in and out between their sleeping places and all about camp. Shortly afterward the campers, if inexperienced, may learn that bacon and other food are contraband and always confiscated by these dogs of the desert. These camp marauders often stand among the bushes only 75 or 100 yards away in the morning and watch the intruders with much curiosity until some hostile movement starts them off in rapid flight.

### WHITE, OR ARCTIC, FOX (*Alopex lagopus*)

The Arctic fox, clothed in long, fluffy white fur, is an extremely handsome animal, about two-thirds the size of the common red fox. It is a circumpolar species, which in America ranges over all the barren grounds beyond the limit of trees, including the coastal belt of tundra from the Peninsula of Alaska to Bering Straits, the Arctic islands, and the frozen sea to beyond 83 degrees of latitude.

The blue fox of commerce is a color phase of this species, usually of sporadic occurrence, like the black phase of the red fox. The white fox makes its burrow either in a dry mound, under a large rock, or in the snow, where its young are brought forth and cared for with the devotion which appears to characterize all foxes.

How this small and delicately formed animal manages to sustain life under the rigorous winter conditions of the far north has always been a mystery to me. I have seen its tracks on the sea ice miles from shore. It regularly wanders far and wide over these desolate icy wastes, which can offer only the most remote chance for food. However, it appears to thrive, with other animal life, even where months of continuous night follow the long summer day.

The food of the Arctic fox includes nearly all species of the wild-fowl which each summer swarm into the far North to breed. There on the tundras congregate myriads of ducks, geese, and waders, while on the cliffs and rocky islands are countless gulls and other water birds. In winter they find lemmings and other northern mice, occasional Arctic hares, and ptarmigan, as well as fragments of prey left by Arctic wolves or polar bears. Now and then the carcass of a whale is stranded or frozen in the ice, furnishing an abundance of food, sometimes for a year or more, to the foxes which gather about it from a great distance.

Perhaps owing to its limited experience with man, the northern animal is much less suspicious than the southern red fox. During winter sledge trips in Alaska I frequently had two or three of them gather about my open camp on the coast, apparently fascinated by the little camp-fire of driftwood. They would sit about, near by in the snow, for an hour or two in the evening, every now and then uttering weak, husky barks like small dogs.

The summer of 1881, when we landed from the *Corwin* on Herald Island, northwest of Bering Straits, we found many white foxes living in burrows under large scattered rocks on the plateau summit. They had never seen men before and our presence excited their most intense interest and curiosity. One and sometimes two of them followed closely at my heels wherever I went, and when I stopped to make notes or look about, sat down and watched me with absurd gravity. Now and then one at a distance would mount a rock to get a better view of the stranger.

On returning to the ship, I remembered that

my notebook had been left on a large rock over a fox den, on the island, and at once went back for it. I had been gone only a short time, but no trace of the book could be found on or about the rock, and it was evident that the owner of the den had confiscated it. Several other foxes sat about viewing my search with interest and when I left followed me to the edge of the island. A nearly grown young one kept on the *Corwin* was extraordinarily intelligent, inquisitive, and mischievous, and afforded all of us much amusement and occasional exasperation.

### PRIBILOF BLUE FOX (*Alopex lagopus pribilofensis*)

The blue fox is a color phase of the Arctic white fox and may occur anywhere in the range of the typical animal. In fact, the blue phase bears the same relationship to the white that the black phase does to the red fox. In the Pribilof, or Fur Seal, Islands of Alaska, however, through the influence of favorable climatic conditions, assisted by artificial selection in weeding out white animals, the blue phase has become the resident form. Isolation on these islands has developed other characters also which, with the prevailing color, render the Pribilof animal a distinct geographic race of the white species. A blue fox is also the prevailing resident animal in Iceland.

In years when fur-seals were killed in considerable numbers on the Pribilofs their carcasses remained on the killing grounds as a never-failing store of food through the winter. During summer there is an abundance of nesting water-fowl, and throughout the year there are mice on land and the products of the sea along shore. As a result the foxes have thrived amazingly and several hundred skins have been produced a year. With the lessening number of seals now being killed on the islands and the resulting scarcity of winter food, the fate of the foxes is somewhat in doubt. The Pribilof skins are of high market value, bringing from \$40 to \$150 each in the London market.

Stock from the Pribilofs has been introduced on a number of the Aleutians and other Alaskan islands for fur-farming purposes. The value of these fur-bearers is so great that special effort should be made not only to keep up the stock on the islands, but still further to improve it.

The Pribilof foxes have from five to eleven young, which are usually born above ground and are later carried to the shelter of dens dug in the open or under the shelter of a rock. Foxes have become so accustomed to people on these islands that they have little fear and come about boldly to satisfy their curiosity or to seek for food. They often show an amusing interest in the doings of any one who invades the more remote parts of their domain. White animals born on the islands or coming in by chance when the pack ice touches there in winter are killed, whenever possible, in order to hold the blue strain true.



WHITE, OR ARCTIC, FOX

PRILOF BLUE FOX

A. G. AGASSIZ.

### WOLVERINE (*Gulo luscus*)

The wolverine, or carcajou of the Canadian voyageurs, is a circumpolar species belonging to the northern forested areas of both continents. In North America it formerly ranged from the northern limit of trees south to New England and New York, and down the Rocky Mountains to Colorado, and down the Sierra Nevada to near Mount Whitney, California. It is a low, squat, heavy-bodied animal, with strong legs and feet armed with sharp claws, and is the largest and most formidable of the weasel family.

The wolverine is extraordinarily powerful and possesses what at times appears to be a diabolical cunning and persistence. It frequently trails trappers along their trap lines, eating or destroying their catches and at times hiding their traps. It is a tireless wanderer, and the hunter or traveler in the northern wilds always has this marauder in mind and is put to the limit of his wits to provide caches for his provisions or other supplies which it can not despoil.

What it can not eat it is likely to carry away and hide. A wolverine has often been known to expend a surprising amount of labor in apparently deliberate mischief, even carrying numerous articles away from camps and hiding them in different places. It sometimes trails a traveler for many miles through winter snow, always out of sight, but alert to take advantage of any carelessness in leaving game or other food unguarded.

Mingled with these mischievous traits the wolverine possesses a savage ferocity combined with a muscular power which renders it a dreaded foe of all but the largest animals of its domain. When guarding her young, the female is no mean foe, even for a man.

As a consequence of its mental and physical character, the wolverine, more than any other animal of the north, has impressed itself on the imagination of both native and white hunters and travelers. A vast amount of folk-lore has grown up about it and both Indians and Eskimos make offerings to propitiate its malignant spirit. The Alaskan Eskimos trim the hoods of their fur garments with a strip of wolverine fur, and Eskimo hunters wear belts and hunting bags made of the skin of the legs and head, that they may acquire some of the power of the animal from which these came.

The value of the handsome brown fur of the wolverine, as well as the enmity the animal earns among hunters and trappers, has resulted in its being so persistently hunted that it has become extinct over much of its former territory, and wherever still found it is much reduced in numbers.

### PACIFIC WALRUS (*Odobenus obesus*)

The walruses, or "sea horses" of the old navigators, are the strangest and most grotesque of all sea mammals. Their large, rugged heads, armed with two long ivory tusks, and their huge swollen bodies, covered with hair-

less, wrinkled, and warty skin, gives them a formidable appearance unlike that of any other mammal. They are much larger than most seals, the old males weighing from 2,000 to 3,000 pounds and the females about two-thirds as much.

These strange beasts are confined to the Arctic Ocean and the adjacent coasts and islands and are most numerous about the borders of the pack ice. Two species are known, one belonging to the Greenland seas, while the other, the Pacific walrus, is limited to Bering Sea and the Arctic basin beyond Bering Straits.

The Pacific walruses migrate southward through Bering Straits with the pack ice in fall and spend the winter in Bering Sea and along the adjacent coast of eastern Asia. In spring they return northward through the straits and pass the breeding season about the ice pack, where they congregate in great herds. One night in July, 1881, the U. S. steamer *Cornwin* cruised for hours along the edge of the ice pack off the Arctic coast of Alaska and we saw an almost unbroken line of walruses hauled out on the ice, forming an extended herd which must have contained tens of thousands.

Walruses were formerly very abundant in Bering Sea, especially about the Fur Seal Islands and along the coast north of the Peninsula of Alaska, but few now survive there. Owing to the value of their thick skins, blubber, and ivory tusks, they have been subjected to remorseless pursuit since the early Russian occupation of their territory and have, as a result, become extinct in parts of their former range and the species is now in serious danger of extermination.

Like many of the seals, walruses have a strong social instinct, and although usually seen in herds they are not polygamous. They feed mainly on clams or other shellfish, which they gather on the bottom of the shallow sea. On shore or on the ice they move slowly and with much difficulty, but in the water they are thoroughly at home and good swimmers. When hauled out on land or ice, they usually lie in groups one against the other. They are stupid beasts and hunters have no difficulty in killing them with rifles at close range.

Walruses have a strongly developed maternal instinct and show great devotion and disregard of their own safety in defending the young. The Eskimos at Cape Vancouver, Bering Sea, hunt them in frail skin-covered kayaks, using ivory- or bone-pointed spears and seal-skin floats. Several hunters told me of exciting and dangerous encounters they had experienced with mother walruses. If the young are attacked, or even approached, the mother does not hesitate to charge furiously. The hunters confess that on such occasions there is no option but to paddle for their lives. Occasionally an old walrus is unusually vindictive and, after forcing a hunter to take refuge on the ice, will remain patrolling the vicinity for a long time, roaring and menacing the object of her anger.

When boats approach the edge of the ice where walruses are hauled up, the animals plunge into the sea in a panic and rise all about

WOLVERINE



the intruders, bellowing and rushing about, rearing their huge heads and gleaming white tusks high out of water in an alarming manner. As a rule, however, they are timid and seek only to escape, although occasionally, in their excitement, one has been known to attack a boat and by a single blow of its tusks to do serious damage and endanger the crew.

#### ALASKA FUR SEAL (*Callorhinus alascanus*)

Several species of fur seals are known, all of them limited to the southern oceans or the coasts and islands of the North Pacific. All are strongly gregarious and formerly sought their island breeding grounds in vast numbers. At one period, soon after the purchase of Alaska, it was estimated that several million fur seals were on the Pribilof Islands in one season. During the height of their abundance the southern fur seals were equally numerous.

The value of their skins and the facility with which these animals may be slaughtered have resulted in the practical extermination of all but those which breed under governmental protection on the Russian islands off the coast of Kamchatka and on the Pribilof Islands in Alaska. Owing mainly to wasteful pelagic sealing prior to the recent international treaty, the numbers on both these groups of islands were much reduced.

The Alaska fur seal is a migratory species, wintering down the Pacific coast as far as northern California. The migrations of these seals are of remarkable interest. In spring they leave the northwest coast and many of them travel steadily across more than two thousand miles of the North Pacific. For days at a time they swim through a roaring gale-swept sea, under dense, low-hanging clouds, and with unerring certainty strike certain passages in the Aleutian Islands, through which they press to their breeding grounds, more than 100 miles beyond, on the small, fog-hidden Pribilof Islands.

Fur seals are extremely polygamous and the old males, which weigh from 400 to 500 pounds, "haul up" first on the breeding beaches. Each bull holds a certain area, and as the females, only one-fifth his size, come ashore they are appropriated by the nearest bulls until each "beach master" gathers a harem, sometimes containing more than 100 members.

Here the young are born, and after the mating season the seals, which have remained ashore without food from four to six weeks, return to the water. The mothers go and come, and each is able to find her young with certainty among thousands of apparently identical woolly black "pups."

From the ages of one to four years fur seals are extremely playful. They are marvelous swimmers and frolic about in pursuit of one another, now diving deep and then, one after the other, suddenly leaping high above the surface in graceful curves, like porpoises. Squids and fish of various species are their main food. Their chief natural enemy is the killer whale,

which follows their migrations and haunts the sea about their breeding grounds, taking heavy toll among them.

Since the discovery of the Pribilof Islands by the Russians the fur seal herds there have yielded more than five million recorded skins. A census of the herds in 1914 gave these islands nearly three hundred thousand seals. Now that pelagic sealing has been suppressed and the herds are being protected, there is every reason to expect that the seals will increase rapidly to something like their former numbers.

#### STELLER SEA-LION (*Eumetopias jubata*)

Sea-lions are near relatives of the fur seals and have a nearly similar distribution, both in far southern and northern seas. The males of the several species are more than twice the size of the females and are characterized by an enormous development of neck and shoulders. The Steller sea-lion is the largest member of the group, the old bulls weighing from 1,200 to 1,500 pounds. All are extremely gregarious and polygamous.

The Steller sea-lions belong to the North Pacific, whence they range in winter as far south as the coasts of California and Japan. In spring they migrate northward to their breeding grounds among the Aleutian, Pribilof, and other rocky islands of the North Pacific. The early histories of this region record their great abundance, including several hundred thousand which were reported to have congregated to breed each season on the Pribilof Islands. Although less valuable than the fur-seal, persistent hunting has gradually reduced their numbers on these islands until in 1914 only a few hundred remained.

In summer range they are less limited than the fur seals, occurring in herds about the shores of many rocky islands along the mainland coast of the North Pacific and the Aleutian chain.

Since the primitive days before the arrival of civilized men in their haunts, sea-lions were of the greatest economic importance to the Aleutian Islanders and other coast natives. Food and fuel were obtained from their flesh and blubber; coverings for boats were made of their skins; water-proof overshirts of their intestines; boot soles from the tanned skin of their flippers; trimmings of fancy garments from their tanned, gutlets and bristles, and thread from their sinews.

They are pre-eminently animals of the most rugged of shorelines and the stormiest of seas, being superbly powerful beasts with extraordinary vitality. The ease with which they pass through a smother of pounding seas to mount their rugged resting places is an admirable exhibition of skill and strength. The males have a bellowing roar, which rises continually from the herds on the rocks in savage unison with the booming of the sea against the base of their refuge.

The harems of the bulls on Pribilof Islands rarely exceed a dozen members, which are

PACIFIC WALRUS



under less strict discipline than the harems of the fur seals. The old bulls, especially during the mating season, are aggressive and savage fighters, inflicting severe wounds on one another. At all times they are more courageous and belligerent than fur seals, and hunters driving parties of them back from the beach on the Pribilofs approach them with extreme caution, to avoid the dangerous charges of angry bulls. It is reported that an umbrella opened and closed suddenly in the faces of the old sea-lions appears to terrify them more than any other weapon and is used successfully in drives. At sea they have only a single known enemy to fear—the fierce killer whale.

#### SEA OTTER (*Latax lutris* and its sub-species)

Sea otters, distant relatives of land otters, are heavy-bodied animals, about 4 feet long, with broad webbed hind feet. When in the water they have a general resemblance to seals, whose mode of life is similar to theirs. Their fur is extremely dense and on the skins of adult males is almost black, closely sprinkled with long white-tipped hairs. The fur of prime skins has a silky luster, equaled in beauty by only the finest silver-tipped fox skins. For centuries sea-otter fur has been highly prized and single skins have brought more than \$1,000 in the London market.

Otters are limited to the coasts of the North Pacific, where formerly they were incredibly abundant all the way from the shores and islands of Lower California to the Aleutians, and thence along the Asiatic coast to the Kuriles. Through excessive hunting, they are now extinct along most of this extended coastline.

In the days of the Russian occupation of Alaska the discovery of the abundance of sea otters led to intense activity in their pursuit. Otter-hunting expeditions were organized by the Russians along the storm-swept coast from Unalaska to Sitka, sailing vessels being used as convoys for hundreds of Aleut hunters in their skin-covered boats. The loss of life among the hunters under their brutal task-masters was appalling and resulted in seriously and permanently reducing the native population of the Aleutian Islands. At the same time enormous numbers of sea-otter skins were taken. Afterward both English and American ships engaged in the pursuit of otters farther down the coast.

The first year after the discovery of the Pribilof Islands the records show that 5,000 sea otters were taken there. Many expeditions in other directions secured from one to several thousand skins. When sea otters were most abundant they were found all down the coast, even in San Francisco Bay, and one American trading vessel obtained 7,000 skins in a few weeks from the natives of the northern coast of Lower California.

The otters formerly frequented the shores of rocky islands and outlying reefs, but constant persecution has driven the few survivors

to remain almost constantly at sea, where they seek resting places among kelp beds. They are now excessively shy and, aided by keen eyes and an acute sense of smell, are difficult to approach. When anything excites their curiosity they commonly raise the body upright, the head high above water, and gaze steadily at the object. If alarmed, they dive and reappear at a long distance.

Otter hunters report the animals very playful in pleasant weather, and sometimes floating on their backs and playing with pieces of kelp. The mother is devoted to her young and is said to play with it in the water for hours at a time.

All efforts to rear the young in captivity have failed. The food of the sea otter is mainly of shellfish of various kinds, secured by them from the bottom of the sea.

Practically the only sea otters left among the hordes which once frequented the American shores of the North Pacific are now scattered along the Aleutian Islands. Government regulations prohibit their being hunted and it is hoped that enough still remain to restock the wild and stormy sea where they have their home.

#### NORTHERN SEA-ELEPHANT, OR ELEPHANT SEAL (*Mirounga augustirostris*)

Sea-elephants are the largest and among the most remarkable of the seals. Two species are known—one from islands on the borders of the Antarctic Ocean and the other from the Pacific coast of Upper and Lower California. The northern species formerly existed in vast numbers along the coast and among outlying islands from Point Reyes, north of San Francisco, south to Cedros Island, but is now reduced to a single small herd living about Guadalupe Island, off Lower California.

The old males attain a length of 22 feet or more and are huge, ungainly beasts, moving with difficulty on land, but with ease and grace in the water. The name sea-elephant is obviously derived from the broad flexible snout of the males, which, when relaxed, hangs 6 or 8 inches below the muzzle. This curious proboscis can be moved about and raised vertically, giving the animal a strange appearance. The males have a loud roar like the bellowing of an ox.

The breeding season extends from February to June, and during this period these seals are far more numerous on shore than at any other time. They are gregarious in habits and formerly hauled up in herds on the islands or on remote and inaccessible beaches of the mainland. On shore they are sluggish, having none of the alertness shown by many other seals. They lie supine on the sand and permit a man to walk quietly up and touch them without showing signs of fear. When attacked by sealers or otherwise alarmed, however, they become panic-stricken and make ungainly efforts to escape, but quickly become exhausted by the exertion necessary to move their great



ALASKA FUR SEAL



STELLER SEA-LION

bodies. Their only natural enemy appears to be the killer whale.

Between 1855 and 1870 the great numbers of northern sea-elephants, combined with their helplessness on shore and the value of their oil, attracted numerous sealing and whaling ships to the coast of Lower California. The resulting slaughter reduced these animals from swarming abundance to a few scattered herds. Since then their numbers have steadily decreased, and there is a serious probability that these strange and interesting habitants of the sea will soon disappear forever.

The small remaining herd on Guadalupe Island is without protection and lies at the mercy of wanton hunters. The people of the coastal towns of California should exert themselves to discourage hunters from killing these seals, since the only hope for the preservation of this noteworthy species lies in an awakened public sentiment in its favor. Even within recent years they have occasionally visited the Santa Barbara Islands, California, and if the existing survivors can be saved they may again become resident there.

#### HARBOR SEAL, OR LEOPARD SEAL (*Phoca vitulina*)

The harbor seal, one of the smallest of the hair seals, attaining a length of only 5 or 6 feet, is one of the most widely distributed and best known of its kind. It is a circumpolar species, formerly ranging well south on the European coast and to the Carolinas on the American side of the Atlantic, though now more restricted in its southern extension. On the North Pacific it ranges south to the coast of Japan on the Asiatic side and to Lower California on the American side.

Throughout its range the harbor seal haunts the coast-line, frequenting rocky points, islets, bays, harbors, and the lower courses of rivers. It commonly frequents the sandy bars exposed at low tide about the mouths of rivers, and has been known to ascend the St. Lawrence to Lake Champlain and Lake Ontario, and the Yukon to several hundred miles above its mouth. It is still a common and well-known animal on the coast of Maine and eastern Canada and about many harbors on the Pacific coast. It appears to be a non-migratory species and in northern waters frequents the pack ice along shore in winter. Where the pack is unbroken, the seal makes breathing holes through the ice, which it visits at intervals, and where it is hunted by the Eskimos.

It is not polygamous and is not so strongly gregarious as some of the other seals. That it has some social instinct is evident, however, since it commonly gathers in small herds on the same sand spits, rocky points, and islets. The young are born in early spring and at first are entirely covered with a woolly white coat. The mother is devoted to the "pup" and shows the deepest anxiety if danger threatens.

The flesh and blubber of this seal are highly prized by the Eskimos as the most palatable of

all the seals, and the skin is valued for clothing and for making strong rawhide lines used for nets and other purposes. On the Alaskan coast of Bering Sea in fall the Eskimos capture many seals in nets set off rocky points, just as gill nets are set in the same places in spring for salmon.

Owing to the presence of this seal along so many inhabited coasts, much has been written concerning its habits, especially as observed about the shores of the British Isles. Where not disturbed it shows little fear and will swim about boats or ships, raising its head high out of water and gazing steadily with large intelligent eyes at the object of its curiosity; but when hunted it becomes exceedingly shy and wary. All who have held the harbor seal in captivity agree in praising its intelligence. It becomes very docile, often learning a variety of amusing tricks, and develops great affection for its keeper.

The small size of this seal and its limited numbers are elements which save it from extensive commercial hunting and may preserve it far into the future to add life and interest to many a rocky coast.

#### HARP SEAL, SADDLE-BACK, OR GREENLAND SEAL (*Phoca groenlandica*)

The black head, gray body, and large dorsal ring of the male harp seal are strongly distinctive markings in a group generally characterized by plain dull colors. The harp seal is a large species, the old males weighing from 600 to 800 pounds.

It is nearly circumpolar in distribution, but its area of greatest abundance extends from the Gulf of St. Lawrence to Greenland, and thence eastward in that part of the Arctic Ocean lying north of Europe and western Siberia. Its reported presence in the Arctic basin north of Bering Straits or along the coasts to the southward is yet to be confirmed. It is an offshore species, migrating southward with the ice pack in fall to the coast of Newfoundland and returning northward with the pack after the breeding season in spring. For a day or two during the fall migration, when these seals are passing certain points on the coast of Labrador, the sea is said to be thickly dotted with their heads as far as the eye can reach, all moving steadily southward.

The harp seal is extremely gregarious and gathers on the pack ice well offshore during March and April to breed. The main breeding grounds are off Newfoundland and off Jan Mayen Land in the Arctic. During the breeding season, in the days of their abundance, they gathered in enormous closely packed herds, sometimes containing several hundred thousand animals and covering the ice for miles.

From all accounts it is evident that originally there were millions of these animals in the North Atlantic and Arctic Oceans. Their gregarious habits made them an easy prey, and the value of their skins and blubber formed



SEA OTTER



NORTHERN SEA-ELEPHANT, OR ELEPHANT SEAL

the basis for a great industry. Hundreds of vessels were sent out from north European and American ports and nearly 1,000,000 harp seals were killed during each breeding season. This tremendous slaughter and its attendant waste has resulted in the disappearance of these seals from many of their former haunts and has alarmingly reduced their numbers everywhere. Some are still killed off the coast of Newfoundland, but the sealing industry, now insignificant as compared with its former estate, is practically dead.

The hunting of harp and other seals on the pack ice is an occupation calling for such splendid qualities of virile hardihood in the face of constant danger to life that its brutality has been little considered. In this perilous work great numbers of hunters have been cast away and frozen miserably on the drifting ice and many a sealing ship has been lost with all hands.

Off Newfoundland the young harp seal is born early in March, wearing a woolly white coat. At first it is tenderly cared for by its mother, but before the end of April it has learned to swim and is left to care for itself. The young do not enter the water until they are nearly two weeks old and require several days of practice before they learn to swim well. The adults are notable for their swiftness in the water. In the tremendous herds of these seals the continual cries uttered by old and young is said to produce a steady roar which may be heard for several miles. Their food is mainly fish. Man is their worst enemy, but they are also preyed upon by sharks and killer whales.

#### RIBBON SEAL (*Phoca fasciata*) (see polar bear group, page 438)

The broad-banded markings of the male ribbon seal render it the handsomest and most strongly characterized of the group of hair seals to which it belongs. Its size is about that of the harbor seal. Its range extends from the Aleutian Islands, on the coast of Alaska, and from the Kuriles, on the Asiatic shore of the Pacific, north to Bering Straits.

This seal is so scarce and its home is in such remote and little-frequented waters that its habits are almost unknown. Apparently it is even less gregarious than the harbor seal and usually occurs singly, although a few may be seen together, where individuals chance to meet. There are records of its capture at various places along the Asiatic coast, especially about Kamchatka and the shores of Okhotsk Sea. In Alaska it is a scarce visitant to the Aleutian Islands and appears to be most common on the coast south of the Yukon Delta and from Cape Nome to Bering Straits.

The few individuals taken by the Alaskan Eskimos are captured while they are hunting other seals on the pack ice in winter, and while at sea in kyaks in spring and fall. Owing to its attractive markings, the skin of the male ribbon seal is greatly prized by the Eskimos,

as it was formerly by the fur traders, for use as clothes-bags. The skin is removed entire and then tanned, the only opening left being a long slit in the abdomen, which is provided with eyelet holes and a lacing string, thus making a convenient water-proof bag to use in boat or dog-sledge trips.

The scarcity of the ribbon seal and its solitary habits will serve to safeguard it from the destructive pursuit which endangers the existence of some of its relatives.

#### POLAR BEAR (*Thalarctos maritimus*)

Both summer and winter the great ice bear of the frozen north is appropriately clothed in white. It is also distinguished from all other bears by its long neck, slender pointed head, and the quantity of fur on the soles of its feet. It is a circumpolar species, the limits of whose range nearly everywhere coincide with the southern border of the pack ice. The great majority live permanently on the ice, often hundreds of miles from the nearest land.

During summer the polar bear rarely visits shore, but in winter commonly extends its wanderings to the Arctic islands and the bordering mainland coasts. In winter it ranges southward with the extension of the ice pack. In spring, by an unexpectedly sudden retreat of the ice, individual bears are often left south of their usual summer haunts, sometimes being found swimming in the open sea far off the coast of Labrador. Occasionally some of those which migrate southward with the ice through Bering Straits fail to turn north early enough and are stranded on islands in Bering Sea.

That a carnivore requiring so much food as the polar bear can maintain itself on the frozen polar sea is one of the marvels of adaptation to environment. The activity of these bears through the long black night of the far north is proved by records of Arctic explorers, whose caches have been destroyed and ships visited by them during that season. In this period of privation they range far over land and ice in search of food, and when in desperate need do not hesitate to attack men. I have seen several Eskimos who had been seriously injured in such encounters, and learned of other instances along the Arctic coast of Alaska in which hunters had been killed on the sea ice in winter. During the summer season of plenty, polar bears are mild and inoffensive, so far as men are concerned. At that time they wander over the pack ice, swimming in open leads, and, when hungry, killing a seal or young walrus.

When spring opens, many polar bears are near the Arctic coast. At that time the natives along the northeast coast of Siberia kill many of them on the ice with dogs and short-hafted, long-bladed lances. The dogs bring the bear to bay, and the hunter, watching his opportunity, runs in and thrusts the lance through its heart.

During the cruise of the *Corwin* we saw many of these bears on the broken ice off Herald and Wrangel Islands. One large old male

*Phoca hispida*

HARBOR SEAL, OR LEOPARD SEAL

HARP SEAL, SADDLE-BACK, OR GREENLAND SEAL



climbed to the top of an uptilted ice-pan and, after looking about, lay down on one side and, giving a push with one hind foot, slid down head foremost 30 or 40 feet, striking the water with a great splash. He then climbed out and walked sedately away.

Another bear saw a seal basking on the ice by a large patch of open water and, swimming across, suddenly raised himself half out of the water to the edge of the ice, and by a blow of his paw crushed the seal's skull. He then climbed out and made a feast within 500 yards of where the *Corwin* was anchored to the ice pack.

Once while we were anchored in a dense fog several miles off the pack a bear came swimming out to us, stopping every now and then to raise its head high out of water to sniff the attractive odors from the ship. Although strong and tireless swimmers, these bears lack the necessary speed to capture their prey in the water.

The female retires in winter to a snug den among the hummocks on the sea ice, where one or two naked cubs are born, which by the time the ice begins to break up are ready to follow the mother. Until the cubs are well grown the mother cares for and defends them with the most reckless disregard for her own safety. On one occasion I saw a wounded mother bear shield her cub, twice the size of a Newfoundland dog, when bullets began to strike the water about them, by swimming straight away with the cub safely sheltered between her forelegs.

The inaccessible character of so large a part of the home of the polar bear will long preserve it from the extermination that is overtaking some of the land bears.

#### **BLACK BEAR (*Ursus americanus* and its subspecies)**

Numerous species of black bears varying in size occur in North and South America and in Asia. In North America a black bear, remarkably uniform in general appearance, but representing various geographic races and possibly species, is generally distributed throughout the forested areas from the borders of the Arctic barrens, at the northern limit of trees, south throughout the United States and down the wooded Sierra Madre to Jalisco, Mexico, and from Newfoundland on the east to Queen Charlotte Island on the west.

These bears are usually entirely black except for a brown patch covering the muzzle and an occasional white spot on the breast. Their weight is variable, the largest ones exceeding 500 pounds, but they average much less.

The cinnamon bear, so common in the West and Northwest, long supposed to be a distinct species, has proved to be merely a color phase of the black bear—cinnamon cubs being born in the same litters with black ones.

Since the days of primitive man and the great cave bear, the ways of bears have had a fearsome interest to mankind. Childhood revels in the delicious thrills of bear stories and

dwells with wonder on the habit bears have of standing upright like droll caricatures of man, on the manlike tracks of their hind feet, and on their fondness for sweets and other palatable food.

From the landing of the first colonists on our shores, hunters and settlers have encountered black bears so frequently that these are among the best-known large forest animals of the continent. During winter they hibernate for months, seeking a hollow tree, a low cave, the half shelter of fallen tree trunks and brush, or else digging a den for themselves. The female chooses a specially snug den, where in midwinter from one to four cubs are born. At birth the young, only 8 or 9 inches long, are practically naked and have their eyes closed. They are so undeveloped at this time that it is more than a month before their eyes open and more than two months before they can follow their mother.

Although powerful beasts, black bears are so shy and timid that to approach them requires the greatest skill on the part of a still hunter. They only attack people when wounded or so cornered that they must defend themselves or their young. To safeguard themselves from danger they rely mainly on a fine sense of hearing and an exquisite delicacy of smell. They have poor eyesight, and where a suspicious object is seen, but no sound or scent can be noted, they sometimes rise on their hind feet and look long and carefully before retreating.

To bears in the forest everything is game. They often spend the entire day turning over stones to lick up the ants and other insects sheltered there, and at night may visit settlers' cabins and carry off pigs. They raid the settlers' cornfields for green corn and are passionately fond of honey, robbing bee trees whenever possible. In season they delight in wild cherries, blueberries, and other fruits, as well as beechnuts, acorns, and pinyon nuts. They are mainly nocturnal, but in districts where not much disturbed wander widely by day.

The success of black bears in caring for themselves is well demonstrated by the numbers which still survive in the woods of Maine, New York, and other long-settled States. Their harmlessness and their exceeding interest to all render them worthy of careful protection. They should be classed as game and thoroughly protected as such except for certain open seasons. If this is done throughout the country, as is now the case in certain States, the survival of one of our most characteristic large wild animals will be assured.

#### **GLACIER BEAR (*Ursus emmonsi*)**

When first discovered the glacier bear was supposed to be a distinct and well-marked species. Recently cubs representing the glacier bear and the typical black bear have been found in the same litter, thus proving it to be merely a color phase of the black bear. Its color varies exceedingly, from a light smoky,

*Bar's Ribbon Seals.*

POLAR BEAR

RIBBON SEAL



almost bluish, gray to a dark iron gray, becoming almost black. Some individuals are extraordinary appearing beasts, quite unlike any other bear. The interest in this curious color development is increased by its restricted distribution.

The glacier bear is an Alaskan animal, which occupies the seaward front of the Mount St. Elias Range, about Yakutat Bay, and thence southeast to Glacier Bay and a short distance beyond toward the interior. The popular name of this bear was well chosen, as its home is in the midst of innumerable stupendous glaciers. Here, where the contours of gigantic mountain ranges are being steadily remade by glaciers, Nature appears to have begun the evolution of a new kind of bear. That the task is in progress is evidenced by the excessive variation in color, scarcely two individuals being the same.

The food of this bear consists largely of mice, ground squirrels, and marmots, which it digs from their burrows on the high mountain slopes. Its food is varied by salmon during the spawning season and by various herbs and berries during the summer. The winters in the home of the glacier bear are less severe than across the range in the interior, but are so long and stormy that the bear must spend more than six months each year in hibernation.

Owing to the remote and little-frequented region occupied by this bear, little is known of its life history. For this reason it is important that all sportsmen visiting its country bring back careful and detailed records of their observations. Up to the present time so few white men have killed glacier bears that a skin of one taken by fair stalking is a highly prized trophy. As the glacier bear country becomes more accessible, more stringent protection will be needed to prevent the extermination of these unique animals.

#### GRIZZLY BEAR (*Ursus horribilis* and its relatives)

Recent research has shown that the popular terms grizzly or silver-tip cover a group containing numerous species of large bears peculiar to North America, some of which, especially in California, have become extinct within the last 25 years. These bears vary much in size, some about equaling the black bear and others attaining a weight of more than 1,000 pounds. They vary in color from pale dull buffy to nearly black, usually with lighter tips to the hairs, which produce the characteristic grizzled or silver-tipped appearance upon which the common names are based.

The strongest and most distinctive external character of the grizzlies is the long, proportionately slender, and slightly curved claws on the front feet, sometimes more than 3 inches long.

Grizzly bears have a wide range—from the Arctic coast of Alaska southward, in a belt extending from the Rocky Mountains to the Pacific, through western Canada and the United States, and thence along the Sierra

Madre of Mexico to southern Durango. They also occupy the barren grounds of northern Canada, and vague reports of a large brown bear in the interior of the Peninsula of Labrador indicate the possibility of the existence there of an unknown species of grizzly.

From the days of the earliest explorers of the Rocky Mountain region grizzly bears have borne the undisputed title of America's fiercest and most dangerous big game. In early days, having little fear of the primitive weapons of the Indians, they were bold and indifferent to the presence of man, and no higher badge of supreme courage and prowess could be gained by a warrior than a necklace of grizzly claws.

Since the advent of white men with guns, conditions have changed so adversely to the grizzlies that they have become extremely shy, and the slightest unusual noise or other alarm causes them to dash away at a lumbering, but surprisingly rapid, gallop. The deadly modern gun has produced this instinctive reaction for self-preservation. It does not mean, however, that grizzlies have lost their claim to the respect of even the best of hunters. They are still considered dangerous, and even in recent years experienced hunters have been killed or severely mauled by them. They are much more intelligent than the black bear, and thus, when wounded, are a more dangerous foe.

Like the black bear, the grizzlies are commonly nocturnal, but in remote districts often wander about in search of food by day. They roll over stones and tear open rotten wood in search of grubs and insects. They also dig out ground squirrels and other rodents and eat a variety of acorns and other wild nuts and fruits. As an offset to this lowly diet, many powerful old grizzlies, from the Rocky Mountains to California, have become notorious cattle-killers. They stalk cattle at night, and, seizing their prey by the head, usually break its neck, but sometimes hold and kill it by biting. These cattle-killing grizzlies still occur on the Western ranges. One or more wily marauders of this kind have run for years with a bounty of \$1,000 on their heads.

Like other bears, grizzlies hibernate in winter, seeking small caves, or other shelter, and sometimes digging a den in the ground. The young, from one to four in number, are born in midwinter and are very small, naked, and but partly developed at birth. They go about with the mother throughout the summer and commonly den up with her the following winter. Although full-grown grizzlies are ordinarily solitary in habits, parties of from four to eight are sometimes seen. The object of these curious but probably brief companionships is not known.

Grizzlies are disappearing so rapidly that it is very desirable that they be placed on the list of game protected during part of the year, except in the case of the few individuals which become stock-killers. They are among the finest of native animals and their absence from the rugged slopes of the western mountains would leave a serious gap in our wild life.



GLACIER BEAR

CINNAMON BEAR

The cinnamon bear is merely a color phase of the black bear

BLACK BEAR

**ALASKAN BROWN BEAR (*Ursus gyas* and its relatives)**

(See frontispiece of this Magazine for the illustration of this remarkable animal)

The Alaskan brown bears form a group of gigantic animals peculiar to North America and limited to the coast and islands of Alaska, from the head of Norton Sound to the Sitka Islands. The group includes a number of species, individuals of two of which, *Ursus gyas*, of the Alaska Peninsula, and *Ursus midden-dorffii*, of Kodiak Island, sometimes attain a weight of 1,500 pounds or more, and are not only the largest existing bears, but are the largest living carnivores in the world. They can be likened only to the great cave bears, which were the haunting terror of primitive mankind during the "Old Stone Age" in Europe. Brown bears stil' exist in Europe and Asia, but they form a distinct group of much smaller animals than the American species.

The Alaskan brown bears vary much in color, from a dull golden yellowish to a dusky brown, becoming almost black in some species. In color some of the darker species are indistinguishable from the great grizzlies, with which in places they share their range; but the relatively shorter, thicker, and more strongly curved claws on the front feet of the brown bears are distinctive.

As a rule they are inoffensive giants and take flight at the first sign of man. The taint left by a man's recent track or the faintest odor on the passing breeze, indicating the proximity of their dreaded enemy, is enough to start the largest of them in instant flight. Instances are reported of their having attacked people wantonly, but such cases are extremely rare. When wounded or suddenly surprised at close quarters, the instinct of self-defense not infrequently incites them to attack their enemy with furious energy. Many Indian and white hunters have been killed or terribly mauled by them in such encounters. At close quarters their great size, strength, and activity—astonishing for such apparently clumsy beasts—render them terrific antagonists.

Some of the species occupy open, rolling, or hilly tundras, and others live on the steepest and most rugged mountain slopes amid glaciers, rock slides, and perpetual snow-banks. On the approach of winter all retreat to dry locations, usually in the hills, where they dig dens in the earth or seek other cover to which they retire to hibernate, and here the young, usually two or three in number, are born. They usually emerge from hibernation in April or early May and wander about over the snow-covered hills and mountains. At this time their dark forms and their great tracks in the snow are so conspicuous that hunters have little difficulty in finding them.

Despite their size, brown bears devote much of their time to hunting such game as mice, ground squirrels, and marmots, which they dig from their burrows with extraordinary rapidity. During the salmon season, when the

streams swarm with fish, bears frequent the lowlands and make trails along the water-courses, where they feed fat on this easy prey. During the summer and fall these great carnivores have the strange habit of grazing like cattle on the heavy grasslike growth of sedge in the lowland flats and benches, and also of eating many other plants.

Although Alaska was long occupied by the Russians and has been a part of our territory since 1867, not until 1898 was there any definite public knowledge concerning the existence of these bears, notwithstanding their size and abundance. Since that time they have become well known to sportsmen and others as one of the wonders of the remarkable region they occupy. Their comparatively limited and easily accessible territory renders their future precarious unless proper measures for their reasonable protection are continued. They are certain to be exterminated near settlements; but there are ample wild and inhospitable areas where they may range in all their original freedom for centuries to come, provided man permits.

**AMERICAN BEAVER (*Castor canadensis* and its subspecies)**

When North America was first colonized, beavers existed in great numbers from coast to coast, in almost every locality where trees and bushes bordered streams and lakes, from near the Yukon Delta, in Alaska, and the Mackenzie Delta, on the Arctic coast, south to the mouths of the Colorado and the Rio Grande. Although now exterminated from most of their former range in the eastern United States, they still occur in diminished numbers over nearly all the remainder of their original territory, even in the lower Rio Grande and the delta of the Colorado. Their vertical distribution extends from sea-level to above an altitude of 9,000 feet.

Beavers are heavily built, round-bodied animals, with powerful chisel-shaped front teeth, short legs, fully webbed hind feet, and a flat, scaly tail. They are covered with long, coarse hairs overlying the short, dense, and silky underfur to which beaver skins owe their value. Their range covers the northern forested parts of both Old and New Worlds. The American species closely resembles in general appearance its Old World relative, but is distinctly larger, averaging 30 to 40 pounds in weight, but sometimes attaining a weight of more than 60 pounds. Owing to the different physical conditions in its wide range, the American animal has developed a number of geographic races.

Beavers mate permanently and have from two to five young each year. Their abundance and the high value of their fur exercised an unparalleled influence on the early exploration and development of North America. Beaver skins were the one ready product of the New World which the merchants of Europe were eager to purchase. As a consequence competition in the trade for these skins was the source of strong and bitter antagonisms be-



GRIZZLY BEAR



AMERICAN BEAVER

tween individuals and companies, and even caused jealous rivalries among the Dutch, English, and French colonies.

Disputes over the right to trade in certain districts often led to bloodshed, and even to long wars, over great areas, where powerful rival companies fought for the control of a new empire. This eager competition among daring adventurers resulted in the constant extension of trading posts through the North and West, until the vanguard of civilization reached the far borders of the continent on the shores of the Arctic and Pacific Oceans.

Among the fur traders the beaver skin became the unit of value by which barter was conducted for all sorts of commodities. This usage extended even throughout northern Alaska, where it was current among the American fur traders until the discovery of gold there upset old standards.

Beavers belong to the rodent family—a group of animals notable for their weak mental powers. The beaver is the striking exception to the rule, and its extraordinary intelligence, industry, and skill have long excited admiration. It is scarcely entitled to the almost superhuman intelligence many endow it with, yet it certainly possesses surprising ability along certain lines. Furthermore, it can alter its habits promptly when a change in environment renders this advantageous.

In wild places, where rarely disturbed, beavers are unsuspicious, but where they are much trapped they become amazingly alert and can be taken only by the most skillful trapping. They are very proficient in building narrow dams of sticks, mud, and small stones across small streams for the purpose of backing up water and making "beaver ponds." In the border of these ponds a conical lodge is usually constructed of sticks and mud. It is several feet high and about 8 or 10 feet across at the base.

The entrance is usually under water, and a passageway leads to an interior chamber large enough to accommodate the pair and their well-grown young. From the ponds the animals sometimes dig narrow canals several hundred feet long back through the flats among the trees. Having short legs and heavy bodies, and consequently being awkward on land, beavers save themselves much labor by constructing canals for transporting the sticks and branches needed for food and for repairing their houses and dams.

Along the Colorado, lower Rio Grande, and other streams with high banks and variable water level, beavers usually dig tunnels leading from an entrance well under water to a snug chamber in the bank above water level. Under the varying conditions in different areas they make homes showing every degree of intergradation between the two types described.

Beavers live almost entirely on twigs and bark, and their gnawing powers are surprising. Where small trees less than a foot in diameter abound they are usually chosen, but the animals do not hesitate to attack large trees. On the headwaters of the San Francisco River, in western New Mexico, I saw a cotton-

wood nearly 30 inches in diameter that had been felled so skillfully that it had fallen with the top in the middle of a small beaver pond, thus assuring an abundance of food for the animals at their very door.

In the cold northern parts of their range, where streams and ponds remain frozen for months at a time, beavers gather freshly cut green twigs, sticks, and poles, which they weight down with mud and stones on the bottoms of ponds or streams near their houses, to be used for food during the shut-in period.

The mud used by beavers in building dams and houses is scooped up and carried against the breast, the front feet being used like hands. The flat tail serves as a rudder when the animal is swimming or diving, and to strike the surface of the water a resounding slap as a danger signal.

Beavers are usually nocturnal, but in districts where not disturbed they sometimes come out to work by day, especially late in the afternoon. Among the myriads of small streams and lakes in the great forested area north of Quebec they are very plentiful; their dams and houses are everywhere, sometimes four or five houses about one small lake. Their well-worn trails lead through the woods near the lake shores and frequently cross portages between lakes several hundred yards apart.

Where beavers continue to occupy streams in settled districts, they often make regular trails from a slide on the river bank back to neighboring cornfields, where they feast on the succulent stalks and green ears. They also injure orchards planted near their haunts, by girdling or felling the trees. Within recent years laws for their protection have been passed in many States, and beavers have been reintroduced in a number of localities. They should not be colonized in streams flowing through lands used for orchards or cornfields, nor where the available trees are too few to afford a continuous food supply.

#### FISHER, OR PEKAN (*Mustela pennanti*)

The fisher is one of the largest and handsomest members of the weasel family. Like others of this group, it is a long-bodied, short-legged animal. It attains an extreme length of from 3 to 3½ feet and a weight of 18 or 20 pounds, but the average is decidedly lower than these figures. In general, it is like a gigantic marten, and from its size and dark color is sometimes known locally as the "black cat" or "black fox."

It lives in the forested parts of Canada and the United States, where it originally occurred from the southern shores of Hudson Bay and Great Slave Lake south throughout most of eastern Canada and New England and along the Alleghanies to Tennessee; also in the Great Lakes region, south to the southern end of Lake Michigan; along the Rocky Mountains to Wyoming, down the Cascades to northern California, and from the Atlantic coast of Nova Scotia and Maine to the Pacific coast of southeastern Alaska and British Columbia. They

still occur regularly in the Adirondacks of New York and the Green Mountains of Vermont and in Maine, but are gone from most of the southern border of their former range.

Fishers are powerful and agile animals, probably for their size by far the swiftest and most deadly of all our forest carnivores. So swift and dextrous are they in the tree-tops that they not only capture squirrels without difficulty, but are able to overtake and kill the marten, almost an incredible feat. When in pursuit of their prey or when alarmed, they make astonishing leaps from tree to tree. While not so speedy on the ground as some other animals, they have the tireless persistence of their kind and capture snowshoe hares in fair chase.

Among the habitants of the forest the fisher is a fearless and savage marauder, which feeds on frogs, fish, and nearly every bird and mammal its domain affords, except species so large that their size protects them. Porcupines are among its favorite victims and are killed by being turned over and attacked on their under-parts. As a consequence of such captures, the fisher often has many quills imbedded in its head and the foreparts of its body.

The fisher, like many other predatory animals, has more or less regular "beats" along which they make their rounds over the territory each occupies. These rounds commonly require several days to accomplish. In winter they keep mainly along wooded ridges, where they are trapped.

It follows trap lines like the wolverine and eats the bait or the captured animal, but, unlike the wolverine, appears to have no propensity for further mischief. When overtaken by dogs or when at war with any of its forest rivals, it is so active and ferocious that it is worthy all due respect from antagonists several times its size.

Although essentially a tree animal, much of the fisher's time is spent on the ground. In summer it appears to be fond of heavy forests in low-lying situations and the vicinity of water. Its dens are usually located in a hollow high up in a large tree, but sometimes in the shelter of fallen tree trunks or crevices in the rocks, where, the last of April or early in May, the young are born. These may number from one to five, but are usually two or three. The young begin to follow the mother in her wanderings when quite small and do not leave her guardianship until nearly grown.

The fisher is not a common animal and only about 8,000 of its skins are marketed each year. Owing to its size, it is conspicuous, and its very fearlessness tends to jeopardize its existence. It is gone from most of the southern part of its former range and will no doubt continue steadily to lose ground with the increasing occupation of its haunts.

#### OTTER (*Lutra canadensis* and its relatives)

Land otters are common throughout a large part of the Old World, and when America was

explored the animals were found generally distributed, and sometimes common, from the northern limit of trees in North America to southern South America. Within this great area a considerable number of species and geographic races of otters occur, all having a close general resemblance in appearance and habits.

The Canadian otter is the well-known type throughout the United States, Canada, and Alaska. It is a slender, dusky brown animal, from 4 to 5 feet in length, frequenting streams and lakes which contain a good supply of fish. Otters are too short-legged to move easily on land, but are remarkable for their admirable grace, agility, and swiftness in the water. Although so poorly adapted to land travel, they are restless animals, constantly moving up and down the streams in which they live and often crossing from one stream to another. In the far north in midwinter they travel surprising distances across snow-clad country, following the banks of streams or passing between them searching for an entrance to water, whether through the ice or in open rapids.

In Alaska I saw many otter trails in the snow crossing the Yukon and through the adjacent forest. In such journeys it was evident that the animals progressed by a series of long bounds, each leaving a well-marked, full-length impression in the snow, so characteristic that it could not be mistaken. These trails, often leading for miles across country, always excited my deepest interest and wonder as to how these animals could succeed in finding holes through the ice in this vast snow-bound waste. Nevertheless they seemed to know full well, for the trails always appeared to be leading straight away for some known objective.

Although never very abundant, otters are so shy and solitary in their habits that they have managed to retain almost all of their original range. They occur now and then in the Potomac, near Washington, and in other rivers throughout the country, where their tracks may occasionally be detected on sand-bars and in the muddy shallows along the banks. A sight of the animals themselves is rare. Their dens are usually in the banks of streams or lakes above or below the surface of the water, under the roots of large trees, or beneath rocky ledges.

Otters are extremely playful and amuse themselves by sliding down steep banks into the water, repeatedly using the same place until a smooth chute or "slide" is defined. They usually have two to five young, which remain with the mother until nearly grown.

While close relatives of the weasel, they are much more intelligent, have a gentler disposition, and make playful and most interesting pets. Their fur is highly prized and always brings a good price in the market. As a result, they have been persistently hunted and trapped since our pioneer days. That the species should continue to exist, though in much diminished numbers, throughout most of its original range is a striking evidence of its retiring habits and mental acuteness.



FISHER, OR PEKAN



OTTER



*Rocky Mountain Sheep*

ROCKY MOUNTAIN SHEEP



*Collared Peccary, or Muskhog*

COLLARED PECCARY, OR MUSKHOG

### **COLLARED PECCARY, OR MUSKHOG (*Pecari angulatus*)**

The numerous and extraordinarily varied species of wild pigs of the Old World are represented in America by the peccaries, a specialized group containing two species of small pigs peculiar to North and South America. One of the many differences between them and their Old World relatives is their having but two young. The name muskhog, applied to them, is based on their possession of a large gland, located high up on the middle of the rump, which emits a powerful odor. The musky odor from this quickly permeates the flesh of a peccary, unless it is cut out as soon as the animal is killed.

The collared peccary is the smaller of the two species, usually weighing less than 75 pounds. It ranges from the southwestern United States south to Patagonia. Within this range numerous geographic races have developed, varying from light grizzled gray to nearly black. It formerly occurred within our border north to the Red River of Arkansas, but is now limited to the southern half of Texas and the southern parts of New Mexico and Arizona.

In tropical America collared peccaries are found in dense forests or in low jungles, but in northern Mexico and the southwestern United States they are equally at home among scattered thickets of cactus and other thorny plants on plains and in the foothills. They are strictly gregarious and live in bands of from a few individuals up to thirty or more, usually led by the oldest and most powerful boar. They are omnivorous, feeding on everything edible, from roots, fruits, nuts, and other vegetable products to reptiles and any other available animals. They are specially numerous in many tropical forests where wild figs, nut palms, and other fruit-bearing trees provide abundant food. In the arid northern part of their range dense thickets of cactus and mesquite afford both food and shelter. Their presence in a locality is often indicated by the rooted-up soil where they have been feeding.

Young peccaries become very tame and make most intelligent and amusing pets. One moonlight night on the coast of Guerrero two of us, after a bath in the sea by a small Indian village, strolled along the hard white sand to enjoy the cool breeze. Suddenly a little peccary, not weighing over eight or ten pounds, came running to meet us and, after stopping at our feet to have its head scratched, suddenly circled about us, away and back again in whirling zigzags, with all the joyous frenzy of a playful puppy. Continuing this performance, it accompanied us for several hundred yards, until we returned to the village.

Tales of the ferocity of bands of the collared peccaries and of their treeing hunters who have disturbed them read well to the novice, but have little foundation in fact. In reality the animals are shy and retiring and fight only when forced to do so for self-protection. When brought to bay by dogs or other animals, they

fight viciously, and with their sharp, knife-edged tusks can inflict serious wounds. Their natural enemies are mainly the jaguar in the south and bobcats and coyotes, which prey upon their young, in the north.

The increasing occupation of our Southwest has already resulted in the extermination of peccaries from most of their former range within our border, and unless active steps are taken to protect the survivors their days will be few in the land. They are such unique and harmless animals that it is hoped interest in their behalf may be awakened in time to retain them as a part of our wild life.

### **ROCKY MOUNTAIN SHEEP (*Ovis canadensis* and its relatives)**

Wild sheep inhabit mountain ranges in both Old and New Worlds. Northern Africa and southern Europe have representative species, but Asia appears to be the true home of the group. There the greatest variety of species is found, including such giants as *Ovis poli*.

In the New World they occur only in North America, where there are two or three species, with numerous geographic races. Among these the sheep inhabiting the main Rocky Mountain region is best known. It is a heavier animal than its northern relatives of the Stikine country and Alaska, with larger and more massively proportioned horns. It occupies the main range from south of Peace River and Lake Babine, in British Columbia, to Colorado, and possibly northern New Mexico. Closely related geographic races occur elsewhere in the mountains of the western United States and northern Mexico.

The usual conception of wild sheep as habitants of the cold, clear upper world at timberline and above is justified in the case of the Rocky Mountain sheep. In early spring its one or two young are born amid these rugged elevations, where it remains until the heavy winter snows drive it down, sometimes through the open timber to the foothills. That wild sheep thrive equally well under very different conditions, however, is shown by their abundance on the treeless mountains of our southwestern deserts, among cactuses, yuccas, and other thorny vegetation, where water is extremely scarce and summer temperatures rise high above 100° Fahrenheit in the shade.

The Rocky Mountain sheep, like other species, appears to feed on nearly every plant growing within its domain. In spring many lambs are killed by bald and golden eagles, and in winter, when driven down to lower levels by snow, it becomes easy prey for mountain lions, wolves, and coyotes. Owing to continuous hunting, this sheep has disappeared from many of its former haunts and is decreasing in most of its range. When effective protection is undertaken in time, however, as in Colorado, the range is readily restocked.

The sure-footedness with which a band of these sheep will dash in full flight up or down seemingly impossible slopes, where a misstep

would mean death, is amazing. Even the old rams, with massive sets of horns, bound from point to point up a steep rock slope with marvelous grace and agility. Mountain sheep living among the rugged summits of high ranges possess the courage and prowess of skillful mountaineers, so admired by all, and the mere sight of one of these animals in its native haunts is an adventure achieved by few.

No other big-game animal carries with it the romantic glamour which surrounds this habitant of the cold, clear upper world. Big-game hunters prize above all others their mountain-sheep trophies, which form vivid reminders of glorious days amid the most inspiring surroundings and evidence their supreme prowess in the chase.

#### STONE MOUNTAIN SHEEP (*Ovis stonei*)

Owing to its dark, iron gray color, *Ovis stonei* is often called the "black" mountain sheep. Despite its dark color, the Stone sheep is probably a geographic race of the pure white Dall sheep of Alaska. It has the same slender, gracefully coiled horns, frequently amber colored and extended in a widely spread spiral.

Its range lies in northern British Columbia, especially about the upper Stikine River and its tributaries; thence it extends easterly to Laurier Pass in the Rocky Mountains, north of Peace River, and south perhaps to Babine Lake. Unfortunately it appears to have become extinct in the southern border of its range, so that its real relationship with the Rocky Mountain sheep farther south may never be determined.

The sheep occupying the mountains between the home of typical *stonei* and that of *dalli* in northwestern British Columbia and southeastern Yukon Territory are characterized by having white heads, with bodies of a varying shade of iron gray, thus showing evident intergradation on a great scale between the white northern sheep and the "black" sheep of the Stikine. These intermediate animals have been called the Fannin, or saddle-backed, sheep (*Ovis fannini*). Hunters report a considerable mingling of entirely white animals among flocks of these intergrading animals, and occasionally white individuals are seen even in flocks of the typical dark sheep of the Stikine country.

Like the white Alaskan sheep, the Stone sheep exists in great abundance in many parts of its range, especially east of Dease Lake. It usually ranges in flocks, those made up of ewes and young rams often containing a considerable number. The old bucks, except in fall, keep by themselves in smaller bands in separate parts of the range. The Stone sheep lives in one of the most notable big-game fields of the continent. Its home above timberline is shared with the mountain goat and in the lower open slopes with the caribou, while within the adjacent forests wander the moose and two or more species of bear.

Owing to its frequenting remote and sparsely

inhabited country, it continues to exist in large numbers; but if its range becomes more accessible, only the most stringent protection can save this splendid animal from the extermination already accomplished on the southern border of its range.

#### DALL MOUNTAIN SHEEP (*Ovis dalli*)

The only variation in the pure white coat of the Dall sheep is a mixture of a few black hairs on the rump, sometimes becoming plentiful enough to form a blackish spot on the tail and a light brownish stain over the entire body, due to the slight discoloration at the tips of the hairs from contact with the earth in their bedding-down places. Their horns are usually dull amber yellow and are notable for their slender proportions and the grace of their sweeping coils, which sometimes curve close to the head and again spread in a wide, open spiral.

As their white coats indicate, the Dall sheep are the northernmost of their kind in America. Their home lies mainly in Alaska, where they were formerly abundant in many mountain ranges, from those bordering the Arctic coast south through the interior to the cliffs on Kenai Peninsula, but are now scarce or gone from some mountains. To the eastward they are numerous across the border in much of Yukon territory, nearly to the Mackenzie River. Their haunts lie amid a wilderness of peaks and ridges, marked in summer with scattered glaciers and banks of perpetual snow and in winter exposed to all the rigors of a severe Arctic climate. They are extraordinarily numerous in some districts, as among the outlying ranges about the base of Mount McKinley.

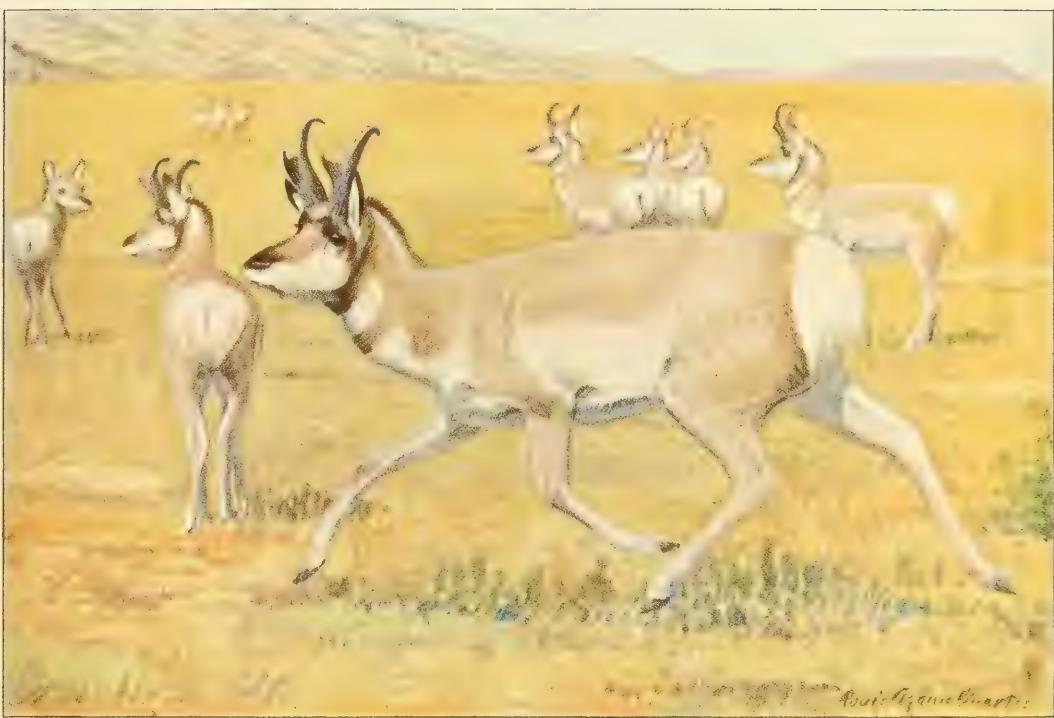
In their high, bleak homes these sheep have little to fear from natural enemies, although the great Canada lynx, the wolf, the wolverine, and the golden eagle, as overlords of the range, take occasional toll from their numbers. Their one devastating enemy is man, with his modern high-power rifle. Even so long ago as the summer of 1881, I saw hundreds of their skins among the Eskimos at Point Barrow, taken that spring with the use of Winchester rifles among the mountains lying inland from the Arctic coast. Of late years the advent of miners and the establishment of mining camps and towns have greatly increased the demand for meat, and this has resulted in the killing of thousands of these sheep. Large numbers of these splendid animals have also been killed to serve as winter dog food.

The advent of thousands of men engaged in the construction of the government railroad which, when completed, will pass through the Mount McKinley region, makes imminent the danger of extermination that threatens the mountain sheep, as well as the moose and caribou, in a great area of the finest big-game country left under our control.

Properly conserved, the game animals of Alaska will continue indefinitely as one of its richest resources, but heedless wastefulness may destroy them forever. All sportsmen and



STONE'S, FANNIN'S, AND DALL'S MOUNTAIN SHEEP



PRONG-HORN ANTELOPE



ROCKY MOUNTAIN GOAT

other lovers of wild life should interest themselves in an effort to safeguard the future of Alaskan game animals before it is too late; for, under the severe climatic conditions prevailing, the restocking of exhausted game fields in that region will be extremely difficult, if not practically impossible.

#### **ROCKY MOUNTAIN GOAT (*Oreamnos montanus* and its subspecies)**

The numerous wild goats of the Himalayas and other mountains of Asia are represented in America solely by the Rocky Mountain goat. This is one of the most characteristic, but least graceful in form and action, of our big-game animals. It is distinguished by a long ungainly head, ornamented with small black horns; a heavy body, humped at the shoulders like a buffalo, and a coat of long shaggy white hair.

The range of these habitants of the cliffs extends from the head of Cook Inlet, Alaska, easterly and southerly through the mountains to Montana and Washington. Unlike mountain sheep, the goats do not appear to dislike the fogs and saline winds from the sea, and at various points along the coast of British Columbia and Alaska they range down precipitous slopes nearly to the shore.

They are much more closely confined to rugged slopes and rocky ledges than the mountain sheep, which in winter commonly descend through the foothills to the border of the plains. Through summer and winter, goats find sufficient food in the scanty vegetation growing among the rocks, and their heavy coats of hair protect them from the fiercest winter storms.

Owing to their small horns and unpalatable flesh they are less sought after by hunters than mountain sheep, and thus continue to exist in many accessible places where otherwise they would long since have become exterminated. They are frequently visible on the high ledges of a mountain across the bay from the city of Vancouver and are not difficult to find in many other coastal localities.

Although marvelously surefooted and fearless in traversing the faces of high precipitous slopes, goats lack the springy grace and vivacity of mountain sheep and move with comparative deliberation. They are reputed to show at times a stupid obstinacy when encountered on a narrow ledge, even to the point of disputing the right of way with the hunter.

Their presence lends interest to many otherwise grim and forbidding ranges where, amid a wilderness of glacier-carved escarpments, they endure the winter gales which for days at a time roar about their cliffs and send snow banners streaming from the jagged summits overhead.

Owing to the character of their haunts, mountain goats have few natural enemies. The golden and bald eagles now and then take toll among their kids, but the lynx and mountain lion, their four-footed foes, are not known to prey upon them to any considerable extent.

Through overhunting they have vanished from some of their former haunts, but still hold their own in many places, and with effective protection will long continue to occupy their peculiar place in our fauna.

#### **PRONG-HORN ANTELOPE (*Antilocapra americana* and its geographic races)**

Unique among the antelope of the world, among which it has no near relatives, the prong-horn, because of its beauty of coloration, its grace, and fleetness, claims the attention of sportsmen and nature lovers alike. It is a smaller and slenderer animal than the larger forms of the Virginia deer. Its hair is coarse and brittle, and the spongy skin lacks the tough fiber needed to make good buckskin. Both sexes have horns, those of the doe being smaller and slenderer. One of the extraordinary peculiarities of this antelope is its habit of shedding the horns every fall and the developing new horns over the remaining bony core.

The rump patch of the prong-horn is formed of long pure white hairs, which in moments of excitement or alarm are raised on end to form two great chrysanthemum-like white rosettes that produce an astonishingly conspicuous directive color mark. The power to raise these hairs is exercised by the fawns when only a few days old. Even when the hairs are not erected the rump patch is conspicuous as a flashing white signal to a distance of from one to two miles as the antelope gallops away. When the animal whose rump signal has been plainly visible at a distance suddenly halts and faces about to look back, as is a common custom, its general color blends with that of the background and it vanishes from sight as by magic.

Early explorers discovered antelope in great abundance over a vast territory extending from near the present location of Edmonton, Alberta, south to near the Valley of Mexico, and from central Iowa west to the Pacific coast in California. They were specially numerous on the limitless plains of the "Great American Desert," where our pioneers found them in great bands, containing thousands, among the vast herds of buffalo. So abundant were they that it has been estimated that on the Great Plains they equaled the buffalo in numbers. Now reduced to a pitiful remnant of their former numbers, they exist only in widely scattered areas, where they are constantly decreasing. Fortunately they are strictly protected by law in most of their remaining territory.

The great herds containing thousands of antelope were usually formed late in fall and remained together throughout the winter, separating into numerous smaller parties during the summer. For years following the completion of the transcontinental railroads they were commonly seen from the car windows as trains crossed the Great Plains. At such times their bright colors and graceful evolutions, as they swept here and there in erratic flight or

wheeled in curiosity to gaze at the passing train, never failed to excite the deepest interest.

In early days prong-horns were noted for their curiosity and were frequently lured within gun-shot by waving a red flag or by other devices. I have repeatedly seen them circle or race a team, or a horseman, crossing their range. In racing a horseman traveling along an open road or trail they gradually draw nearer until finally every member of the band dashes madly by only a few yards in front and then straight away across the plains in full flight.

The prong-horns appear to possess a highly nervous temperament, which requires for their welfare the wide free sweep of the open plains. They do not thrive and increase in inclosures, even in large game preserves, as do deer, elk, and buffalo. For this reason, it will require the greatest care to protect and foster these attractive members of our fauna to save them from soon being numbered among the many wild species which have been destroyed by the coming of civilized man.

#### WAPITI, OR AMERICAN ELK (*Cervus canadensis* and its relatives)

By a curious transposition of names the early settlers applied to the American wapiti the term elk, which belongs to the European representative of our moose. Our elk is a close relative of the European stag. It is the handsomest and, next to the moose, the largest member of the deer family in America. The old bulls, weighing more than 800 pounds, bear superb widely branched antlers, which give them a picturesque and noble mien. This is the only American deer which has a well-marked light rump-patch. The young, numbering from one to three, are white spotted, like the fawns of other deer.

Originally the elk was the most wide ranging of our hoofed game animals. It occupied all the continent from north of Peace River, Canada, south to southern New Mexico, and from central Massachusetts and North Carolina to the Pacific coast of California. Like the buffalo, it appeared to be equally at home in the forested region east of the Mississippi River and on the open plains flanking the Rocky Mountains. Its range also extended from sea-level to above timberline on lofty mountain ranges.

Exterminated throughout most of their original range, elk still occupy some of their early haunts in western Canada, Montana, Wyoming, Colorado, and the Pacific Coast States. The last elk was killed in Pennsylvania about 60 years ago, and in Michigan and Minnesota some 20 years later. The main body of the survivors are now in the Yellowstone Park region. Their size and the readiness with which they thrive in captivity has led to serious consideration of elk farming as an industry.

In the West, before the settlement of their range crowded the elk back, large numbers lived throughout the year on the plains and among the foothills. They have now become mountain animals, spending the spring and

summer largely in the timberline forests and alpine meadows, where many bands linger until the heavy snows of early winter force them down to the foothills and valleys. During the last days of their abundance in the Rocky Mountains winter herds numbering thousands gathered in Estes Park and other foothill valleys.

Elk are the most polygamous of all our deer, each bull gathering a small herd of cows during the fall. At the beginning of the mating season the bulls wander widely through the high forest glades, their musical bugling piercing the silence with some of the most stirring notes of the wilderness. Amid the wild grandeur of these remote mountain fastnesses the appearance of a full-antlered buck on the skyline of some bare ridge presents a noble picture of wild life.

There are probably over 40,000 elk still left in the United States, and of these more than 30,000 are located in Wyoming, mainly in and about Yellowstone National Park.

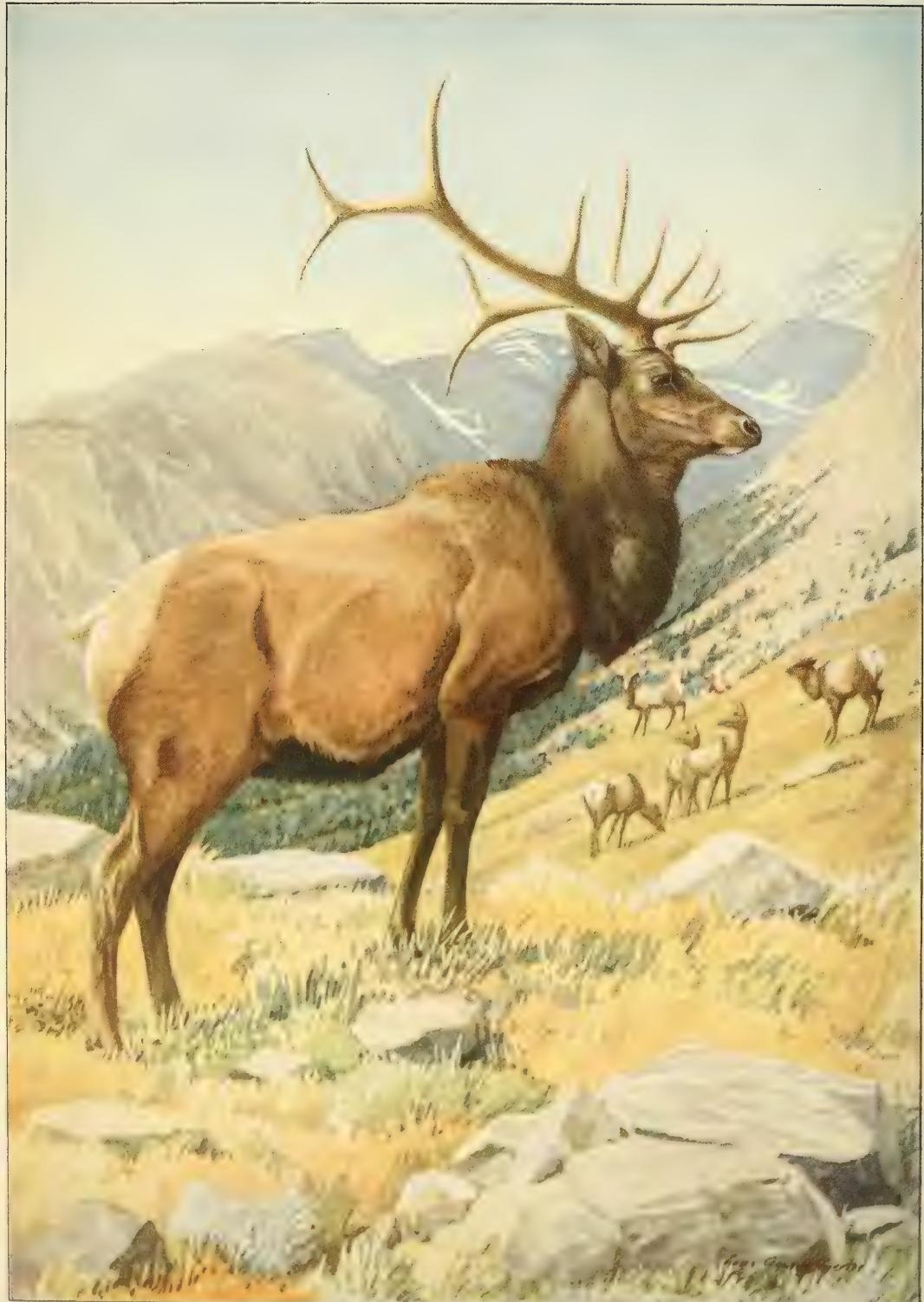
During the last few years great interest has been shown in the reintroduction of elk in parts of their former range, where they had been exterminated and where conditions are still suitable for their perpetuation. Such efforts are meeting with much success. Not only do the animals thrive and increase rapidly, but local sentiment is almost unanimous in their favor. This is well shown by the active interest taken by both cattle and sheep owners in northern Arizona in regard to a band of elk introduced a few years ago on their mountain stock ranges. The stockmen exercise a virtual wardenship over these animals that insures them against molestation, and the herd is rapidly increasing.

As against this, we have the despicable work of poachers, who are shooting elk for their two canine teeth and leaving the body to the coyotes. Information has been received that more than 500 elk were ruthlessly slaughtered for this purpose about the border of Yellowstone National Park during the winter of 1915-1916.

#### MULE DEER (*Odocoileus hemionus* and its subspecies)

Mule deer are larger than the common white-tails, with a heavier, stockier form. Their strongest characteristics lie in the large doubly branching antlers, large broad ears, and rounded whitish tail with a brushlike black tip. Their common name in this country and the name "venado burro" in Mexico are derived from the great, donkeylike ears. Their antlers vary much in size, but in some examples are almost intermediate between those of the white-tail and of the elk. Antlers of the mule deer and of the black-tail agree in having the tines all pronged, in contrast with the single spikes of the white-tails. In summer these deer have a rich, rusty red coat which is exchanged in winter for one of grayish brown.

The range of mule deer extends from northern Alberta, Manitoba, and western Iowa to the State of San Luis Potosi, on the Mexican



WAPITI, OR AMERICAN ELK



MULE DEER



BLACK-TAILED DEER

table-land, and west to Lower California and the coast of California. Within these limits they inhabit different types of country, from the deciduous forests along streams on the eastern border of the Great Plains to the open pine forests of the high western mountains, the chaparral-covered hillsides of southern California, and the thickets of mesquites, acacias, and cactuses on the hot and arid plains of Sonora. Several geographic races of this deer have resulted from these varied conditions.

In spring in the Rocky Mountains the does leave the bands with which they have passed the winter and seek undisturbed retreats among forest glades or along scantily wooded slopes of canyons, where they have two or three handsomely spotted fawns with which they remain apart throughout the summer.

The bucks usually keep by themselves during the summer, in parties rarely exceeding ten. As their horns lose the velvet and the mating season draws near, the old bucks gather in bands of from six to ten.

At this time they are in perfect physical condition, and a band of them in the open forest, their antlers held proudly aloft and their glossy coats shining in the sun, presents a superb picture. They have little of the protective caution so characteristic of the white-tails, and when a shot is fired at a band they often begin a series of extraordinary "buck jumps," bounding high in the air, facing this way and that, sometimes not taking flight until after several additional shots have been fired. These high, bounding leaps are characteristic of mule deer and are commonly made when the animals are suddenly alarmed and often when they are in full flight through brushy thickets.

After the mating season, bucks and does join in bands, sometimes of fifteen or twenty, and descend to the foothills and sometimes even to the adjacent plains. Their preference, however, is for rough and broken country, such as that of canyon-cut mountains or the deeply scored badlands of the upper Missouri River.

These deer are not good runners in the open. On several occasions, on level country in Arizona, I have ridden after and readily overtaken parties of them within a mile, their heaving flanks and open mouths showing their distress. The moment rough country was reached, however, with amazing celerity a series of mighty leaps carried them away from me over declivities impossible for a horse.

The sight of a party of these splendid deer bounding away through the aisles of a mountain forest always quickens one's pulse and gives the finishing touch of wildness to the scene. Mule deer are characteristic animals of the beautiful open forests and forest parks of the Rocky Mountains and the high Sierras, where they may be perpetuated if given reasonable protection.

#### **BLACK-TAILED DEER (*Odocoileus columbianus* and its subspecies)**

In general appearance the black-tails have a close resemblance to the mule deer, but average

smaller. They have the same large ears, forked tines to the antlers, and rather "stocky" body; but the brushy all-black tail distinguishes them from any other American deer. In color they have much the same shade of brown as the Virginia deer. They have the usual cycle of annual changes common to most American deer—assuming a dull coat in fall and losing their horns in winter, followed by the resumption of a brighter coat in spring and the renewal of their horns in summer.

The black-tails have one of the most restricted ranges among our deer. They are limited to the humid heavily forested belt along the Pacific coast from Juneau, Alaska, southward to the Coast range in central California. This coastal belt is characterized by superb growths of cedars, spruces, and firs in the north and by redwoods and firs in the south, uniting to make one of the most magnificent forest areas in the world. Here the deer live in the midst of rank undergrowths of gigantic ferns and other vegetation, as luxuriant in many places as that of the humid tropics.

Their home on the abruptly rising slopes of the islands in the Alaskan Archipelago is so restricted that both in summer and winter they fall an easy prey to native and white hunters. It has been reported that there has been much wasteful killing of the deer on these islands for commercial purposes. When the heavy snows of winter on the islands force the deer down to the shore, great numbers of them are also killed by wolves.

Black-tails commonly have two or three young, and this fecundity, combined with the effective protection given by the dense forest where many of them live, will aid in their perpetuation. At the same time they have not developed the mental alertness of the Virginia deer, and there is imminent need for prompt and effective action in safeguarding the deer in the Alaskan part of their range if their extermination on some of the islands is to be prevented. In this northern region the black-tails share their range with strange tribes of coastal Indians, whose huge sea-going canoes, totem poles, and artistic carvings are unique among native Americans.

#### **VIRGINIA, OR WHITE-TAILED, DEER (*Odocoileus virginianus* and its subspecies)**

The aptness of the name "white-tail" for the Virginia deer is obvious to any one who has startled one in the forest and seen it dash away with the tail upright and flashing vivid white signals at every leap. The adults have two strongly contrasted coats each year: brownish gray in winter and rusty red in summer. The fawns, usually two in number, are dull rusty brown, marked with a series of large white spots, which remain until the gray winter coat is assumed in the fall. Large bucks sometimes attain a weight of more than 300 pounds.

The white-tail is the well-known deer of all the forest areas in eastern North America. With its close relatives, it ranges from north-

ern Ontario to Florida and from the Atlantic coast to the Great Plains; also in the Rocky Mountains south to New Mexico, and in the Cascades and Sierra Nevada to northern California.

The supreme importance of this deer to the early settlers of the Eastern States is made plain in all the literature covering the occupation of that region. Its flesh was one of the most reliable staples in the food supply, and not infrequently was the only resource against starvation. In addition, the tanned skins served for clothing and the sinews for thread. Many of the most striking and romantic characters in our early history appear clad in buckskin, from fringed hunting shirt to beaded moccasins.

As no other American game animal equaled the white-tail in economic value to the settlers, so even to-day it remains the greatest game asset in many of the Eastern States. Partly through protective laws and partly through its acute intelligence and adaptability, the Virginia deer continues to hold its own in suitable woodland areas throughout most of its former range, and in recent years has pushed hundreds of miles northward into new territory in Ontario and Quebec.

Even in the oldest and most densely populated States, as New York and Massachusetts, white-tails still exist in surprising numbers. Over 7,000 were killed during the hunting season of 1915 in Maine, and an average of about 2,800 are killed yearly in Vermont. The great recreational value of the white-tail to a host of sportsmen is obvious. To the growing multitude of nature lovers the knowledge that a forest is inhabited by deer immediately endows it with a delightful and mysterious charm.

In summer white-tails are usually solitary or wander through the forest in parties of two or three. In winter, where the snowfall is heavy, they gather in parties, sometimes of considerable size, in dense deciduous growth, where food is plentiful. There they remain throughout the season, forming a "yard" by keeping a network of hard-beaten paths open through the snow in order to reach the browse afforded by the bushes and trees.

Ordinarily Virginia deer are shy and elusive habitants of dense forests, where they evade the unpracticed intruder like noiseless shadows. Where they are strictly protected for a period of years under State laws, they become surprisingly confident and often damage young orchards and crops on farms near their haunts. Several States pay for the damage thus done. Happily this attractive species thrives so well under protective laws that its continued future in our forests appears to be assured.

#### ARIZONA WHITE-TAILED DEER (*Odocoileus couesi*)

The Arizona white-tails are slight and graceful animals, like pygmy Virginia deer, so small that hunters often ride into camp with a full-grown buck tied back of the saddle. They have

two seasonal pelages—gray in winter and more rusty brown in summer. The antlers, very small, but in form similar to those of the Virginia deer, are shed in winter and renewed before the end of summer.

These handsome little deer, the smallest of our white-tails, are common in many of the wooded mountains of middle and southern Arizona, southern New Mexico, western Texas, and in the Sierra Madre of Chihuahua and Sonora, Mexico. By a curious coincidence this area was the ancient home of the Apache Indians and has had one of the most tragic histories of our western frontier.

During summer and early fall in the higher ranges small bands of Arizona white-tails occupy the lower parts of the yellow-pine forests, between 6,000 and 9,000 feet altitude, where they frequent thickets of small deciduous growth about the heads of canyons and gulches. As winter approaches and heavy snowstorms begin, they descend to warm canyon slopes to pass the season among an abundant growth of pinyons, junipers, oaks, and a variety of brushwood.

In the White Mountains of Arizona, between the years 1883 and 1890, when wild life was more abundant than at present, I often saw, on their wintering grounds, large herds of these graceful deer, numbering from 20 to more than 100 individuals. Such gatherings presented the most interesting and exciting sight, whether the animals were feeding in unconscious security or streaming in full flight along the numberless little trails that lined the steep slopes. Where these deer live on the more barren and brush-grown tops of some of the desert mountains in southwestern Arizona and Sonora, the snowfall is so light that their summer and winter range is practically the same.

Although far more gregarious than our other white-tails, the herds of Arizona deer break up in early spring. At this time one or two fawns are born, amid early flowers in the charming vistas of the open forest. Very young fawns are hidden in rank vegetation and sometimes left temporarily by their mothers. If a horseman chances by the fawns may rise and follow innocently at the horse's heels. On such occasions I have had difficulty in driving them back to prevent their becoming lost.

In the Sierra Madre of Chihuahua one summer I found these little white-tails occupying "forms," like rabbits, located in the sheltering matted tops of fallen pine trees which had been overthrown by spring storms. In these shelters they rested during the middle of the day, secure from the wolves and mountain lions which prowled about the canyon slopes in search of prey.

With the growing occupation of their territory by cattle and sheep and the increase in the number of hunters, these once abundant deer are rapidly diminishing. It is high time more careful measures be taken for their conservation, else extermination awaits them throughout most of their original haunts.



VIRGINIA, OR WHITE-TAILED, DEER



ARIZONA WHITE-TAILED DEER



WOODLAND CARIBOU

### WOODLAND CARIBOU (*Rangifer caribou* and its subspecies)

The caribou lacks the symmetry and grace of the true deer. Its large head topped with irregular antlers, heavy body, and thick, sturdy legs, ending in large, broad-spreading hoofs, produce a distinctly ungainly animal. It is the only member of the deer family in which both sexes have antlers, those of the female being smaller and slenderer than those of the male. It varies in size in different parts of its range, but large old bulls usually weigh from 300 to 400 pounds. A single calf is the rule, but occasionally there are two.

The woodland caribou, the southern representative of the barren ground caribou, inhabits almost the same northern forest of spruce, tamarack, birch, and alder as those sheltering the moose. It ranges from the northern border of the forests in Alaska and Canada south to Maine, northern Minnesota, northern Idaho, and British Columbia. It is far less gregarious than the barren ground caribou, during summer only small parties of cows, calves, and partly grown young keeping together, while the bulls are solitary or in still smaller separate parties. In winter all unite in larger herds.

The curiously ungraceful appearance of the caribou, so different from other deer, gives it a strong individuality, which seems to belong with its remote haunts in the wilderness. This great animal has an added appeal to our interest, owing to its close relationship to that other woodland caribou which was such an important resource to the cave-men of France and other parts of Europe, as shown by bone and horn implements, carvings, and other records discovered in their homes.

During summer and fall in eastern Canada, where this caribou is distributed through much of the wilder forests, it has a habit of coming out of the woods to sun itself and bathe on the borders of shallow lakes. Here the old bulls wallow in the water, and on rising shake themselves like a dog, filling the air with a halo of sparkling water drops. In such places the bulls frequently stand basking in the sun for hours. To a canoe-man gliding silently around a jutting point, this rugged habitant of the wilds, discovered across the shining waters, standing outlined against the dark green forest, represents a wonderfully picturesque sight. When alarmed at such times the caribou dashes shoreward through the water amid clouds of flying spray struck up by its broad feet and vanishes in the sheltering forest, accompanied by a loud crashing of dry branches.

The woodland caribou is neither so swift nor so astute in avoiding danger as the Virginia deer or the moose. It falls an easy prey to hunters and to wolves, and when not properly safeguarded is readily exterminated. This is shown by its complete disappearance from the Adirondacks, in northern New York, and by its threatened disappearance from the forests of Maine, Minnesota, and Idaho; in fact, the woodland caribou is in more imminent danger

of complete and early extermination within the United States than any other game animal and can be saved only by stringent laws and careful guardianship.

### BARREN GROUND CARIBOU (*Rangifer arcticus* and its subspecies) (see illustration, page 421)

The typical barren ground caribou is smaller and paler colored than the woodland species. Several geographic races have been distinguished, among which the most notable is the Peary caribou, the palest of all and the subject of the accompanying drawing. Like other members of the group, this species is a heavily built animal, with thick legs and large feet.

The barren ground caribou is characteristic of the desolate Arctic barrens and tundras beyond the limit of trees, ranging to the northernmost limit of land beyond 83 degrees of latitude. When explorers first visited these northern wilds, including the treeless coastal belt from the Peninsula of Alaska to Bering Straits, they found these animals almost everywhere in extraordinary abundance. Over great areas of this territory straggling herds of caribou, sometimes numbering hundreds of thousands, drifted with the season from one feeding ground to another.

The advent of white men with guns has resulted in their rapid decrease everywhere and in their extermination over great areas. In many of their old haunts the only trace of their former abundance is in well-marked trails winding by easy grades to the bare tops of the low mountains. They are still numerous on the Peninsula of Alaska and in much greater numbers in parts of the barren grounds of Canada. There, on the shores of Artillery Lake, during the summer of 1907 a small migrating herd of about 2,000 was seen.

When alarmed these caribou often break into a clumsy gallop, which soon changes to a steady shambling trot, their characteristic gait, carrying them rapidly across country. In winter their tracks in the snow show that their feet, instead of being raised high at each step, like those of a Virginia or mule deer, drag through the snow like those of domestic cattle. Their large, broad-spreading hoofs, with sharp, cup-shaped edges, are admirably adapted to secure a firm footing in the yielding and hummocky surface of their haunts in summer and on the snow and ice in winter.

The barren ground caribou, living under severe climatic conditions, has developed an extraordinary method of storing up fat to carry it through winter stresses. Early in fall a layer of pure tallow, called "backfat," is formed over the entire top of the back from between the shoulders to the rump. This is a solid slab of tallow lying between the superficial muscles and the skin. It is almost as thin as a knife-blade at the shoulders, but thickens gradually to a depth of from 4 to 6 inches at the rump. This slab of tallow is gradually absorbed during the winter and has totally disappeared by spring. In early winter the "backfat" is easily

removed and transported in its original form. It is highly prized for food and as an article of trade among the Eskimo and Indian hunters, and figures as one of the chief delicacies at their winter feasts.

The Peary caribou lives in Ellesmere, Grinnell, and other of the northernmost Arctic lands to beyond 83 degrees of north latitude, where in places it is common. It appears to thrive on moss, lichens, and other dwarf and scanty Arctic vegetation, and holds its own against the depredations of packs of the white Arctic wolves. In these northern wilds, amid the most intense cold, the caribou passes from three to five months of continuous night, its wanderings lighted only by the moon, stars, and the marvelous displays of waving northern lights.

Tame reindeer, which are kept by the people of the Arctic border of the Old World from Lapland to Bering Straits, are domesticated descendants of the barren ground caribou of that region. They are used by their owners to pack burdens and haul sledges as well as to supply them with food and clothing. These animals have been successfully introduced in Alaska, and both natives and white men are developing this new and promising stock industry. The herds of tame reindeer are extremely gentle and easily handled. Their progenitors were like other wild caribou—of a dull and nearly uniform color—but domestication has resulted, as with cattle, in producing endless color variations, from white to black, with every imaginable piebald variation.

The changed conditions of life in Alaska, due to the recent development of that territory, have seriously affected the welfare of the natives. Fortunately the introduction of reindeer herds appears to open a promising future for both Eskimos and Indians.

#### MOOSE (*Alces americanus* and its subspecies)

The American moose is a large cousin of the elk of the northern forests of Europe and Siberia. The Old World animal is characterized not only by its smaller size, but also by smaller antlers. The moose is a large, grotesquely formed animal, with the most impressive individuality of any of our large game. Its great head, with oddly formed nose, huge palmated antlers, pendulous bell under the neck, short body, and disproportionately long legs unite to lend the impression that it may be a strange survivor from some remote geologic period.

The moose inhabits our northern forests, where it wanders among thickets of spruce, tamarack, birch, aspen, and alder, from the mouth of the Yukon and the lower Mackenzie southward to Maine, northern Minnesota, and down the Rocky Mountains to Wyoming. It varies in size in different parts of its range. The bulls of the Kenai Peninsula and adjacent region in Alaska are the largest of their kind in the world, sometimes weighing more than 1,400 pounds. The enormous antlers of these great northern beasts attain a spread of more

than six feet and make the most impressive trophy the big-game hunter can secure in America.

Although taller than an ordinary horse, weighing more than half a ton, and adorned with wide-spreading antlers, the bull moose stalks with ghostly silence through thickset forests, where man can scarcely move without being betrayed by the loud crackling of dry twigs. In summer it loves low-lying, swampy forests interspersed with shallow lakes and sluggish streams. In such places it often wades up to its neck in a lake to feed on succulent water plants, and when reaching to the bottom becomes entirely submerged. These visits to the water are sometimes by day, but usually by night, especially during the season when the calves are young and the horns of the bulls are but partly grown.

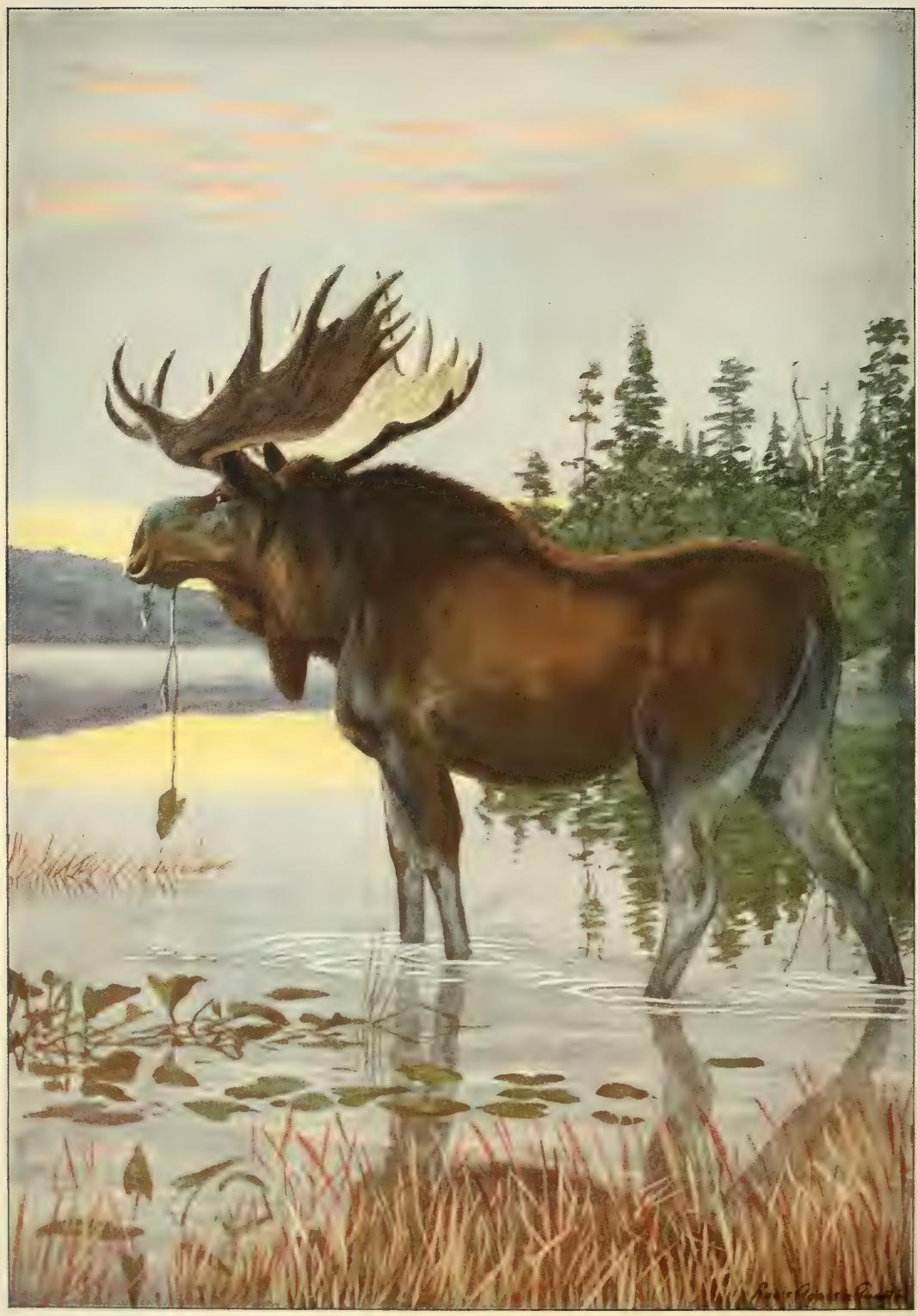
Late in the fall, with full-grown antlers, the bulls wander through the forest looking for their mates, at times uttering far-reaching calls of defiance to all rivals, and occasionally clashing their horns against the saplings in exuberance of masterful vigor. Other bulls at times accept the challenge and hasten to meet the rival for a battle royal. At this season the call of the cow moose also brings the nearest bulls quickly to her side. Hunters take advantage of this, and by imitating the call through a birch-bark trumpet bring the most aggressive bulls to their doom.

Ordinarily moose are extremely shy, but during the mating season the males become so bold that when encountered at close range they have been known furiously to charge a hunter. They strike vicious blows with their front feet, as well as with their heavy antlers, and make dangerous foes for man or beast.

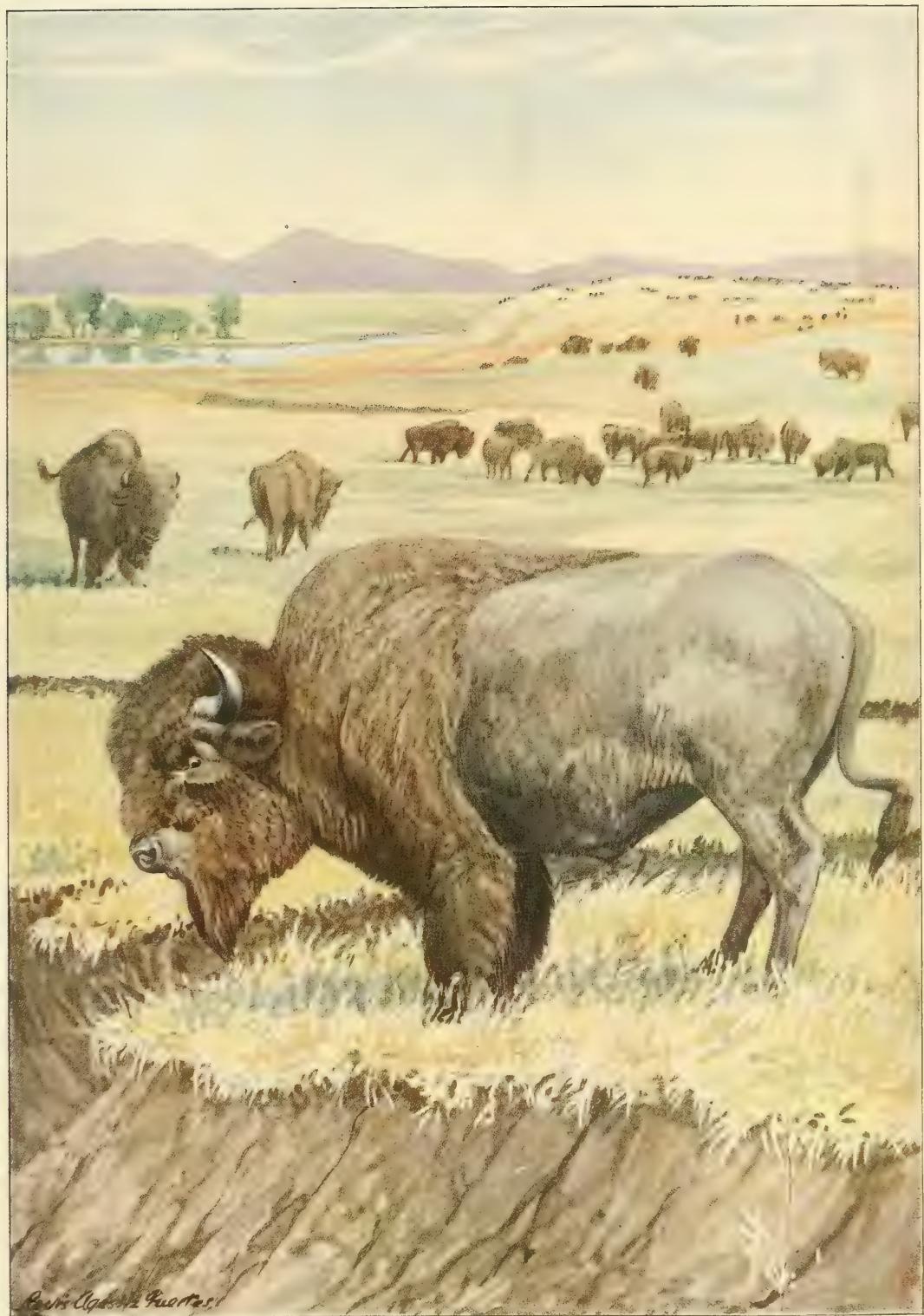
Moose have disappeared from the Adirondacks and have become scarce in many districts where once plentiful. Through wise protection they are still numerous about the head of Yellowstone Lake, and are still among the available game animals of Maine and the eastern provinces of Canada. Indeed, during the last few years they have steadily extended their range in northern Ontario and British Columbia. They occupy great areas of little-visited wilderness, which are becoming more and more accessible; as a result the future existence of these superb animals depends upon their receiving proper protection.

#### AMERICAN BISON (*Bison bison* and its subspecies)

The American bison, or buffalo, is a close relative of the larger bison which once inhabited Europe and survives in limited numbers in certain game preserves of Poland and the Caucasus. The size, dark shaggy coat, great head, and high arched shoulders of our bison give them a unique individuality among American big game. They once roamed in vast numbers over a broad territory, extending from Great Slave Lake, Canada, south to southern New Mexico, and from Pennsylvania and eastern Georgia to Arizona and northern Nevada. It



MOOSE



AMERICAN BISON, OR BUFFALO

is thus evident that they were at home in the forested country east of the Mississippi River, as well as on the treeless plains of the West. In the northern part of their range they are larger and darker than elsewhere and form a local geographic race called the wood buffalo.

Originally buffalo were enormously abundant in America, and it has been variously estimated that when the continent was first discovered their numbers were from 30,000,000 to 60,000,000. With the settlement of eastern America, they gradually retreated across the Mississippi River, but continued to exist in great but rapidly diminishing numbers on the Great Plains up to within the last fifty years.

The crossing of their range by the first transcontinental railroad quickly brought the remaining herds to an end. In 1870 there were still about 5,500,000 head on the plains, but these were so wastefully slaughtered for their hides that in 1895 only about 800 remained. The depletion of the herds was so startling that sportsmen and nature lovers awoke to the danger of the immediate extermination of these splendid animals; the American Bison Society was organized and the surviving buffalo were saved.

Although the bison usually has but a single calf a year, these are so hardy and do so well in fenced preserves, and even in the closer confinement of small parks, that their number has now increased to approximately 4,000, about equally divided between the United States and Canada. In the district south of Artillery Lake, northern Canada, a few hundred individuals, remnants of the wild stock of that region, survive and are increasing under the wise protection of the Canadian Government. The only other herd still existing on its original ground is that in Yellowstone National Park.

Experiments have been made in crossing buffalo with certain breeds of domestic cattle for the purpose of establishing a new and harder variety of stock for the Western ranges. These have not proved successful, largely owing to the lack of fertility in the hybrid, which has been called the "cattalo."

Under primitive conditions, buffalo herds numbering millions of animals regularly migrated in spring and fall from one feeding ground to another, often traveling hundreds of miles for this purpose. The herds followed the same routes year after year and made lasting trails, often from two to three feet in depth. Investigation has shown that many of our highways, and even some of our main railway lines, seeking the most convenient grades, follow trails laid down by these early pathfinders. When a great migrating herd was stampeded, the thunder of its countless hoofs shook the earth, and in its flight it rushed like a huge black torrent over the landscape.

The buffalo was the most important game animal to the Indians over a great area. Several tribes were mainly dependent upon these animals for food and clothing and the entire tribal economy was built about them. The mode of life, customs, and folk-lore of the Indians all centered about these animals. Their

clothing and tepee covers were made of the skins. The tanned skins also served as individual and tribal records of the warrior-hunters, the chronicles being drawn in picture-writing on the smooth surfaces. The passing of the buffalo on the free sweep of the western plains ended forever one of the most picturesque phases of aboriginal life in America.

#### MUSK-OX (*Ovibos moschatus* and its subspecies)

The musk-ox is one of the unique and most interesting of American game animals. In general appearance it suggests a small, odd kind of buffalo, and is, in fact, related to both cattle and sheep. It is a heavily built, round-bodied animal, with short, strong legs and long fringelike hair which hangs so low on the sides that it sometimes trails on the snow. The horns—broad, flat, and massive at the base—curve down and out to a sharp point on each side of the head and form very effective weapons for defense.

Fossil remains prove that musk-oxen lived in northern Europe and Asia during Pleistocene times, but they have long been confined to Arctic America. Up to within a century they have occupied nearly all of the cheerless wilds north of the limit of trees, from the coast of northern Alaska to that of east Greenland. They appear to have become extinct in northern Alaska within the last 75 years, and their present range east of the Mackenzie River is becoming more and more restricted.

They are now limited to that part of the barren grounds of Canada lying north and northwest of Hudson Bay and from the Arctic islands northward and eastward to the northern coast of Greenland. Their range extends to beyond 83 degrees of latitude and covers some of the bleakest and most inhospitable lands of the globe. There a short summer, with weeks of continuous sunshine, permits the growth of a dwarfed and scanty Arctic vegetation; but winter brings a long period of night, continuous, in the northernmost parts, through several months.

Under such rigorous conditions musk-oxen thrive unless hunted by civilized man. They are strongly gregarious, usually traveling in herds of from six to twenty, but herds containing about 100 have been recorded. Their eyesight is not strong, but their sense of smell is good, and when danger is suspected they dash away with great celerity for such heavily formed animals. If rocky ground is near, they seek refuge in it and ascend steep, broken slopes with astonishing agility.

When brought to bay, the herd forms a circle about the calves and, with heads out, presents to the enemy an unbroken front of sharp horns. So long as the circle remains unbroken such a defense is extremely effective against both dogs and wolves. The only natural enemies of musk-oxen are wolves, and against these and the primitive weapons of the Eskimos they hold their own very well.

When the Greely Expedition landed at Lady Franklin Bay in 1881, musk-oxen were encoun-

tered and killed practically on the site where winter quarters were established. Since then several exploring and hunting parties have taken heavy toll from the herds of that region. Some accounts of the wholesale killings do not make pleasant reading for one who desires the perpetuation of our native species. Fortunately for the musk-oxen, the adventurers of these northern quests are few and far between, so that on departing they leave the game animals in their vast solitudes to recuperate from these onslaughts.

Musk-oxen have but a single young, so that between depredations of wolves and overkilling by white and native hunters these animals face the very real danger of extermination threatening so many other game animals in the far North. For this reason, it is hoped that sportsmen who visit these remote game fields will restrain a desire for making large bags.

#### FLORIDA MANATI (*Trichechus latirostris*)

The manatis, or manatees, are strange aquatic mammals, with seal-like heads and whalelike bodies. Compared with whales, their flippers are more flexible at the joints, and thus can be used much more freely. They have very small eyes and a heavy upper lip, deeply cleft in the middle and forming a thick lobe on each side. The skin is hairless and covered with fine wrinkles.

These animals inhabit the rivers entering the sea and shallow coastal lagoons on both sides of the Atlantic, in tropical parts of West Africa and of eastern North and South America. The South American species ascends the Amazon and its tributaries well up toward their headwaters.

The Florida manati regularly frequents the coast from eastern Florida to Mexico, Central America, and the West Indies; in summer it sometimes strays as far north as the coast of Virginia.

This species attains an extreme length of more than 15 feet and a weight of more than 1,500 pounds, but the average size is much less. A large specimen exhibited alive at New Orleans the winter of 1912 weighed 1,310 pounds and is reported to have eaten daily from 60 to 100 pounds of grass. One captured near Point Isabel, Texas, measured a few inches more than 15 feet in length.

Manatis were formerly plentiful in the Indian River and elsewhere along the Florida coast, but were shot and netted to the verge of extermination. They were killed not only for amusement by thoughtless sportsmen, but many were killed by residents for their flesh, which was salted down like beef for future use. The flesh is said to be well flavored and not unlike beef.

The imminent danger of the extermination of these curious animals and their evident value for the interest they lend the coastal waters of the State led to the passage of protective laws with a penalty of \$500. As a result of this, manatis have increased rapidly. A

correspondent, writing on June 20, 1916, from Ponce Park, on Indian River, says that at this season scarcely an hour in the day passes but that from one to half a dozen may be seen in front of his house. He adds that one with a "calf" about 3 feet long keeps about his dock all the time. In this vicinity manatis appear to be migratory, leaving about the first of December and returning in early spring, the first one noted in 1916 appearing on March 26. They are extremely susceptible to cold, as was demonstrated by the number which perished in Indian River near Micco, February 12, 1895, when the temperature fell to 20° Fahrenheit. They are known to winter in Biscayne Bay and elsewhere in southern Florida.

Within a few weeks after the manatis return to the vicinity of Ponce Park the young are born. Just before this the females are said to seek the protection of a dock, crib, or bridge, possibly in order that the new-born young may be safe from the sharks and sawfish which abound in these waters. Usually there is only one calf, which is about 30 inches long, but sometimes the mother is seen accompanied by two. During this season the females are scattered and, with their young, keep in comparatively shoal water near the shore, and not infrequently lie in shallow pools with half their bodies exposed. Later in the season they gather in herds and often 15 to 20 may be seen close together. At such times they roll about and make a great turmoil in the water. The Mexicans on the coast of southern Vera Cruz described to me similar summer gatherings of manatis in small lagoons and claimed they were there for the purpose of mating.

In fall, near Ponce Park, the larger animals, probably the old males, separate from the herds and roam about singly. At this time they often make a peculiar noise like a loud snort, which may be heard for half a mile or more.

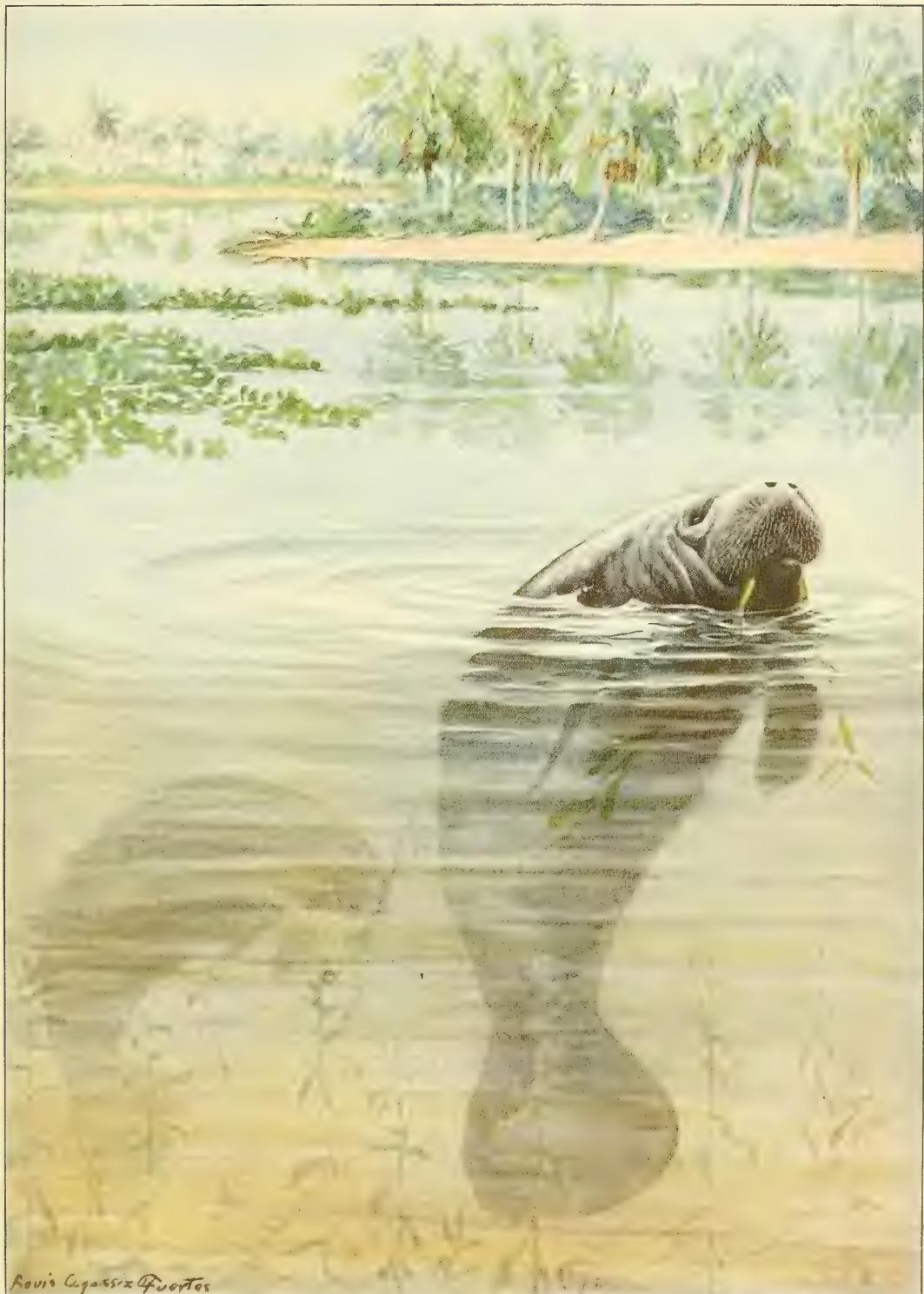
The Florida manatis are extremely mild and inoffensive animals, seeming never to fight one another, nor to show aggressiveness of any kind. When not molested they are very gentle and will feed close about a boat or dock regardless of the presence of people, but they become alarmed by any sudden noise. In captivity they soon learn to eat from their captor's hands.

Manatis are sluggish, stupid animals, without other defense than their size. They are not rapid swimmers and are among the extremely few herbivorous aquatic mammals. Unlike seals, whales, and their allies, which feed upon some form of animal life, manatis feed on the lush grasses and other vegetation springing from the oozy bottom of the waters they frequent. When feeding on the bottom they use their flippers to help move slowly about. In places along the Indian River they are reported to approach the shore and, with head and shoulders out of water, to feed on heavy grass-like plants hanging from the banks.

While they are feeding the heavy bi-lobed upper lips work freely and are sufficiently prehensile to seize the grass, or other plant food, between the lobes and thrust it back into the



MUSK-OX



Louis Agassiz Fuertes

FLORIDA MANATI

mouth. The ends of the flippers are sometimes used to help convey food to the mouth, like huge hands in thumbless mittens.

When suckling her young the manati rises to the surface, her head and shoulders out of the water, and with her flippers holds the nursling partly clasped to her breast. This semi-human attitude, together with the rounded head and fishlike tail, may have furnished the basis on which the ancients built their legends of the mermaids.

#### KILLER WHALE (*Orcinus orca*)

The killer whale is a habitant of all oceans from the border of the Arctic ice fields to the stormy glacial margin of the Antarctic continent. So far as definitely known, there appears to be but a single species. It attains an extreme length of approximately 30 feet and is mainly black with well-defined white areas on the sides and underparts of the body. Its most striking and picturesque characteristic is the large black fin, several feet long, standing upright on the middle of the back.

The killer usually travels and hunts in "schools" or packs of from three to a dozen or more individuals. Unlike most whales, the members of these schools do not travel in a straggling party, but swim side by side, their movements as regularly timed as those of soldiers. A regularly spaced row of advancing long black fins swiftly cutting the undulating surface of the sea produces a singularly sinister effect. The evil impression is well justified, since killers are the most savage and remorseless of whales. The jaws are armed with rows of effective teeth, with which the animals attack and devour seals and porpoises, and even destroy some of the larger whales.

Killers are like giant wolves of the sea, and their ferocity strikes terror to the other warm-blooded inhabitants of the deep. The Eskimos of the Alaskan coast of Bering Sea consider killers as actual wolves in sea form. They believe that in the early days, when the world was young and men and animals could change their forms at will, land wolves often went to the edge of the shore ice and changed to killer whales, and the killers returned to the edge of the ice and climbed out as wolves, to go ravening over the land. Some of the natives assured me that even today certain wolves and killers are still endowed with this power and, on account of their malignant character, are much feared by hunters.

Killers are known to swallow small seals and porpoises entire and attack large whales by tearing away their fleshy lips and tongues. When attacking large prey they work in packs, with all the unity and fierceness of so many wolves. The natives of the Aleutian Islands told me that large skin boats are sometimes lost in the passes between the islands by sealions leaping upon them in their frenzied efforts to escape the pursuit of killer whales.

The killers are specially detrimental to the fur-seal industry, owing to their habit of prey-

ing upon seals during their migrations in the North Pacific and during the summer in Bering Sea. They also haunt the waters about the Fur Seal Islands to continue their depredations during the summer. It would be a wise conservation measure for the Federal Government to have these destructive beasts persistently hunted and destroyed each spring and summer when they congregate on the north side of the Aleutian passes. Their destruction would not only save large numbers of fur seals, but would undoubtedly protect the few sea otters still remaining in those waters.

#### WHITE WHALE, OR BELUGA (*Delphinapterus leucas*)

The white whale, or beluga of the Russians, is a circumpolar species, limited to the extreme northern coasts of the Old and the New Worlds. The adult is entirely of a milk-white color, is very conspicuous, and as it comes up to "blow" presents an interesting sight. The young beluga is dark slate color, becoming gradually paler for several years until it attains its growth. The beluga usually lives in the shallow waters along shore, and not only frequents sheltered bays and tidal streams, but ascends rivers for considerable distances. Plentiful along the coast of Alaska, especially in Bering Sea and the Arctic Ocean, this whale also ascends the Yukon for a long distance. It also comes down the Atlantic coast and enters the lower St. Lawrence River.

The white whale is said at times to attain a length of 20 feet, but its ordinary length is nearer 10 or 12 feet. It travels in irregular "schools" of from three to ten or fifteen individuals and usually rolls high out of water when it comes up to breathe. It enters sheltered bays and the lower courses of streams, mainly at night, in pursuit of fish, which furnish its main food supply. During the twilight hours of the Arctic summer night, glowing with beautiful colors, the ghostly white forms of these whales breaking the smooth blue-black surface of a far northern bay add the crowning effect of strange unworldly mystery to the scene.

When on hunting trips in early autumn, I camped many times on the banks of narrow tide channels leading through the coastal tundra, and for hours during the darkness of night, as the tide was rising, heard the deep-sighing sound of their blowing, as schools of belugas fished up and down the current, often only 15 or 20 feet from where I lay.

The oil and flesh of the white whale is highly prized by the Eskimos, and they not only pursue it in kyaks with harpoon and float, but set large-meshed nets of strong seal-skin cords off projecting points near entrances to bays. Young or medium-sized animals are often caught in this manner, but powerful adults often tear the nets to fragments.

The beluga frequents broken pack ice along shore, and one trapped alive by the closing ice north of the Yukon early one winter was re-

ported by the Eskimos to have uttered curious squeaking noises when they attacked and killed it—an interesting fact, as the beluga is said to be the only member of the whale family to make vocal sounds of any kind.

When a school has its curiosity aroused by the approach of a boat or for any other cause, the members often raise their heads well out of water, one after the other, and take a deliberate look, then dive and swim to a safe distance before coming up again.

The small size of the beluga has long saved it from organized pursuit. Recently it has been announced that its skin has become valuable for commercial purposes, and that many are being killed. If this continues, these harmless and interesting animals are likely soon to disappear from most of their present haunts, unless proper measures can be taken to protect them from undue killing.

#### GREENLAND RIGHT WHALE, OR BOWHEAD (*Balaena mysticetus*)

The Greenland right whale is one of the largest of sea mammals, reaching a length of from 50 to 60 feet, and has a marvelously specialized development. Its enormous head comprises about one-third of the total length, with a gigantic mouth provided with about 400 long, narrow plates of baleen, or whalebone, attached at one end and hanging in overlapping series from the roof of the mouth. These thin plates of baleen rarely exceed a foot in width and are from 2 to over 10 feet long. One edge and the free end of each plate is bordered with a stiff hairlike fringe.

The northern seas frequented by these whales swarm with small, almost microscopic, crustaceans and other minute pelagic life, which is commonly so abundant that great areas of the ocean are tinged by them to a deep brown. These gatherings of small animal life are called "brit" by the whalers and furnish the food supply of the bowhead. The whale swims slowly through the sea with its mouth open, straining the water through the fringed whalebone plates on each side of its mouth, thus retaining on its enormous fleshy tongue a mass of "brit," which is swallowed through a gullet extraordinarily small in comparison with the size of the mouth. Among all the animal life on the earth there is not a more perfectly developed apparatus provided for feeding on highly specialized food than that possessed by the right whale—one of the hugest of beasts and feeding on some of the smallest of animals, untold numbers of which are required for a single mouthful.

The bowhead is a circumpolar species, which in summer frequents the Arctic ice pack and its borders, and on the approach of winter migrates to a more southerly latitude. For centuries this huge mammal has formed the main basis for the whaling industry in far northern waters, first in the Greenland seas and later through Bering Straits into the Arctic basin north of the shores of Siberia and Alaska.

Each large whale is a prize worth winning, since it may yield as much as 200 barrels of oil and several thousand pounds of whalebone. All know of the rise and fall of the whaling business, on which many fortunes were built and on which depended the prosperity of several New England towns.

Whaling served to train a hardy and courageous generation of sailors the like of which can nowhere be found today. They braved the perils of icy seas in scurvy-ridden ships, and when fortune favored brought to port full cargoes of "bone" and oil, which well repaid the hardships endured in their capture. Many a ship and crew sailed into the North in pursuit of these habitants of the icy sea never to return.

Interest in the brave and romantic life of the whalers still exists, though the most picturesque quality of their calling passed with the advent of steam whalers and the "bomb gun," which shoots an explosive charge into the whale and kills it without the exciting struggle which once attended such a capture by open boats.

It has been well said that no people ever advanced in the scale of civilization without the use of some artificial illuminant at night. The world owes a great debt to the right whale and its relatives for their contribution to the "midnight oil," which encouraged learning through the centuries preceding the discovery of mineral oil. It also furnished the whalebone which built up the "stays" so dear to the hearts of our great-grandmothers.

The female right whale has a single young, which she suckles and keeps with her for about a year. She shows much maternal affection, and a number of cases are recorded in which the mother persisted in trying to release her young after it had been harpooned and killed.

Every year, as the pack ice breaks up for the season, the bowheads move north through Bering Straits. As late as 1881 Eskimos along the Arctic coast of Alaska put to sea in walrus-hide umiaks, armed with primitive bone-pointed spears, seal-skin floats, and flint-pointed lances for the capture of these huge beasts. These fearless sea hunters, with their equipment handed down from the Stone Age, were sufficiently successful in their chase to cause trading schooners to make a practice of visiting the villages along the coast to buy their whalebone.

From one of the whaling ships encountered north of Bering Straits the summer of 1881 we secured a harpoon, taken from a bowhead in those waters, bearing a private mark which proved that it came from a whaling ship on the Greenland coast, thus showing conclusively that these whales in their wanderings make the "Northwest Passage."

Persistent hunting through the centuries has vastly decreased whales of all valued species, and the modern steam whaler is hastening their end. Their only hope of survival lies in wise international action, and it is urgent that this be secured in time.



KILLER WHALE

R. W. Shufeldt



WHITE WHALE, OR BELUGA



GREENLAND RIGHT WHALE, OR BOWHEAD



SPERM WHALE, OR CACHALOT

**SPERM WHALE, OR CACHALOT**  
(*Physeter macrocephalus*)

The cachalot is from 40 to 60 feet long, about equaling the Greenland bowhead whale in size. It has a huge blunt head, which comprises about one-third of the entire animal. The mouth is large and the under jaw is provided with a row of heavy teeth, consisting of ivory finer in grain than that from an elephant's tusk.

The great whaling industry of the last two centuries was based mainly on the sperm and the bowhead whales. The largest of the bowheads is limited to the cold northern waters, but the sperm whale frequents the tropic and subtropic seas around the globe. The main hunting area for them lies in the South Pacific, but they frequently visit more temperate coasts, especially when seeking sheltered bays, where their young may be born. The young are suckled and guarded carefully until old enough to be left to their own devices. Sperm whales sometimes occur off both coasts of the United States, especially off southern California.

The feeding grounds of these whales are mainly in the deepest parts of the ocean, where they cruise about in irregular schools containing a number of individuals. Their food consists almost entirely of large octopuses

and giant squids, which are swallowed in large sections.

As befits a gigantic mammal possessing huge jaws armed with rows of fighting teeth, the sperm whale is a much more pugnacious animal than the bowhead. There are many records of whale-boats being smashed by them, and several well-authenticated cases of enraged bull cachalots having charged and crushed in the sides of whaling ships, causing them speedily to founder.

The sperm whale yields oil of a better quality than the bowhead. Its huge head always contains a considerable number of barrels of specially fine-grade oil, which produces the spermaceti of commerce. Ambergris, having an excessively high value for use in the manufacture of certain perfumes, is a product occasionally formed in the digestive tract of the sperm whale.

The name cachalot is one to conjure with. It brings up visions of three-year voyages to the famed South Seas, palm-decked coral islands, and idyllic days with dusky islanders. As in the case of the Greenland bowhead, however, this animal has been hunted until only a small fraction of its former numbers survives and the romantic days of its pursuit are gone, never to return.

## THE LARGER NORTH AMERICAN MAMMALS

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# THE NATIONAL GEOGRAPHIC MAGAZINE



## LONELY AUSTRALIA: THE UNIQUE CONTINENT

By HERBERT E. GREGORY

AUSTRALIA is the most isolated of all inhabited continents and is remote from the center of all of the world's activities. Northward the sailing distance to Japan is approximately 3,000 nautical miles; to India, 2,500 miles. South America is 7,000 miles to the east; and Africa an equal distance west.

From London to the capital of Australia ships by the Suez route traverse approximately 11,000 miles of water and by the Panama Canal, 12,734 miles. From California ports the routes via Samoa, or Fiji, or Tahiti cover a quarter of the circumference of the earth. Australia's only large civilized neighbor within a radius of 1,000 miles is Java.

The continent, lying thus far outside the ordinary routes of travel, is rarely visited by Americans. For most of us knowledge of this fascinating land is obtained by a study of a few pages in the back of school geographies—pages descriptive of "Australia and New Zealand" and accompanied by a map of "Australia and the Islands of the Pacific" on a scale too small for the recognition of significant features.

### AUSTRALIA AND NEW ZEALAND ARE UNLIKE

One of the first surprises awaiting the tourist from the Northern Hemisphere is to find that Australia and New Zealand may not be grouped as two islands of

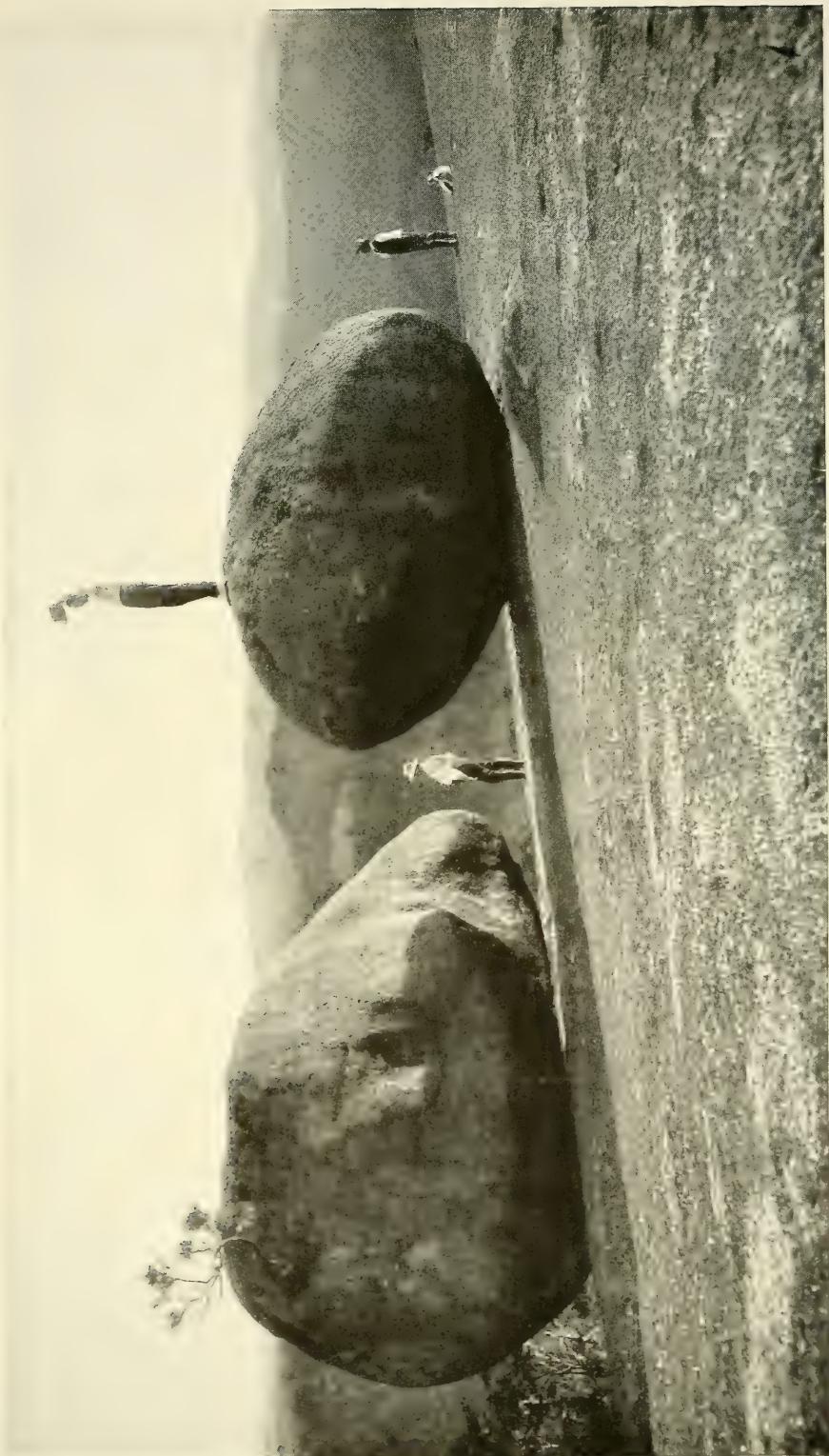
like appearance, differing mainly in size; near neighbors which may be treated as a unit. New Zealand is nearly twice as far from Australia as Bermuda is from New York, and is not only east but also south.

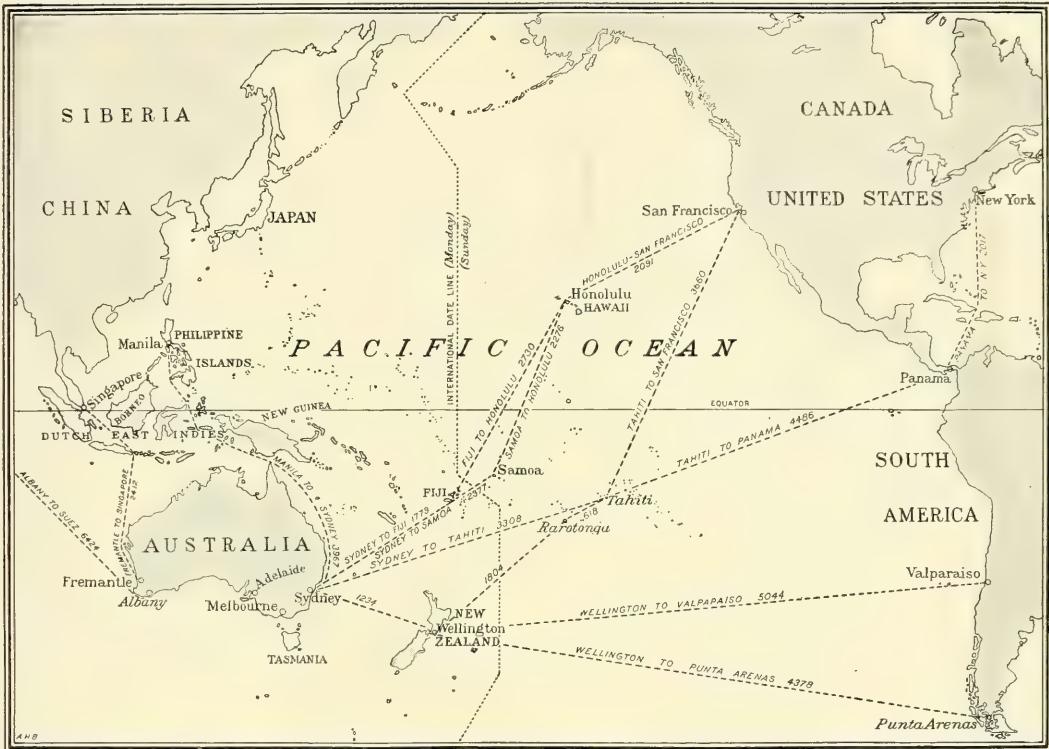
Four days' travel across a chilly sea is required for the traverse from Wellington to Sydney, and after exchanging the chill midsummer climate of the New Zealand Lake region for the heat of Adelaide, one readily accepts the evidence of the map that the southern coast of the Australian mainland has the latitude of central New Jersey, while the southernmost of the three islands which comprise the Dominion of New Zealand occupies the position of southern Newfoundland (see map, page 477).

In climate and vegetation the two dominions are as unlike as Norway and South Carolina. New Zealand is a land of mountains, gorges, rivers, and fiords. The higher peaks of the South Island are eternally snow-capped and the glaciers of its southern Alps rival those of Switzerland. The surrounding seas are too cold for corals. Among the mountains of the North Island volcanic fires are still active and the geysers and hot springs are little less impressive than those of the Yellowstone Park. The aboriginal inhabitants of New Zealand, at the time of their discovery by Captain Cook, were the most advanced of all the South Pacific races,

THE TWO BROTHERS ON BALD MOUNTAIN (4,070 FEET) : SOUTH QUEENSLAND, AUSTRALIA

These relics of a bygone geologic age here appear in contrast with the white man. While the Caucasian history of Australia is only a little over a hundred years old, dating from the first settlement in 1788, when Botany Bay was colonized, its geological history ranks with the oldest on earth.





MAP SHOWING THE ISOLATION OF AUSTRALIA (SEE PAGE 473)

while the aborigines of Australia are the lowest in intelligence of all human beings.

Australia is in no sense inferior to New Zealand in geographic interest, but lofty peaks, profound canyons, and active volcanoes are lacking; its rivers are unimpressive and its permanent lakes small and few in number; it is a continent composed of plains interrupted by ridges and mountain knobs.

Unique vegetation of remarkable variety and beauty (see page 486), animal life of by-gone geological periods (see page 502), and an aboriginal population, the lowest in the scale of beings having human form, stand out as features distinctly Australian—a never-ending source of interest to the geographer.

Australia is a large country. It is about fourteen times the size of France or Germany, twenty-five times the size of Italy, Hungary, or Ecuador, and two and one-half times the size of Argentina! Its chief competitor in the Southern Hemisphere. Its area is equal to three-fourths of Europe, one-third of all North Amer-

ica, and one-fourth of the British Empire.

#### SOME COMPARISONS WITH THE UNITED STATES

The continent is almost exactly the size and is nearly the shape of the United States (see map, page 476).

Of outlying provinces, Australia has the tropical land of Papua to offset arctic Alaska. The Commonwealth is responsible also for the rich little Lord Howe Island and for 800 inhabitants of Norfolk Island, descendants of Tahitian women and British sailors—mutineers of the famous ship *Bounty*.

Australia is the most level in surface and regular in outline of all the continents, and even of most large islands. It is also the lowest continent, with an average elevation about that of Ohio. Its surface lacks variety. The change from one type of topography is so gradual and significant natural features are so few and so widely spaced that, with the exception of the Murray River, they are



OUTLINE MAP OF AUSTRALIA ON OUTLINE OF THE UNITED STATES, TO SHOW  
RELATIVE SIZES

If we except the lakes, the land area of the continental United States is 2,973,890 square miles, and of Australia 2,974,581 square miles, a difference in favor of Australia of 691 square miles.

not utilized in marking the boundaries of States.

Except for the low coastal mountains, the obstructions to transcontinental railroads from Queensland to Perth or from Port Augusta to Port Darwin are less than those between Pittsburgh and Denver (see also page 489).

The traveler in search of duplicates of the Canadian Rockies, the Yosemite, the Grand Canyon, of Norwegian fiords and Alpine scenery, need not visit Australia. Its mountain scenery is that of the southern Appalachians, the White Mountains, and the low ranges of Arizona. Its plains and plateaus are comparable with those of the Rocky Mountain foothills and the arid expanses of Utah, Idaho, and Oregon. The blunt granite cap of Mt. Kosciusko, 7,328 feet above sea, is the culminating point of land. A half dozen peaks reach the height of Mt. Washington, and

something like one per cent of the entire land area rises as high as the Catskills.

Although the mountains are low compared with those of other continents, their influence is great, for nowhere is their control of rainfall and consequent distribution of vegetation and people better exemplified. A bird's-eye view of Australia shows a belt of vegetation extending along its north, east, and southeast edges, with a patch on the extreme southwest corner and another covering most of the island of Tasmania. In these regions the people live. The remainder of the big island presents an enormous expanse of brown and gray soils and rock, dotted with patches of vegetation on dunes and on isolated highlands and strips of green along watercourses.

The cause is not difficult to find. The trade winds abundantly supply the northeast coast, but carry little water beyond;



OUTLINE MAP OF AUSTRALIA SUPERPOSED ON OUTLINE OF PART OF NORTH AMERICA  
OF SAME SCALE, IN CORRECT LATITUDE

Only one-twentieth of the total area of Australia lies in a latitude farther removed from the Equator than Chattanooga, Tennessee, Clarendon, Texas, and Albuquerque, New Mexico. Considerably less than one-third of its area lies in a cooler latitude than the sugar-cane lands of Louisiana.

the westerlies, the "roaring forties" of the sailor, deposit their moisture on the lands along Bass Strait and on the southwest tip of the continent, but have little or none to carry inland. The north coast is alternately drenched and dried with the coming and going of monsoons. The center of the continent is therefore arid, large parts are desert, and the numerous large lakes shown on the map are expanses of salt mud covered with water by infrequent rains (see page 488).

Australia's streams are fewer and carry less water than those of any other continent.

#### AUSTRALIA HAS NO RIVERS LIKE OURS

There are in Australia no Colorados or Columbias or Tennessees, trenching plateaus and crossing mountain chains, and no counterparts of the thousands of spring-fed brooks and streams issuing from lakes widely scattered over the country. The St. Lawrence system of lakes and rivers of large volume and steady flow is the very antithesis of anything found in Australia. The large area in Utah and Nevada from which dwindling streams never escape to the sea is represented in Australia by an enormous



THE HIGHEST PEAK IN AUSTRALIA, MOUNT KOSCIUSKO (7,328 FEET), AND THE UPPER MURRAY RIVER: VICTORIA

expanse of territory, comprising fully half of the continent.

The heart of the United States is a well-watered land of fields and woods and cities; the corresponding part of Australia is dry and barren and thinly populated.

The Murray-Darling is the one great river system of Australia. From the source of its uppermost branch, the Condamine, in the highlands of Queensland, 80 miles from the edge of the continent, to its mouth, through the sand reef of the Coorong, the stream travels 2,310 miles, receiving supplies from 414,000 square miles of land. It drains five-sixths of New South Wales, more than one-half of Victoria, and nearly one-seventh of the entire Australian Continent (see map on pages 480-481).

In relative length and area drained, it is the Missouri-Mississippi of Australia; but in other respects the two systems are quite unlike. The Mississippi, whose basin occupies nearly three-sevenths of the United States, flows through the heart of the country and receives abundant water from mountains on either side. The Murray is on the edge of the continent, far removed from the interior; its course lies between well-watered highlands on the east and arid plains on the west. The Mississippi receives supplies from nearly every part of the 1,250,000 square miles of its basin; the Murray receives effective contributions from only 160,000 square miles; from the remaining 254,000 square miles the water is lost before it enters the main stream, and the dry air abstracts further toll from the river itself.

Instead of a delta pushed out to sea, the Murray terminates in a lagoon inclosed by a barrier of sand pierced by an inlet with scarcely seven feet of water.

Because of its unfavorable outlet, its small volume, its snags and sand-bars and great sinuosities, navigation of the Murray is limited to small, light-draft steamers towing one or two barges. Regular traffic in grain and wool is maintained during seven months of the year from the mouth of the river to Wentworth, 500 miles, and small boats reach Albury.

During times of exceptional floods

boats have reached Walgett on the Darling, 1,900 miles from the sea. In the flood year of 1870 a steamer went beyond the Queensland border along a river 60 miles wide, and in 1890 steamers on the Darling between Wentworth and Burke "traveled for hours without seeing any land, and in one instance discharged cargo 25 miles from the ordinary channel of the river." But a few years later (1902-1903) the Darling ceased to flow for eleven months. During exceptional years the bed of the Murray is partly dry and the waters near its mouth become too salt for stock.

#### THIS GREAT CONTINENT WAS NOT DISCOVERED UNTIL JUST BEFORE OUR REVOLUTION

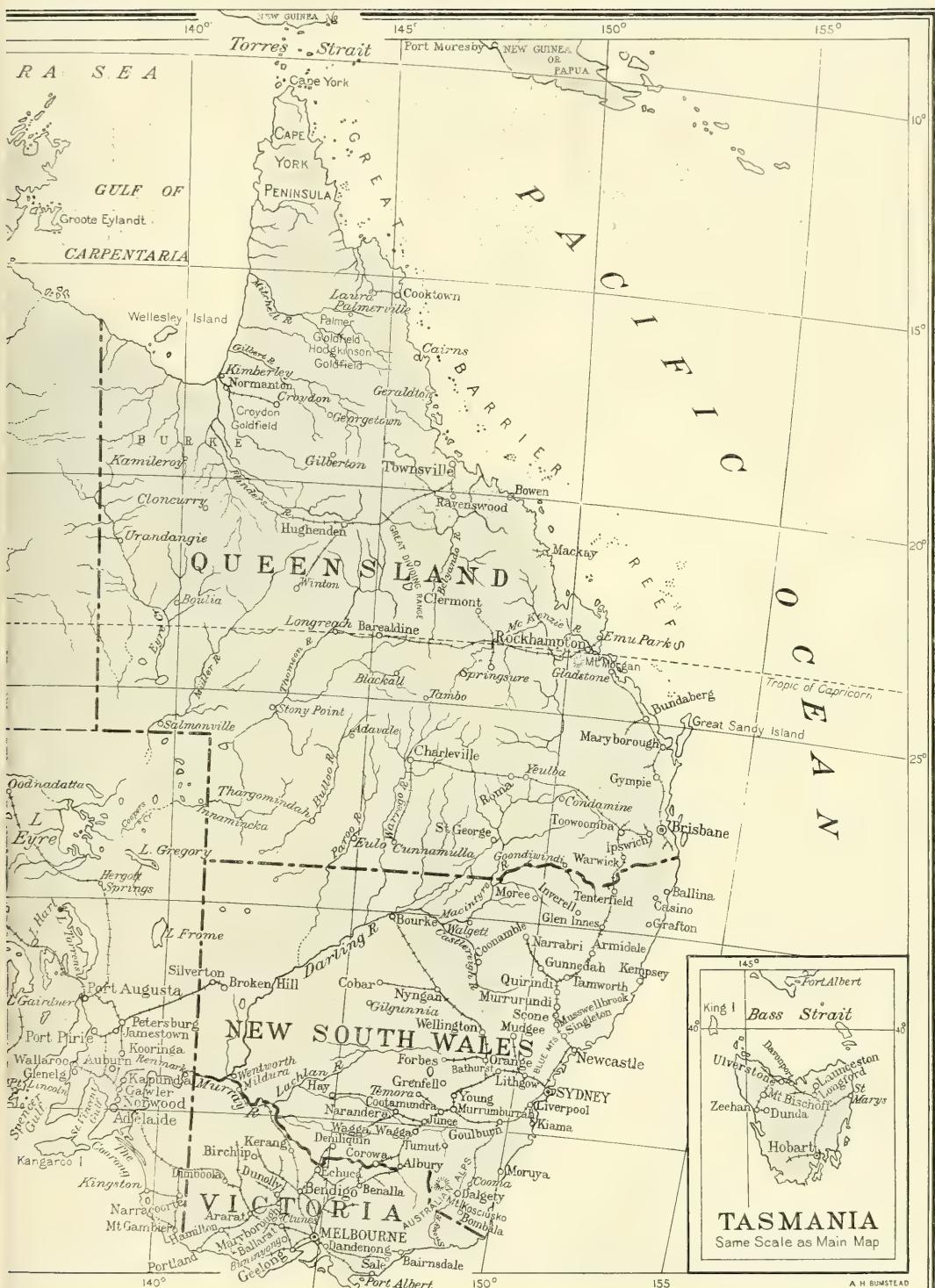
That the size and form of a land-mass nearly as large as Europe should have remained unknown until 1770 is most remarkable.

Louis de Torres, sailing from Peru (1606), thought the northern Queensland coast another of those island groups (Marquesas, Solomon, New Hebrides) through which he had passed. The Dutch proceeding from Java several times met the west and north of Australia, but learned little regarding the land. They reported a "barren," "wild" country, inhabited by "barbarous," "cruel," "black" people. Abel Tasman, in 1642, found Van Diemens Land, Tasmania, which he left in disgust. Following the westerly winds he sailed east, found New Zealand, but missed the Australian coast.

In 1688 William Dampier, an English buccaneer, landed in West Australia, and the following year mapped the coast, which he described as "sandy and waterless," with stunted trees, inhabited by "the miserablest people in the world."

These early explorers were singularly unfortunate in the route which they traversed. They visited the tropical belt of northern Australia, the inhospitable shores of western Australia, and sailed along the southern coast, where cliffs prevented landing and where for a distance of nearly 1,000 miles no water was procurable other than that from their ships. The attractive parts of the country were not seen at all. Small wonder that little



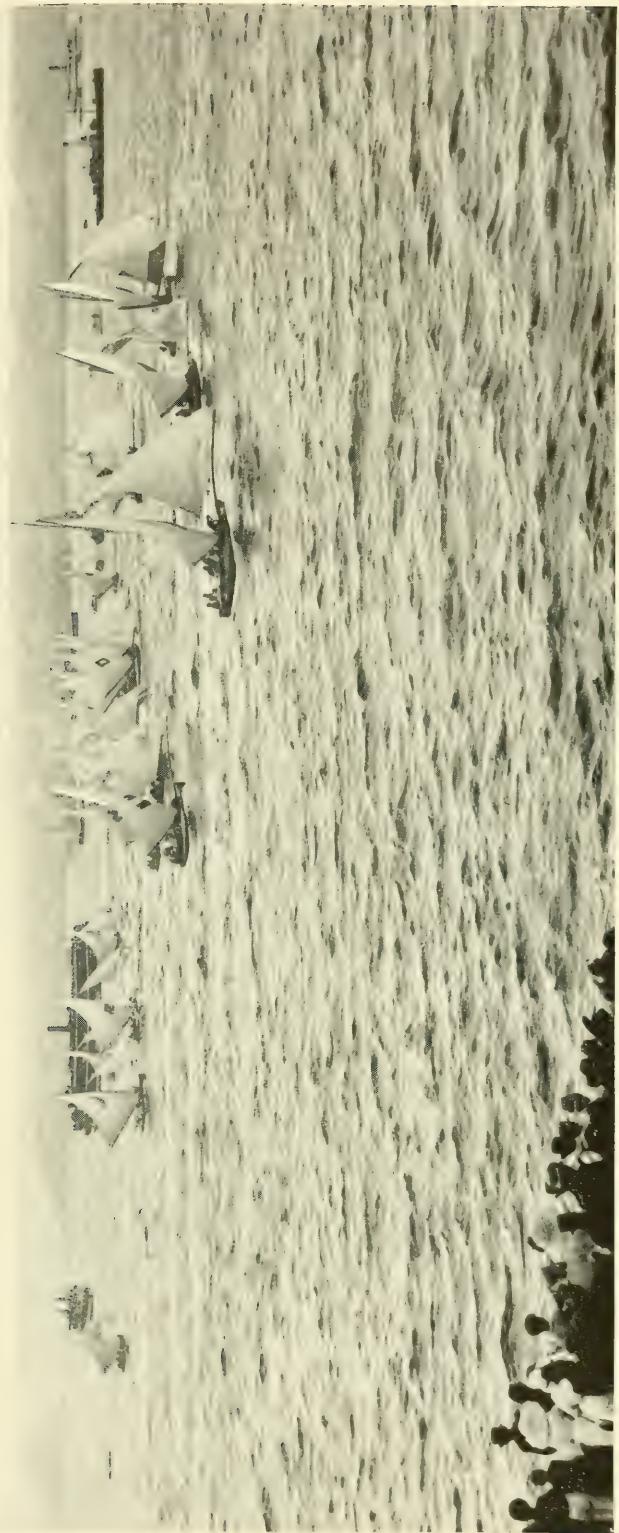


Photograph by Norman Thomas

PERTH, THE CAPITAL OF WEST AUSTRALIA, AND SWAN RIVER

Upon the opposite edge of the Australian Continent, 2,000 miles almost due west from Sydney, is Perth, the capital of Western Australia, a city of perhaps 50,000 inhabitants. A little to the south is Cape Leeuwin, the first land seen by the traveler sailing to Australia via the Suez Canal and through the Indian Ocean, which received its name from the little Dutch ship which discovered it, the name of whose commander is lost (see map, pages 480-481).



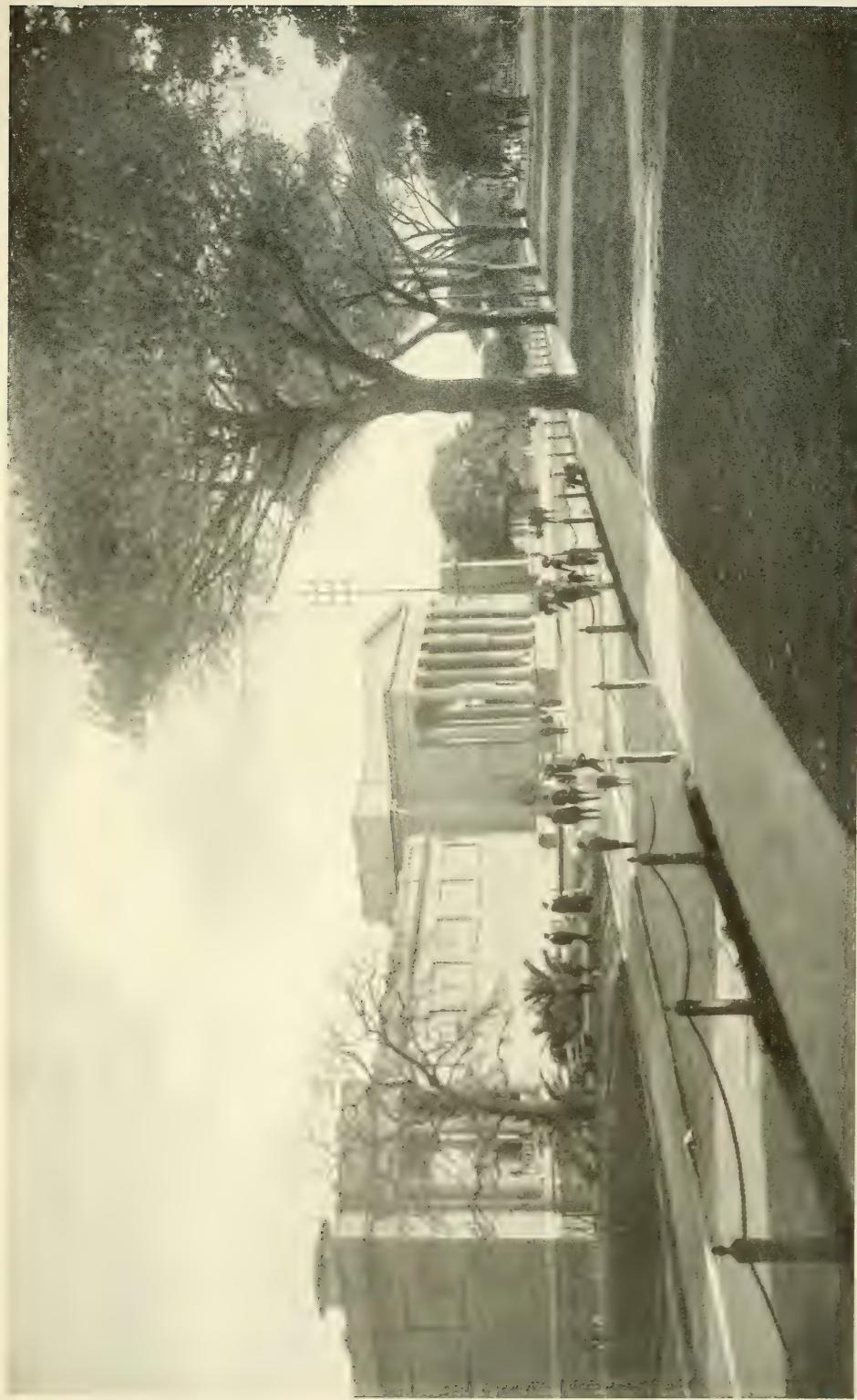


A SAILING RACE OF 12-FOOT BOATS: SYDNEY HARBOR, NEW SOUTH WALES

The history of Australia begins with the year 1788, when 1,035 convicts were landed at Sydney Cove, the first settlement of white men on the continent. In natural advantages Sydney's harbor is unsurpassed on the North Atlantic coast (see page 485).

THE NATIONAL ART GALLERY OF SYDNEY

Sydney is the seventh city in size in the British Empire, being exceeded only by London, Calcutta, Bombay, Glasgow, Liverpool, and Manchester. It is about the size of Boston or St. Louis, two of the five largest cities of North America. Its population is exceeded in the Southern Hemisphere only by Buenos Aires and Rio de Janeiro.



was heard of the Great South Land for nearly one hundred years after Dampier made his official report to King William.

One is minded to compare the experiences of these Pacific navigators with those of the discoverers of North America. The English and Dutch, like their predecessors, the Spanish, found the North Atlantic seaboard "pleasant land," well watered, clothed with vegetation, with obviously fertile soil, inhabited by a virile race. If Columbus had first landed on the barren shores of Lower California, explored the Gulf of California, and sent scouts into the Sonoran and Gila deserts, the story to be told of a new world would have had a far different wording.

The uncertainty surrounding the distribution of land in the South Pacific was dissolved by the English scientific expedition of 1768-1770, under Captain Cook. After circumnavigating the islands of New Zealand, Cook set his course westward toward Tasmania, but, luckily, was carried by storm winds to the east coast of Australia. Proceeding northward, he discovered the Great Barrier reef, and passed through Torres Strait, proving Australia to be a land-mass of great dimensions. Cook's expedition revealed for the first time the presence of wide belts of fertile land in Australia, and his landing at Botany Bay, Sydney, April 28, 1770, was destined to result in acquiring a continent for the British Crown.

#### THE SETTLEMENT OF AUSTRALIA RESULTED FROM THE AMERICAN REVOLUTION

Curiously enough, the establishment of the first colony on the new-found continent is an episode in the history of the United States. It was proposed by the British Government to utilize the land as a home for the "Loyalists" (Tories) who found life in the American Colonies uncomfortable at the close of the Revolutionary War. They were to be supplied with land and money, and Malay slaves or English convicts were to be provided as laborers.

Fear of the French fleet and the removal of many Tories to Canada led to the abandonment of this scheme, but another use for Botany Bay was soon discovered. Place must be found for undesirable citizens, who, before the Revolu-

tion, had been sent to America at the rate of one thousand a year, and New South Wales met the requirements. The history of Australia begins with the year 1788, when ten hundred and thirty-five convicts under military escort landed at Sydney Cove.

In looking back over the history of the original settlement at Sydney, at first it seems strange that the base of the Blue Mountains, a plateau 3,000 feet in height and a day's ride from the coast, should mark the edge of known land for twenty-five years after colonization.

There are, however, good reasons for this seeming lack of enterprise. The Blue Mountains, though not lofty, are broad, and constitute a formidable barrier. There are no long valleys heading in practicable passes and furnishing access from the east and the west; the stream heads are boxes inclosed by walls, and it was only when the narrow divides were chosen for causeways that the passage of the mountain was successfully accomplished (see page 487).

The famous "zigzags" of the first railroad, now replaced by a dozen expensive tunnels required for the precipitous descent of 2,000 feet, give even the casual tourist an impression of the ruggedness of the plateau; and when one is led out onto one of a hundred flat-topped promontories and gazes down into canyons whose walls may be scaled only by an experienced mountaineer and looks out over a tangle of canyons and cliffs and tables at lower levels, he realizes that "magnificent scenery" for the present generation must have been "disheartening obstacles" to the scout in search of tillable land.

It is as if the only feasible crossing of the Appalachians which confined the American colonists to the coastal belt were through the most rugged portion of West Virginia rather than along the Mohawk or through the Cumberland Gap.

The drought of 1813 appears to have been the force which compelled the leaders of the now prosperous colony to undertake a systematic search for new lands among and beyond the barriers which held them close to the sea.

The history of the effort to discover what lay back of these coastal regions in the "land of the never-never": to find the

nature and extent of the heritage now firmly in English hands is a disheartening but fascinating story. Whatever route was chosen the results were the same: tales of hardship and disaster and reports of no good land.

#### TALES OF UNSURPASSED COURAGE

One of the most dramatic incidents was the discovery of the Darling River by a group of worn-out, disheartened men traversing a scorched, waterless plain. A great river was found, but its waters were salt! The experience of Sturt's men carried involuntarily through the gorge of the Murrumbidgee into the broad channel of the Murray; their journey to the sea down an unknown river which followed an undreamed course, and their arduous return up 800 miles of current, with the scantiest of fare and amid hostile blackfellows, constitutes a record of endurance and resource comparable with Powell's descent of the Colorado canyons.

Parties from Sydney found little of value beyond the Darling; Bourke and Wills from Melbourne perished of starvation on Cooper Creek. Leichhardt disappeared utterly. From Port Lincoln and Adelaide, Eyre traversed the coast of South Australia, finding only three water-holes in 300 miles, and penetrated to the center of that State only to discover its watercourses dry and its lake beds coated with brine. Stuart, in 1862, succeeded in making a complete traverse of the continent from south to north, but found little on which to base the nation's future.

From the tropical portions of the Commonwealth came the same tale. The settlement established on Melville Island in 1824 was abandoned in 1829, in spite of the rich soil, good surplus of fresh water, and abundance of tropical fruit. Fort Wellington, on Raffles Bay, retained its colonists for only three years. Kennedy, on York peninsula, was killed by the natives; his companions starved to death.

As a record of human endeavor the explorations of Australia during these years constitute a chapter in history for which the United States has no parallel. The pioneers who crossed the Alleghanies found fertile country beyond; the trap-

pers and traders on our northern boundaries were in country abundantly supplied with food and water; the men who pushed their way across the great plains had forage and water for their animals and wild game for themselves. The forty-niners who crossed the deserts of Utah and Nevada were encouraged by knowledge of California beyond. Only the Spanish explorers from Mexico and pioneer travelers through the deserts of Arizona and southern California can appreciate the suffering and understand the failures of the heroic Australian scouts.

To the colonists grouped about the five cities on the mainland the results of these explorations between 1840 and 1860 must have been disheartening. The center of the great continent, which their hopes had pictured as grass-covered plains, fertile valleys, lakes, and timbered highlands, interspersed perhaps with arid stretches, had turned out to be one of the most extensive deserts in the world, into which streams rising near the coast were lost in a sea of rock and sand.

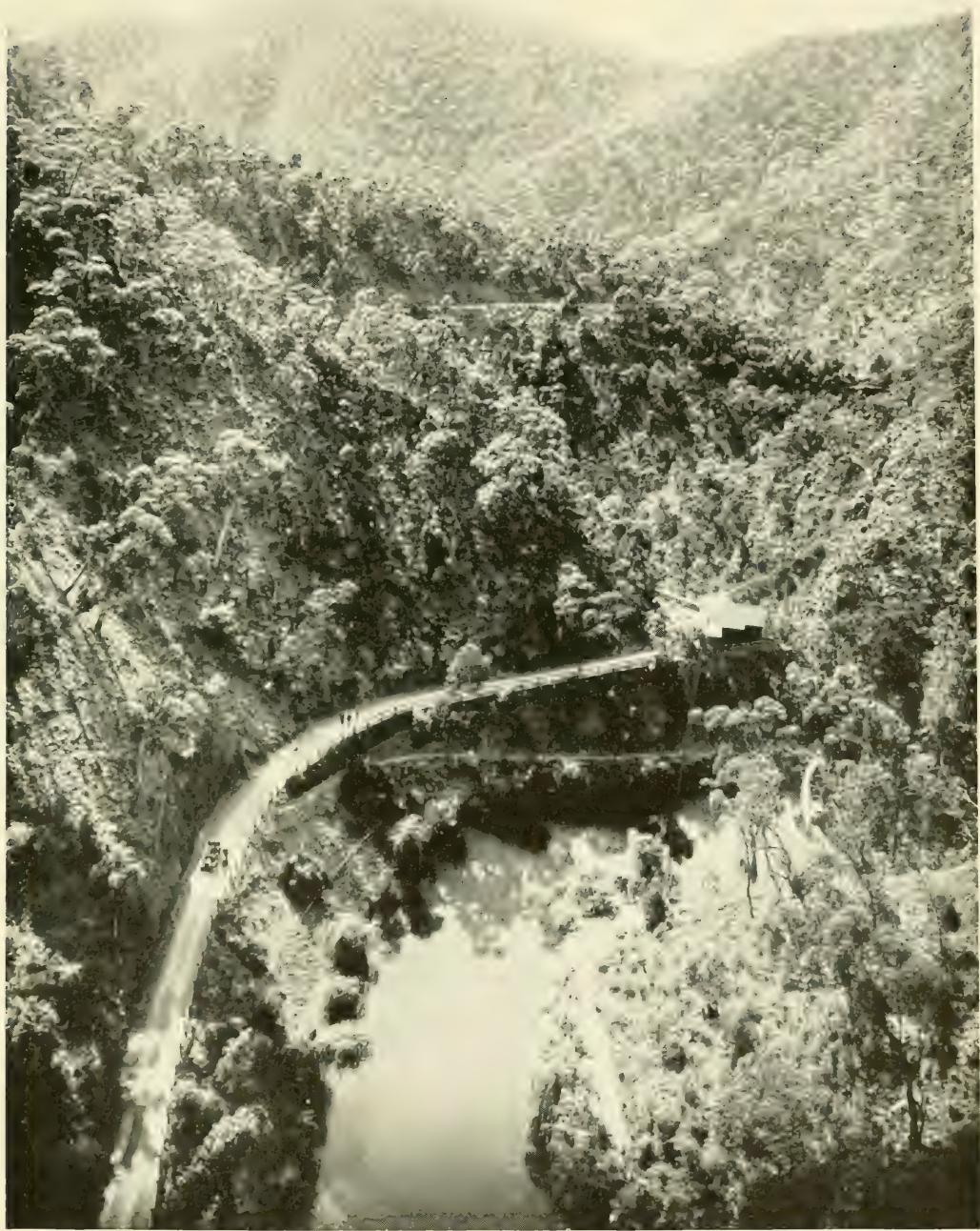
It is as if the people of the United States should wake up some morning and find that all the land between the Alleghanies and the Sierra Nevadas had been converted into plains like the arid stretches of Utah.

However, persistent explorations gradually disclosed to the Australians that their continent, in spite of its arid expanse, had well-watered agricultural lands for many millions of peoples, and that the resources in timber and ores and grazing lands were unusually large.

#### FORESTS OF ANCIENT LINEAGE

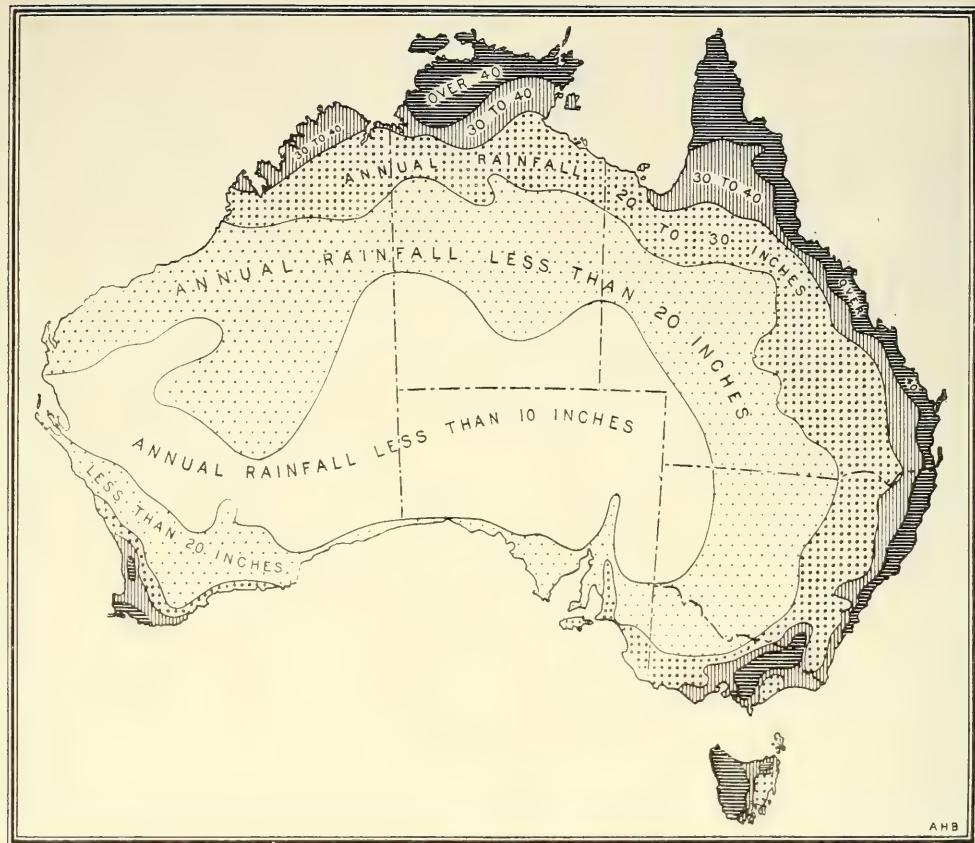
To me the most lasting impressions of Australia are of its wonderful woods. One readily understands why the Australian loves his trees. The groves of giant eucalyptus form pictures never forgotten, and the scent of the wattle brings a homesick feeling like the smell of the sage to a Westerner.

The flora is not only beautiful, it is unique, and has no counterpart in other lands. Of the 10,000 species of plants most of them are purely Australian, and are unknown even in New Zealand. The general impression one gets of Australian



A ROAD SCENE NEAR GRAND ARCH, JENOLAN CAVES, NEW SOUTH WALES

For many years the beautiful Blue Mountains of New South Wales were a barrier to the interior for the early colonists. With many mouths to be fed, an extension of territory became imperative, and an expedition under the leadership of a Kentish farmer, George Blaxland, for whom Mt. Blaxland was named, found a way through the mountains to the fertile country beyond. Now motor-cars glide through these mountains over smooth roads and tourists stop off en route to see the wonderful Jenolan Caves with their remarkable stalactitic formations.



A MAP SHOWING THE RAINFALL IN AUSTRALIA

More than two-thirds of the territory of Australia has less than twenty inches of rainfall a year. Washington, D. C., has 43 inches; Boston, 43; Chicago, 33; Kansas City, 37; Atlanta, 49; New Orleans, 57; Denver, 14; San Francisco, 22, and Seattle, 36. Being without high mountains, the continent has no summer snows to melt, which renders irrigation, except by artesian wells, almost impossible. Fortunately the configuration of bedrock makes artesian irrigation possible in many places, though the water so obtained is usually brackish.

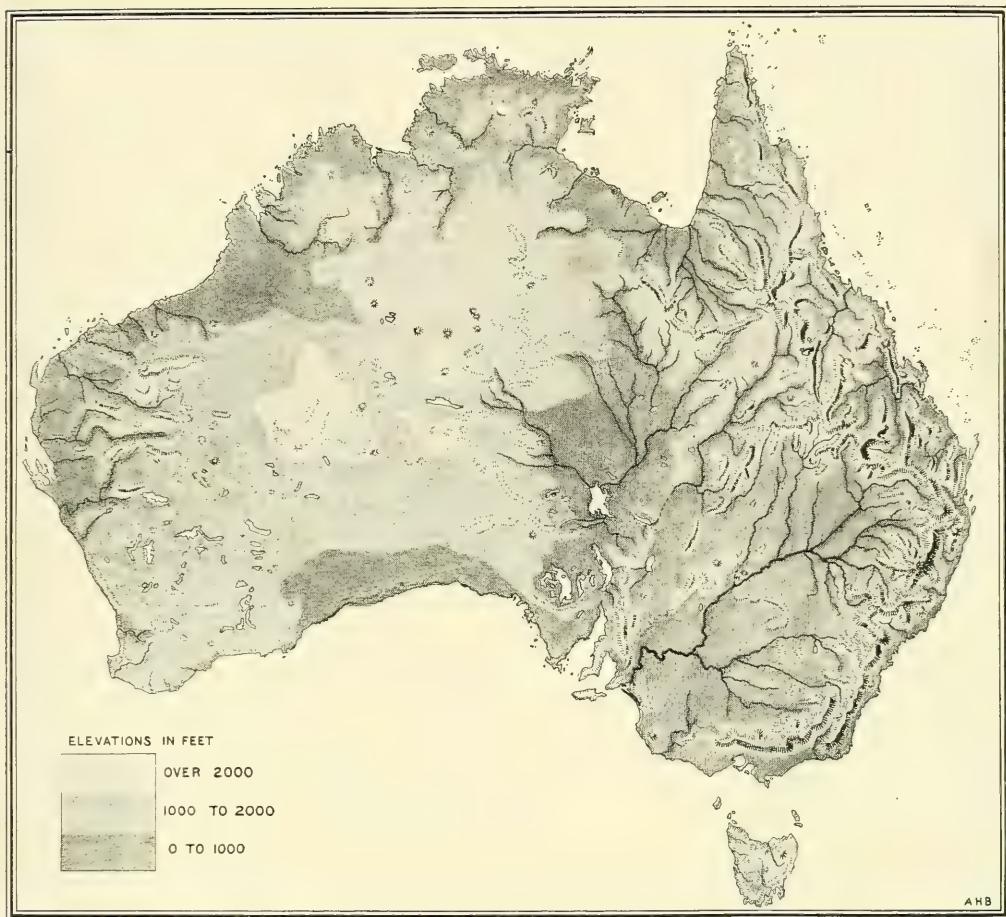
forests is their total unlikeness to anything seen elsewhere. The great forests of timber trees are not damp and shaded and all of one species, but are well lighted and filled with other forests of shorter trees; in places the woods consist of large widely-spaced trees surrounded only by bunch grass, and even in areas where water is not to be found on the surface for hundreds of square miles true forests of low trees are present.

Forms which may be recognized as tulip, lily, honeysuckle, and fern take on a surprising aspect. They are not garden flowers, but trees, and the landscape of which they form a part reminds one of the hypothetical representations in books of science of a landscape of Mesozoic

time, a period antedating our own by millions of years.

The trees are indeed those of a bygone age. In America and Europe shadowy forms of fossil leaves of strange plant species are gathered from the rock and studied with interest; in Australia many of these ancient trees are living. The impression that one is looking at a landscape which has forever disappeared from other parts of the world is so vivid that the elms and maples and oaks in some of the city streets strike a jarring note. The transition from Jurassic to modern times is painfully abrupt.

With a flora of such great interest, it occasions no surprise to find that Australia is the home of many eminent botanists,



PHYSICAL MAP OF AUSTRALIA

The very small area in Australia having an elevation of more than two thousand feet is clearly shown. Perhaps more striking even than this is the fact that, except for a very tiny area lying back of the coast in the southeast corner, there are no elevations exceeding four thousand feet.

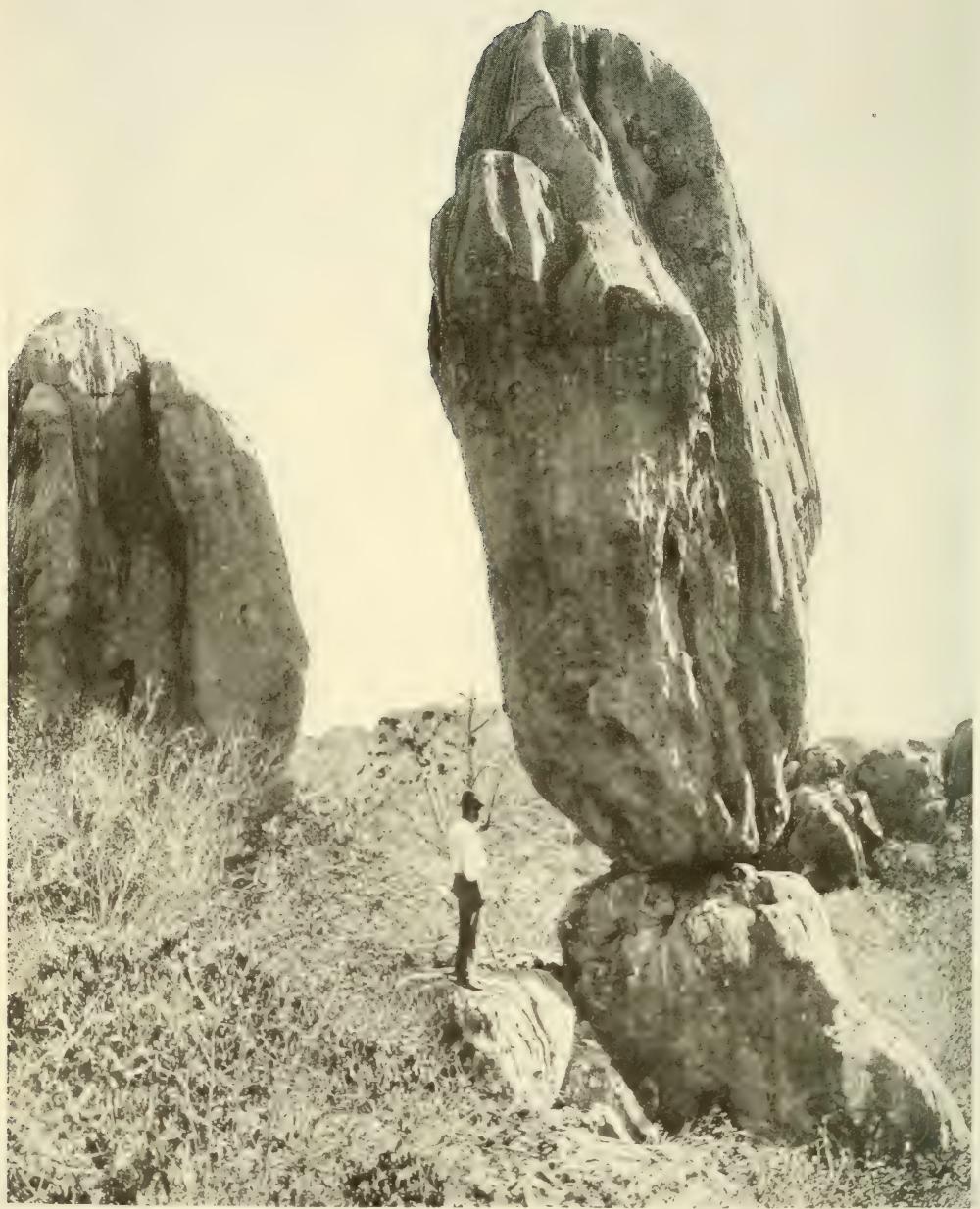
and that geologic history is a common subject of study in schools; but I sometimes wonder why the kangaroo and emu occupy the commonwealth coat of arms to the exclusion of the gums and the wattle, about which the finer sentiments of Australia center.

#### AUSTRALIA'S NATIONAL TREE

Australia is the home of the wonderful eucalyptus, a tree about which a fair-sized library of books and pamphlets has been written, without exhausting the subject. For geological ages the eucalypts have remained undisturbed in this "biological backwater," and, spreading over the continent, have adapted themselves to many

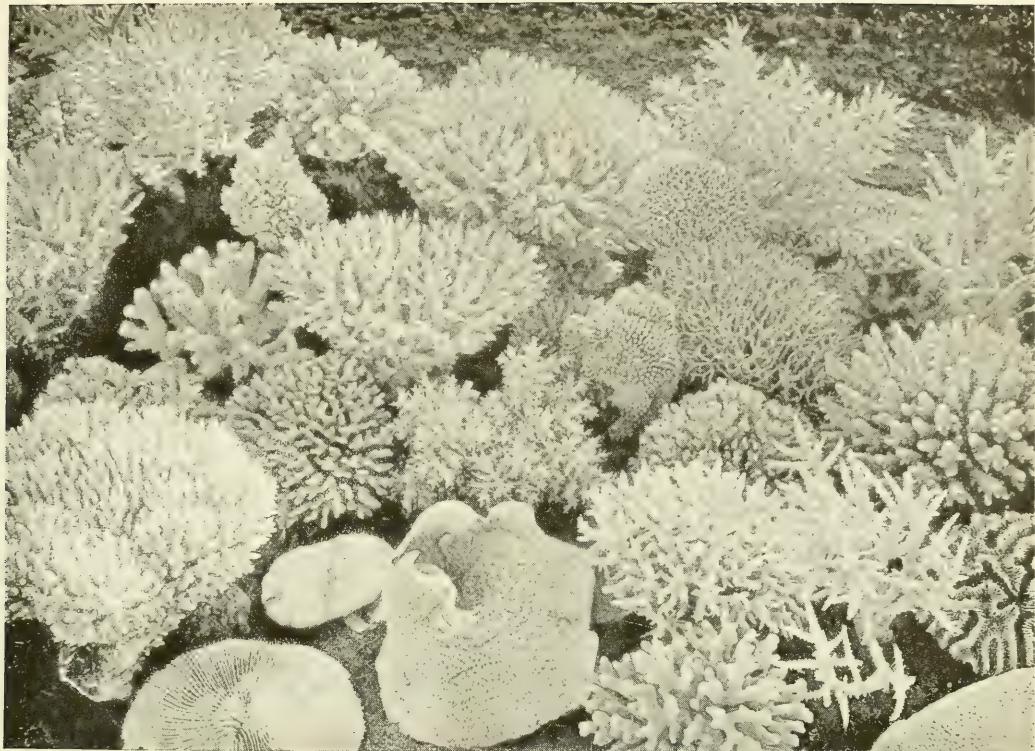
varieties of soil and climate and elevation. About 300 species have already been discovered in the small part of the continent explored by botanists.

It is a hopeless task for the tourist to gain an acquaintance with this national tree. As we passed through woods and open spaces, seeing trees of widely different aspect—different in form and method of branching, different in color and kind of bark, different in shape and size and color of leaf, some oozing gum, others clean and dry—it was disconcerting to be quietly told by our botanist-guide that this surprising array of trees "includes only varieties of the genus *eucalyptus*." It is as if the traveler in New England were



BALANCING ROCK: NEW SOUTH WALES

Australia is a land of the strange and curious, unlike any other on earth. While both its fauna and flora are unusual to a startling degree, its geology is unique. Science claims for it the distinction of being one of the oldest land surfaces.



CORALS FROM THE AUSTRALIAN BARRIER REEF, NORTH QUEENSLAND

Ages of time and the lives of myriads of coral polyps have gone to make up countless forms like these in the Great Barrier Reef off the coast of Queensland, the largest coral formation in the world, 1,200 miles in length. The explorer Captain James Cook almost lost his ship on the reef in 1870; but today, when the openings through it are known and charted, as well as the channel which it protects, the barrier is regarded as a boon to coasting vessels.

told that all the maples, oaks, chestnuts, elms, birches, and cedars, and even apples and cherries, were but species of the genus hickory.

The Australian is likewise embarrassed by these prolific variations of eucalyptus. The trees in general are "gums"—white gums, red gums, blue gums, spotted gums, cabbage gums—or ironbark, stringy bark, woolly bark, smooth bark, and when distinctions are necessary we get such combinations as narrow-leaved-red-ironbark, or broad-leaved-yellow-stringy-bark.

#### LEAVES THAT GROW VERTICALLY INSTEAD OF HORIZONTALLY

Where conditions are favorable, the eucalypts form forests of straight, slender trees; where soil is poor, they are wide-spaced and branch like the California oaks; on sand plains they develop an enormous root, from which spring a number of thin round stems leading to a

canopy of scattering leaves; and even where soil and rain are practically absent the genus is represented.

Eucalypts are evergreens, which shed their bark, but not their leaves; but they are not shade trees. The leaves are placed in inclined rather than in horizontal positions, and the passage of light is but little obstructed. For this reason, smaller trees and bushes and grass grow underneath, and the woods in places assume the appearance of a jungle from which arise the towering shafts of trees. It is interesting to note that primitive types of eucalyptus, as well as the young of more modern types, have horizontal leaves, pointing to a time in the geologic past when the climate was more congenial and no precautions to conserve moisture need be taken.

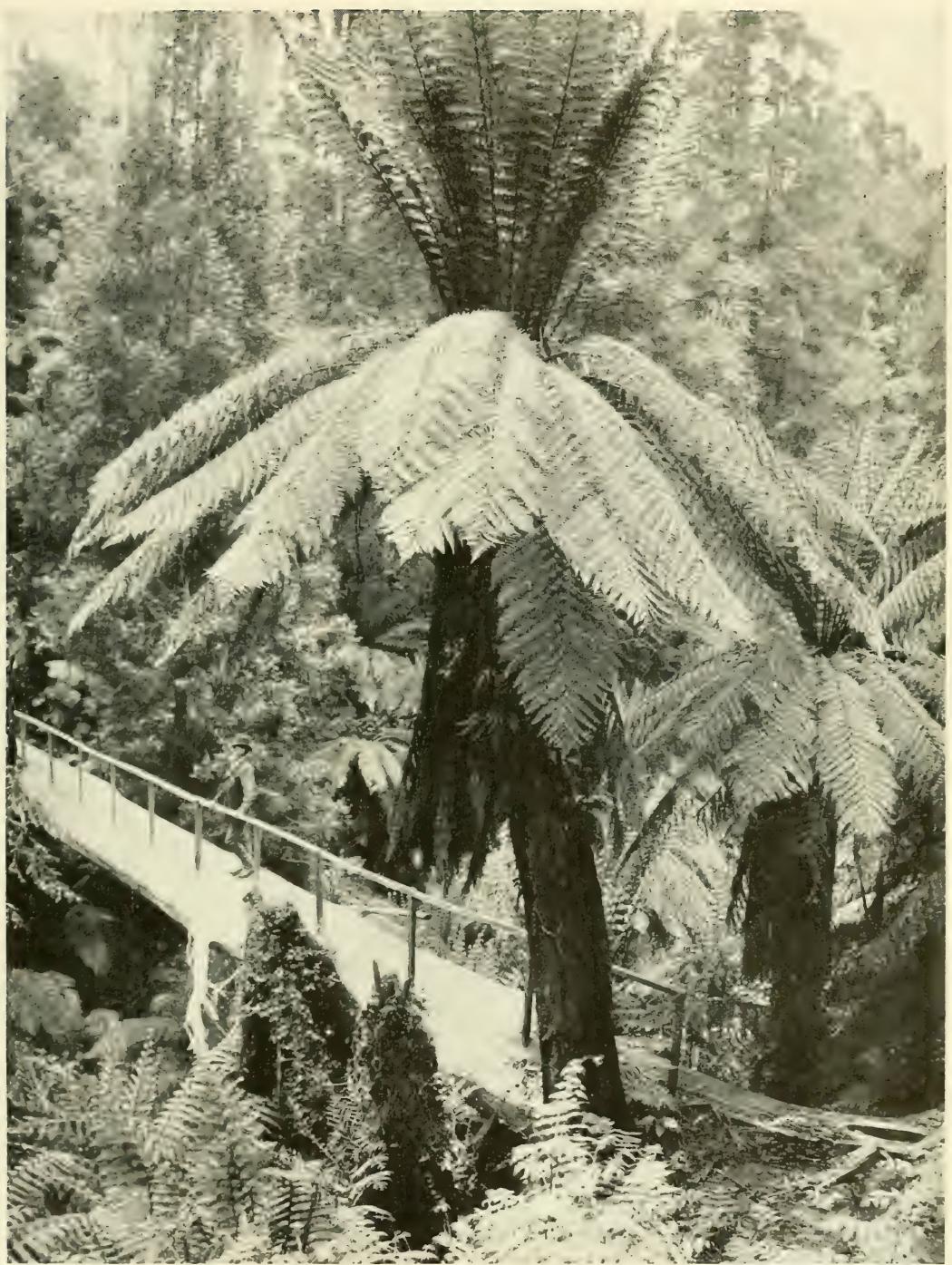
The eucalypts include some of the tallest trees in the world. The Victorian Forests Department records trees which



Photograph from Janet M. Cummings

A FERN-TREE GULLY IN VICTORIA, AUSTRALIA

No other continent is so rich in ferns as Australia. Just as its long isolation kept out the animals of other continents and allowed species of old geologic ages to persist, so also that isolation has resulted in the continuance of plant forms there that have lost the race for existence in other continents. Among these are some of the great tree ferns that are met with elsewhere only in fossil form.



Photograph by N. J. Caire

**GIANT TREE BRIDGE OVER RIVER TARWAN: GIPPSLAND, VICTORIA**

Australia's trees are largely forms that lived and became extinct in our own land more than one million years ago



A FOREST SCENE (GROUP OF TURPENTINE TREES) : NEW SOUTH WALES

Eucalyptus trees grow about seven times more rapidly than oak or hickory, and they also reproduce themselves even more readily than these popular American trees. Their strength is twice that of the English oak. Note the man.

measure 329, 333, and 342 feet, and states that there are "scores of trees about 300 feet in height." The surveyor of the Dandenong ranges made notes of the tallest trees felled during an eight-year period and reports that "all those measured were over 300 feet in length."

Eucalyptus trees reproduce themselves readily and grow about seven times more rapidly than oak or hickory. From a ton of bark of the gimlet tree was obtained by analysis 416 pounds of tannin extract and 308 pounds of oxalic acid. From the gum and leaves of these trees come also the highly valuable eucalyptus oils, from which no less than twenty-seven constituents have been distilled for pharmaceutical purposes and for the separation of metals by the flotation process.

The eucalyptus is the great timber tree of the continent. Of sixty varieties in Victoria, twenty have high commercial value and are finding an ever-increasing market. The Tasmanian blue gum is one of the strongest, densest, and most durable woods in the world. Timbers 2 feet square, exceeding 100 feet in length, are readily obtained, and, when used for pilings, need not be weighted, for the density of the wood is such that it sinks in water.

#### THEIR STRENGTH REMARKABLE

Their strength is twice that of English oak, and they are practically immune from attack by the Teredo, which plays such havoc with ordinary timbers. In Tasmania railroad ties or paving blocks of blue gum and stringy bark have a life of fifteen to twenty years—three times that of ordinary woods. In the dryer climate of Victoria blue-gum sleepers have been in service for nearly forty years. Shingles from peppermint gum have a life of thirty to forty years.

The jarrah, a eucalyptus of West Australia, is another famous tree. It is one of the few woods of the world which successfully resist the ravages of white ants; it is practically immune from the attacks of marine borers, and, like the iron bark of Victoria and New South Wales, has been known to withstand fire better than iron girders. Piles of sawn jarrah driven at Port Adelaide in 1868 "showed no signs of decay in 1910."

The forests of West Australia also sup-

ply the karri, one of the world's big trees. It is straight and tall, reaching heights of 300 feet and 120 to 180 feet to the first branch. Like the jarrah, its timber is widely used where strength and durability are requisites. The karri planking of a dismantled ship, which had plowed the seas for thirty years, was sawed into blocks and used for paving. A log of karri which had lain forty-six years in mud below high-water mark was found by a Royal Commission to be "perfectly sound." Their life as railroad ties is twenty-five to thirty-five years.

#### AUSTRALIA DESTROYING HER TREES

In view of the present and prospective value of Australia's national tree, it is a little surprising to find that cutting and burning is proceeding with scant scientific supervision. California and South America are planting eucalypts; Australia is cutting them down.

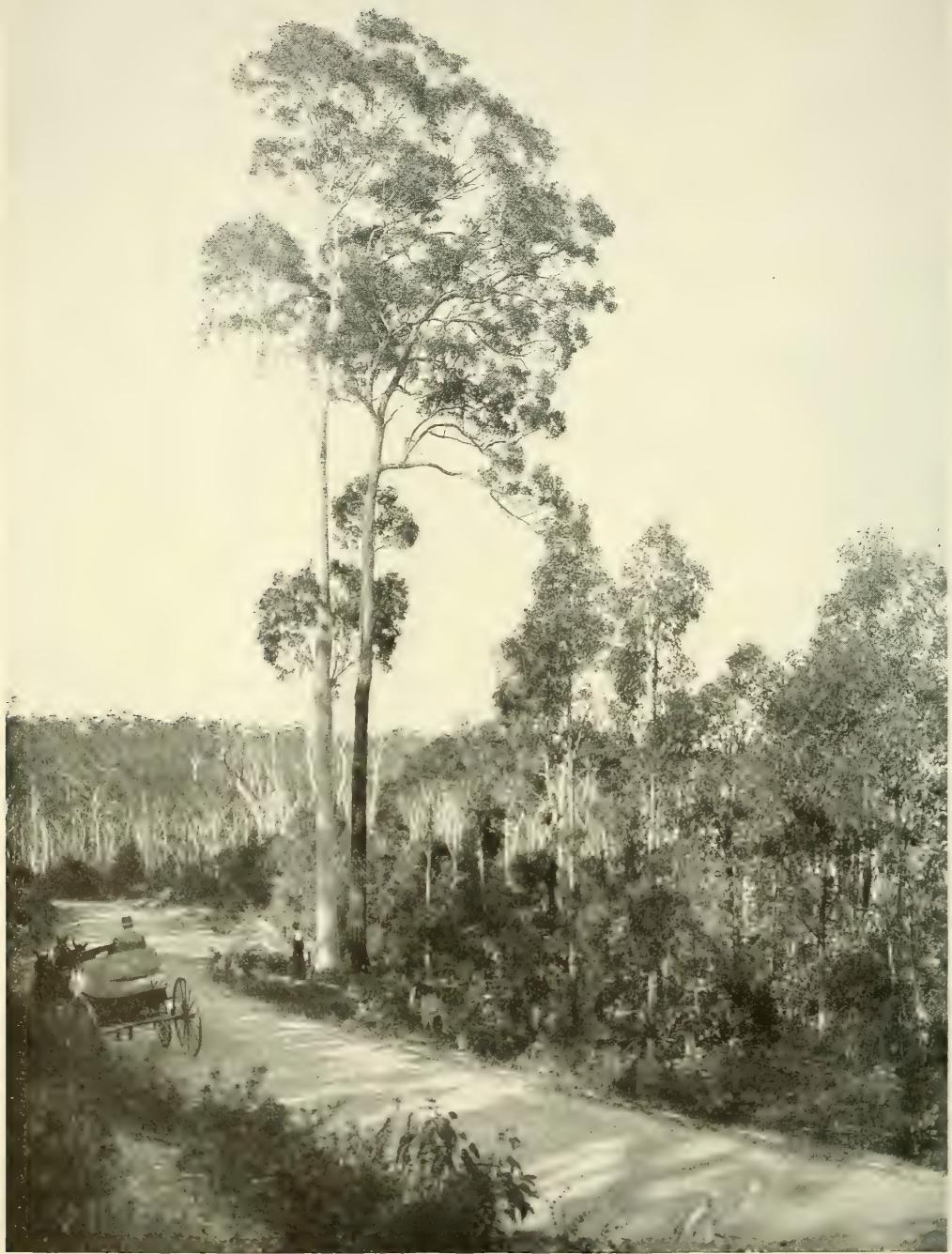
Australian hardwoods rival mahogany in beauty and susceptibility of polish, and are unsurpassed among the world's timbers in strength, durability, and resistance to fungous and insect attacks.

But soft woods for ordinary construction purposes are not abundant, and the imports of lumber are correspondingly large. During 1913 timber to the value of \$10,000,000 reached the commonwealth from foreign parts, 70 per cent of it from the United States; in return, Australia exported undressed hardwoods of about half that value chiefly to New Zealand, South Africa, India, and England.

One effect of the scarcity of suitable lumber is shown in the extensive use of galvanized iron in building. Iron replaces shingles for roofing, and in parts of the country practically no other building material is used.

#### THE ANIMALS OF OTHER CONTINENTS— HORSES, CATTLE, PIGS, TIGERS, LIONS— UNKNOWN IN AUSTRALIA

The animals of Australia are so distinct from the rest of the world that some have proposed two great zoölogical realms: Australian and non-Australian. The peculiarity lies not only in the fact that Australian types are not found elsewhere, but also that families like the cats and



FOREST TWINS: AN IRONBARK AND A SPOTTED GUM

The ironbark is a species of the eucalyptus, very highly prized in work requiring great strength and durability. Often it is preferred to steel and iron for girders and supporting columns, since it is almost impervious to fire and does not bend or buckle when exposed to unusual heat.

the pigs, which are found native on all other continents and on many islands, are absent from Australia.

*The continent has so long been isolated that the passage for animals from other land-masses has been closed for millions of years.* Species and genera have evolved, and some even disappeared, in other continents, while Australia remained apart, and so it comes about that most of the forms known in other lands are represented neither by living nor by fossil species. The barrier of water which protects Australia from animal immigrants from other countries was formed at the beginning of the "Age of Mammals," before the prominent elements in the world's fauna—cats, swine, horses, cattle, sheep, elephants, camels, rats, rabbits, bears, monkeys, etc.—had originated. These, therefore, are not native to Australia, which possessed mammals of only the most primitive types.

#### THE WORLD'S STRANGEST ANIMALS

The great animal groups—the lizards, tortoises, snakes, birds, fishes, crabs, etc.—which developed in geological periods before the land bridges to other countries had been destroyed, are represented in Australia, but they have evolved along distinct lines, and most of the genera and species are peculiar to the continent.

The most primitive order of mammals, the monotremes, are confined to Australia. There is the platypus, a strange beast which lays eggs like a turtle, but suckles its young; has horny pads for teeth and a bill like the duck; its front feet are webbed, and both back and front feet have claws. Little wonder that he has received many names, or that his scientific designation is *Ornithorhynchus paradoxus* (see page 502).

The spiny ant-eater is another strange mammal. He looks and acts like a hedgehog, but he has a long beak and a longer tongue, covered with a sticky substance, with which he captures quantities of ants. He not only burrows vertically into the ground with great rapidity, but also climbs with surprising agility. Like the platypus, the spiny ant-eater lays eggs which are hatched in a pouch and the young reared on the mother's milk.

The kangaroo is Australia's national animal, and the group to which it belongs, the marsupials, is typically Australian. Marsupials—mammals whose young are born very immature and then transferred to a pouch and suckled—have been long extinct in Europe and are represented in America by unimportant survivors, like the opossum. They belong to a past geological age, and have survived and flourish in Australia only because the entrance of carnivorous beasts has been barred by the protecting zone of water. Primitive forms have been allowed to persist, and degenerate forms have not been eliminated.

#### COUSINS OF OUR 'POSSUM

Like the eucalyptus of the plant world, marsupials have dominated the animal kingdom of Australia, and in their adjustment to a varied environment have evolved species very unlike in form and manner of life. In size they range from the giant kangaroo, the height of a man, to creatures no larger than mice, and extinct forms include diprotodon as large as a rhinoceros, kangaroos more than 10 feet high, and a huge carnivorous beast as big as a polar bear.

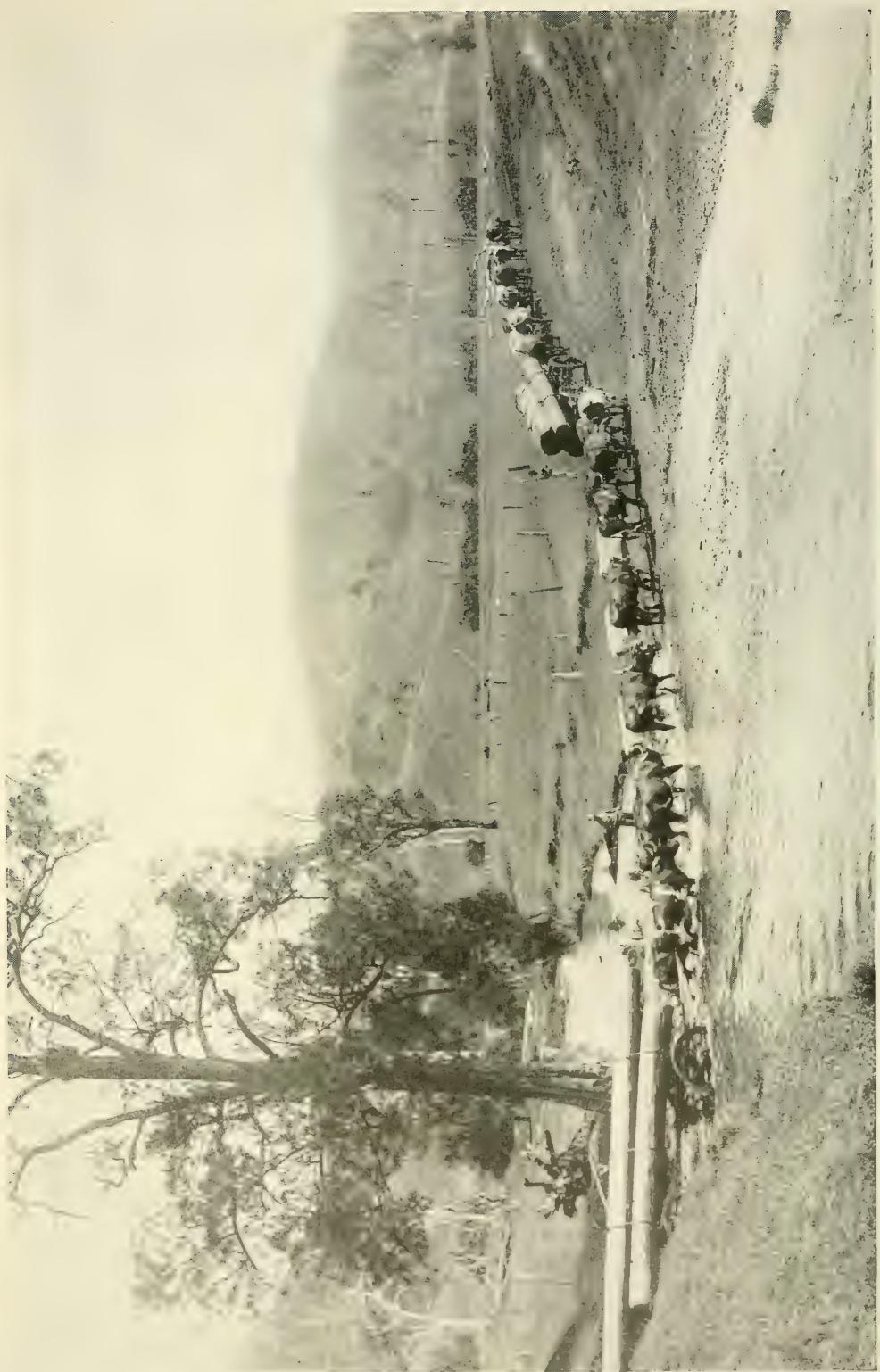
Some marsupials live in trees; others roam the woods or desert; still others burrow in the ground. Some species eat grass; others live on leaves. One large group is carnivorous, eating flesh or insects; another eats food of all kinds. Some are nocturnal; others seek their food by day.

#### AN ANIMAL WITH FIFTY-FOUR TEETH

The Tasmanian devil is a ferocious beast; other forms are harmless, and some are affectionate pets. One species is blind; another has toes like the deer. Some have few teeth, but the striped ant-eater has fifty-four, the greatest number in any living land mammal.

The great diversity of species is reflected by the popular names—tiger, native cat, weasel, mole, rat, mouse, wolf, bear, flying squirrel, opossum, ant-eater, in addition to the terms kangaroo, wallaby, wombat, bandicoot, obtained from the aborigines; but all are marsupials.

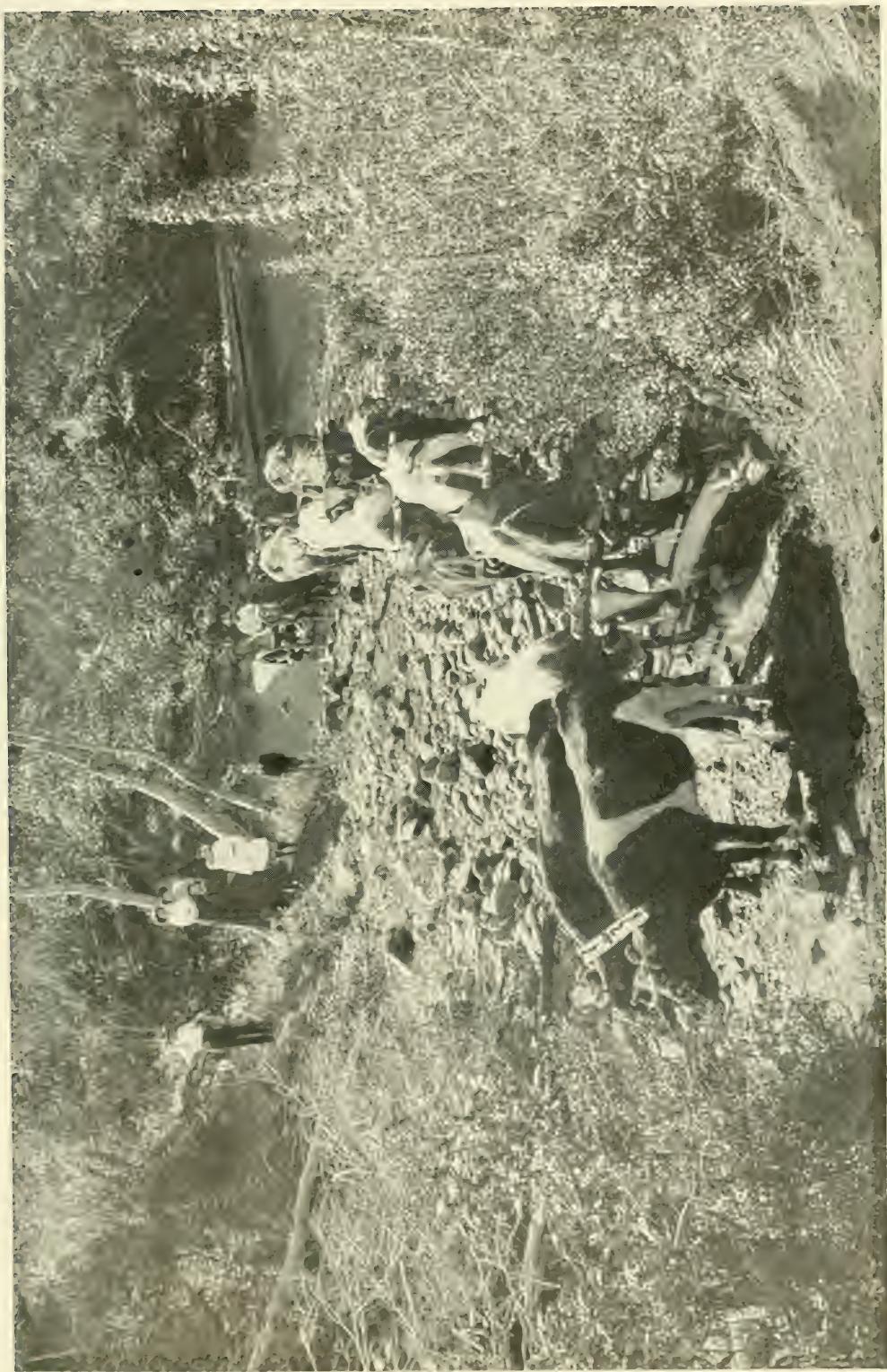
The kangaroos and the closely related

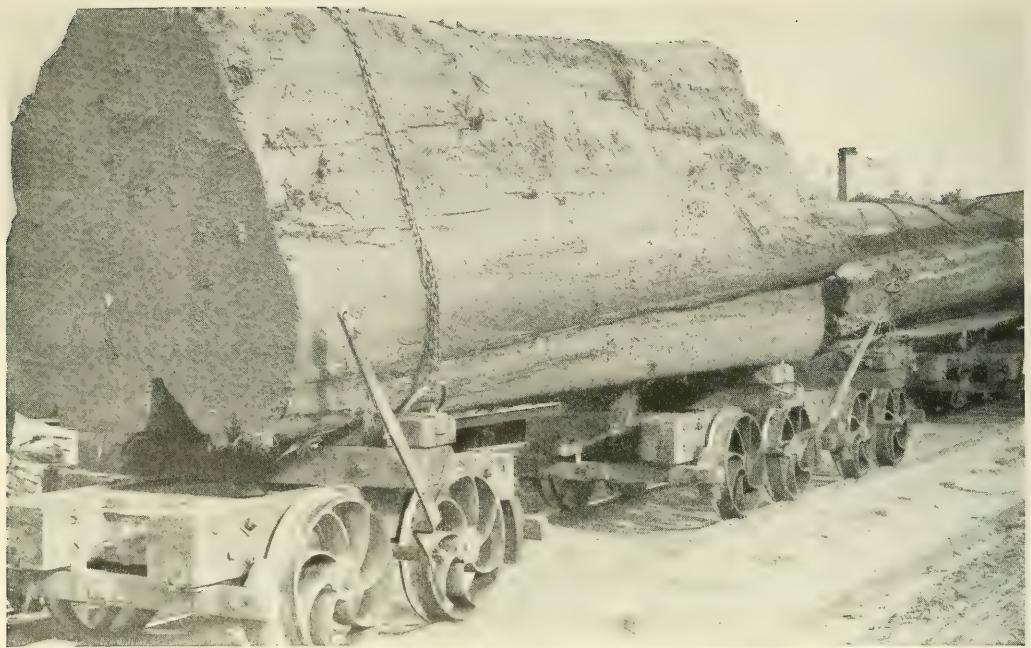


HAULING TIMBER TO MILLS: LAMINGTON, BEAUDESERT DISTRICT

A TIMBER-CUTTER AND HIS FAMILY IN THE "BIG SCRUB," NORTH COAST DISTRICT OF NEW SOUTH WALES

Photograph from *Layat*, W. R. Harris





Photograph by Beattie

A EUCALYPTUS LOG FROM TASMANIA

A great many of these logs are sawed up into paving blocks and exported to the ends of the earth (see page 495)

wallabies are the commonest of the larger Australian mammals. They play the rôle of the American buffalo, formerly feeding by thousands on the grass-covered plains, but are now disappearing under the attack of the sportsman and fur merchant. In earlier days they formed the chief item of food for the native "blackfellows" and for the pioneers. They are generally harmless and shy, and when approached the females hastily gather their young into their pouches and retreat to shelter by a series of enormous hops at a rate exceeding 15 miles an hour. When attacked at close quarters they defend themselves vigorously.

An "old man" kangaroo standing on his hind legs and tail, with his head as high as that of a man, is no mean antagonist. He boxes skillfully, and with his powerful hind leg and claw can rip up a dog at a single stroke. When streams or lakes are handy he seizes a dog, or even a man, and holds him beneath the water until life is extinct.

The "native bear," or koala, belies his name except in form. He is a lethargic, unintelligent, fluffy little creature, an attractive though unresponsive pet. In the

night-time he feeds on the leaves of the gum trees; during the day he usually sleeps curled up in the fork of a branch. The young spend their time in their mother's pouch or hanging to the fur on her back. The wombat plays the part of the woodchuck; the bandicoot is the rat, and the Tasmanian wolf the wild cat, of the marsupial family. The most numerous group of marsupials, like their namesakes, the possum of the South, hide away in daytime in hollow logs or trees, or hold themselves on branches with their long, prehensile tails, coming out after dark to feed on leaves or fruit. Their fur is in great demand.

A HUNDRED KINDS OF SNAKES!

Australia is supplied with 100 species of snakes, three-fourths of them venomous. The big pythons and rock-snakes are harmless, but as one travels from the tropics southward the dangerous varieties increase in number, and in Tasmania all are venomous, though only five are really deadly, and fortunately these are rarely seen.

The continent is also abundantly supplied with lizards. Three hundred and



FOREST OF EUCALYPTUS (MANNA GUM) : NOTE THE THREE MEN

"To me the most lasting impressions of Australia are of its wonderful woods. One readily understands why the Australian loves his trees. The groves of giant eucalyptus form pictures never forgotten, and the scent of the wattle brings a homesick feeling like the smell of the sage to a Westerner" (see text, page 486).



Photograph of specimen in U. S. National Museum

AN ANIMAL THAT LAYS EGGS LIKE A TURTLE AND SUCKLES ITS YOUNG: THE  
PLATYPUS OF AUSTRALIA

This is a web-footed, beaver-tailed, duck-billed creature which inhabits the river banks of Australia and Tasmania. When it was first described the scientific world thought the naturalist who reported it a nature faker. Even when a stuffed specimen was sent to England there were those who believed it a "fabrication out of the whole skin." It has teeth with which to chew its food, but it lacks an external ear, although its hearing is most acute.

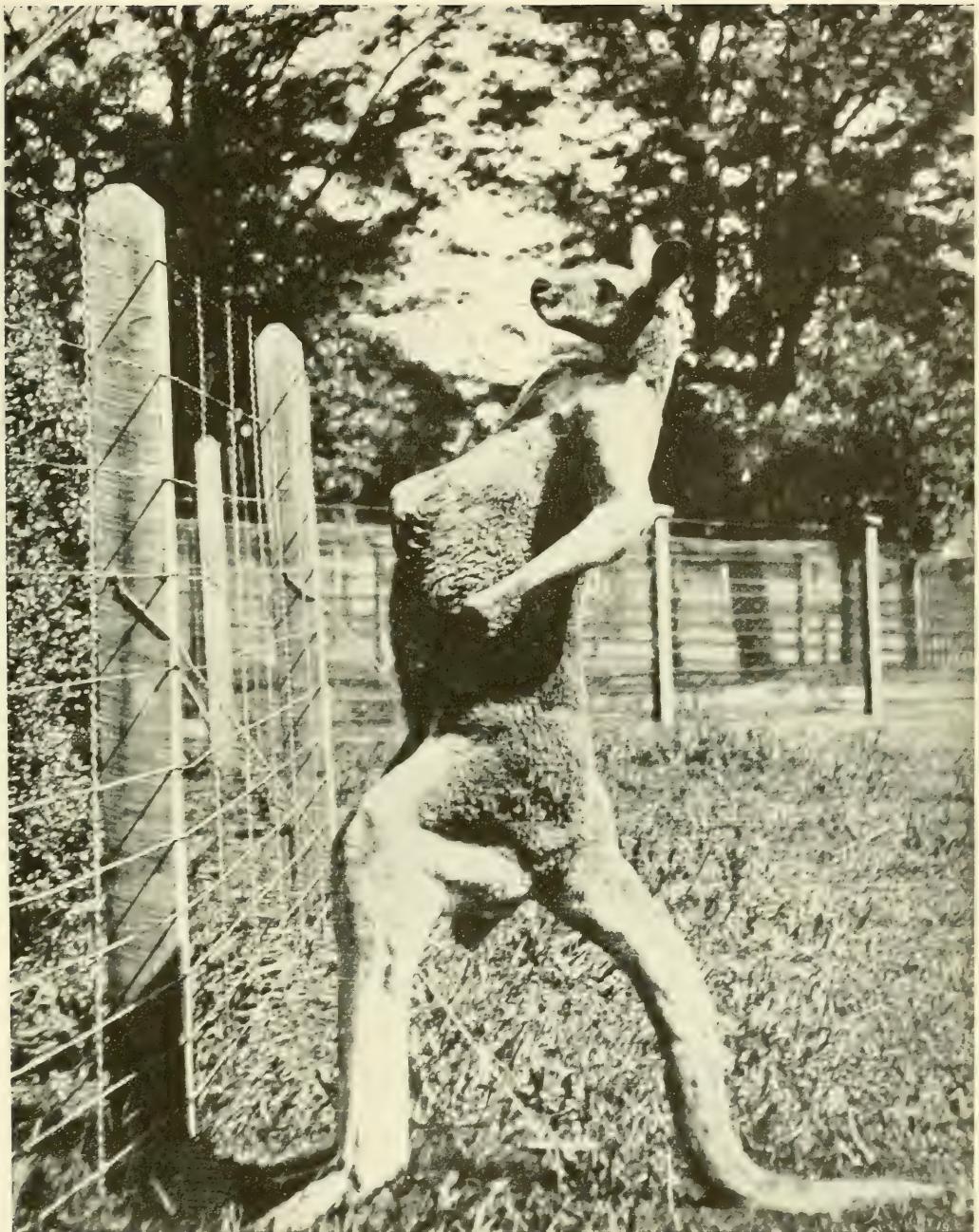
ninety species are recorded, and they may be seen not only in woods and prairies and deserts, in the water, among rocks, and in trees, but also in the less frequent city streets. The monitors, or "iguanas," attain lengths exceeding 6 feet. Their favorite food is young birds and eggs, which they secure by climbing trees corkscrew fashion or robbing poultry yards. Skinks are the most abundant lizards and form an interesting series in which limbs become gradually shorter and toes gradually disappear until "the fore limbs have vanished and the hinder are reduced to rudiments with a solitary toe."

The strangest of all lizards are the legless one, one family of which is found only in Australia. They look and move like snakes, for which they are often mistaken. One of the forms (*Pygopus lepidopodus*), locally called the slow-worm, is

about 2 feet in length, and so exceedingly brittle that it snaps into several pieces when grasped back of the head. Some of the lizards in the deserts exhibit bizarre forms and are as beautifully colored and as harmless as their namesakes of the Colorado plateaus.

WAS AUSTRALIA EVER CONNECTED WITH  
SOUTH AMERICA?

The lizards, also most of the flying birds, crayfish, and insects, have their nearest allies in the Malay Islands to the north, and indicate a former land connection through the Pacific islands to Asia. The animals of more ancient lineage, like the marsupials, the air-breathing fish, and the giant earthworms, have their nearest living relatives in South America, and suggest that at some time far back in the history of the world the thousands of



A KANGAROO OF NEW SOUTH WALES

"An 'old man' kangaroo standing on his hind legs and tail, with his head as high as that of a man, is no mean antagonist. He boxes skillfully, and with his powerful hind leg and claw can rip up a dog at a single stroke. When streams or lakes are handy, he seizes a dog, or even a man, and holds him beneath the water until life is extinct" (see text, page 500).

Australia may be said to be a museum in which animals that became extinct in other parts of the world ages ago still persist in a modified form. The kangaroo is a representative of the general type—the marsupial. And of the kangaroos there are many species, from the big grays and reds, the size of a man, to creatures no larger than mice (see page 407).



Photograph by B. W. Kilburn

THE PET KANGAROO AND HIS TRAINER: AUSTRALIA (SEE PAGE 497)

Many circuses have boxing kangaroos. In nature, the kangaroo, when attacked and a line of retreat is not open, usually backs up against a tree and defends itself with its fore feet. Trainers turn this method of defense to their advantage by putting boxing-gloves on the kangaroo's fore feet, and then training him in the manly art of self-defense; and the boxer who can break through a kangaroo's guard is a good one.

miles of sea now separating that continent from Australia were crossed by a bridge of land.

The lover of insects finds Australia an interesting and but partially explored field. Spiders, butterflies, beetles, moths, wasps, bees, cicadæ, are abundant, widely-distributed, and include many forms of great beauty and unusual habit. Some of them are unique. The number of bush flies which occur in summer is incredible. In the arid regions it is impossible to eat with even a semblance of comfort between sunrise and sunset, and traveling without the protection of a head-net is possible only for the skin-hardened bushman.

Of the neuroptera, the best-known and best-hated species is the white ant—a termite of unusual destructive ability. He flourishes in deserts, in woods, and makes his way into city buildings. Supports of houses must be protected by caps of iron, for few timbers are immune from his

attack. If printed accounts are to be believed, lead boxes and pipes are not beyond the range of his voracious appetite. The mounds built by the white ants are odd-looking structures, firm as soft wood and of various shapes. Mounds like miniature haystacks scattered through the woodlands or as thickly set as trees in a forest are familiar sights in parts of the continent. Shaft-like nests resembling decayed stumps attain heights of 6 to 10 feet (see page 505).

A LAND OF BEAUTIFUL BIRDS

Australia is stocked with beautiful birds, many of them of unusual aspect. The man who originated the popular saying that "Australian birds have plumage, but no song," must have lived in a sound-proof box. Among the 775 species are included some of the most brilliantly colored, sweetest voiced, and most unusual birds in the world.

Along the northeast coast is the bower



THESE QUEER ROCKS ARE NESTS BUILT BY THE WHITE ANTS (SEE PAGE 504)

bird, which adorns its nest and decorates its playing ground with shells, seeds, and other bright objects, not despising brass buttons and cartridge cases (page 507).

The lyre bird, famous for its plumage, is the rival of the mocking-bird of the South in sweetness of tone and skill as a mimic. The crow-shrikes ("magpies"), the brown flycatcher ("Jacky Winter"), the bush warbler, the rock warbler, the reed warbler, the bush lark, the cuckoos, the honey eaters, and the "Willy-Wagtail" constitute parts of a bird chorus difficult to surpass. Cockatoos are as common in Australia as crows in the Central West; even in the desert flocks were frequently seen. Some of them are excellent talkers, most of them gorgeously dressed.

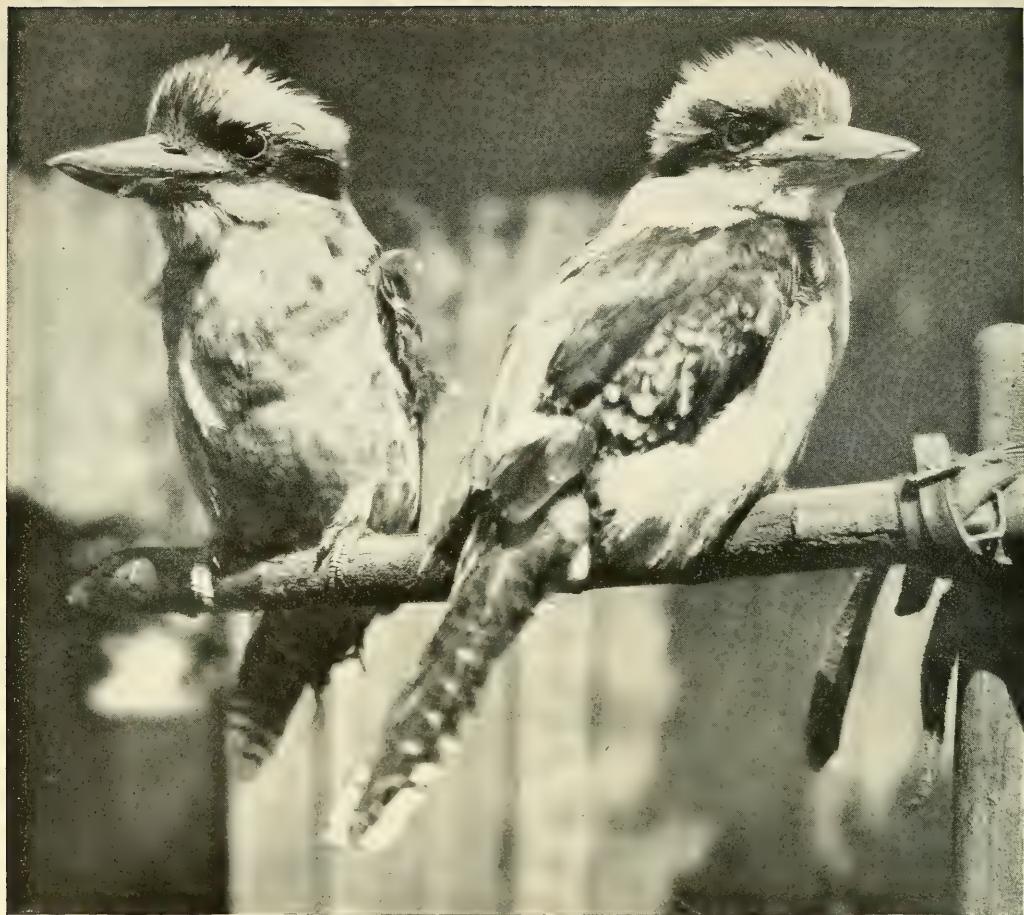
A most surprising bird is the kookooburra, or laughing jackass. All at once in the quiet bush come loud peals of uproarious, mocking laughter. One is not inclined to join in the merriment—it all seems as foolish and weird as if an idiot boy were disturbing a congregation in church. When the source of the laughter is located, it turns out to be a silly-looking bird with clumsy, square body and open mouth sitting unconcernedly on a stump. Some animals look so foolish, say and do

such silly things, and yet are so patient and friendly that affection involuntarily goes out to them. The kookooburra is one of these and the bird which mocked me at Mt. Gambier, and the solemn little fellow which toddled about the yard of my hostess at Melbourne will long remain in memory (see page 506).

#### A BIRD-BUILT INCUBATOR

The ibis occur by thousands, and the gigantic black-necked stork, or jabiru, standing 5 feet high, inhabits the swamps of the northern coast, while the graceful black swan frequents the estuaries and lakes. The mallee hen and the brush turkey build mounds of sticks, leaves, and earth 3 to 10 feet high. The eggs are laid in burrows excavated in the mound and are left to be hatched by the heat resulting from decomposing vegetable matter—a home-made community incubator.

The cassowary of the forests of Queensland and Papua and the emu, which is found throughout the continent, are unknown outside the Australian region. The emu is the national bird and shares with the kangaroo the task of upholding the shield on the commonwealth coat of arms. It is a powerful bird, can



Photograph from Boston Photo News Co.

#### THE LAUGHING JACKASS (SEE PAGE 505)

run at the rate of 15 to 20 miles an hour, and break an ordinary fence by impact.

The ostrich has been introduced into South Australia and the export of its plumes bids fair to assume considerable proportions. Stray ostriches are occasionally met with. On a smooth stretch of desert road north of Port Augusta we had an opportunity to gauge their speed. It was a neck and neck race for 2 miles, with the motor cyclometer registering 30 miles an hour.

#### THE ORIGINAL AUSTRALIANS

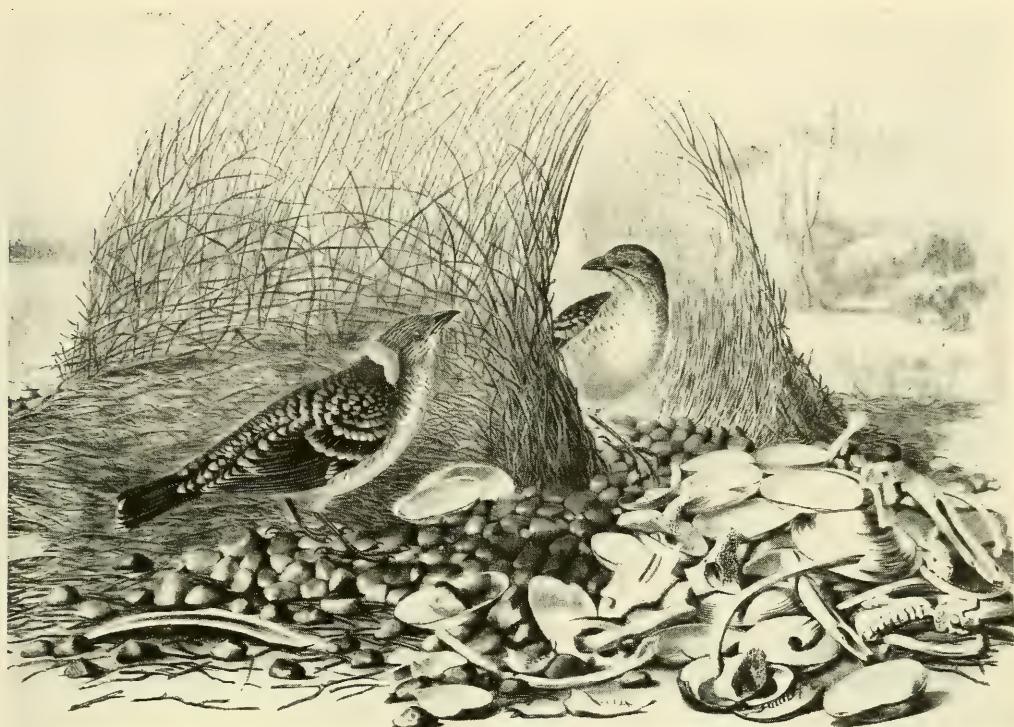
The isolation of the Australian Continent, so clearly reflected in its fauna and flora, has left its stamp on the native race. Like the kangaroo and the tree fern, the aboriginal is a remnant of bygone days. Paleolithic man, whose primitive tools are eagerly sought in the caves and grav-

els of Europe, was alive in Tasmania within the memory of people now living, and Neolithic man is roaming the deserts of Australia by hundreds.

Though comparatively little is known of the aborigines and many tribes have never been studied, there is general agreement that the "blackfellow" is on the lowest rung and perhaps at the very bottom of the ladder of civilization. In the opinion of Andrew Lang, "they are infinitely beneath the status in culture of Paleolithic man of the mammoth and reindeer period," and their "manners and rites were far the most archaic of all with which we are acquainted."

The Australian native\* is unlike the

\*The term "native" is used in the American sense. In Australia the term is applied to native-born whites. The original inhabitants are "blackfellows" or aborigines.



From "Birds of Australia," by John Gould

#### A BIRD THAT BUILDS A PLAYHOUSE AND GARDEN—THE AUSTRALIAN BOWER BIRD

There are several species of bower birds, chief among them the Satin and the Newton. The Satin bower bird is the best known. When the bowers were first discovered it was supposed that they were playhouses built by the native children; but, as a matter of fact, they are the dance halls of bird land. The nests are built in the trees and have no connection with the playhouses. The male birds build these latter and gather every bright and shining object they can find to adorn the entrance to the bower. When it is completed, according to one who has watched them, little "at homes" are given daily, at which the males meet and pay their court to their lady loves, now bowing and scraping, now playing hide and seek through the bower, and now doing an absurdly dignified dance for their edification. Newton's bower bird decorates its bower with fresh flowers every day, and if a visiting male bird wants a fight all he has to do is to disturb one of these flowers. The master of the bower proceeds with the painful duty of teaching him how to behave in company, while the remainder of the party raise a great racket, but never interfere. A naturalist studying them disarranged one of their flowers, but each time he did it the bower master rearranged it with great care.

negro, the Malay, the Mongolian, and the American Indian in physique and facial expression. His range in height is about that of Europeans. Some individuals are strongly built, but in general only the upper part of the body is well developed. The legs are usually thin and long, with inconspicuous calves, the great toe is "loose," and the foot is about as useful as the small, delicately formed hands in picking up objects. A long skull, with a low, flat forehead and brows overhanging deep-set, intelligent eyes, a heavy lower jaw, strong teeth, and a nose broad and very flat, with wide nostrils, are conspicu-

ous features. His cranial capacity is 75, as compared with 83 for the African negro. Wavy or curly hair, not woolly or frizzy, of auburn or black tones, is abundant not only on the head and face, but in some cases covers the body, and many new-born children are coated with long downy hair.

#### LITTLE USE FOR CLOTHING

With the arts the native is little acquainted. He has no permanent buildings. His shelter is a cave or overhanging rock, sometimes a piece of bark to ward off rain or branches to shield him-



Photograph from Boston Photo News Co.

THE NATIONAL BIRD—THE EMU

The emu is a bird that has relied on its legs for so long and used its wings so little that it now cannot fly if it wants to, its wings having degenerated into mere rudimentary members. It fights only in self-defense, but it can kick sidewise as well as backward, sometimes with force enough to break a man's leg. Papa Emu is an amiable person, taking most of the cares of the household off the shoulders of his mate. The ostrich has plumes and only two toes, while the emu's feathers almost resemble hair, and it has three toes (see page 505).

self from the sun. He does not bother with clothes except when the weather is particularly bad, and then bark or the skin of the kangaroo is used without sewing or fashioning. Some tribes use rushes and seaweed for temporary clothing or make a blanket from the dried scum of lakes. For boats pieces of bark tied at the end and daubed with clay suffice.

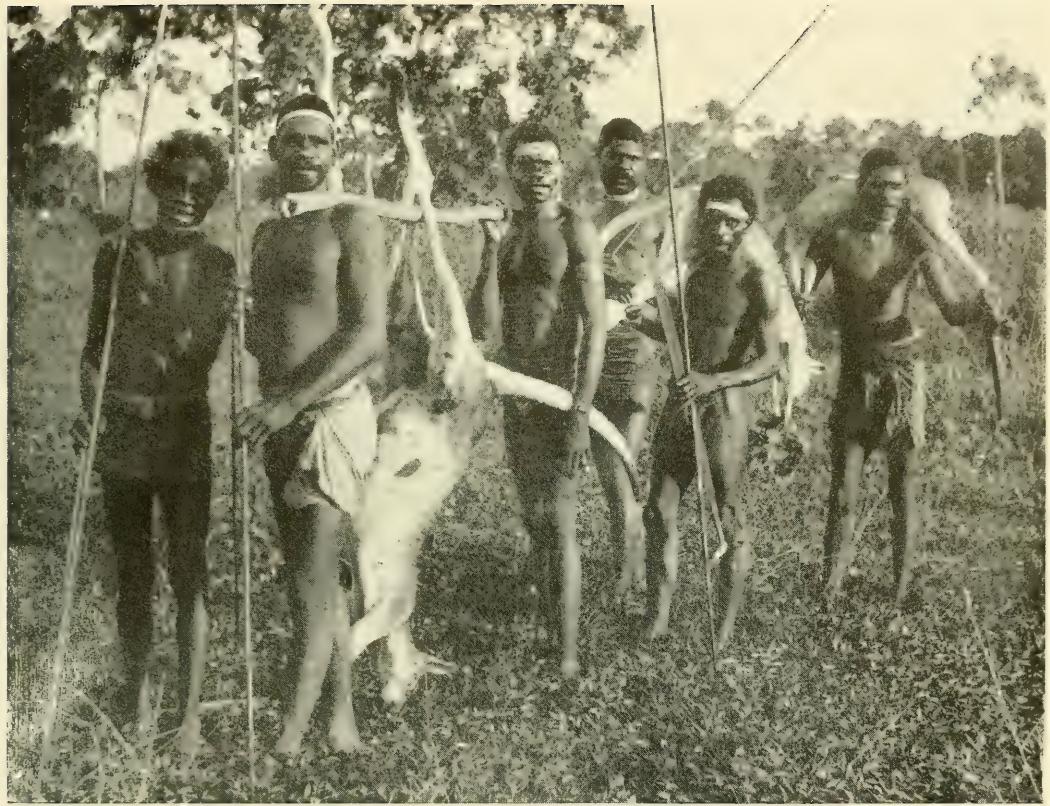
He makes no pottery, and cooking utensils are represented by stones for crushing roots and seeds, stone knives, and a rudely fashioned scoop which serves as a dish, a spade, and as a receptacle for carrying water. He knows nothing of agriculture, and his one domesticated animal is the dingo, a half-wild dog.

The geography of Australia is such that localities where food and water are sufficient for a large number of people are very scarce. There are no wild cereals, and the native fruits are few in

number, restricted in distribution and of meager nutriment, while water must be searched for over half the continent. The different tribes therefore have no fixed abode beyond vaguely defined limits inside of which they roam in search of food like packs of hunting animals. The groups are necessarily small and their relations are governed by fear and suspicion. Infrequent contact has resulted in the development of many languages within the same race. In "one district less than 300 miles square seven languages are spoken, one of them in two dialects, one in five."

MOST EXPERT OF HUNTERS

In endurance and speed he is not the equal of the American Indian, and his weapons of wood and poorly fashioned stones are effective only at short range; but as a hunter the native Australian is marvelously adjusted to his environment.



Photograph by B. W. Kilburn

#### THE HAPPY NATIVE KANGAROO HUNTERS: QUEENSLAND

His success lies in an intimate knowledge of the habits of animals on land, in the ground, in trees, and under water, and his wonderfully developed powers of observation.

He decoys pelicans by imitating their cries, catches ducks by diving below them, locates an opossum in a tree by marks on the bark or by the flight of mosquitoes, finds snakes by observing the action of birds, and follows a bee to its store of honey. Any animal which leaves a track, however dim, in sand, on rock, or in the grass, falls an easy prey to the black-fellow. Children are taught to track lizards and snakes over bare rocks and to find their absent mother by following tracks too indistinct to serve as a guide for an European. When a white man is lost in the desert or a child strays from home, the final resort is to secure a "black tracker."

When in search of game or enemies, the native is armed with a stone hatchet, a boomerang, and a stout club, all stuck

in a belt made of cords spun from hair or fur, and with a sheaf of selected spears and a throwing stick carried in the hand. The spear is the principal weapon—long ones armed with stone or barbed wood for war and shorter ones of reeds tipped with hard wood, or still shorter-pointed sticks for hunting. The effective range of the spear is greatly increased by the use of a wommera or spear-thrower.

#### THE INVENTOR OF THE BOOMERANG

Clubs of all sorts are hurled at prey or human enemies. The best-known form is the boomerang, made of a curved piece of heavy wood about 2 feet long and 2 inches wide. The well-known return boomerang, round on one side, flat on the other, and slightly twisted on its axis, is used as a plaything or to hurl at flocks of birds in the sky. The war and hunting boomerangs are heavier; they do not return to the thrower, but are deadly weapons at ranges inside of about 400 feet.

Faced with starvation, the native knows

Photograph from H. E. Gregory

SOUTH AUSTRALIAN BLACKFELLOWS: THESE SAVAGES RANK LOWEST IN INTELLIGENCE OF ALL HUMAN BEINGS



Photograph by C. P. Scott



nothing of property rights; food is to be obtained wherever found, either in the open or in possession of his fellows or of the immigrants. When his hunger is satisfied the next strongest man may have the remains.

The kangaroo, wallaby, and opossum form his chief food supplies; but no animal or nourishing plant is neglected. The diet of the north Queensland aborigines includes 240 plants and 93 species of mollusks. Ants, caterpillars, moths, beetles, and grubs of all sorts are eaten raw or cooked. Honey, birds' eggs, and young birds are obtained from trees by use of a climbing rope or by cutting notches with his stone hatchet. The native is fond of snakes and lizards, which are cooked on hot stones covered with leaves and earth.

Human flesh is not a regular article of diet, but when conditions are hard men who have fallen in battle or died of disease are added to the food supply, and infants are killed and sometimes eaten by their parents. Captives are commonly slaughtered and eaten, sometimes for ceremonial purposes, sometimes to satisfy hunger. The flesh of the native or Chinese or Malay, whose diet is vegetable, is said to be preferred to that of Europeans, which is tougher and more salt.

The blackfellow is not a "degraded savage," but rather a primitive man placed in an unfavorable environment. When food and water are abundant the aboriginal is kind to the infirm, and even shows traits of generosity and gratitude. When the struggle for existence is severe he becomes an animal searching for its prey. Mentally he is a weak child, with uncontrolled feelings, without initiative or sense of responsibility. In many respects he is intelligent and profits by education, but abstract ideas are apparently beyond his reach. His ignorance, suspicion, and fear, rather than viciousness and evil intentions, make him dangerous to strangers.

The story of the relations between aborigines and whites of Australia repeats a chapter in American history. Organized brutal treatment in Victoria practically ended with the Myall Creek massacre, in 1839, during which thirty or forty men, women, and children were murdered by

the whites. The Queensland natives suffered unbelievable cruelties at the hands of the white settlers as late as 1860-1870, and not until 1897 did West Australia undertake their protection. In Tasmania a great hunting bee, in which 3,000 Europeans of all classes took part, was organized in 1830 to exterminate the native race. From the slaughter about 200 were rescued and placed within a reservation; by 1847 only 44 natives remained. In 1876 Truganini died and the Tasmanian race became extinct.

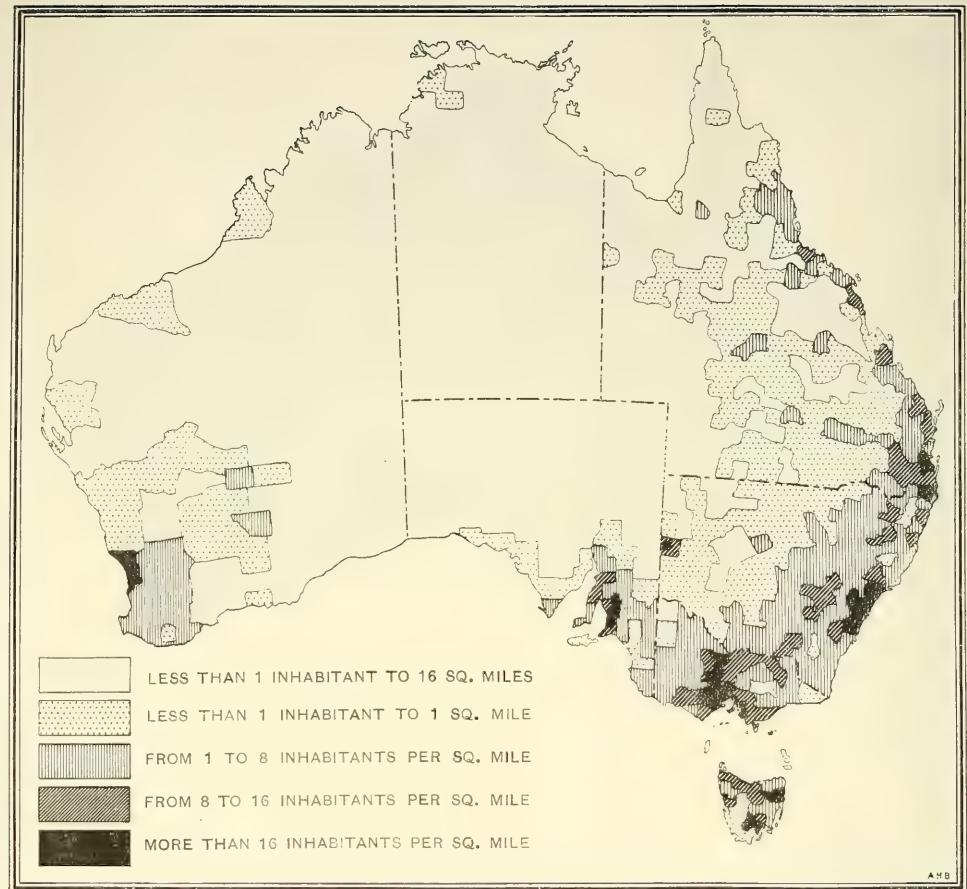
The natives on the mainland are now under the protection of the government, but "the birth rate has dropped amazingly" and it is doubtful if any large number can survive the process of civilization.

#### OUR PRIMITIVE ANCESTORS

The origin and migration of the Australian native stock is a fascinating story, whose outlines and chapter headings only have been written. The Tasmanians were perhaps a separate group related to the Papuans. Unlike the native of the mainland, their hair was coarse, short, woolly; they had no boomerang, no wommera, knew nothing of polished stone implements, and their boats were rafts made of reeds.

It is probable that this race reached Tasmania before the Glacial Period, when its island home formed part of the continent. The great antiquity of the race on the mainland is demonstrated directly by the discovery of stone hatchets buried in peat beneath extensive deposits of marine clays 15 feet below sea-level, and no less conclusively by the great development of languages and dialects and the absence among the tribes of traditions of migration.

A feature of peculiar interest is the almost universally accepted conclusion that the aboriginal stock of Australia belongs to the Indo-Aryan or Caucasian race. Their nearest relatives are the Veddas of Ceylon and the Dravidian races of the Deccan plateau. Although perhaps the most primitive of the world's inhabitants, tucked away on an extremity of the world's lands and isolated for a whole geological period, they are our own



A MAP TO SHOW THE DISTRIBUTION OF THE POPULATION

racial relatives and picture the life of our ancestors.

#### MOST OF THE PEOPLE LIVE ON THE SEACOAST

Australia is the size of the United States; its density of population is less than that of Arizona (1.67 persons to the square mile). The continent is less thickly populated than Russia in Asia, or the similarly situated Canadian plains, and has less people to a square mile than South Africa, Algeria, or even Arabia. All of the States are thinly settled.

Victoria, the most densely populated State, is about equal in size to Kansas plus Connecticut and Rhode Island; its population is about that of Connecticut. New South Wales, much larger in area than Texas, has the population of Arkansas. Queensland, inside of which could be placed the seventeen Atlantic States,

extending from the Gulf of Mexico to Quebec, in addition to Minnesota, North Dakota, South Dakota, and half of Iowa, enrolls less people than Oregon. South Australia, larger than the three Pacific States, California, Oregon, and Washington, plus Kentucky and West Virginia, has the population of New Hampshire.

The enormous State of West Australia, within whose borders Spain, Italy, France, Belgium, Germany, and Austria-Hungary, or all the United States east of the Mississippi, could be accommodated, has 40,000 fewer people than rural Vermont. In density it corresponds with Greenland and French Sahara. Tasmania, the baby State, is a little larger than West Virginia; its population is about that of Columbus, Ohio. The Northern Territory, ten times the size of Alabama, is inhabited by 3,672 people—the sparest population of any consider-

able area of the earth's surface inhabited by man.

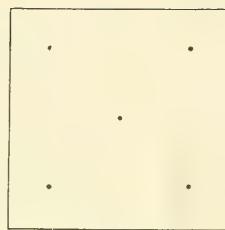
A modern warship, if allowed access to the bays and harbors, could bring about one-half the population within reach of its guns. A belt of country 100 miles wide along the east, south, and southwest edges of the continent would include probably 80 per cent of the Commonwealth population. There are no inland cities of over 10,000 population, except six mining camps, and the most remote of these is about as far from the sea as is Pittsburgh.

In the center of the continent is an area larger than all the United States west of the longitude of Denver, in which less than 5,000 people reside.

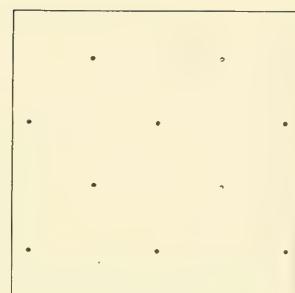
#### CITY LIFE EVEN MORE POPULAR THAN IN THE UNITED STATES

A striking feature of the Australian census is the concentration of population in cities—a phenomenal situation for an agricultural and pastoral nation with less than 1 per cent of its area under cultivation and 47 per cent unoccupied. The six Australian State capitals include 38.80 per cent of the Commonwealth's population, and five of them are growing at the expense of the back country. No other nation, and few States, can match these figures. In South Australia 45.68 per cent of the people live in Adelaide; Perth enrolls 37.95 per cent of the people of West Australia; a large part of the remainder are in mining camps. Sydney, the capital of New South Wales, has 725,000 inhabitants, 39.6 per cent of the entire population of the State, and 71 per cent of the increase for the period 1911-1913 is credited to the metropolis.

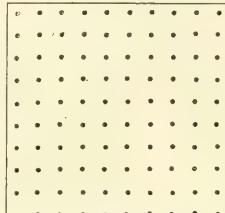
Victoria shows an even more marked tendency toward urban concentration. The proportion of the population of Melbourne to the total population of the State has steadily increased from 43.3 per cent in 1909 to 47.1 per cent in 1914, and there seems no prospect of a diminution. During the three-year period ending 1913, 84 per cent of the increased population was credited to Great Melbourne, which is



AUSTRALIA



SIBERIA



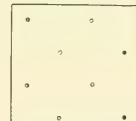
UNITED STATES



OHIO



FRANCE



ARGENTINA

A COMPARISON OF THE DENSITY OF POPULATION OF AUSTRALIA, THE UNITED STATES, SIBERIA, FRANCE, AND ARGENTINA

The squares represent the relative areas of several countries and the dots the population, there being a dot for each 1,000,000 inhabitants. If small squares are formed by connecting the dots, the relative sizes of these will represent the relative amount of land per inhabitant.

growing three times as fast as the remainder of the State. During 1914 a net loss was recorded for the population outside of the metropolis.

It has interested me to compare the distribution of the first 5,000,000 people within the United States—a number reached about 190 years after the first English settlement—with the distribution of Australia's first 5,000,000, attained in 1915—127 years after the landing at Botany Bay. In both cases the people were grouped on the edge of the continent, in corresponding positions, their centers of settlement determined by climate and soil and nature of the coast. The chief point of difference is the absence of large cities in the United States. In 1800 New York was one-ninth the size of Sydney, and the entire urban population of the United States (4 per cent of the total population) could be accommodated in the city of Adelaide.

#### WHITE AUSTRALIA

A "white Australia" is the settled policy of the Commonwealth government,



Photograph by B. W. Kilburn

A SCHOOL IN THE BUSH: QUEENSLAND

the immigration laws being so administered as effectually to exclude colored races. Legislation is directed particularly to the exclusion of Chinese, Japanese, and Polynesian labor, not only from the land, but from employment in pearl fishing, coastwise shipping, and on overseas steamers holding mail contracts. The various restrictive acts have secured the desired result. At the latest census (1911) there were 38,680 Asiatics, 693 Africans, 84 Americans, 2,751 Polynesians, 10,113 mixed-blood Australian aborigines—a total of 52,338, including 14,554 half-cast, out of a population of 4,568,707, or a little more than one per cent.

The Australian's ideal is a continent of

whites without the "taint of color," "a homogeneous people of British origin." They point to America as a horrible example of an unmanageable mixture of races. They recognize the fact that their policy will indefinitely delay the development of the continent, but are willing to make the sacrifice.

But the fundamental reason of their policy is doubtless economic, an unwillingness to come into competition with "people with lower standards of living," to run the risk of disturbing the existing domination of the "laboring man." This attitude is shown by legislation against Asiatics already domiciled in Australia. By legal definition one Asiatic constitutes



Photograph by B. W. Kilburn

**"A TOUCH OF NATURE MAKES THE WHOLE WORLD AKIN"**

Children the world over are never so happy and interested as when they feel they are actually helping in some useful work. Australian youngsters are given every opportunity to help and they develop early a love of the practical things of life, which viewpoint generates energy, resourcefulness, and a love of the out of doors.

a factory, but four white people in three States and six in West Australia are allowed to work together without coming under the restrictions of the factory acts.

Australia is not only "white," it is also British—the most British of all lands outside of Great Britain. Australian writers call attention with pride to the fact that Canada has her French province, that the Dutch are in South Africa, that India and Egypt have large native elements, and that America is a medley of races. Of the total population at the last census 82.90 per cent were Australian born; 13.35 per cent were natives of the United

Kingdom, and 0.72 per cent were born in New Zealand.

**SOME NATIONAL TRAITS**

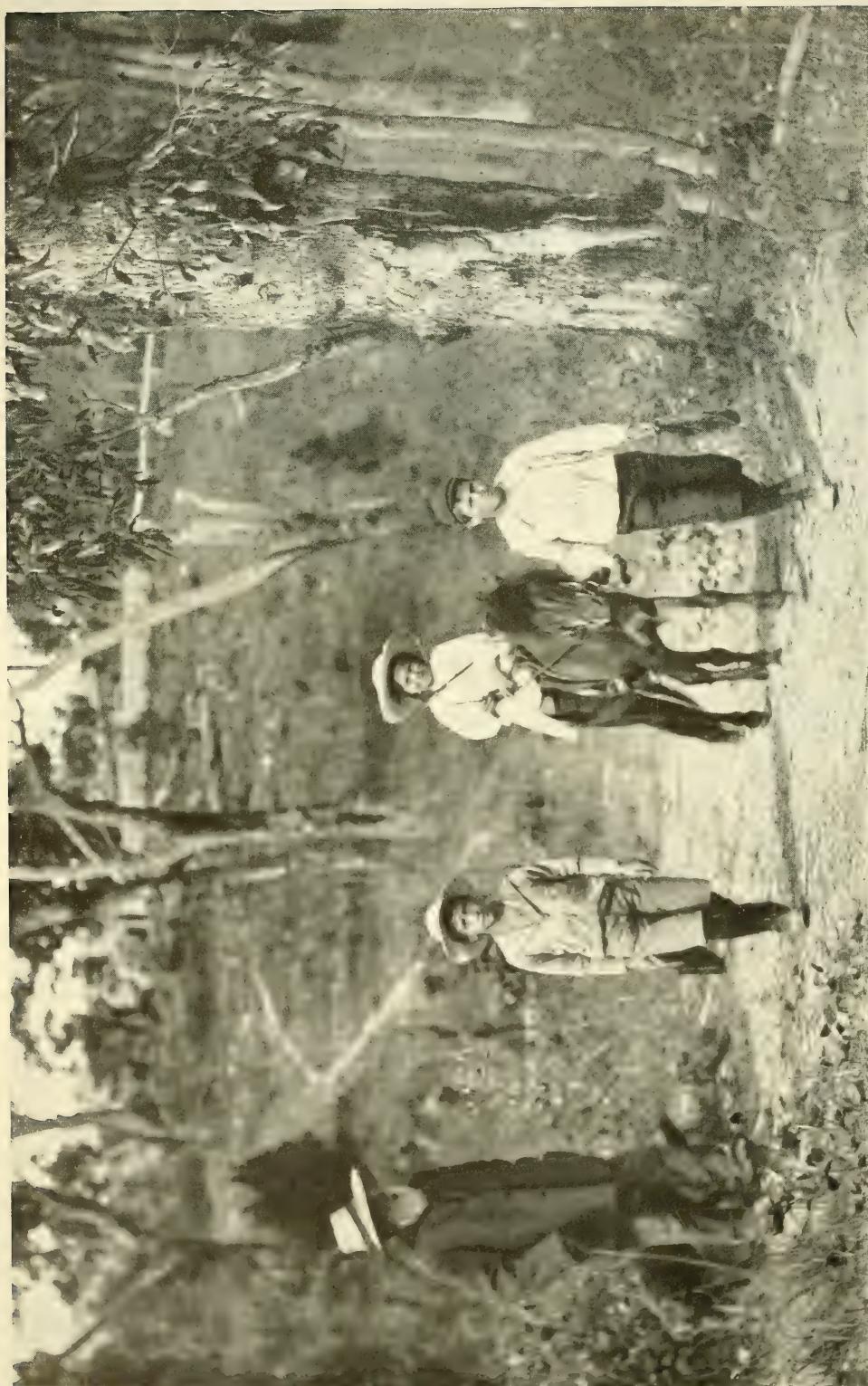
They are proud of their British ancestry and glory in the achievements of their race.

An American who knows the United States and Canada feels at home in Australia, much more so than in the British Islands. He finds the people discussing immigration, land settlement, railroad building, mining, irrigation, forestry, secondary education, social legislation, progressive *vs.* stand-pat policies, military

Photograph from Janet M. Cummings

**THE ROYAL ROAD TO KNOWLEDGE: YOUNG AUSTRALIANS OFF TO SCHOOL, VICTORIA, AUSTRALIA**

Old Father Time steps aside for the moment to make way for Youth as he marches bravely along the one Highway to Knowledge that is available to Prince of the Blood and peasant lad alike—the school-room





© Underwood & Underwood

"DOING THEIR BIT"

Both well over their allotted threescore and ten, these two Australian women—the one on the right the mother of the commander-in-chief of Australia's oversea forces—are nevertheless contributing their share of assistance in maintaining their country's contingent at the front. They spend most of their waking hours cutting up clean rags to be used in pads for the wounded.

training, need of a big navy, and other matters relating to national development. He hears in general the language of Ontario, but the variation in individuals, families, and communities is closely similar to that in the United States, plus a bit of cockney.

Many of the numerous Australianisms are also Americanisms, but would require an interpreter in England. In some mining towns and outlying villages the local dialects of the United Kingdom are said to prevail, but there is probably nothing in Australia like Dunedin or Christchurch, New Zealand, where the peculiarities of speech of southern Scotland and middle England are found in an exaggerated form.

It seems to me that two things mark the Australian as a class from Americans—their attitude toward work and their attitude toward wealth. The percentage of

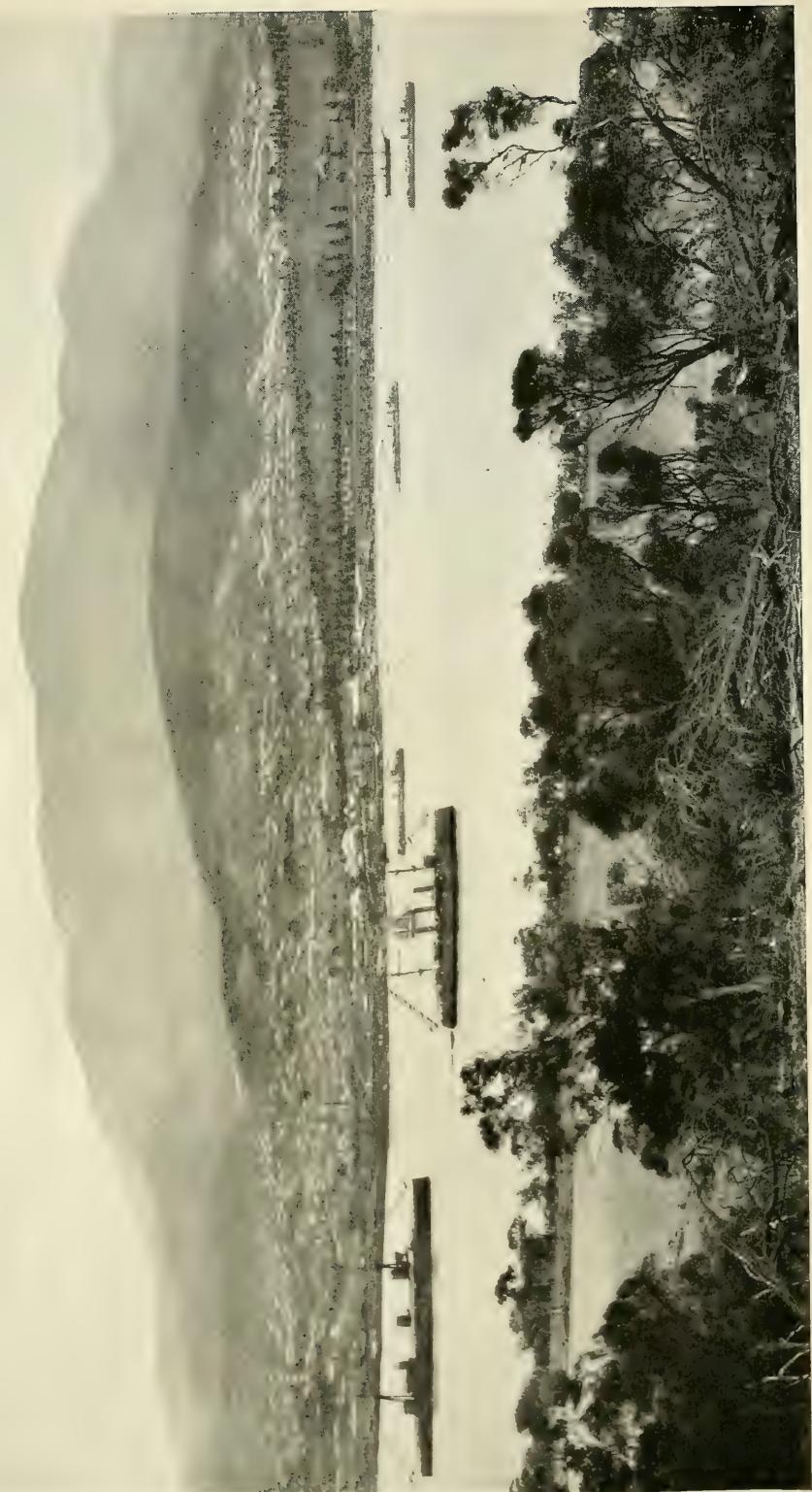
men who do no productive labor, loafers and "idle rich," is probably about the same in the two countries, but the number of men and women who voluntarily work long hours and gladly assume uncongenial tasks with the idea of demonstrating their usefulness and "getting ahead" is very much greater in America. In Australia the species finds an uncongenial environment.

On the basis of doing a moderate amount of work amidst agreeable surroundings, most Australians are workers. Short hours are the rule, and there is a tendency to ward off competition by legislative enactments rather than to meet and overcome it.

The desire for money is in most cases a desire to secure a competence, not to secure power and prestige by amassing a huge bank account. Wealth is so diffused that nobody is really poor and few are

HOBART AND MOUNT WELLINGTON: TASMANIA

With Mount Wellington as a striking background and the Derwent River as its foreground, Hobart, the capital of Tasmania, is one of the most picturesquely situated cities of the southern world. Founded in 1803, it now has a population of 40,000 and is a highly progressive municipality.



COMMONWEALTH PARLIAMENT HOUSE: MELBOURNE, VICTORIA

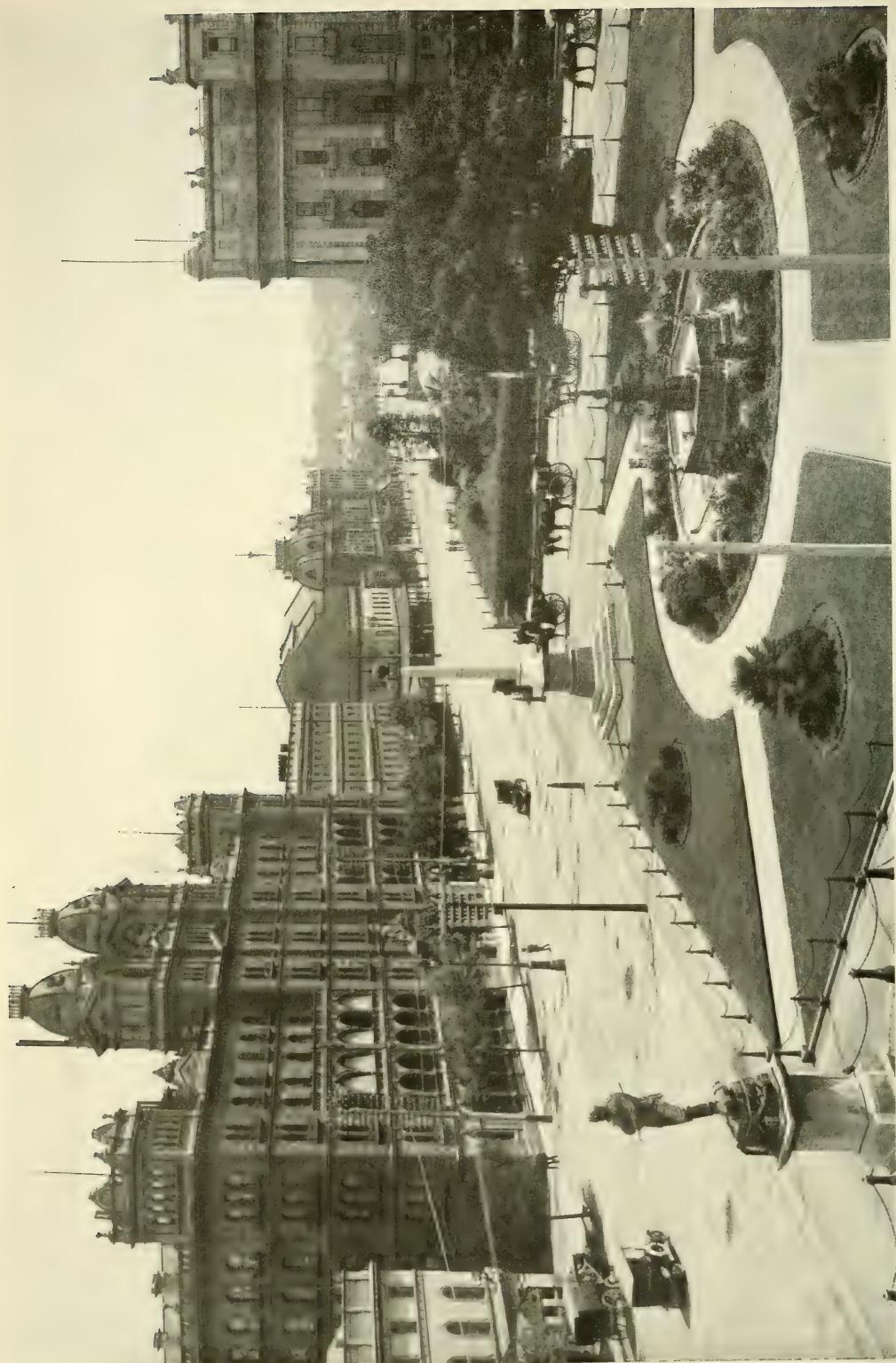
While Sydney is much older than Melbourne, there is a neck-and-neck race between them for the honor of the greatest population, not to mention a gentlemanly rivalry in all other matters. More than one-fourth of the population of this continent is centered in these two cities. Combined they have about 1,400,000 people, while the population of the six Australian States is only about 5,000,000. At present Melbourne is the seat of the Federal Government, but will lose that distinction when the new capital, Canberra, is completed.



Melbourne is the Chicago of Australia. Founded fourscore years ago, it now has nearly 700,000 population, and proudly claims to have finer public buildings than any other city of its size in any part of the world. The ramshackle districts which usually lie between the suburban places and the "down-town" section of a city are not found in Melbourne, which is practically slumless.

SPRING STREET, IN MELBOURNE

Photograph by Norman Thomas



very rich. It is stated that one in six Australians owns property, and that one in four has deposits in savings banks.

#### HIGH SCHOOLS AND UNIVERSITIES POORLY ATTENDED

One of the anomalies of Australian life is their attitude toward education. In a country where the government digs a man's well, sells him fish, and tells him when to open his store, and where 98 per cent of the adult population can read and write, it is strange indeed that interest in higher education should be so slow in developing.

Free public education from kindergarten to a university degree, giving equal opportunities to rich and poor of both sexes, is not known in Australia. The numbers enrolled in secondary schools, both public and private, and in universities are therefore relatively small.

The States of Washington and Victoria have about the same population, but the Washington high schools enroll four times the number of pupils and the State University enrolls four times as many students.

One reason for the small number of students in the university and secondary schools is doubtless the tuition charges; but this obstruction is partly removed by scholarships and stipends of various sorts granted to deserving pupils at public expense.

To my mind the chief reason is the low valuation placed on higher education; too few are willing to obtain it at a personal sacrifice. Stories of American boys and girls without money, who by the thousands work their way through school and college by sacrificing their holidays and vacations, performing menial services and living on meager fare in cheap lodgings, read like fiction to the son of the Australian laborer.

#### AUSTRALIANS AT PLAY

With a short, easy day for the business and professional man and for the wage-earner, with Saturday afternoon free and frequent holidays, the Australian has the energy and the time for amusements, which, because of the climate, take largely the form of out-of-door sports. Horse-

racing is a national interest, to an extent unknown in other countries, and racecourses are as much a part of a community's equipment as streets and cemeteries.

Metropolitan "cup days" in spring are the Easters of Australia, the days on which fashionable women display their new gowns and hats. For the great races people come to the cities by thousands, the streets are crowded, and the hotels packed to the limit. Ordinary work practically ceases; freedom and gaiety prevail and money is lavishly spent. The attitude of the community is like that of an American student during an intercollegiate foot-ball match.

Unfortunately horse-racing is not only the national sport; it is also the national vice. Where thousands see the races, tens of thousands bet on them. A lack of knowledge of horse or rider or owner is no deterrent, for there is little pretense of an honest race. The grand prize of \$25,000 to \$100,000—occasionally \$300,000—is irresistible. The gambling spirit pervades all classes and all occupations.

To quote an attorney general of New South Wales: "Clerks and shop girls will stint themselves of food and office boys pilfer the stamps to buy a ticket or share in one of these lotteries . . . . ninetenths of the embezzlements and forgeries and breaches of trust which come before the Australian courts are directly due to horse-racing and its concomitants." In spite of editorial and pulpit utterances, of votes in the hands of women, of efforts of the Commonwealth government and mild legislation by States, the evil continues.

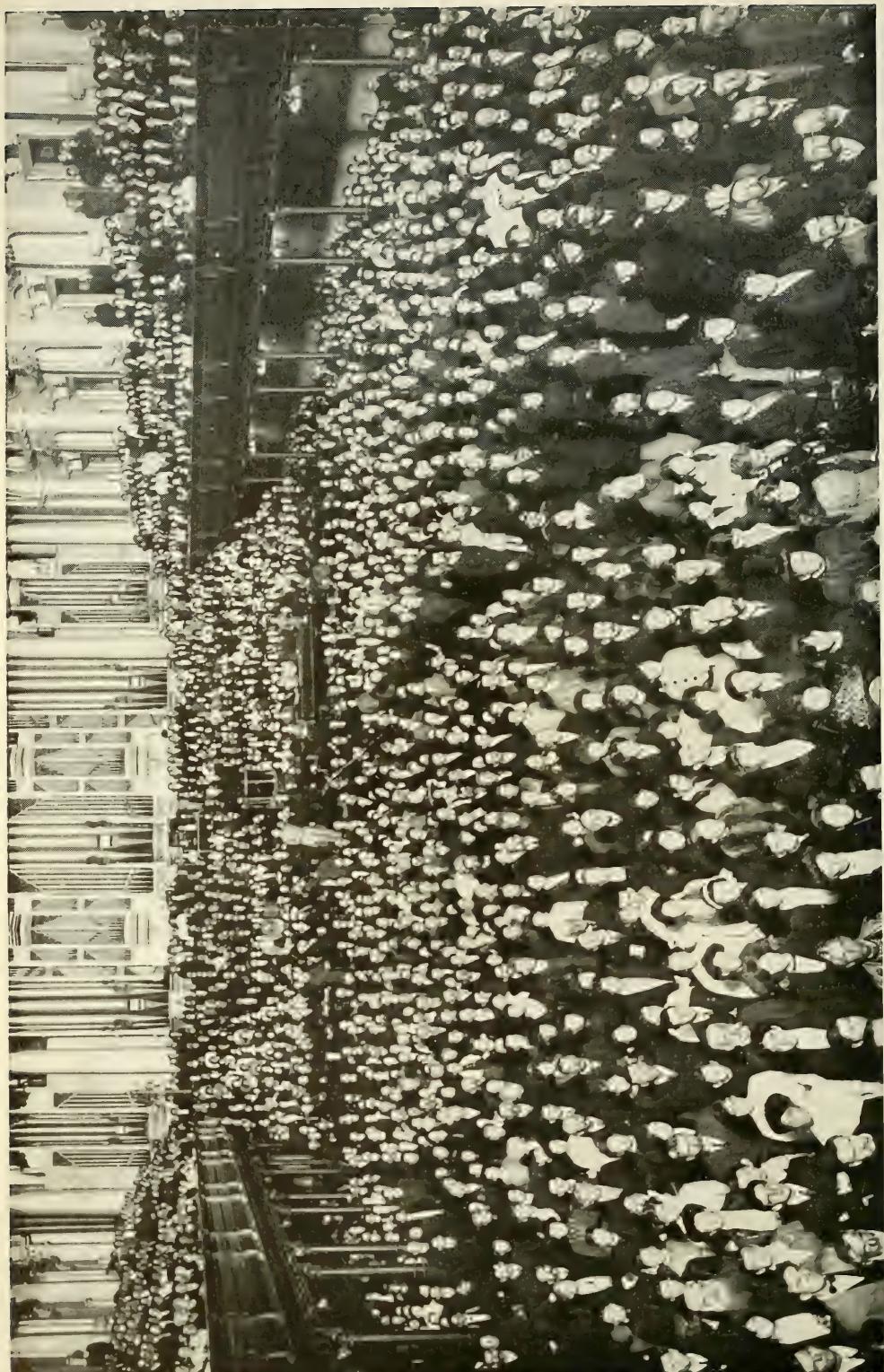
As in the United States, the "movies" often constitute the chief indoor amusement, but the universal recreation is the picnic, which in Australia reaches its highest development. Men, women, children, families, clubs, churches, lodges, and miscellaneous groups are out on picnics afternoons, Sundays and holidays.

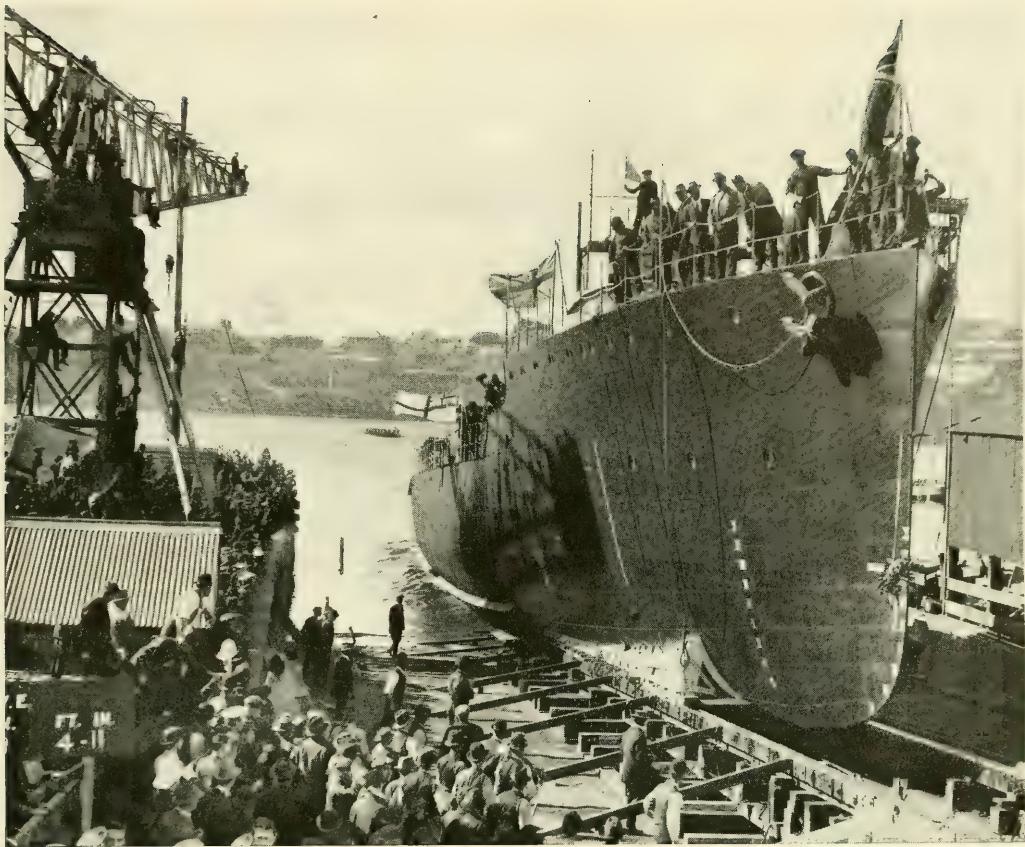
Two picnics a week are not unusual; a young lady of my acquaintance had five to her credit. The picnickers walk, ride horses, take wagons, or go by motor, street car, train, or boat. They go to the shore, to the woods, to rivers, to pictur-

Photograph by Norman Thomas

INTERIOR OF SYDNEY CITY HALL, WHICH HAS ONE OF THE LARGEST ORGANS IN THE WORLD

An Australian's idea of a nice day is the exact antithesis of ours. He thinks it is a nice day when it rains. When the havoc wrought by a drought is realized, one cannot but agree that his point is well taken and his opinion justified. One wonders, though, if when the great city audience pictured above went into the street and found it raining "cats and dogs" a consensus of opinion among the ladies would have borne out the previous statement.





Photograph by George Bell

#### LAUNCHING THE AUSTRALIAN-BUILT TORPEDO-BOAT DESTROYER "TORRENS"

The policy of the Australian Commonwealth is to make the continent able to defend itself. Under an agreement with the mother country, it undertakes to equip and maintain a navy consisting of a battle cruiser, three unarmored cruisers, six torpedo-boat destroyers, and two submarines.

esque hillsides, or to the zoölogical and botanical gardens, which in Australian cities are used, not guarded by "keep off the grass" signs. The time is occupied by gossiping, reading, sewing, writing letters, playing simple games, eating lunch or supper, fishing, swimming, studying flowers or insects, or "plain resting."

America has much to learn from the Southern Continent of the use of parks and the attainment of recreation without the expense of country clubs and Coney Islands.

#### THE DAY LABORER IS KING

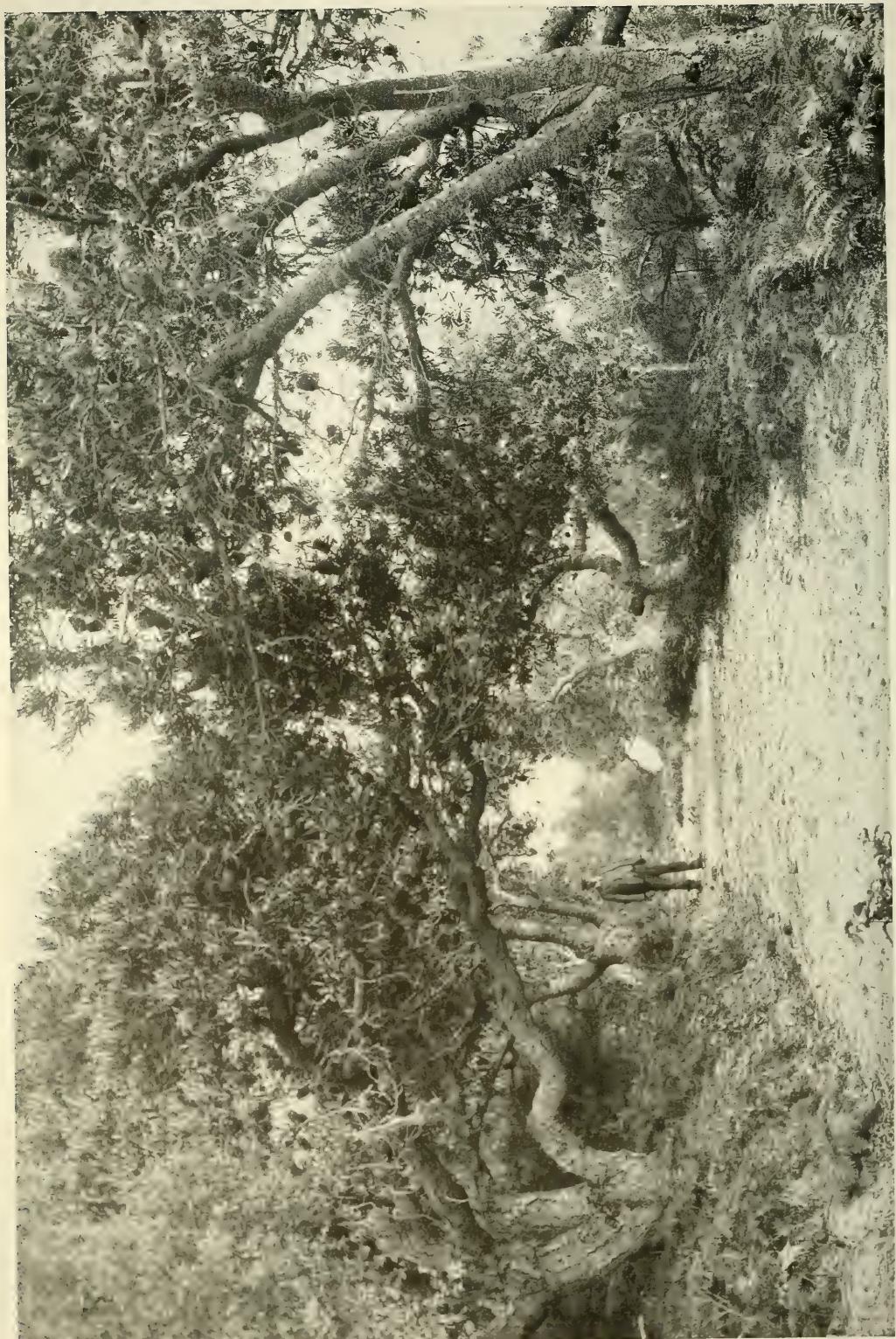
The day laborer, as opposed to the employer and to other workers, is king in Australia. The unions, through the labor party, practically control the executive, legislative, and judicial machinery of the

cities, the States, and the Commonwealth. Much of the legislation enacted during the past ten years—for example, shortening of hours, increase in wages, restriction of child labor, safeguarding from accident, and employer's liability—finds its counterpart in the United States. Certain other features of industrial life are unfamiliar to Americans.

Forty-eight hours is the recognized maximum for a week's work; but in certain occupations forty-four, forty-two, forty, and even thirty-six hours are considered full time. Some of the larger building trades have a forty-four-hour week, and it is probable that this figure will become the recognized standard for all labor. Of the "four sacred eights" in the original slogan—"eight hours' work, eight hours' play, eight hours' rest, and

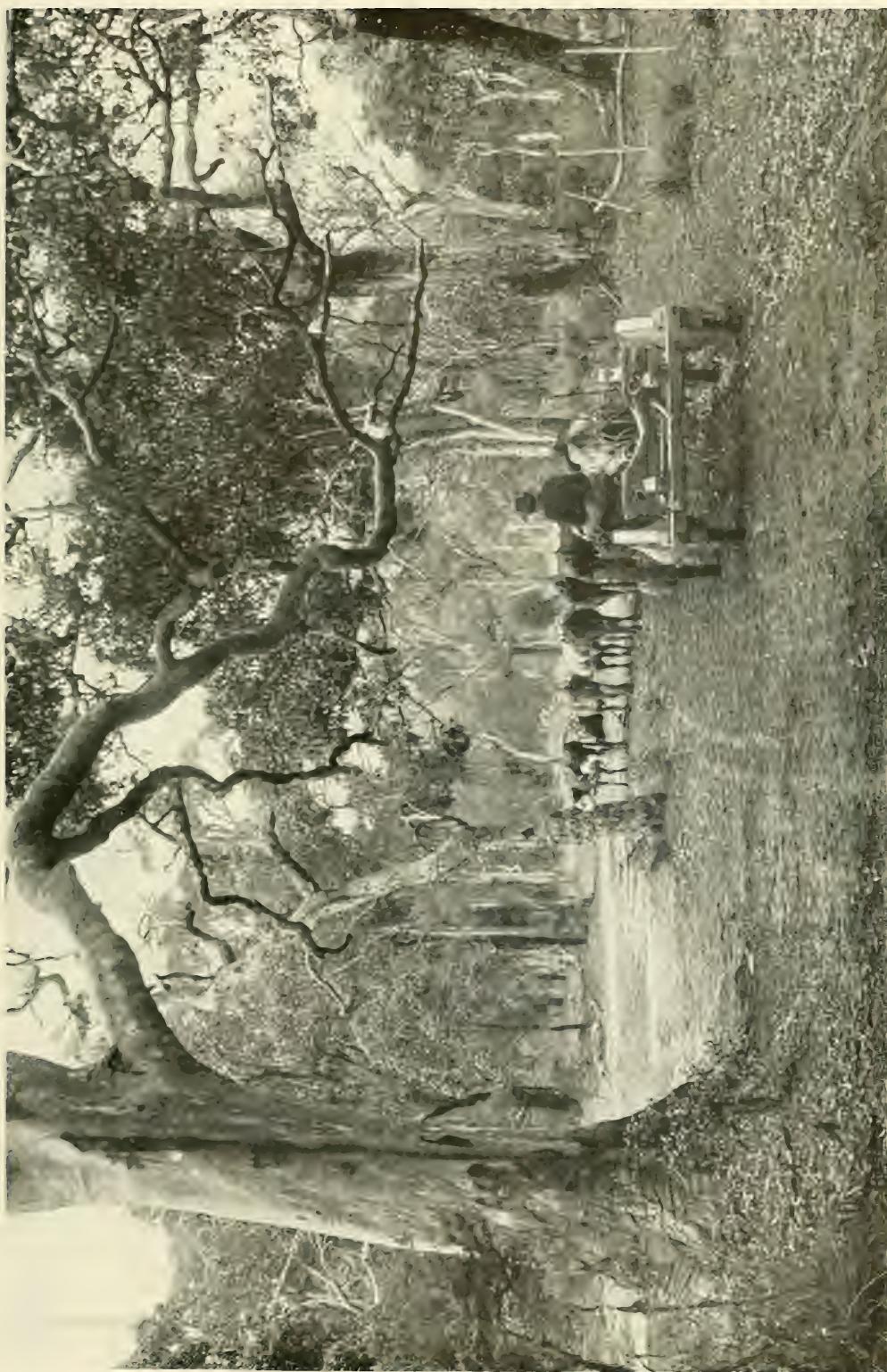
A BUSH PATH IN NEW SOUTH WALES

In the well-watered sections of Australia the vegetation is thick and tangled and the early settlers cleared their land with great difficulty



A BULLOCK-DRAWN LOGGING WAGON: NEW SOUTH WALES

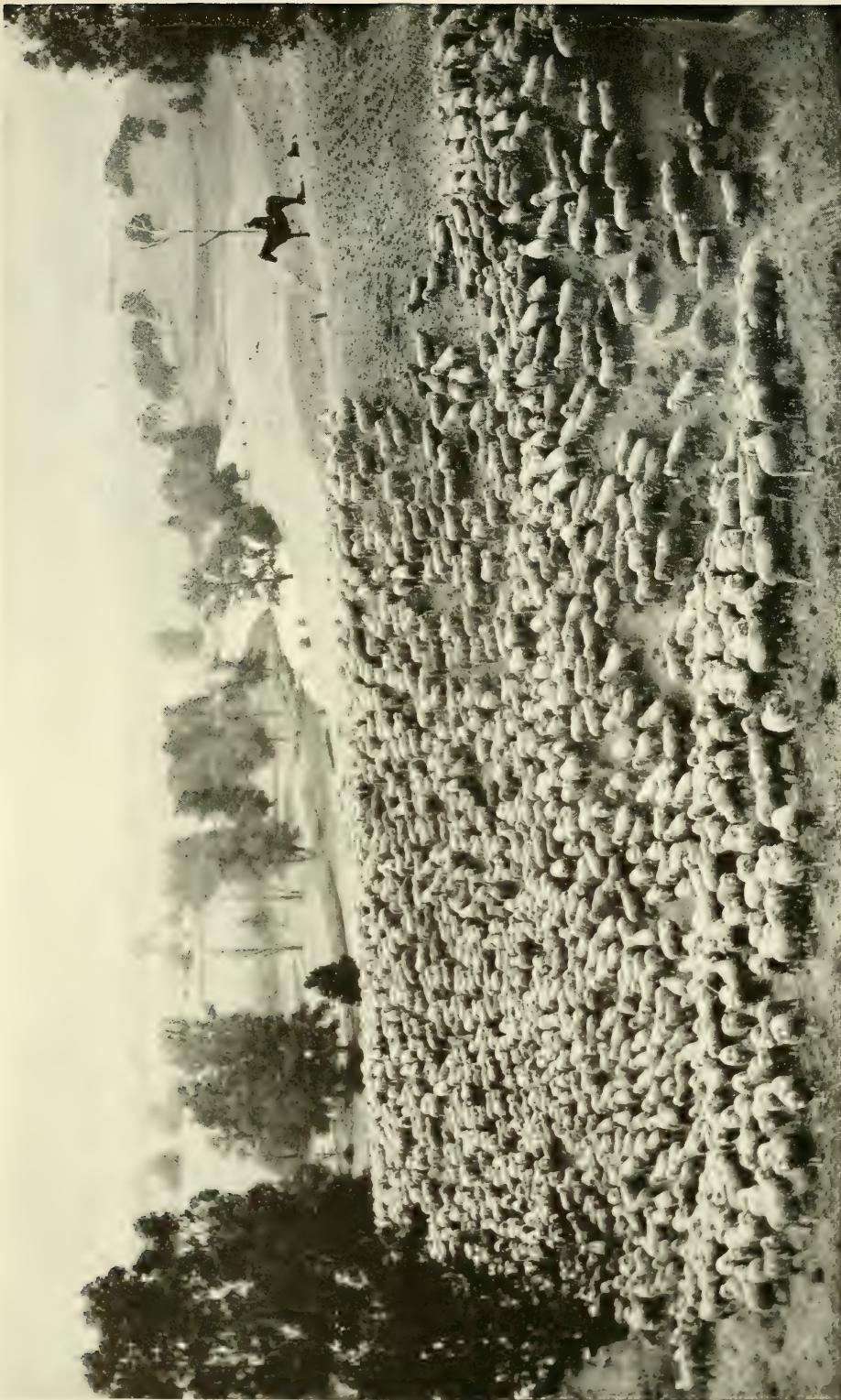
They tell many a story about bullock drivers in Australia. Usually their language to the soldiering ox is about as sharp as the crack of their "black-sticks" whips. But once a "bullocky," swinging his whip and preparing a whole machine-gun load of verbal shots to accompany its lash, perceived the mail-coach coming, and a clerical hat on the front seat. "The whip dropped and the 'bullocky' coughed politely, "Ahem, Strawberry, proceed." And to his obvious astonishment Strawberry did as he was told.



Photograph by George Bell

A FLOCK OF SHEEP ON A NEW SOUTH WALES RUN

"The shearers are concentrating. For 100 miles on every side every one knows that shearing begins at the central paddock. Orders have to be sent out weeks before to the back stations to have different detachments of sheep marched into certain places on certain dates. Regiment after regiment has to be shifted in like troops at a military concentration. When the final order arrives to have the sheep from White Dog paddock in at Einu paddock on Wednesday week, at Einu paddock on Wednesday week they must be; for it may be that on that very day they will send from the station to fetch 5,000 or 6,000 of those sheep into the wool-shed paddock."—"On the Wool Track."



eight bob a day"—only the portion relating to rest has been retained. Stores are forced, not permitted, to close at 6 p. m. on four days, at 9 or 10 p. m. on one day, at 1 p. m. on Saturday; but drug stores and saloons and restaurants are exempted.

After watching railroad laborers doing "the government stroke," it was easy to understand the opinion of contractors, who had had experience in the United States, Canada, England, France, or Germany, that the work accomplished in an eight-hour day in Australia was the equivalent of that performed in six and one-half to seven hours in other countries.

#### A LIVING WAGE DEFINED

The theory of the minimum wage is in practical operation. The fluctuating cost of living is recorded in detail by various boards and furnishes a basis for awards in industrial disputes. It is interesting to note the definition of a living wage as formulated by the Court of Industrial Arbitration of New South Wales in 1914:

"The living wage is standardized as the wage which will do neither more nor less than enable a worker of the class to which the lowest wage would be awarded to maintain himself, his wife, and two children—the average dependent family—in a house of three rooms and a kitchen, with food, plain and inexpensive, but quite sufficient in quantity and quality to maintain health and efficiency, and with an allowance for the following other expenses: Fuel, clothes, boots, furniture, utensils, rates, life insurance, savings, accident or benefit societies, loss of employment, union pay, books and newspapers, train and tram fares, sewing-machine, mangle, school requisites, amusements and holiday, intoxicating liquors, tobacco, sickness and death, domestic help, unusual contingencies, religion, or charity."

Elaborate legislative and judicial machinery has been devised to adjust misunderstandings between employers and employees and to prevent strikes and lockouts—an experiment which is attracting world-wide interest. In 1914 five hundred and twenty-two State boards dealing with disputes in various occupa-

tions were sitting and the docket of the Commonwealth courts were overloaded.

While many disagreements have been composed by these various boards, industrial unrest has increased to a discouraging extent, and the difficulty experienced by courts and boards in enforcing their awards, except as against employers, tends to nullify the effect of arbitration. The number of industrial disputes has increased since the Industrial Arbitration Act of 1912 became operative, and shows little diminution in consequence of the present war.

Judging from the New South Wales statistics, the parties to disputes prefer to fight it out. Of three hundred and thirteen "industrial dislocations" in this State for the year 1914, two hundred and forty-five were settled by "strife," forty-five by "arbitration," and twenty-three by "other means."

#### THREE AUSTRALIAN CITIES

While the visitor may feel that the Australian capital cities are sapping the life of the rural sections, he must admit their attractiveness. They are clean and are not overcrowded, and lack the congested districts of tenement houses. Parks are numerous, the streets are ornamented with trees, and an effort is made to decrease the natural ugliness of trolley and telephone poles and street lights. Gardens, which take the place of lawns, are everywhere present, and where the city meets the country the zone of ramshackle buildings and unkept yards, characteristic of many American cities, is conspicuous by its absence.

Sydney is the seventh city in size in the British Empire, being exceeded only by London, Calcutta, Bombay, Glasgow, Liverpool, and Manchester. It is about the size of Boston or St. Louis, two of the five largest cities of North America. Its population is exceeded in the Southern Hemisphere only by Buenos Ayres and Rio de Janeiro.

Sydney has grown spontaneously, like Boston, not according to a previous plan, like Washington or Salt Lake City. It has straight streets and crooked streets, long streets and short streets, boulevards and streets too narrow to permit double-

A FLOCK OF SHEEP ON AN AUSTRALIAN FARM

Until recently Australia led the world in the number of sheep, but now she has been forced to yield first place to Argentina. Just as the farmer and his fence have encroached upon the cattle lands of our western plains, so they are encroaching upon the sheep ranges of Australia, with the result that the number of sheep is declining from year to year.





Photograph from Boston Photo News Co.

#### PREPARING TO "DRAFT" A FLOCK OF SHEEP: NEW SOUTH WALES

Drafting sheep is the process of separating them. They are driven into the drafting yard, from which leads a runway wide enough for one sheep, with two pens at the end and a gate. By turning this gate to one side or the other the drafter is able to send a sheep into the one pen or the other. Each ewe has a right-ear mark and each wether has a left-ear mark. Expert drafters can work two and even three gates at a time, separating the sheep into three and even four pens and classes.

tracking. Some parts of the city are flat; in others the streets lead up and down steep little hills. There is no division into business and residential sections, or into "new part" and "old part," or "rich part" and "poor part." The soft buff-colored sandstone, so largely used in construction, gives a pleasing impression of age even to buildings recently constructed. It may be that the attractive informality of the life of the metropolis is a reflection of the city, or both may have resulted from the mild and fluctuating climate.

#### A KINDLY FATE

The surprising beauty and spaciousness of the harbor of Sydney, Port Jackson, its "deep water fingers stretching miles up between wooded banks," have often been described, but its commercial value is not so widely known. Fate never

served an explorer a better turn than when it directed Captain Cook's course to the entrance of Sydney Bay, for it is the one place along a thousand miles of coast where access to the interior is easy.

In natural advantages it surpasses any harbor of the North American coast. The entrance is a channel one mile wide and 90 feet deep, walled by perpendicular cliffs of sandstone. Inside The Heads is an expanse of deep water covering several square miles and extending with slight decrease in depth along many miles of shore. Danger at the entrance, shifting sand-bars, shelving bottom, strong currents, and rough seas stirred up by winds are all lacking. In 1913 the total shipping business amounted to over 9,000,000 tons, a figure exceeded in the United Kingdom only by London, Liverpool,



SHEARING SHEEP: JIMBOW, WEST QUEENSLAND

A good shearer will shear one hundred sheep a day and is paid six cents a head. The shearing season begins in July and ends in November. Men come from all parts of the world to become shearers, and they travel from sheep station to sheep station as the tramp printer used to travel from city to city.

Cardiff, and the Tyne, and in the United States only by New York and Duluth.

Melbourne's appearance speaks of ambition and faith in the future and reflects the exciting epochs in the history of Victoria. The groups of government and city buildings are admirably placed and include some imposing structures which rank with those of any American State capital. Railways are convenient, the parks and public gardens are large and numerous, well cared for and largely used.

Business is concentrated on a relatively small number of blocks bounded by

streets 99 feet wide, feeding into parkways of twice that width, which seem to have been planned to secure fascinating vistas. Although the exaggerated prophecies of Melbourne's builders have not become realities, the feeling for greatness, and order, and convenience has been splendidly expressed.

Adelaide's unusual plan—a business section surrounded by a zone of 2,000 acres of park lands, beyond which are the residential sections—seems designed to put business cares, recreation and quiet home life in separate compartments. The organization of city life to allow for



AN ILLUSTRATION OF THE HEAVY, FINE WOOL OF AN AUSTRALIAN MERINO RAM  
(SEE PAGE 533)

leisure—a feeling more prevalent in Adelaide than in Melbourne, or even in Sydney, and almost unknown in American cities—is partly responsible for the universal impression among visitors that Adelaide ranks high in general culture.

But climate and the high quality of the South Australian pioneers are also factors which have helped to make Adelaide such a desirable place of residence. Those who are attracted by the climate, people, and manner of life of the foothill cities of Southern California, who care for out-of-door life and flowers and fruit, and wish to spend week-ends in near-by mountains or at the seashore, would feel at home in Adelaide.

Most writers on Australia profess to see differences in types and manners in the three leading cities of the Commonwealth, and the natives feel sure that differences exist. Melbourne is "hustling;" Sydney is "easy-going"; Adelaide is "solid" and "contented." On the basis of short acquaintance these characteriza-

tions seem as unreal as "dead" Philadelphia or "provincial" Boston would to an Australian traveler. In the American sense, no Australian city is hustling; all are easy-going and contented; all are doing much business in an orderly, efficient manner. As places for residences, they have few competitors among cities of the United States.

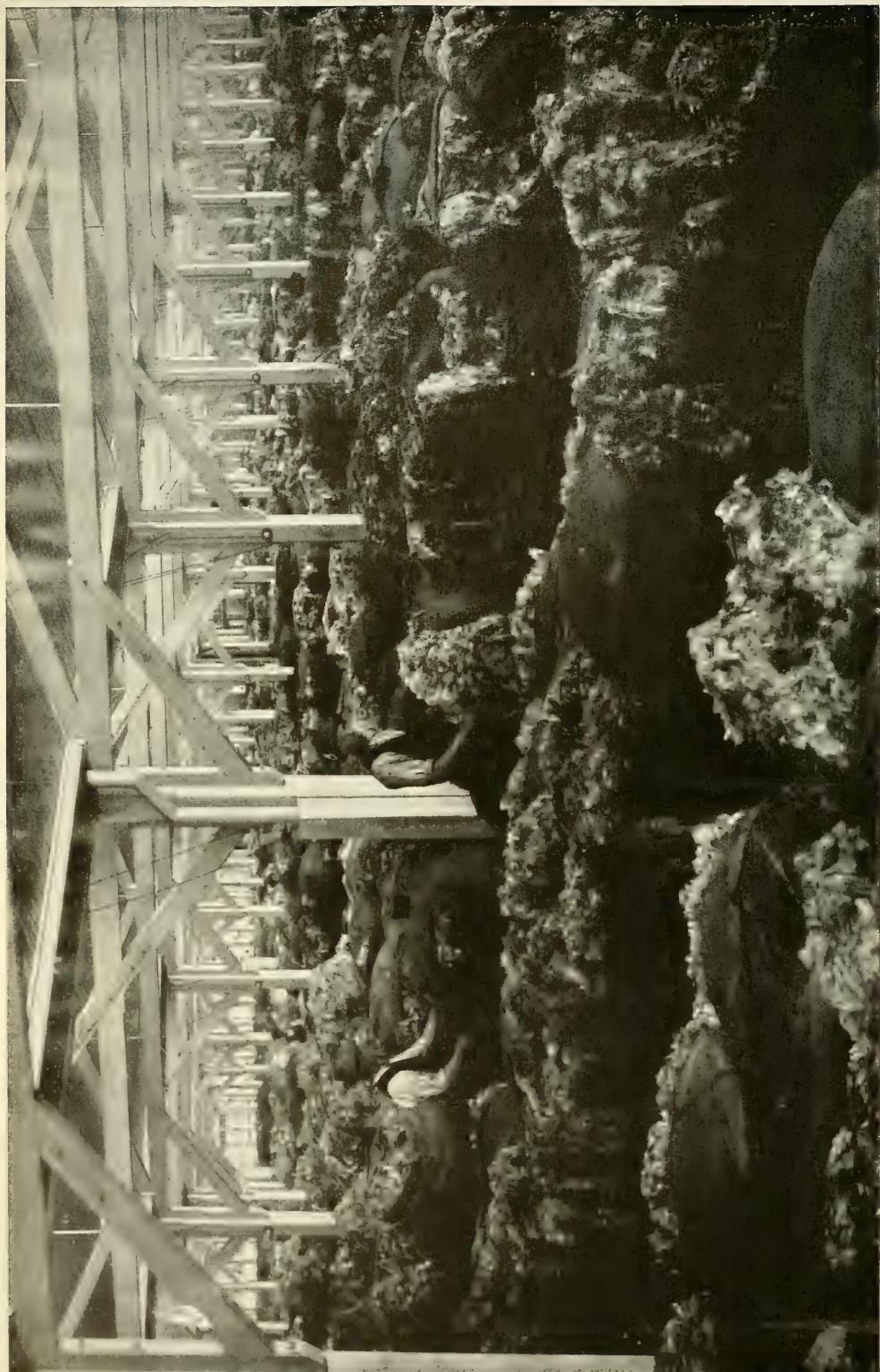
#### THE AUSTRALIAN BUSH

The "bush" of Australia is the back country anywhere away from thickly settled communities, where life resembles that of the ranchman of New Mexico, the dry farmer of western Kansas, or the settler in a remote Colorado valley, whose daily round of duties involves energy, skill, and daring. The enemies of the bushman are not disagreeable persons who may be ignored or bought off or turned over to the police; they are heat and winds and floods—forces of nature to which man's resistance is feeble.

For the weak-hearted and the lover of

A WOOL SHED IN PORT ADELAIDE, SOUTH AUSTRALIA

The auctions of Australian wool markets often witness as lively bidding as on the New York Stock Exchange. The wool sold is contained in the big storehouses miles away. About a third of each lot is on the top floor, under bright skylights, each bale open, so that prospective buyers can inspect each lot before the sale begins and note on his catalogue the price he is willing to bid.



physical comfort and social companionship the battle with the bush is lost at the outset. The struggle demands self-confidence, a dogged refusal to be discouraged, a faith in the future of the country, and a profound belief that a man's life sacrificed for the good of coming generations is well spent.

#### A TYPICAL SHEEP STATION

Yalata, South Australia, is a typical sheep station of the better class. Parts of this ranch, which was formerly about the size of Connecticut, and still retains the generous proportions of 300,000 acres, are inclosed by dog-and-rabbit-proof fences and subdivided into grazing paddocks. The all-essential water is obtained from wells of uncertain yield, from storm-water "tanks," and from the roofs of buildings.

The ranch is a community in itself. There is a blacksmith shop, a carpenter shop, and a laundry, in addition to the familiar sheep pens and wool sheds. Besides the station-house—a roomy structure of stone and galvanized iron—there are outlying houses for workmen and huts for the families of "blackfellows"—docile dependents who are fed, cared for like children, and render a little inefficient service. Teams of camels bring in fuel and haul wool to the port at Fowler Bay (see map, pages 480-481) and pack-camels carry water to distant points.

There is not the bustle and long hours of labor common to American ranches, for the Australian employee has clearly defined working days. But the employer and his family are not restricted and their work is varied and arduous. The owner is incessantly busy with repairs, with examination of fences and water supplies, and keeps a cheerful and generous spirit in spite of the fact that hopes of financial independence, which had come within reach after years of isolation and struggle, were shattered by the drought of the previous year.

The women of the family, refined, educated and broadened by travel, are bearing the household burdens, running the store, post-office, and telegraph station, acting as nurse and medical adviser to women and children of the

"blacks," and making life more endurable for the small ranchmen of the neighborhood, who had lost much through failure of crops and starvation of their meager flocks.

The ever-present temptation to "let things slide" is courageously resisted. Culture is shown in a collection of good books and musical instruments, in the appearance of the table, the leisurely ordering of meals, and the discarding from conversation of the cares of a busy day. Time is arranged for reading, for quiet gossip, and for interchange of ideas on a wide range of subjects. The dirt and annoyances incident to ranch life are kept outside of the home.

When a traveler comes along he is accepted on terms of equality, receives what the station has to offer, and is expected to give from his store of experiences. The bushman looking for work is passed along from station to station, hospitably entertained and supplied with provisions for the road.

For us hospitality was begun by the owner, who sent a cordial invitation 130 miles inland to our desert camp, and was ended by his daughter, who guided us on the 400-mile "track" to the boat at Port Lincoln.

#### THE LANDS OF COTTON AND WOOL

What America is for cotton, Australia is for wool. The Australian has no serious rival as a producer of Merino wool. In this favorable climate sheep multiply rapidly and produce the heaviest known fleece of the finest known quality. The fiber is fine, of great length, unusual strength, and therefore holds first place in the manufacture of high-grade cloths in England, Germany, and America.

With a satisfactory market assured for every pound of wool Australia can raise, it is natural to find all sorts of people trying their hand at sheep-raising. Lawyers, physicians, clerks, teachers, titled aristocracy, as well as farmers and stockmen, are enrolled as wool-raisers, and while the actual work on the run requires few men, the number indirectly connected with the wool and mutton business probably includes one-third of the population.

During a series of good seasons his returns are very great, but he must fight

Photograph by George Bell

CARTING WOOL TO BATHURST

The bullock teamsters charge about \$20 a ton per hundred miles for hauling wool, the price depending largely on the supply of grass available along the road. Often the teams must cross vast parched plains several hundred miles broad, in which there is perhaps not more than one water-hole and one person to a hundred square miles (see page 535).



the dingo and rabbit, and a year of drought may mean complete loss of flocks. During the past ten years he has been called upon to give up his land to farmers and to pay the cost of political experiments designed to improve the lot of the day laborer in cities.

In 1913 there were 85,000,000 sheep in the Commonwealth; the value of wool exports alone was \$128,000,000, or 65 per cent of the total pastoral products. In addition to wool, there was sent to market: mutton, \$14,000,000; skins, \$11,000,000, and tallow, \$10,000,000; so that if all products of the sheep industry be combined, the total equals 40 per cent of all exports from the Commonwealth.

#### THE CATTLEMAN

As in America, the cattlemen of Australia occupy the outlying posts of civilization. They are "way out back" in the "Never-Never" country, or even "behind the beyond." The cattle roam widely over unfenced runs thousands of square miles in area. The average size of pastoral holdings in the Northern Territory is 275,000 acres. In West Australia one hundred people own together 40,000,000 acres, and Frazer speaks of a Queensland "cattle king" who held 60,000 square miles—an area nearly as large as all New England.

The events of the year are the "musters" (round-ups), when the "mobs" (herds) of cattle are assembled, counted, and sorted, the "clean skins" branded and suitable stock sent to market. But sending to market is a serious business. Two, three, or even five months may be required to drive cattle to the nearest port or railroad. Unless the season is favorable it cannot be done at all, for feed and water are lacking along the tracks. Even in good years forage is insufficient and water absent over long stretches of country, and herds of cattle started on the long drive may be greatly depleted by starvation and thirst, the remnant reaching their destination fit only for "boiling down."

A stockman told me of one of his mobs numbering 2,000 which succumbed completely to the hardships on an 800-mile drive (see also page 537).

#### STOCK ROUTES AND WATERING PLACES ARE MAINTAINED BY THE GOVERNMENT

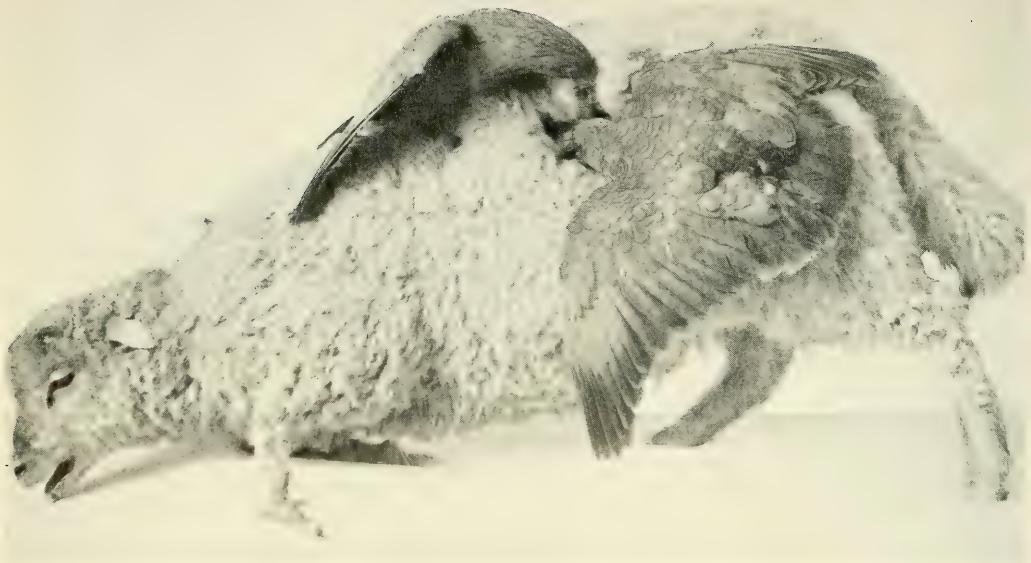
Stock routes are laid out and tended as carefully as wagon roads or railways. They head for the principal markets, or for the ends of railroads, which extend into the arid belts and wind across the country, taking advantage of all known water supplies. Streams, springs, billabongs, and gnamma holes are used, regardless of the quality of the water, for almost any liquid is acceptable in the desert.

When the distances between watering places are too great, or areas of feed are beyond the reach of water, artificial supplies are provided and kept under surveillance. In places wells are dug; elsewhere reservoirs and tanks designed to collect storm water of infrequent rains are constructed. Many of these are built below the surface and covered to check evaporation. Where other means fail, skeleton buildings with large roof area are constructed to conserve rain-water.

A land-office map of an Australian State is decorated with a network of crooked lines, main arteries with branches, along which are indicated at distances of 10 to 40 miles the watering places and camping sites maintained by the government. These stock routes cover the continent like a system of railways, for which they form a substitute, and their construction and maintenance is a highly important function of the States.

In New South Wales 6,000,000 acres are reserved for this purpose, and seven hundred public watering places have been constructed, three-fourths of them tanks and reservoirs. In South Australia routes extend from Port Augusta to the borders of Queensland and West Australia, and into the heart of the Northwest desert for a distance of 700 miles. One route crosses the State and continues through the Northern Territory to the northern edge of the continent. West Australia likewise maintains 2,000 miles of stock routes leading from inland stations to the cities on the Southwest coast.

While farmers in the new country were few or absent, the cattlemen secured the land. They were powerful financially



Photograph of specimen in U. S. National Museum

#### A KEA, OR MOUNTAIN PARROT, KILLING A SHEEP: NEW ZEALAND

In this bird we see the harmless, vegetable-eating parrot transformed into a vicious bird of prey within the space of a few decades. Having gotten a taste of sheep fat from the frozen carcasses hanging on the meat gallows at the ranch houses during the cold winters, they soon learned to attack the live sheep. These attacks became so frequent that a bounty had to be put upon the head of every kea.

and politically and practically controlled the State parliaments. Laws favoring the large landholder were passed and acts designed to protect the small holder often were nullified. By the familiar processes of bogus competitive bidding, exaggerating the value of improvements, employing dummies, and choosing choice bits of land in such situations as render large adjoining areas useless for purposes other than grazing, the 640 acres which an individual might lease under the law could be indefinitely expanded.

#### DUMMY LEASE-HOLDERS

In one case the purchase of 27,000 acres in forty-acre blocks scattered broadcast over the run effectually secured an area of 258,000 acres, and by the transference of dummy leases four squatters obtained control of 55,000,000 acres, not in the arid region, but in the heart of New South Wales. The situation was complicated by large free grants of the choicest land in the Commonwealth—grants given to army and navy officers, to favored politicians and promoters.

Settlement by farmers was delayed also by a strange economic theory that the way to colonize was to sell land at a high price, using the proceeds to bring out more colonists. By keeping the land beyond the financial means of the average immigrants, a "nicely graded society of landlords, yeomen, and laborers" could be established!

That the problem of regaining for the people the enormous holdings already alienated to wealthy stockmen and absentee landlords is under vigorous attack is shown by the bewildering mass of legislation enacted during the past twenty years.

The significant difference between the present Australian and American practice is that the public lands of the Commonwealth are in general leased, not given away or sold. Free land to which unrestricted title may be obtained by settlement and cultivation is now unknown in Australia. On lands not previously occupied the farmer secures possession by a five-year residence and the payment of a small annual rental—a figure subject to

change after a stated period. If his land is part of a larger holding purchased by the State, the settler pays the price in the form of long-term loans.

Since much of the desirable land is included in large estates, the amount available for settlement is measured by the ability of the government to purchase holdings at their present high valuation.

#### THE SOURCE OF HER WEALTH

The position of Australia as the leader among nations in average wealth per head of population is largely the work of the stockman, who has made good use of his opportunities; his wool, and mutton, and beef, and hides are known in every world market.

The Australian wheat-grower, like the sheep-rancher, is master of his craft; he uses the most modern machinery, imported from abroad, and has developed implements of his own, including the well-known stripper-harvester used in other wheat-growing countries. Under the guidance of scientific leaders, he has increased the yield and improved the quality of his crop, and has developed new varieties suited to the climate. In brightness and hardness of grain, in milling qualities and in whiteness of flour, his wheat stands unequaled, and therefore ranks first in value per bushel in foreign markets.

Oddly enough, the handling of Australia's wheat crop is still in a primitive stage. It is put in bags in the field, hauled in bags to the railway station, carried in bags on the train, and remains in bags during its oversea journey to market.

Instead of the familiar grain elevators of the United States and Canada—big ones at terminal points, small ones scattered along the railways—the traveler in Australia sees bags stacked by the hundreds at nearly every station and accumulated by thousands at the larger shipping points. Stacks containing 100,000 to 200,000 bags of wheat are not unusual sights at South Australian ports (see page 540).

That Australian agriculture is an infant is shown by the fact that the land under cultivation is 14,700,000 acres, less than half that of Kansas and an insignificant fraction (0.77 per cent) of the

area of the Commonwealth. That the tropics are practically uncultivated, and the area with rainfall between 10 and 20 inches little utilized, is to be expected, for these conditions prevail in other countries, and the treatment of such lands may be left for the future; but it occasions surprise to find that nearly 300,000,000 acres in the temperate zone, receiving over 20 inches of rainfall—land like that of Tennessee, Nebraska, and Oregon—should remain idle (see p. 545).

The Commonwealth is suited for all the crops of the temperate and tropical zones, and on the small area cultivated nearly every known kind of grain, fruit, and vegetable is grown. Many varieties of fruit trees and vines thrive even better in Australia than in the countries from which they were introduced, and the climate is such that lemons and oranges and the finer varieties of grapes may be grown in all the States on the mainland.

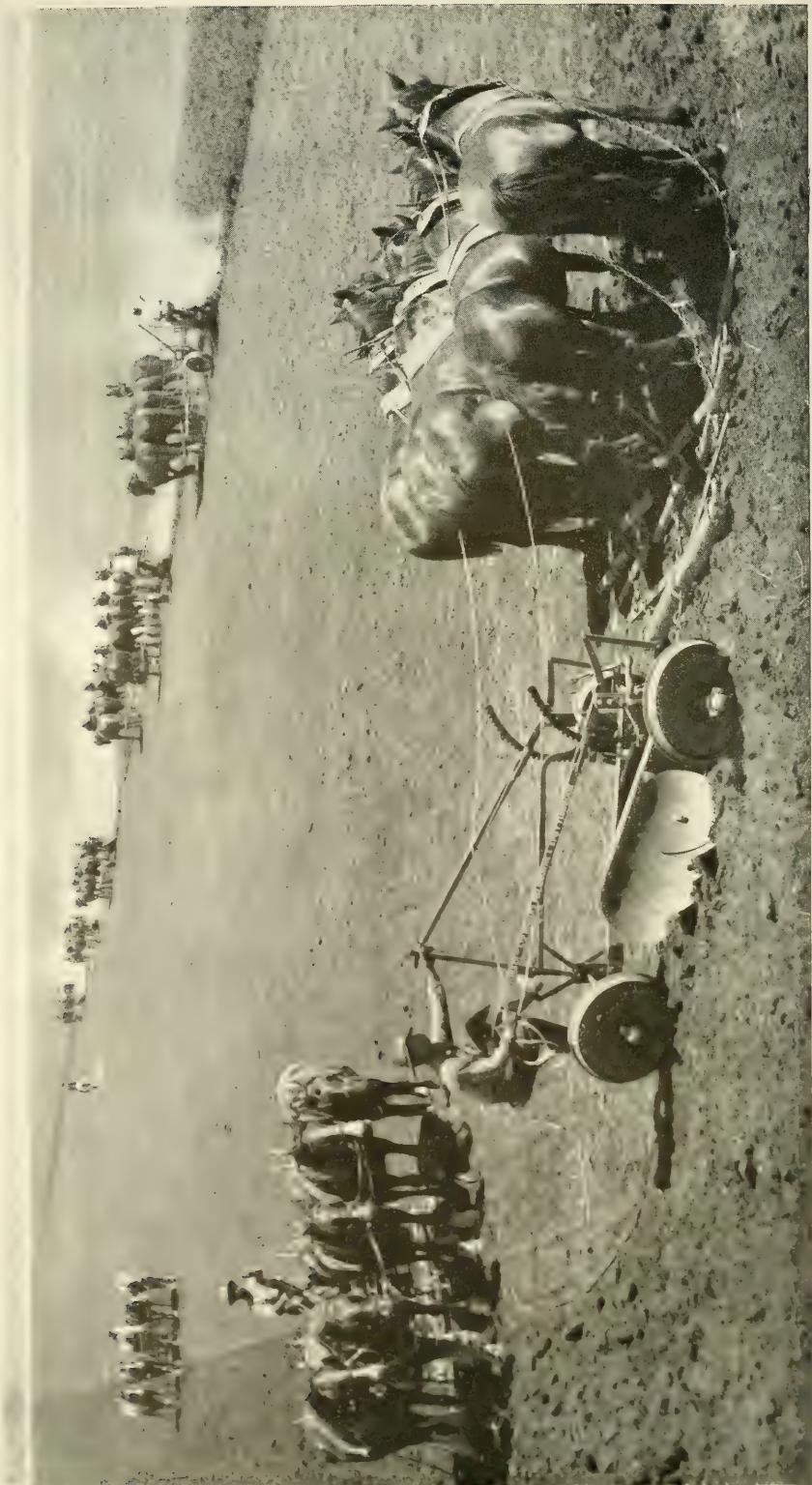
#### MORE ANIMALS PERISH THAN IN THE DAYS OF THE MURRAIN

The Australian farmer and fruit-grower and ranchman are practically free from the fear of frosts, but instead they must contend against a more bitter foe—the drought. In other countries droughts when severe are local. Australia alone is subject to visitations (fortunately rare) which travel like a scourge from one end of the continent to the other. Those who have experienced a drought on our western plains, when growth of vegetation not only seems to be suspended completely, but grass withers to the roots, may form a picture of the disaster attending a severe drought extending, as it were, from California to New York, with only the mountains and parts of New England and Washington retaining their coating of green.

Ten of the twelve droughts recorded for Australia since 1880 affected chiefly the inland areas, where the rainfall is normally below 25 inches; but the great drought of 1902-1903, which marked the culmination of five unfavorable years, affected the entire continent. In one year 15,000,000 sheep and 1,500,000 cattle perished, and the whole drought period saw the death of 60,000,000 sheep and 4,000,-

STARTING THE PLOWING SEASON AT NARROMINE, NEW SOUTH WALES

Australia is the most level in surface and regular in outline of all the continents, and even of most large islands. It is also the lowest continent, with an average elevation about that of Ohio.

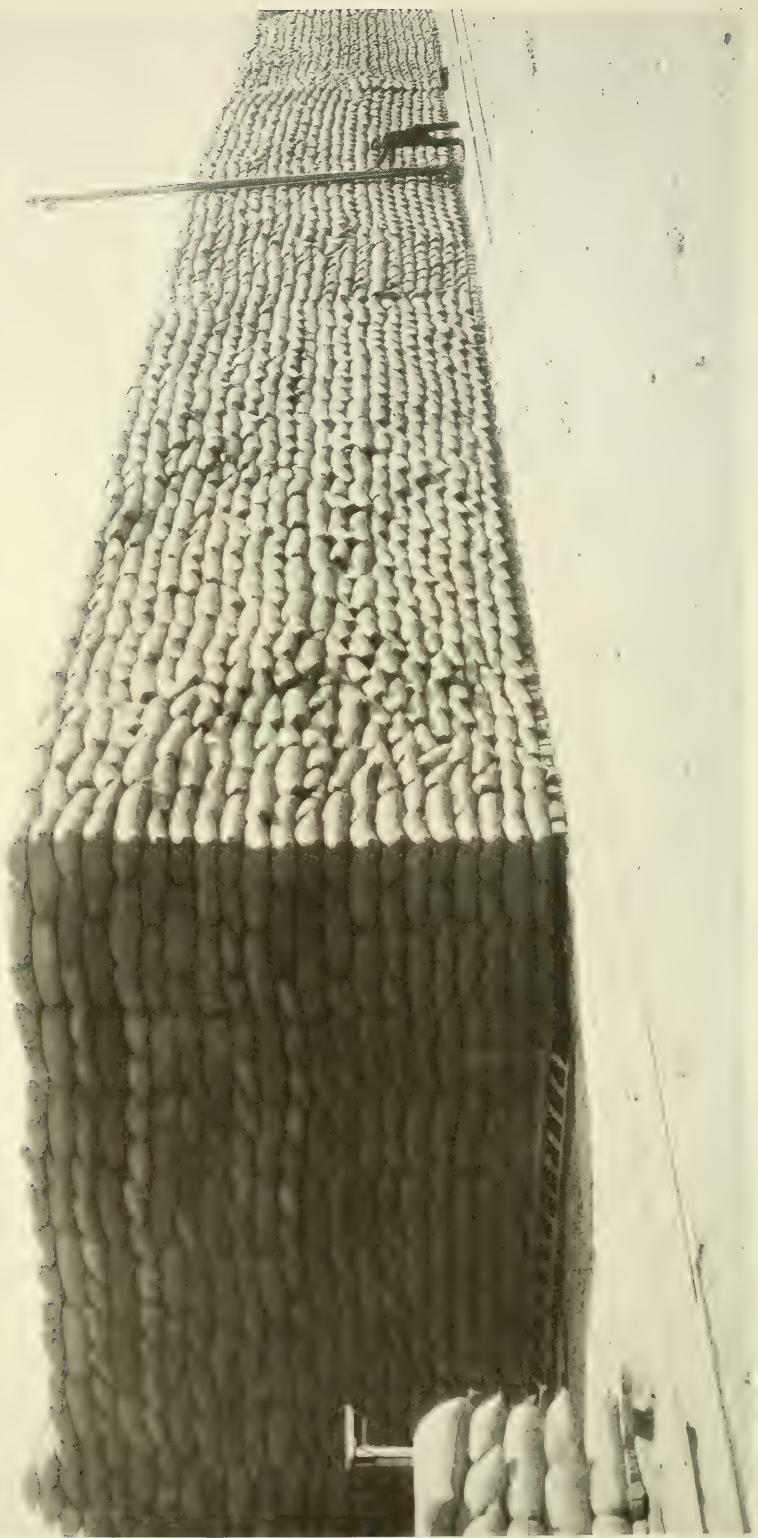


Photograph from Janet M. Cummings

CARTING WHEAT IN THE MALLEE DISTRICT, NORTHERN VICTORIA

The Mallee district consists of about 11,000,000 acres of bush territory in temperate Victoria. It has a fair amount of rainfall, and when the scrub is cleared off makes excellent farming land. By a system of farm loans this can be carried out by settlers, the government lending a fixed amount for every ten acres cleared. Much wheat now grows where once the bush reigned supreme, although more than half of the district is still open to settlers.





200,000 BAGS OF WHEAT STORED FOR SHIPMENT: PORT WAKEFIELD, SOUTH AUSTRALIA

Owing to the dry weather in the harvest season, the wheat can be stacked for shipment. Unlike ours and the Canadian crops, grain in Australia is handled in bags; elevators are not used (see page 537).

000 cattle from starvation and thirst. Mining operations were checked for lack of water. The wheat production fell in one year from 38,000,000 bushels to 12,000,000 bushels, and flour, as well as other foodstuffs, were imported. Many people left the country, the excess of departures over arrivals for the period 1901-1905 being 16,800. The birth rate decreased; the death rate increased so that the increase in population dropped to 1.38 per cent, the lowest in the history of the country.

Nothing shows better the temper of the Australians and the marvelous recuperative power of soil and stock than the rapid recovery from this overpowering disaster. During the drought "the black-soil plains of the Darling were reduced to dust, without vestiges of herbage for miles. Within a week they were covered with green, and in a few weeks there was luxurious pasturage."

In the year following the drought 74,000,000 bushels of wheat were harvested, and the fields of New South Wales, which had returned about two bushels to the acre in 1902, returned 15 to 17 bushels per acre in 1903. Within three years the flocks of this State, which had lost 17,000,000 head during the drought, had increased from 23,000,000 to 40,000,000, and the number of cattle and horses had doubled; and by 1905 the number of sheep and of cattle in the Commonwealth exceeded that of 1900.

#### THE RABBIT PEST

The Australian farmer and ranchman originally had little to contend with in the way of native prolific weeds and predatory animals; but, unfortunately, Australia, like the United States, has suffered from misguided efforts to introduce new species of plants and animals. The cactus finds a congenial home. Its myriad seeds are spread by birds, by wind, and through the involuntary efforts of cattle and sheep. It plays the part of the Russian thistle on our western plains, and, thriving as it does in most any soil and climate, has so far defied the efforts of the bushman who by ingenious systems of burning, burying in pits and poisoning, have courageously attacked the pest.

Foxes and also rabbits have been intro-

duced, for the transplanted English squire must have his sport, and the hunting of kangaroos and wallabies and wombats furnish about the same excitement as killing a herd of defenseless buffalo or cornering woodchucks on a New England farm. Foxes have outlived their usefulness; they take an annual toll of about 100,000 sheep, and are now more dreaded than the dingo.

Likewise the enthusiasm with which the harmless-looking rabbits were turned loose has been replaced by sincere regret. The joyous sport of "hunting the hare" has become the discouraging and expensive task of exterminating "vermin." Within a few years after their introduction rabbits were overrunning the country. They appropriated the forage for sheep and cattle and threatened the extermination of the native fauna because of the loss of its food supply. Like swarms of locusts, they swept parts of the country clean of vegetation, destroying the bushes and eating the grass down to its roots. Not only were the agricultural lands and sheep "runs" infested, but vacant land in the suburbs of the cities was honeycombed by these industrious little miners.

#### MORE THAN 100,000 MILES OF WIRE FENCES BUILT TO CHECK RABBITS

Liberal bounties and wholesale poisoning and hunting with packs of tamed dingos failed to check the spread of the remarkably prolific beast. Hundreds of thousands were killed, but millions were born each year. There was some hope that a severe drought might exterminate them or at least deplete their numbers to the point where a vigorous attack might be successful. It was found, however, that though during droughts their corpses were thickly strewn over "back blocks" and along dry water-courses, they quickly reappeared with the coming of the rains. The introduction of parasites was also without result, and it seemed for a time as if agriculture and grazing were doomed over large parts of the continent.

As a last resort, the scheme of fences, which gives to an Australian land map such an unusual appearance, was devised. As described in the South Australian Act of 1914, the "rabbit-proof fence" is made



Photograph by Norman Thomas

#### AN AUSTRALIAN RABBIT TRAPPER

An Englishman, moving to Australia, desired to give his farm a homelike air, so he took along some rabbits. They began to spread like the English sparrow in America, and soon the fertile parts of the country were overrun. The rabbit march inland was that of a pitiless vandal army, for, in the dry years, not content with nibbling the grass of the sheep and cattle stations to the point where it would not make goose pasture, they ate it out by the very roots, barked all the trees, and left nothing but blank desolation behind them. Poison was tried, special machines being devised to sow poisoned grain in furrows where the rabbits would burrow for it, but the sheep and cattle would pass it over. But it came nearer to killing off all the birds than it did the rabbits and was abandoned. Now rabbit-proof fences and bounties hold the rabbit plague in check.

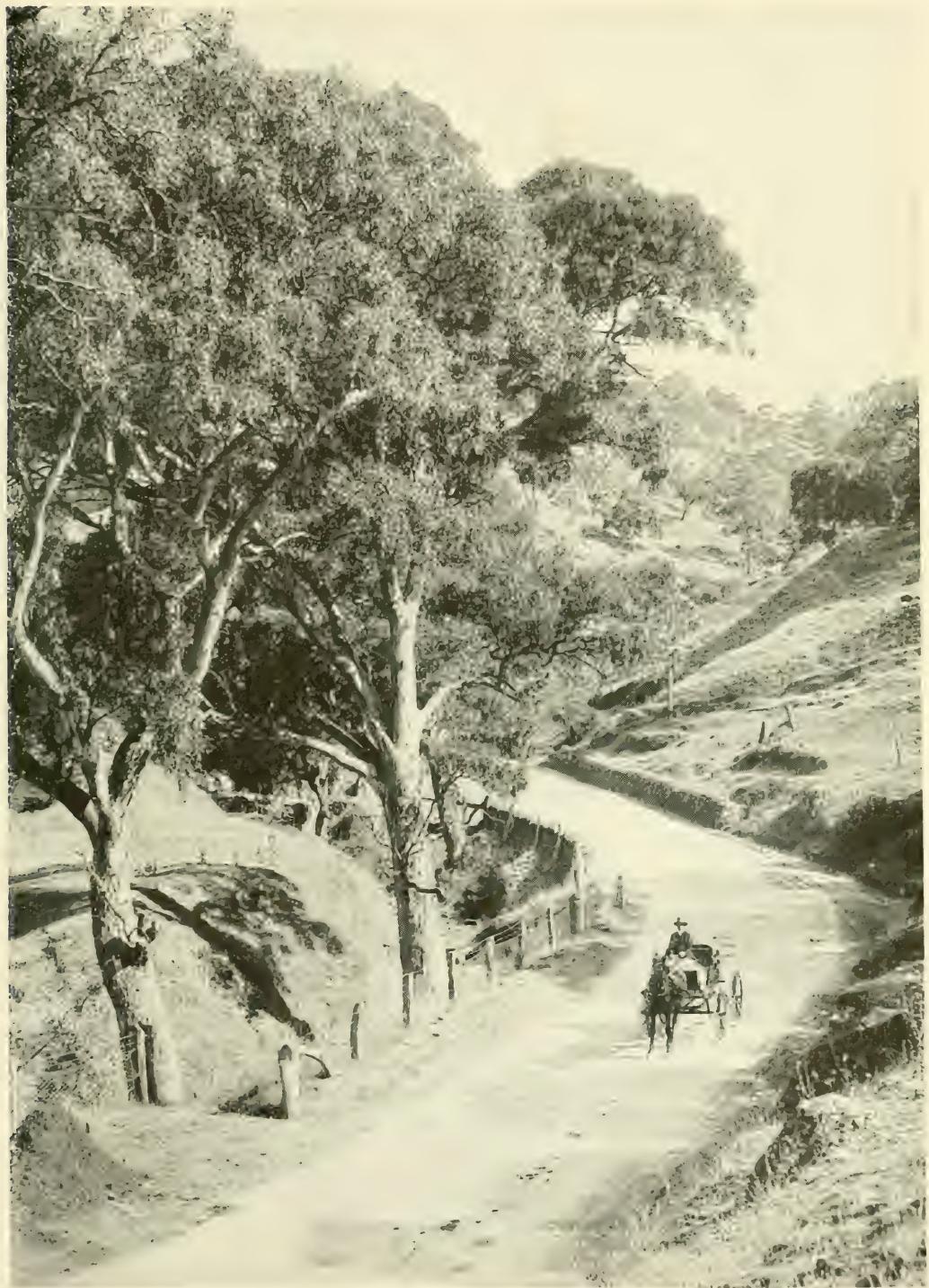
of wire netting 3 feet wide, set 4 inches into the ground, and topped by a strand of barbed-wire placed above the netting. A "vermin fence," designed to prevent the encroachment of "rabbits, wild dogs, and foxes and any other animals which the governor, by proclamation, declares to be vermin," is built like a rabbit-proof fence, but reaches a height of  $4\frac{1}{2}$  feet and includes three strands of wire at the top. Especially designed gates are used on highways and the penalty for leaving one open is justly severe.

The cost of these fences is enormous, for distances are great, construction is expensive, and they must be continually patrolled and repaired; but the need is imperative and the work has been vigorously pushed. Vermin fences run through woods, cross vacant fields, and stretch far

out into the desert. They border stream channels and follow the shores of the great salt lakes, dividing the country into a series of irregular blocks.

The State of South Australia has, since 1891, erected 29,148 miles of fence, enough to encircle the globe and with the remnant build a double line of fence along the southern border of the United States. When contracts now running are completed the mileage will be much increased. New South Wales has expended over \$27,000,000 for rabbit extermination and has within its borders 98,000 miles of fence. One of West Australia's fences extends entirely across the continent.

Of late years the rabbit has been repaying in part for his keep — paying board, as it were. He goes to swell the



A RABBIT FENCE ON THE BARKER ROAD NEAR GLEN OSMOND, SOUTH AUSTRALIA

More than one hundred thousand miles of rabbit fences had to be built to put a check to their ravages. It is said that they were once so numerous that three million were poisoned at a single water-hole in one of the drought years. At some places the paths they wore in going down to the Darling River are declared by C. E. W. Bean, author of "On the Wool Track," to be two feet deep (see page 542).



© Underwood & Underwood

TWO AND A HALF TONS OF BUNNIES: TARANA STATION, AUSTRALIA

The rabbit now has only the poor lands bordering the desert, which it is unprofitable to fence, for his own. But even here the professional rabbit trapper and his dogs assail him. For rabbits are now sent frozen to England, their carcasses for food and their skins for furs and felt.

total of food exports from the Commonwealth. Along the country roads rabbits may be seen hung on the fences awaiting the passage of the rabbit carts which convey them to the packing-houses to be prepared for shipment as frozen meat and hides. Practically all are exported (the Australian does not eat "vermin"), and during 1913 frozen rabbit and hare to the value of \$1,400,000 and skins to the value of \$3,000,000 were sent from Commonwealth ports.

#### SAVING A SCANTY RAINFALL

On the assumption that a temperate climate and 20 inches of rain be required for Australian agriculture, there is available for crops only 480,000 square miles, 307,000,000 acres, or 16 per cent of the continent. As thus viewed, Australia for the farmer is somewhat larger than Germany and Austria-Hungary and equal to the combined areas of Louisiana, Texas, Oklahoma, Kansas, Nebraska, and South Dakota (see also page 537).

There remain, however, within the temperate zone 347,000 square miles, or 860,000,000 acres, with rainfall less than 20 inches. How may this enormous area in the temperate zone of good soil and favorable temperature be reclaimed for farming, or at least made available for grazing? As might be expected from the spirit of the Australian people, this prodigious task is being vigorously attacked. Much is being done with dry farming and by the selection of drought-resisting plants; but the hopes of reclaiming desert lands to agriculture are based, as in the United States, on irrigation.

The problems which confront the Australian reclamation engineer are exceedingly difficult. Of mountain ranges suitable for collection of water there is one—a plateau-like affair, 2,000 to 4,000 feet high, with knobs here and there reaching above 6,000 feet, but without important accumulations of snow. The range is so near the Pacific coast that no large belts of agricultural land are found on its well-watered eastern slopes. The task before the Australian is comparable with that involved in irrigating Arizona and New Mexico after the Rio Grande, the San Juan, the Colorado, and the Gila had

been eliminated and the mountains now furrowed by living streams reduced to ridge-dotted plains.

One of the world's great irrigation schemes, and the most ambitious yet undertaken by Australia, is the impounding of the waters of the Murrumbidgee, one of the chief tributaries of the Murray. This project, which is rapidly nearing completion, involves the construction of the great Burrinjuck dam—240 feet high, 780 feet long, with a width of 18 feet at the crest. Though its dimensions are less, it is a fair rival of the Roosevelt dam of Arizona, which it resembles in structure and setting. The artificial lake formed at Burrinjuck is 41 miles long.

From the dam the water is to be led down the channel of the Murrumbidgee 200 miles to Berembed, where it will be diverted among 250,000 acres of choice farm lands which are now awaiting settlement.

Unlike the American system, which limits governmental control of irrigation projects to the selling of water and land, the government of New South Wales becomes the parent of an irrigation colony. It plans and builds villages, lays out and controls race-courses and athletic fields, builds houses and fences, sells trees and seed and lumber, loans money, stock, and agricultural implements, grants reduced freight and passenger charges on railways, builds and operates butter factories, cheese factories, and canneries, and provides scholarships at the university.

#### THE LARGEST ARTESIAN BASIN

Beyond the reach of streams from the coastal mountains, the land stretches westward for nearly 2,000 miles without encountering water sufficient for irrigation. Part of this vast area is available for dry farming if domestic and stock supplies can be obtained, and large areas are suitable for cattle and sheep if only water can be found.

Drilling for water in arid regions has revealed the largest artesian basin in the world, covering 499,000 square miles. From this basin New South Wales has obtained 468 flowing wells, ranging in depth from 46 feet to 4,338 feet at the

Photograph from Boston News Co.

A FARM IN A SHELTERED VALLEY: TUMUT, NEW SOUTH WALES

Insufficient moisture prevents agriculture in the greater part of Australia, but where rainfall suffices the land is enormously productive



Boronga bore, which yields over 1,000,000 gallons daily. In this same basin Queensland has 985 flowing wells, 64 of which are classed as yielding over 1,500,000 gallons per day and 6 over 3,000,000; twelve of them are over 4,000 feet deep, and the Bimerah No. 3 was sunk to a depth of 5,045 feet.

Water from these deep wells is naturally hot. Temperatures between 120° and 150° are fairly common, and eight wells of Queensland furnish water above 190°.

The temperature of well water is unimportant, but its quality is a factor of moment, and unfortunately the water from many of the deep wells contain alkali or salt in quantities which render them useless except for stock which have become accustomed to impure water. It is most discouraging to obtain at great expense a well of large flow only to find its waters unfit for irrigation or domestic use. The grip of the desert is felt not only on the surface, but at depths below.

#### THE PROBLEM OF THE TROPICS

The northern edge of the Australian continent corresponds in latitude to Costa Rica, the coast of Venezuela, and the central Philippines; its southern edge, excluding Tasmania, has about the position of Washington (D. C.), San Francisco, Peking, and central Portugal (see map, page 477). The portion of the continent within the tropics is therefore large—38.6 per cent of the lands of the Commonwealth—but conditions are such that even the Malays have found it less attractive than the more tropical regions farther north.

In the Northern Territory the natural obstacles are too serious to be overcome without capital and expert knowledge. The summer monsoon, caused by overheating of the great desert belt in the center of the continent, brings heavy rains during the three summer months, culminating in January. During this season grass literally bounds up, some varieties attaining heights of 10 feet in three months—so coarse and rank as to be useless for stock—and must be removed by burning. The ground becomes so soaked that traffic is impossible, farming imple-

ments are bogged, and river flats with good soil are submerged. These flood conditions are succeeded by drought, and from March to October the monthly rain is measured by fractions of an inch, and in some years fails altogether. On leaving the coast the rainfall rapidly decreases and desert conditions prevail over nearly half of the area within the tropics.

The few settlers in the Northern Territory are making an heroic struggle in this unfavorable environment. Port Darwin, the capital city, on one of the best harbors in the world, is a village of iron houses, with a population of about 1,000, less than half of whom are whites, and the white population of the territory, the size of three Swedens, is about 2,000. It is reached by steamer from Brisbane—an eight to eleven days' journey, and access to the back country is attained by a narrow-gauge road, running trains semi-weekly to Katherine River, 200 miles; by two boats a year, subsidized to visit coastal ports on the Gulf of Carpentaria, and by pack-horse mail, whose going depends upon seasons and the state of roads. The distance inland to the nearest railroad at Oodnadatta is 1,300 miles, and a large part of the cattle are driven 1,000 miles or more to market.

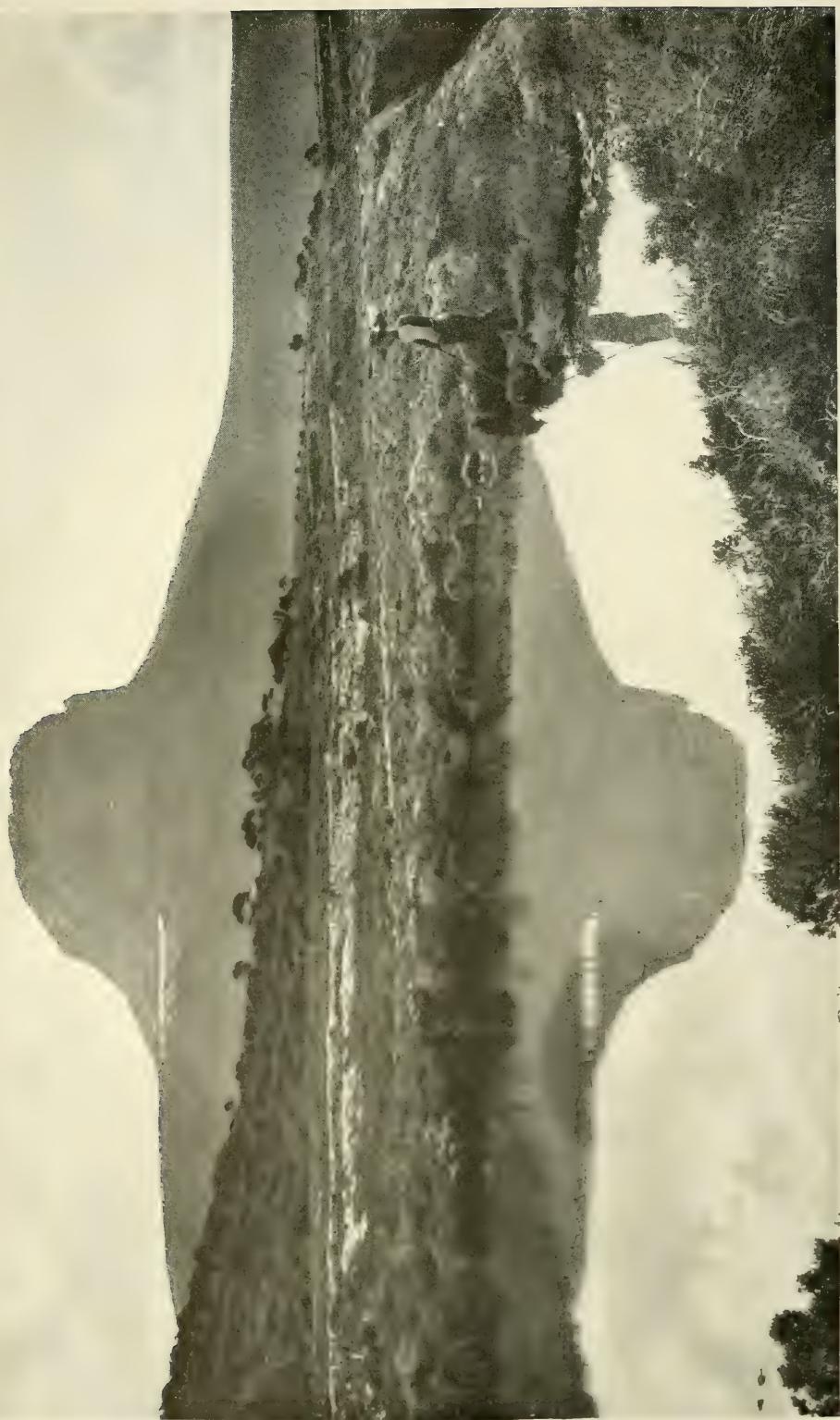
The coast of northern Queensland is truly tropical; its heat and humidity are high. The average annual rainfall from latitude 25° northward is over 50 inches, and for about 100 miles of coast exceeds 90 inches. At Harvey Creek it is 165 inches, and annual falls of 211 inches at Innisfail, 238 inches at Harvey Creek, and 241 inches at Goondi have been recorded. On twenty-two different occasions single downpours exceeding 17 inches have been experienced at various stations. These superabundant supplies furnished by monsoons and trade winds unfortunately are not distributed inland, but are confined to the coast by mountains. More than one-half of Queensland is within the tropics, making an area larger than Central America, Cuba, Jamaica, and Porto Rico combined.

The story of sugar is an important phase of the problem of the tropics. This industry in tropical Queensland was built up by the use of indentured Asiatic and

Photograph by Spurling and Son

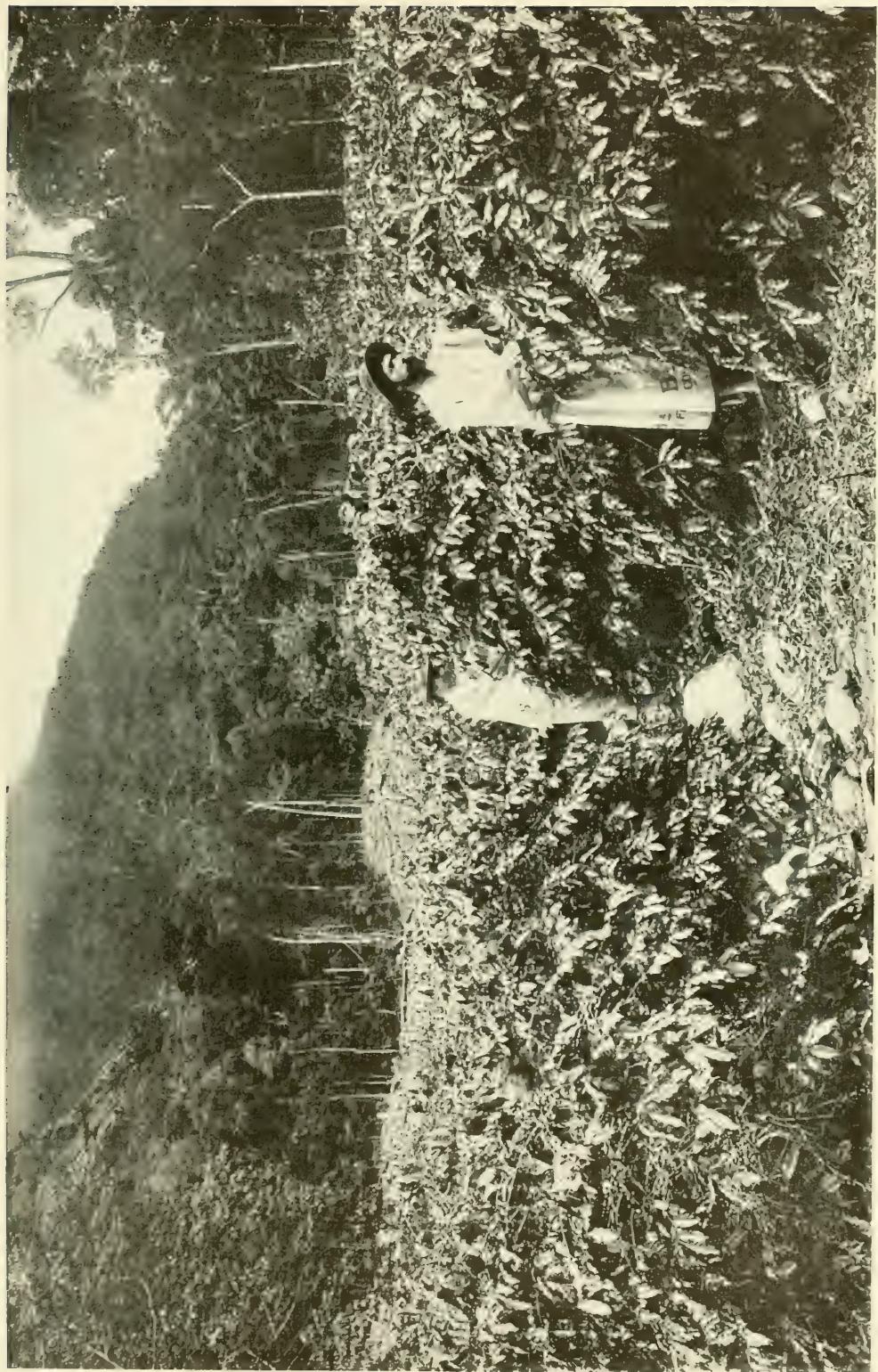
BAM BLUFF: NORTH HIGHLANDS, TASMANIA

Tasmania is blessed with water and escapes the fear of drought ever present in other Australian States (see page 537). The peaks and ridges which everywhere break the surface of the island are rich with minerals. And her people have such abounding faith in the future of Tasmania that they believe she will one day bear to the rest of Australia the relation that England bears to Continental Europe.



PICKING COFFEE: MACKAY, NORTH QUEENSLAND

One usually thinks of Australia as being situated in a latitude as cool as that of our country, and yet three-fourths of its territory lies nearer the Equator than the sugar-cane lands of Louisiana





Photograph by H. E. Gregory

A CHARACTERISTIC "LAKE"—THE BED OF LAKE HART

Kanaka labor. Opposition to the color of the laborers, and more especially to the wage received, led the people of the temperate part of southern Queensland, outside the sugar belt, to object to the employment of non-Europeans, and the political friction engendered led to serious talk of secession. With the formation of the Commonwealth the demand for the elimination of competition with colored races under the guise of the "White Australia" policy was irresistible and the sugar-planters were deprived of their efficient labor and their profits.

The profits were restored by a bounty granted on condition that white labor be employed and that wages and hours be "fair and reasonable." Bernhard H. Wise states that "for the first five years the cost of this experiment was about \$4,900,000." While the tonnage of sugar produced has fluctuated, the acreage of the Commonwealth has remained practically the same since 1902, and the number of persons engaged in the sugar industry has decreased steadily from 46,000 in 1907 to 28,000 in 1912.

The history of cotton, rice, and coffee, for which the climate of Australia appears to be eminently suitable, is similar to that of sugar. In spite of liberal bounties, their production has decreased.

THE DESERT

The Central Desert is the Australians' family skeleton. There is not much said about it at home and the visitor rarely sees it; but it is there, a stern reality, which stands in the way of national development. Other continents have deserts, too; the Sahara is larger and our Mohave and the Painted deserts, as well as large areas in Utah and Nevada, are as barren as the region about Lake Torens.

It is its enormous area in proportion to the size of the continent which gives the Australian desert its commanding position. More than half of the entire continent receives less than 15 inches of rain per year, and the area receiving less than 10 inches is 1,077,245 square miles—more than one-third of the continent, or more than all the United States east of



MOUNT FEATHER TOP, VICTORIA, IN EARLY SPRING

Snow-capped peaks are rare in Australia, and this view of the high Alps was first seen by the young explorer, Hamilton Hume, who in the early years of the nineteenth century won his way from Sydney across country to Port Philip, where Melbourne now stands. "There was Kosciusko to the southeast, and Bogong, Feather Top, and the Cobbler raising their giant hoary heads in front, and you may be sure the explorers could scarce prepare their breakfast for gazing at the strange scene."

the Mississippi. One station reports eight inches in seven years; another six inches in ten years. In the center of the desert the annual precipitation is less than five inches, and over large areas rain may not fall for a period of several years (see map, page 588).

Large areas are so flat that no feature in sight rises above the level of the eye except the ghost-like ridges suggested by the ever-present mirage, and the portion known as the Nullarbor plain, having dimensions, roughly, 450 miles by 200 miles, is one of the most even land surfaces in the world. Railroad levels across this plain reveal a gradual slope from 329 feet to 605 feet in a distance of 450 miles—an imperceptible rise of about seven inches to a mile and a difference in elevation of any two points 20 miles apart of less than 40 feet (see map, pp. 480-481).

In constructing the Commonwealth railway (from Perth, Western Australia, to Port Augusta, South Australia) there are no obstructions to avoid, no bridges to build, and practically no grading to be done, and for 430 miles in a single stretch the line will be without curves.

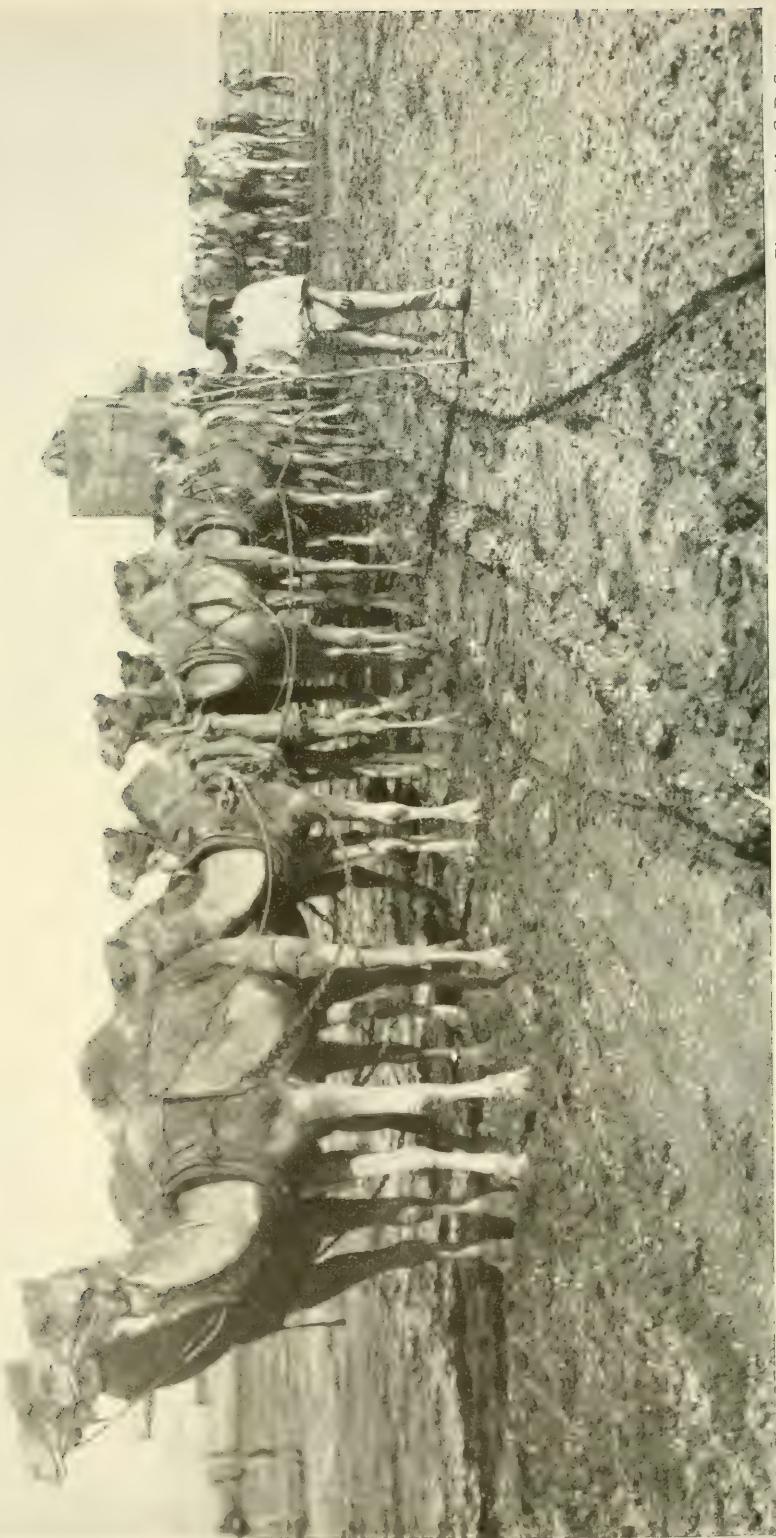
#### A DESOLATE REGION

The Australian desert is not a mythical affair like the "Great American Desert," but is a singularly inhospitable waste, which may be entered only in favorable seasons and by special means of transport. Excluding the miners of the Kalgoorlie region, the population on 800,000 square miles of this area, including ranches and villages along the railways, is estimated by the Meteorological Bureau at "probably not a thousand white folk."

Photograph by C. P. Scott

GOVERNMENT CAMEL TRAIL IN THE DESERT NORTH OF ADELAIDE

The Great Desert of Australia divides the continent into two parts, isolating the people of West Australia as completely as if they were on another island. Camels are now generally used for transportation in this region.



## CAPRICIOUS RAINS

Large areas of the desert are unknown, but the wide-spaced tracks of explorers are sufficient in number to reveal its character. The reports of the most recent expedition coincide with those undertaken a half century ago: "We have demonstrated the uselessness of any persons (pastoralists or miners) wasting their time and money in further investigations of that desolate region" (Carnegie).

The annual average rainfall is not only insufficient, but is distributed from year to year and throughout the year in capricious fashion. All the rain of a year may fall in a few hours, or several years may pass without rain enough to wet the ground.

Evaporation on the desert's edge, where tested by measurements of loss in tanks, in New South Wales and at Coolgardie, Western Australia, is at the rate of 85 inches per annum—about that of the lower Colorado Valley. At Laverton it is 146 inches, or more than 12 feet—15 times as much as the rainfall.

Travel through the desert consists essentially in getting from one water-hole to another, a task at which the native excels the European. The aboriginal knows the location and yield of every water-hole within the limits of his hunting ground, and is free to move with the rains. When soaks and gnamma holes fail he digs up mallee roots, from short lengths of which water sufficient for a drink may be obtained. He has also learned that water may be squeezed from the bodies of frogs, which bury themselves in mud during droughts.

## CAMELS ARE INTRODUCED

Not until 1862, after many failures, was the desert crossed by horses, and then along the line which has proven to be the only feasible one. Compared with other routes this first transcontinental traverse by Stuart is well watered, and has determined the location of the Adelaide-Port Darwin telegraph line, and of a proposed railway (see map, pages 480-481).

From the termini of railways in Queensland and New South Wales, 2,000 miles westward to the Indian Ocean, camels are the burden-carriers across the

waterless steppes. Settlements of Afghans with their camels are familiar sights at mining camps and stations along the railways. They carry wool to market and return with needed supplies. Driven in harness, or saddled, they bear the settler and the mails from oasis to oasis, and take the missionary, physician, and engineer to their work. They are used to haul materials for construction, to bring in fuel, to plow, and to distribute water along routes of travel. The water-supply branch of the West Australia government has 350 camels in use, and 300 are taking part in the construction of the Port Augusta-Kalgoorlie railway (p. 554).

The camel of Australia is not a beautiful or an affectionate beast, but he will browse on desert shrubs and carry a load three or four times that of a good horse 20 miles a day without apparent fatigue. When deprived of water for more than five or six days, his efficiency decreases, but he is capable of work for much longer periods.

On Carnegie's expedition the camels were without water for thirteen and one-half days. On a geological expedition north of Eucla, camels were at one time twelve days without water in an average temperature of 100°. On the Jones Survey across and beyond the Nullarbor plains, camels traveled 340 miles over rock and sand, in fifteen days, without water, and waterless stretches exceeding 600 miles have been covered.

It is no simple matter to fill a camel with water. His ordinary drink is seven to eight gallons; when thirsty, twenty gallons; but after being deprived of water for several days, forty gallons is scarcely enough. His demands, therefore, make great inroads on small water-holes. In desert mining camps, where water is scarce, the drink for a camel may cost \$2 or \$3, and the owner of "Misery," coming in from a long trip, is said to have paid \$14 to quench the thirst of his mount.

At the end of the railway, in South Australia, is Oodnadatta, the most remote village on the continent. Three stores, a hotel, a missionary hospital, an Afghan village, and buildings of the government railway are its principal features. Water is obtained from an artesian well which



Photograph by C. P. Scott

A CAMEL TRAIN IN THE CENTRAL AUSTRALIAN DESERT

yields 270,000 gallons of somewhat salty, hot water a day; for drinking, the rain-water caught on iron roofs is used. Food of all kinds is brought to Oodnadatta by train; the town exists for the purposes of forwarding supplies by strings of camels to far-away ranches and for shipping produce of scattered stations and transferring cattle and sheep in times of drought.

#### BUILDING A DESERT RAILWAY

A ride on one of the tiny trains which run twice monthly to Oodnadatta, equipped with extra tank cars and water bags for passengers, is dreary enough if one is looking for grass and water and trees. To me the views of sand-dunes and gibber-plains, of the sheet of Lake Eyre, of mirage and dust-storms and distant mesas, constituted features of a fascinating journey.

The Great Desert of Australia divides the continent into two parts, isolating the people of West Australia as completely as if they were on another island. There is no land communication between this State and its nearest neighbor except by telegraph, and the boat journey from Sydney to Perth requires more time than from Sydney to New Zealand and only a little less than from Perth to India.

The Commonwealth has now undertaken the task of providing an overland route from the Pacific to the Indian Ocean. The ordinary engineering problems are so small that the line was laid out by compass; there are no tunnels, deep cuts, or steep grades, and few culverts and bridges are required. Sand-dunes are the greatest obstruction, and the amount of excavation in crossing a belt of dunes 20 miles wide is more than half that required for the whole 1,063 miles of new track (see map, pages 480-481).

The remarkable feature of the railway is its location in a region uninhabited even by aborigines, and where the real task of the engineer is to provide water, grading and track-laying being incidental.

The preliminary surveys for the railway were conducted by camel parties; then well-boring outfits were dragged by teams of 14 or 16 camels over the route or from ports on the coast. Workmen supplied with water by camel-trains were set at work constructing catchment basins



Photograph by C. P. Scott

"GETTING ON" IN THE WORLD

On the long marches through the Australian deserts the wobbly legs of the baby camels sometimes fail them, and they are then given a free ride

and digging shallow wells, but the chief reliance is upon water in tank cars hauled hundreds of miles.

At the eastern end of the line water must be found for 200 horses, 300 camels, and 1,200 workmen with their families, besides that needed for eight locomotives, each one of which uses about 60 gallons per mile, or 60,000 gallons for a 1,000-mile run. Water at the head of rails, carried 300 miles in tank cars and 30

miles by camel, costs \$39 a thousand gallons; at one point the cost is \$2 a gallon. At the western end of the line, water is taken from pipe 350 miles long, then hauled 220 miles at a cost of \$8.40 a thousand gallons for each 100 miles.

PANAMA CANAL IDEAS APPLIED IN THE  
AUSTRALIAN DESERT

It was interesting to watch the railroad building. The construction camps



Photograph by H. E. Gregory

A BUBBLING SPRING OF SALT WATER: CENTRAL AUSTRALIAN DESERT

near the end of the line have buildings like those on the Panama Canal, with well-equipped hospitals, dining-rooms, and offices. The "tea and sugar train" is continually bringing supplies from the storehouse at Port Augusta, for the daily menu of the highly paid workman includes not only freshly baked bread and fresh meat, but also fresh vegetables and fresh fruit.

At the end of the constructed track the home-like train is left and a string of thirteen camels carries us on into the desert towards Ooldea and the Nullarbor plains. At Ooldea soak there is water among the sand-dunes and we go into camp, nearly 200 miles from the nearest settlement. Over the 630 miles separating Ooldea from Kalgoorlie travel by motor is feasible after supplies of water and gasoline have been laid down at stated points by camels. There is no road, but the Nullarbor plains are remarkably level and their surface is practically free of sands.

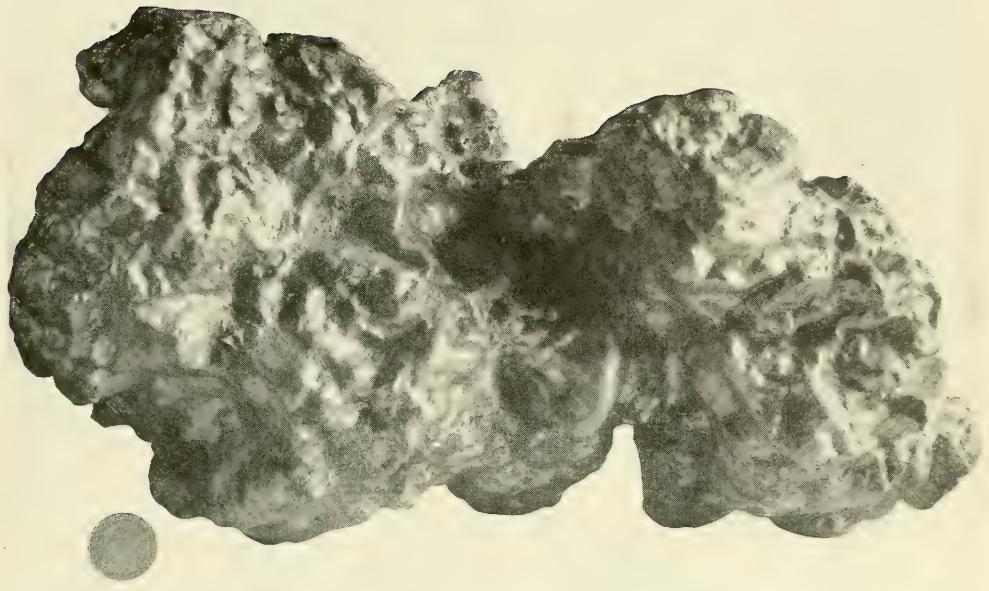
The expected returns from traffic on the Australian transcontinental line are an insignificant fraction of the cost of building and upkeep, but its political and strategic values are immense. It shortens the distance from London to Melbourne or Sydney by nearly a week, and

likewise decreases the time between West Australia and New Zealand or America. It brings the western half of the continent in touch with the eastern by converting a strenuous two months' overland journey from Adelaide to Perth into a comfortable ride of two days.

THE ROMANCE OF GOLD AND SILVER

When word reached Sydney early in 1849 that an Australian engineer had found gold in the streams of the Sierra Nevada, the boats to San Francisco were crowded with Australians. One of these amateur miners, Edward Hargraves, was so impressed with the similarity between the gold-bearing rock of California and the rocks along the Macquarie, that he hurried back to Australia and had the satisfaction of startling the peaceful colonies by the discovery of gold in New South Wales in February, 1851. One year later 105,000 men were encamped at three gold centers: Ballarat, 40,000; Bendigo, 40,000; Castlemaine, 25,000.

In 1850 Victoria had a population of 76,000, chiefly stockmen and farmers; by 1855 there were 364,000 inhabitants, three-fourths of them men. During this period Melbourne rose from a town to hold for a time the position of the foremost city in the Southern Hemisphere;



Photograph by C. R. Martin

AN AUSTRALIAN GOLD NUGGET COMPARED TO A \$20 GOLD PIECE

The nugget weighed 2,159 ounces when found at Ballarat, Victoria, on June 15, 1858, and was sold for \$50,000

parks were laid out; the University, Public Library, and Museum established; the first Australian railway built, and plans for the future knew no bounds.

Reports of panning \$100 to \$200 per day and of finding nuggets worth thousands of dollars each upset even the most sober-minded. "Farms, shops, ships were alike deserted, not only by men on them, but by their owners and masters. It was shearing time, but there were no shearers; it seemed like that at harvest time there would be no reapers." Even government officers and policemen deserted, and order was kept and offices manned by soldiers brought from Tasmania and from England.

The workings at Ballarat and Bendigo justified the excitement. For the first ten years, 1852-1861, the output was valued at \$486,000,000. From the Victoria field have come 412 gold nuggets, each weighing over 100 ounces, 52 over 500 ounces, and 12 over 1,000 ounces. The weight of the "Welcome" was 2,217 ounces and of the "Welcome Stranger," found an inch

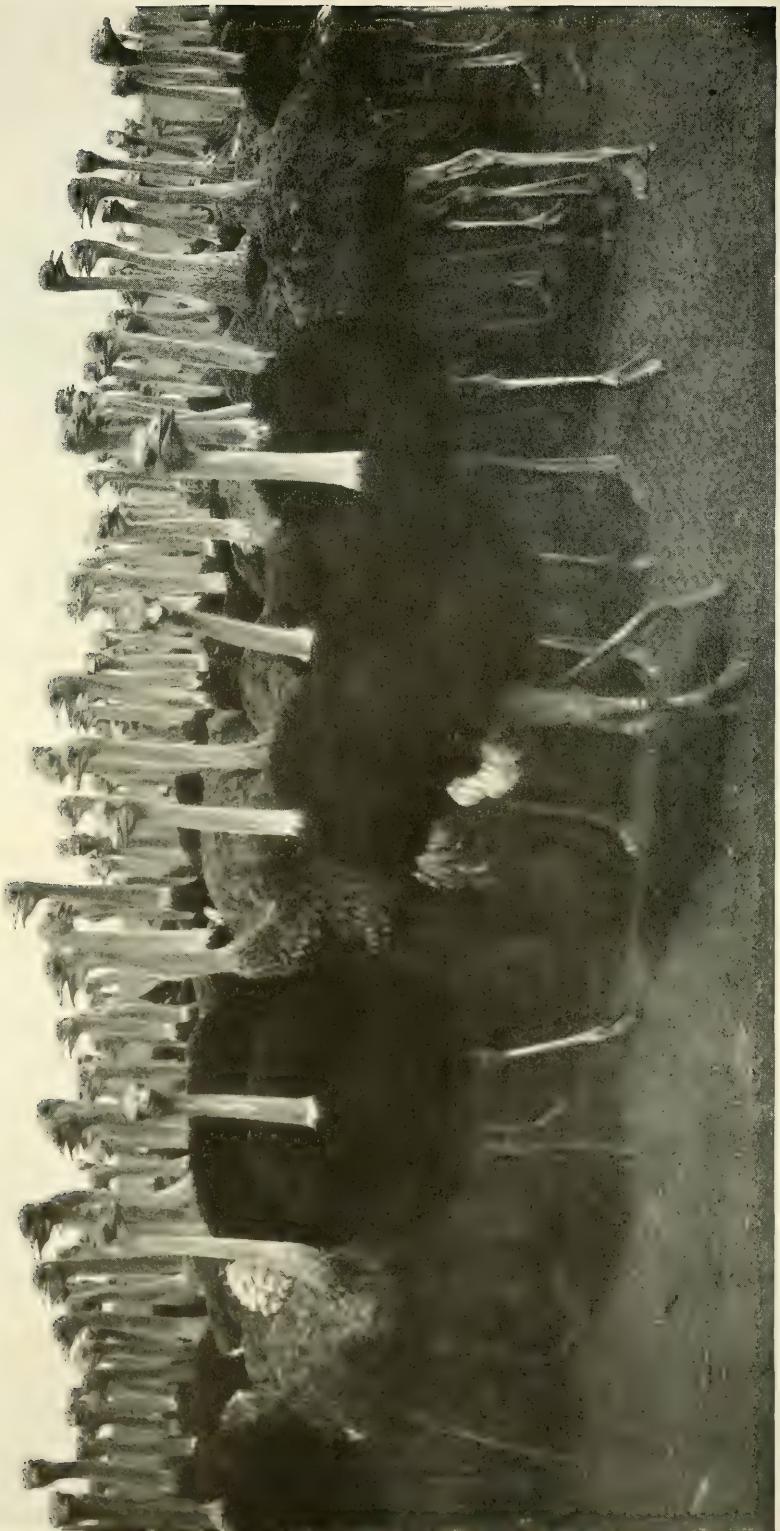
below the surface, 2,520 ounces, worth \$50,000.

Queensland's turn came next. One small field after another was developed, until in 1886 the famous Mt. Morgan mine was opened. This wonderful mine, literally a mountain impregnated with gold, began by paying dividends of \$2,000,000 a year. In 1889 the stockholders received \$5,000,000, and the dividends for the first twenty years amounted to \$35,000,000. Although Mt. Morgan continues to produce \$2,000,000 in gold a year and is a leading factor in Queensland's annual gold production of \$5,000,000 to \$10,000,000, it is in reality a copper mine! The gold constitutes the fringe of a mammoth deposit of copper, with reserves estimated at 7,000,000 tons. In several respects it is the most remarkable mine in the world and ranks next to Broken Hill as a dividend-payer.

Tasmania had her mining excitement with the discovery of tin at Mount Bischoff (1871), followed by the finding of deposits of gold, copper, and silver.

AN OSTRICH CHORUS: PORT AUGUSTA, SOUTH AUSTRALIA

"The young birds are said to be remarkably silent, but the old birds, and especially the males, have a hoarse, mournful cry, which is likened by some to the roaring of a lion and by others to the lowing of an ox." —KNOWLTON



These discoveries had, however, little effect in increasing the population or changing its character. Although this State ranks first in the production of tin, second in silver and lead, and produces over 6,000 tons of copper a year, "it remains what it always was—a group of gardens, farms, wood-lots, and orchards" in the midst of delightful scenery. It is the White Mountain region for Australia.

#### FABULOUS RETURNS

Broken Hill, in New South Wales, is perhaps the most famous mining district in Australia, noted alike for containing the largest lead-silver mine in the world and for its endless labor troubles. These two claims to fame are closely related, for the richness of the ore bodies and size of the dividends have incited the miners to "get their share." The crude ore runs 16 per cent of lead and zinc and 11 ounces of silver to the ton. From a lode 10 to 300 feet wide and 2 miles long ore to the value of \$383,000,000 has been extracted. One of seven shares of the original proprietary syndicate, valued at \$500, afterward was quoted at \$11,000,000!

The Broken Hill mines have changed the map of Australia. They support in the desert a city of 33,000 people, a privately owned railway 250 miles in length leading to a port in an adjoining State, and at the end of the railroad the smelter town of Port Pirie, with a population of 15,000.

West Australia was the last of the States to feel the push of mining discoveries, but the impulse came with unusual force. The growth, development, prosperity, legislation, and social character of this State are but the reflections of its gold mines. In 1880 the total population of an area nearly one-third as large as the United States was 29,000, distributed along the coast and engaged in agricultural and pastoral pursuits. But the sensational discoveries at Coolgardie (1892), followed by the almost unparalleled finds a few miles farther on, at Kalgoorlie, within three years doubled the population of the State, and during the twenty years since Hannan made his memorable discovery a population of 48,000 had become 320,000 (see map, pages 480-481).

The mines of the "Golden State" have



RAILROAD MAP (SEE ALSO PAGES 480-481)

Although the railroads of Australia are largely State owned, there can be very few through routes, for each State has its own gauge track (see text, page 564). It is not likely that motor trucks will ever play a large part in the Australian Desert. The amount of material transported to the back country will always be small, and on account of the scarcity of water and the very high price of gasoline (there is no fuel oil of any sort in Australia), it will be unprofitable to use trucks for transportation. Where a large amount of material is to be handled, as from a mine, an amount too large for camels and too small to justify the construction of a railway, motor trucks will eventually, I believe, find a place. At present automobiles are used in the more thickly settled parts of the country; horses, however, are the chief transportation agents in the humid regions and camels in the arid.

justified their early promise—they are fabulously rich. Within a few feet of the surface gold in flakes, grains, and nuggets weighing tens of ounces was ready for the finder. In one excavation 8 feet by 5 feet by 4 feet \$90,000 was taken, and by the year 1900 seventy tons of gold had been gathered at Kalgoorlie.

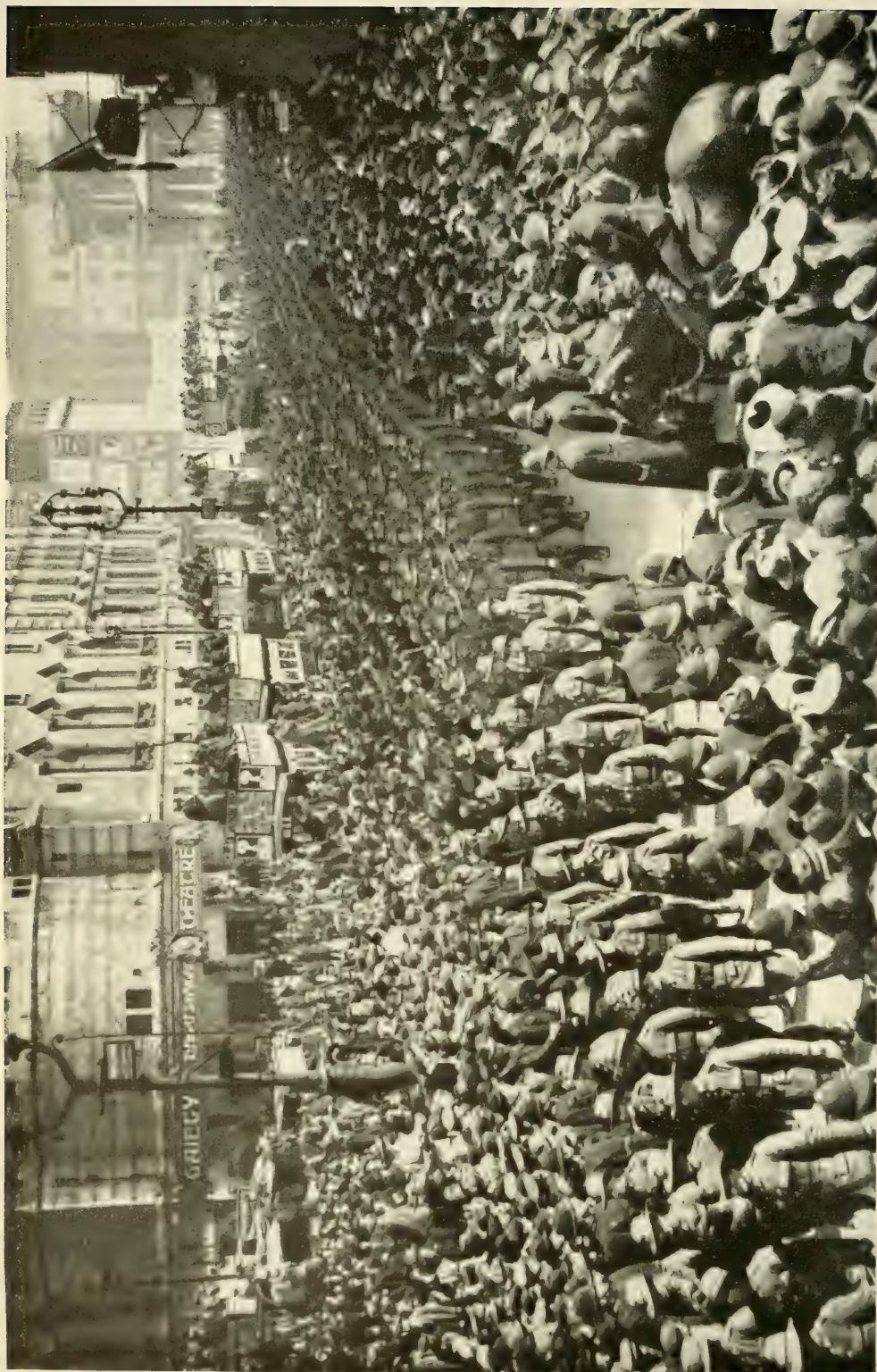
West Australia is the Nevada of the southern continent; Kalgoorlie its Comstock Lode.

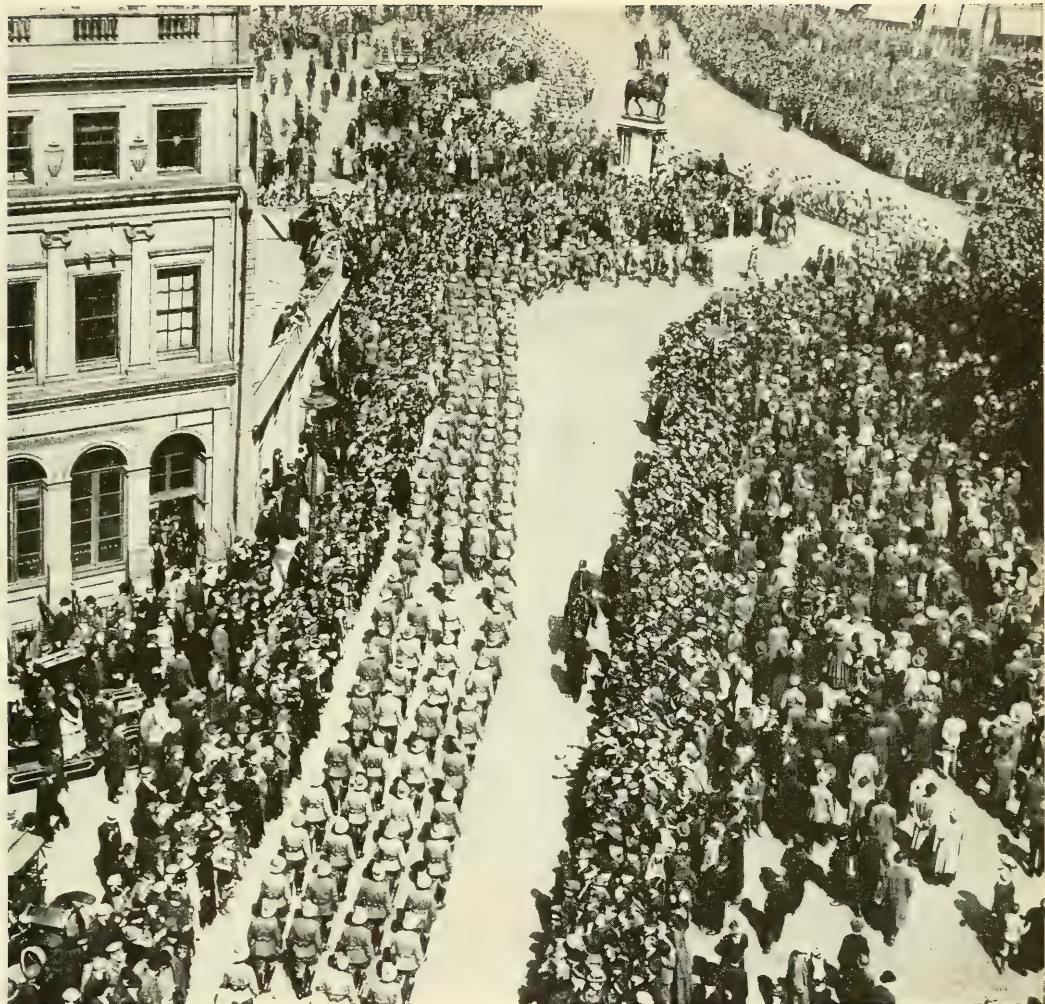
The sensational yields of the early days in Queensland, Victoria, and West Australia were largely from surface workings made by pick and shovel; but now ore is mined at Ballarat to depths of exceeding 2,500 feet. At Bendigo thirteen shafts are over 3,000 feet in depth, and the Victoria Reef Quartz Mine reaches a depth of 4,614 feet—probably the deepest gold mine in the world. In West Australia real prosperity began with deeper mining and has continued with slight abatement to the present day.

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THE AUSTRALIAN-NEW ZEALAND TROOPS MARCHING THROUGH THE STRAND TO WESTMINSTER ABBEY, LONDON

London has had frequent object lessons in the patriotic devotion of the people of the overseas dominions, but none more stirring than the marching of this division, which had come 11,000 miles to help the mother country





© International Film Service

#### A GREAT DEMONSTRATION AS AUSTRALIAN AND NEW ZEALAND TROOPS MARCH THROUGH THE STREETS OF LONDON

Could one read the inmost thought of every individual in that multitude of watchers, what a flood of sorrow and woe the reading might reveal! For London homes that have not sent fathers, husbands, brothers, or sons to make the supreme sacrifice for the Empire are rare.

The Broken Hill mines supply the bulk of the lead, silver, and zinc annually exported from Australia, the zinc until 1914 going chiefly to Germany for the manufacture of munitions. It is not at all unlikely that volunteers from New South Wales have met their death from shrapnel made from zinc and copper which they had previously mined.

For a few years following 1900 Australia ranked first among the world's producers of gold, but with the development of the Alaskan fields and the unparalleled

production of the Transvaal she has fallen to third place.

#### A WATER MAIN 350 MILES LONG

The gold mining camps of Western Australia are in an unmitigated desert—hot and dry. In the early days of the gold fields water was scarcer than gold, and the hardships endured by the early miners and the disastrous endings of some of the prospecting expeditions make a story one would like to forget.

With the discovery of rich gold mines



Photograph by George Bell

AUSTRALIAN TROOPS EMBARKING FOR FRANCE

So long as red blood continues to run in human veins, so long will men continue to pledge their lives, their fortunes, and their sacred honor to the maintenance of what they believe to be their country's rights.

centering at Kalgoorlie, a serious problem was presented. The region is without streams and fresh-water lakes, and wells yield only salt water. The nearest supply in quantity is 300 miles distant. By converting the salt water into fresh with condensers, by utilizing the few soaks, by storing some of the scant rainfall, by hauling water with camels and later by rail, mining operations could be carried on at great expense. When dry blowing of alluvial gold had exhausted the rich surface deposits and the equally rich ledge was encountered, the future profits of the field depended not only upon the amount of the mineral—gold—but also upon the mineral—water.

To meet this situation a most ambitious scheme was undertaken—the construction of a pipe-line from a point near the coast

over desert range and valley to supply an artificial reservoir with 5,000,000 gallons a day. The length of the 33-inch steel main pipe is 351 miles—115 miles longer than the Los Angeles aqueduct—and the water is lifted by a series of pumps to a height of 1,290 feet. The cost was great, \$5,000,000 for the manufacture of the pipe alone.

The water is sold by the government at an average rate of 75 cents per thousand gallons—a price which seems large to American consumers—but it replaces the wholly inadequate supply of poor water bought at the rate of \$8.00 to \$12.00 per thousand gallons. Without the Goldfields' pipe line the richest mining fields of Australia with the cities of Coolgardie, Kalgoorlie, and Boulder would revert to their original state—a forbidding desert.

The various State governments advance money to prospectors and to mining companies, drill for metals, coal and oil, erect and operate crushers, testing plants, construct roads, build dams and reservoirs, buy and sell machinery. In Victoria 26 batteries are run at government expense; in West Australia, 40. New South Wales has "grub-staked" prospectors to the sum of over \$2,000,000.

The mining towns of Australia emphasize the Australians' love of home and pleasant surroundings. The mushroom city of Kalgoorlie in the land of "sun, sand, sin, sorrow and sore eyes," where water is obtained from the end of a 35-mile pipe, has its gardens and lawns and shade trees.

To an American, whose idea of a mining town is based on visits to Butte or Virginia City, a day in Ballarat, Victoria, is filled with surprises. He walks through clean streets, lined with attractive buildings and adorned with statues, leading to parks and public gardens and on to a beautiful lake. Ballarat has demonstrated the fact that mining town is not synonymous with ugliness and lack of public spirit.

#### THE IMMIGRATION AUSTRALIA SEEKS

Australia is disappointed that of the four large areas which offer congenial homes for people of European blood,—namely, Australia, Canada, United States and Argentina—Australia alone is passed by, while the other three favored regions are receiving Europeans by hundreds of thousands. She sees the United States receiving in one year (1913) 1,197,892 people from abroad, more than the entire net immigration to Australia for the past fifty-three years, and in another year (1910) enrolling four times as many people born in the United Kingdom as were living in Australia.

The stream of immigrants has been not only small but remarkably fluctuating for individual States and for the Commonwealth, and at times has ceased altogether. For the five years, 1896-1900, the net immigration was only 2,487, and the five years following showed a net loss of 16,793. Since that date net immigration has again increased, and in 1913 reached 55,000.

In countries of large population the rate of immigration is a matter of small account, but a continent of nearly 3,000,000 square miles, with vast undeveloped natural resources, must have people if the financial burdens incident to development are not to be crushing. On June 30, 1914, before the beginning of the European war, the debts of the six States reached the enormous total of \$1,550,000,000, or \$245 per capita, in addition to a Commonwealth public debt of \$93,000,000. These startling totals for a dominion with a population less than New York City, while not directly comparable with the debts of most other countries because much of the money is invested in public utilities, are disproportionate to the population and demand interest charges not easily met.

#### ENCOURAGING NEWCOMERS

Viewed in the abstract, the advantages offered by Australia to a foreigner are exceptionally good. The climate is healthful, unoccupied land is abundant, and social life is unusually pleasant. But in spite of a vigorous campaign, immigrants do not flock to the Commonwealth. Perhaps, because the land, though practically free, is not really so in the sense of the homesteads in the United States, to which absolute title is obtained by residence; and the available land also requires more preparation than the prairies of Canada before return in crop is possible, while the rainfall is less reliable.

Or it may be that the door for the immigrant is not wide open.

The type of immigrant desired is indicated by the classes to which the States and Commonwealth provide "assisted passages." The South Australian list is typical: *a.* Agricultural or other rural workers. *b.* Domestic helpers. *c.* Persons whose introduction to the State will not, in the opinion of the minister, cause congestion in the State in any occupation or trade." Even with agricultural laborers "care is taken to limit the supply to the demand."

#### THOSE WHO ARE NOT INVITED

Agriculturalists who will take up small tracts of new land, and domestic servants, are more than welcome, and to these

money aid is extended, but mechanics and miners, factory operatives and manual laborers, and professional men, are not received with open arms, and may find difficulty in becoming established. The carpenter calls for immigrants, but not for more carpenters; the mason sees no need for immigrants skilled in stone or brick work, and the pick-and-shovel man thinks there are enough of his guild already in the country.

If 200,000 European immigrants, such as land in New York, should arrive at Sydney some year, planning to distribute themselves among the skilled and unskilled trades, to open small shops, and start market gardens, a special session of Parliament might have to be called to deal with the disaster! And, when it is remembered that Europeans desiring to emigrate are in crowded industrial, rather than agricultural communities, and know little and care less for country life of uncertain outcome, there is no occasion for surprise that a call to the farm or to domestic service receives feeble response. Even Australians are drifting to the cities (see pages 513 and 527).

#### THE AUSTRALIAN COMMONWEALTH

As population increased and industries and communications became established, it was found that the interests of the Australian States were not identical—in fact, were in many respects antagonistic—a condition readily understood when the sites of the colonies are noted (see map, pages 480-481).

It is as if Massachusetts, Pennsylvania, Georgia, Arizona, and Oregon were small contemporaneous colonies, each striving to work out its local problems. It appeared to be the duty of each State to enlarge its power, regardless of the welfare of its neighbor or of the continent as a whole. Even within the States differences developed, and secession was proposed by the tropical portion of Queensland and the mining sections of West Australia.

New South Wales was a free-trade State; the others favored protection; but each State had its own tariff laws. Each State also had its own land laws and rules governing copyright, and its own

system of defense and of quarantine. Each State developed its railways without regard to interstate traffic, with a gauge and type of rolling stock which suited its needs.

#### STATE RATE WARS

The struggle was the most intense between the two most populous colonies, New South Wales and Victoria—in reality between the cities of Sydney and Melbourne. Victoria built railroads to and along the border of New South Wales and agreed to carry wool and produce of New South Wales origin to Melbourne at nominal cost. New South Wales also made ridiculously low rates for freight from Victoria points to Sydney, and Queensland and South Australia were likewise industriously engaged in cutting their neighbors' throats at public expense.

The submergence of national to local interests and the desire to build cheaply and rapidly have resulted in a condition of railway gauges which makes interstate traffic impossible without reloading. New South Wales has a gauge of 4 feet 8½ inches; Victoria, 5 feet 3 inches; Queensland and West Australia, 3 feet 6 inches; South Australia, 5 feet 3 inches, 4 feet 8½ inches, and 3 feet 6 inches. The gauge of the new transcontinental railway is 4 feet 8½ inches. A passenger landing at Brisbane, destined for Perth, must change to a different type of car five times, and even between the two largest cities, Sydney and Melbourne (582 miles)—the distance from Omaha to Denver—no through cars can be operated.

With such jealousies and antagonisms it is not surprising that fifty years of fruitless effort should have preceded federation, or that the constitution finally adopted should give large play to the doctrine of State's rights. The model chosen was, naturally, the Constitution of the United States, in which the States retain such powers as are not specifically delegated to the Federal authorities. The Canadian scheme, in which Federal Parliament is supreme over the provinces, and the South African Union, which is a union only in name, were unacceptable.



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ANZAC TROOPS OFF TO THE FIRING LINE IN FRANCE

Their hearty response to the welcome of the French villagers is full of jollity, even though a thousand Balaklavas rolled into one may be their morrow's lot

## STATE'S RIGHTS IN AUSTRALIA

But the Commonwealth government of Australia has a much narrower scope than the Federal Government of the United States. Its chief function is to organize defense, regulate overseas and interstate commerce, establish and collect customs duties (of which three-fourths must be returned to the States), coin money, and operate post-offices, telephones, and telegraphs. The States retain all forms of taxation, control the public lands and rivers, and operate railways. The meteorological service is a Commonwealth department, but geological surveys, mine investigations, irrigation, etc., are State functions. Interstate commissions replace Federal bureaus in dealing with many internal problems.

There is even a greater difference between Australia and America in the scope of governmental action. To an Australian, the Federal, State, and city governments are not organizations designed primarily to preserve order and protect property and maintain civic rights; they exist in order to do the people's business, and have no apparent limitations.

Action by Parliament is the cure-all for public and private ills. The State operates railroads, street cars, ferry-boats, water works, electric light plants; fixes prices and hours of labor and wages; makes clothes and machinery; sells fish, meat, dairy produce; exports wines; runs warehouses; supplies seed wheat; builds fences and roads; digs wells; provides insurance; pays hospital bills; loans money to individuals; buys and sells land; runs mining plants.

## A GENUINE AUTONOMY MAINTAINED

Not only have the States refused to be submerged in the Commonwealth, but the Commonwealth maintains its independence of the British Government to an unusual degree. Politically and economically, Australia and England are far apart. Appeals to the Privy Council at London are strictly limited, and tariff regulations restricting the trade with the mother country are in force. To the Australian the Commonwealth is a growing nation, which owes its origin, but not its development, to England.

The leaders recognize the fact, obvious to the foreigner, that Australia has its own problems, in the solution of which little is gained by following traditions and customs applicable to a thickly settled manufacturing country with well-defined social strata.

If one were to take at their face value a selection of caricatures and humorous writings, as well as editorials, letters, and pamphlets, printed in Australia during the last quarter of the nineteenth century, he might well reach the conclusion, apparently arrived at by certain of England's enemies, that self-centered and ambitious Australia was little removed from an unfriendly Australia. The fallacy of confusing independence with disloyalty is amply demonstrated by the Boer War and by the Great War.

When by Germany's action Great Britain was placed in a perilous position, the response of Australia was vigorous and immediate. A nation of peace-loving people, intent on their own affairs, was transformed into a group of warring Britons, as it were, over night. It appeared as if the very weakness of the political tie strengthened the bond of allegiance.

## PROMPT TO ANSWER THE EMPIRE'S CALL

Within two months after war was declared the little Australian fleet of five cruisers, three torpedo-boat destroyers, and three light gunboats, built and manned at the nation's expense, had occupied the German Pacific islands—Samoa, Marshall, Carolines, Pelew, Ladrone, New Guinea, New Britain—broken up the German wireless system, captured eleven enemy's vessels, forced twenty-five others to intern, and prevented the destruction of a single British ship in Australian waters. In the third month of the war the *Emden*, lying in wait for Australian transports, met its fate before the guns of the cruiser *Sydney*. Later on the watchful Australian fleet played its part in driving von Spree's squadron from the Pacific into the trap set by Admiral Sturdee at the Falkland Islands.

The response of the military forces was likewise quick and effective. Although fighting at a distance involved unusual effort and expense, the task was



Photograph by George Bell

WELCOME HOME : THE RETURN OF THE HOSPITAL SHIP

In all the history of war no colonials ever rendered braver or better service to a mother country than that which Australians and New Zealanders have rendered to Great Britain in her present struggle. From Gallipoli to Arras and the Somme they have covered themselves with glory. And the devotion of the folk back home is worthy of the courage of the men at the front.



Photograph from Paul Thompson

#### A WARM WELCOME FOR A YOUTHFUL VETERAN

The Australian people are naturally proud of their heroes on their return from the firing line. This photograph shows a wounded Anzac being attended by auxiliary nurses on arrival at the base hospital at Randwick, Sydney.

loyally assumed. Universal military service was inaugurated for the first time by an English-speaking community. Factories were turned over to the government, seventy steamers were requisitioned and rebuilt for transport service, war loans were offered and quickly accepted.

On November 1, 1914, 20,000 men, the entire Australian army at the declaration

of war, left Australia for Egypt; at the end of the first year of the conflict 76,000 were in the field, and by July, 1916, "nearly 300,000 volunteers had crossed the seas." The creation, equipment, and supplying of this army, involving enormous cost and personal sacrifice, constitutes a thrilling chapter in the history of loyalty.

















# Map of MEXICO

prepared especially for  
THE NATIONAL GEOGRAPHIC MAGAZINE

GILBERT H. GROSVENOR, Editor

by The Matthews-Northrup Works, Buffalo, N.Y.

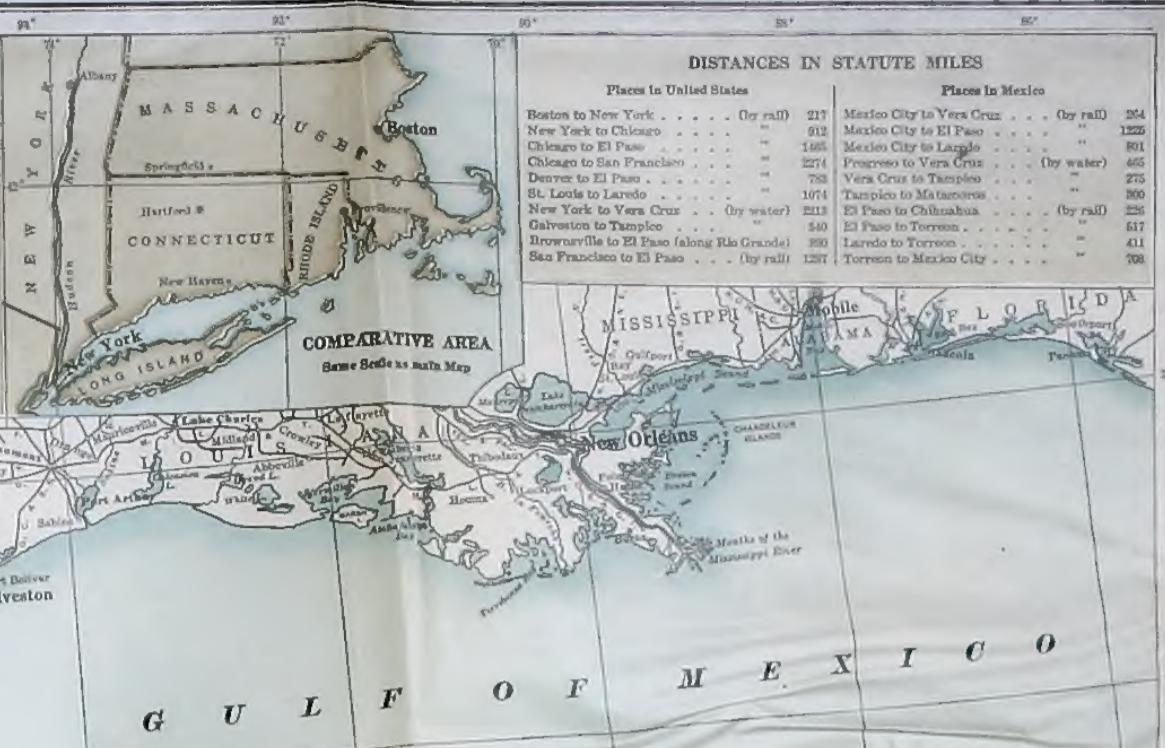
English Statute Miles

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Kilometers

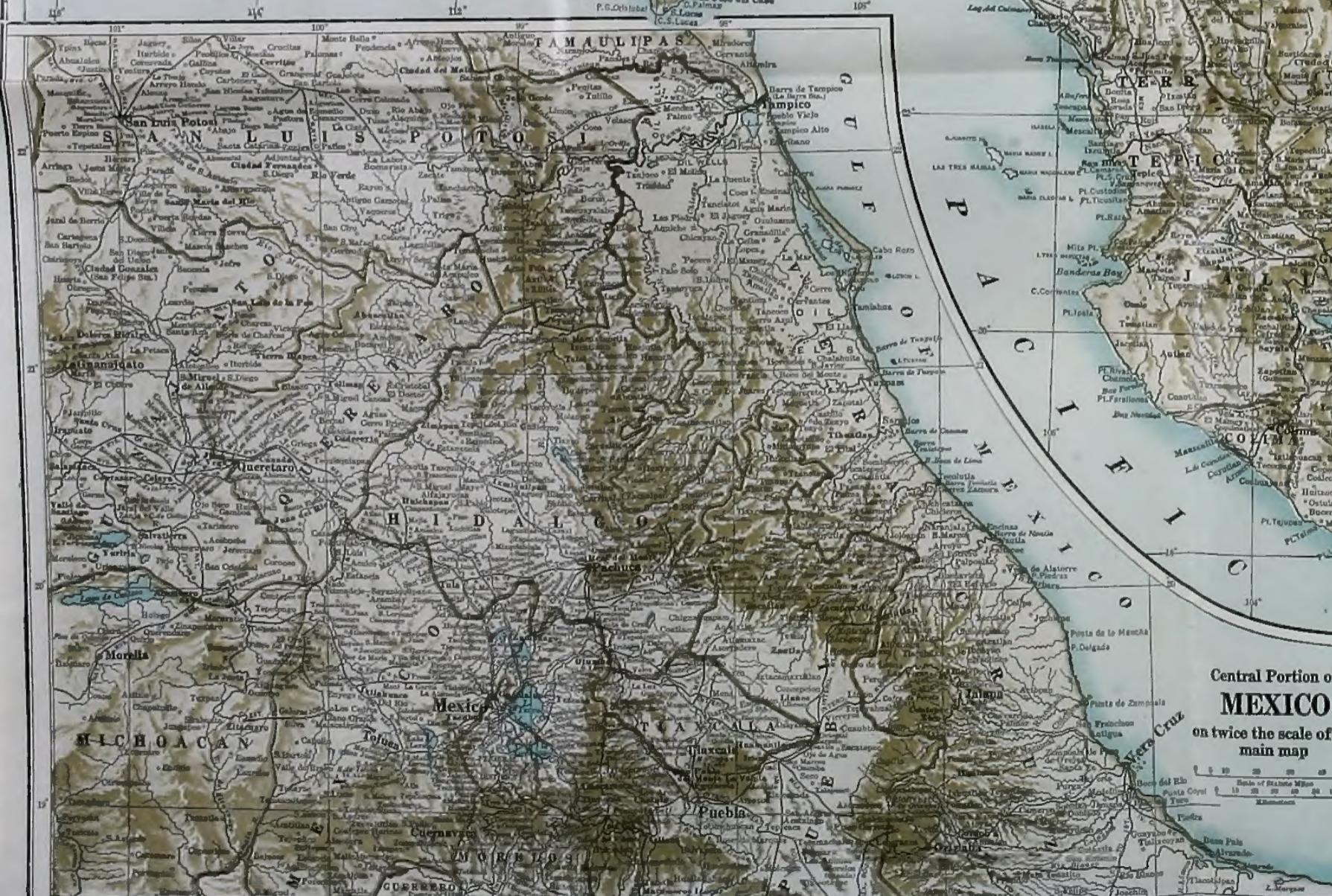
0 10 20 30 40 50 60 70 80 90 100

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## DISTANCES IN STATUTE MILES

Places in United States	Places in Mexico
Boston to New York	Dry rail 217
New York to Chicago	Mexico City to El Paso 364
Chicago to El Paso	" 912
Chicago to San Francisco	Mexico City to Laredo 1225
Detroit to El Paso	" 1851
St. Louis to Laredo	Puerto Rio Y Vado Cruz 274
New York to Vera Cruz	Vera Cruz to Tampico 275
Galveston to Tampico	Tampico to Matamoros 303
Brownsville to El Paso (along Rio Grande)	El Paso to Chihuahua 326
El Paso to Tornillo	" 340
Laredo to Tornillo	Laredo to Torreon 411
Torreon to Mexico City	Torreon to Mexico City 411
San Francisco to El Paso	" 427
El Paso to Tucson	Tucson to Mexicali 508
Brownsville to El Paso	" 508
Torreon to Mexicali	" 508



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