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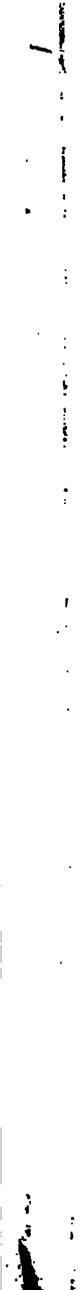
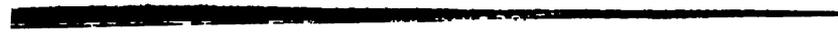
FROM THE

UNITED STATES GOVERNMENT

THE ISLAND OF GUAM



WASHINGTON
GOVERNMENT PRINTING OFFICE
1915




 1914

1914





1722

THE ISLAND OF GUAM

WITH MAP AND 12 ILLUSTRATIONS

BY
Civil Engineer L. M. COX, U. S. Navy
1904

PARTIALLY REWRITTEN BY
Capt. E. J. DORN, U. S. Navy
1910

REVISED BY
Passed Asst. Paymaster K. C. McINTOSH, U. S. Navy
1911

REVISED AND ENLARGED BY
Lieut. Commander M. G. COOK, U. S. Navy
1916



WASHINGTON
GOVERNMENT PRINTING OFFICE
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Aug. 30, 1917.
From
United States Government

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LETTER OF TRANSMITTAL.

NAVAL GOVERNMENT OF GUAM,
Government House, September 12, 1916.

From: Lieut. Commander M. G. Cook, U. S. Navy.

To: Capt. Roy C. Smith, U. S. Navy, Governor of Guam.

Subject: Revision of pamphlet *Island of Guam*.

Reference: (a) Department's letter No. 9351-1429 of June 15, 1915.

1. In accordance with the department's request contained in reference (a), there is forwarded herewith the manuscript of a revision of the pamphlet entitled "*Island of Guam*," originally written by Civil Engineer L. M. Cox, U. S. Navy, and subsequently revised by Capt. E. J. Dorn, U. S. Navy (retired), and Paymaster K. C. McIntosh, U. S. Navy.

2. The old pamphlet being out of print, it was considered desirable to take this opportunity to revise such portions as had become obsolete and to add new matter which has since been discovered, or which was considered necessary in amplification of statements made by previous writers.

3. The delay in completing the revision has been due to the necessity of obtaining information from sources outside of Guam and interference caused by other official duties.

4. A large share of credit is due to the Rev. M. Saderra Maso, S. J., of the Weather Bureau, Manila, P. I., who revised the historical part of the pamphlet, rewrote the article on climate, and made valuable suggestions on the arrangement of the chapters. Thanks are also due to Hospital Steward H. W. Elliott, U. S. Navy, who contributed the photographs which accompany these pages; to Mr. N. M. Flores, of the Bureau of Lands, Manila, P. I., who drew the excellent map of Guam forwarded herewith; to Mr. A. T. Perez, chief clerk to the governor, who has contributed many items of general information as well as proof-read the manuscript; to the Hon. Francisco Portusach of the Island Court of Guam, Mr. Vicente Herrero, jr., Mr. Lorenzo Franquez, commissioner of Agana, and Mr. W. W. Rowley, who have contributed many items relating to the capture of Guam and its subsequent administration by the United States; also to Corp. H. G. Hornbostel, U. S. Marine Corps, formerly chief forester of Guam, who revised that part relating to the topography of Guam, and to Chief Yeoman J. C. Poshepny, U. S. Navy, who has done the actual work of writing these pages.

M. G. COOK.

UNITED STATES NAVAL STATION,
ISLAND OF GUAM,
Marianas, January 13, 1912.

From: K. C. McIntosh, Passed Asst. Paymaster, U. S. Navy.
To: Capt. G. R. Salisbury, U. S. Navy, Commandant.
Subject: Revision and completion of reprint of report concerning this island made by Civil Engineer L. M. Cox, U. S. Navy, and partially reprinted by Capt. E. J. Dorn, U. S. Navy (retired), former governor of Guam.

1. In the work of revision and completion of the pamphlet partially printed by former Gov. E. J. Dorn, it was decided that, in view of the rapidity of the island's progress since that time, many points of the text were out of date. Much additional information of undoubted value was discovered that had not been incorporated in the former revision or in the original report, so the best course seemed to be to rewrite the entire book, adding these additional paragraphs. In this rearrangement, the original text has been adhered to as closely as possible, the majority of the book being unchanged.

2. The manuscript which is herewith submitted is, as far as can be discovered, historically and technically correct. Historical dates and events have been verified by old records of the island and of private individuals resident here; ethnological notes have been compiled from many sources; the article on "Government previous to the American occupation" is based on the printed reports of the home Government at Madrid; and those added portions of the pamphlet which deal with the superstitions of the natives have been gathered from conversation with the natives themselves.

3. Great indebtedness must be acknowledged to Capt. P. M. Duarte for much documentary information and assistance in reading the manuscript, and to Mr. Jose Herrero, of Agana, for the loan of some valuable and interesting records.

K. C. McINTOSH.

GOVERNMENT HOUSE,
Agana, Guam, October, 1910.

In 1904 Civil Engineer Leonard M. Cox, U. S. Navy, prepared and submitted to Capt. Seaton Schroeder, Chief Intelligence Officer of the Navy and former governor of Guam, a report on that island, which, together with other data relating to Guam, was issued as a public document by the Navy Department. In 1907, when the undersigned was about to leave for Guam as governor, he tried in vain to get a copy of this pamphlet from official sources, it being out of print.

Recognizing the desirability of having the information contained in this excellent and most carefully prepared report placed within reach of the younger generation of the island—where great changes have taken place in the last six years, made possible by the liberality of Congress and the zeal and intelligence with which affairs have been administered both by the officers stationed there and by the native officials of the civil branch of the government—I have undertaken to bring it up to the present, rewriting portions where necessary.

It is believed that the pamphlet, as far as it goes, presents the island of Guam as it now is and that the pupils of the schools, in whose interest more particularly it is republished, may derive therefrom the benefit toward which the efforts of the revisor have been directed.

E. J. DORN,
Captain, U. S. Navy (retired), Governor.

The southern part of the island is high and mountainous. A chain or ridge of hills ranging in altitude from 700 to 1,300 feet begins near the Bay of Pago and crossing to the west coast near Agana follows that coast to the extreme southern part of the island. The slope of these hills or mountains is very steep to the northward and westward, while to the southward and eastward it is steep until an elevation of about 400 feet is reached, where an elevated plateau stretches eastward, terminating in coastal highlands of coral rock which end in abrupt cliffs. This plateau is broken by the valleys of five streams with their numerous tributaries, each having its source near the top of the ridge, thence crossing nearly the whole width of the island and emptying into the sea on the east coast. The slope toward the west merges into low foothills some little distance from the sea, leaving a narrow belt of rolling lowlands valuable for cultivation and pasturage.

The highest peak is Lamlam, about east of Facpi Point, which attains an elevation of 1,334 feet. Mount Sasalaguan ("Hell Mountain") is 1,110 feet high and forms the southern prominence. Mount Tenjo, near the head of Apra Bay, is 1,013 feet high and makes a convenient landmark for approaching vessels.

Most of the mountains are bare of foreign growth and are covered with various grasses and shrubs. The mountains from the town of Agat south to a point east of Facpi Point are heavily wooded. The highest plateaus, or mesetas, are covered with various cogon grasses and the valleys are wooded.

The east coast of the southern part of the island is indented by numerous bights or bays lined by narrow strips of beach land more or less under cultivation. Coconut groves are planted near the sea, together with patches of maize, taro, and camotes, while here and there rice is grown where a stream furnishes a swampy bottom.

The topography of the northern half of the island is entirely different from the southern, inasmuch as it is one large plateau ranging in elevation from 200 to 500 feet, sloping generally from the cliffs bordering the sea inland and from the northernmost point to the swampy land north of Agana, through which flows the Agana River. This part of the island is watered by no perennial stream except a few brooks that rise on Mount Santa Rosa and disappear in the coral rock at its base. Running water can also be found during 10 months of the year at the foot of Mataguac, a small hill east of Santa Rosa. The cliffs on the north and northeast sides of the island are the highest in Guam, reaching a height of 600 feet above the sea. These cliffs are covered almost entirely with verdure except where there is a sheer drop of 200 feet or so, and at their base lie coconut plantations and white beach sand. The whole presents a very pleasant tropical scene.

The eastern exposure of the northern part, like that of the southern, is precipitous, dropping abruptly into the sea, with the reef lying so close that the waves in stormy weather break directly against the cliffs. The only beach land of any consequence along the whole of the eastern exposure is between the mouths of the Ylig and Talofofo Rivers in the southern part of the island.

GEOLOGY.

It would appear that the ridge or chain of mountains extending through the southern part of the island was thrown up by volcanic action during some remote geologic period, and that originally only this ridge and a very small part of Santa Rosa appeared above water, while Barrigada was probably a shoal. The condition being favorable, the formation of coral reefs was begun, which, together with alternate elevations and subsidences, have brought the island to its present state. This is shown by the conditions observed at present, which are as follows:

(a) The formation of the mountains is ancient and offers abundant evidence of volcanic action in the distorted and broken stratification, the presence of lava rock, flint quartz, and clay in different forms.

(b) Ancient coral has been found at an elevation of 1,200 feet above the sea. The northern plateau consists almost entirely of some form of coral limestone or "cascajo" (a soft coral of comparatively recent origin). All coast bluffs, hills, and other elevations in this part of the island, except Mount Santa Rosa, Mataguac, and Sabana Maagas, show where exposed hard madreporic rock, while on the surface are evidences in the way of shells, pebbles, and boulders, showing that at one time it was covered by shallow water.

Special features.—On the slope of Mount Santa Rosa, and 50 feet below the top, a portion of the formation has been exposed by the action of water. The section shows an infinite number of thin layers of hard clay, presenting every shade of color from light green to red, white, gray, and brown; dip, about 25° to northwest; strike, southwest. On the northern slope fragments of flint quartz are found, and coral on the plateau below at an elevation of about 350 feet.

All coast bluffs, Barrigada Hills, and other elevations in the northern part of the island, except Mount Santa Rosa, show only, where exposed, the madreporic rock.

Starting at the sea level in Agana Bay to the top of Macajna, the nearest knob of the main ridge, the following rough section was observed:

Beach land, elevation 6 feet; sand and coral, one-fourth mile.

Meseta (table-land), elevation 225 to 300 feet; light-red soil, a little sand overlying cascajo, 1 mile to foot of Macajna.

Clay strata in every direction and all inclinations, often curled and crumpled, elevation from 300 to 700 feet; 1 mile to top of Macajna.

From Mount Macajna, in the direction of Pago Bay, a series of rounded hills are seen, decreasing in elevation to the level of the coast meseta. These hills are covered by reddish soil, and the only vegetation is scattered clumps of sword grass. There are clay stones, clay iron stones, and dark, heavy limestones, called "jomon" (identified by the United States Geological Survey as a lava rock), outcropping from these hills, and no trace of coral down to the elevation of about 300 feet. The valleys which lie between show coral limestone in their creek beds.

The hill next Macajna to the northwest is crowned by thin strata of "jomon" of hardness and a weight almost equal to granite, while below it is an outcropping of coarse sandstone, soft and friable where weathered, but hard and compact in the interior. Below the sand.

stone is a kind of conglomerate composed of rounded boulders of "jomon" held in a matrix of gray sandstone similar to the strata above. The boulders appear to be water worn, and run from egg size to the volume of a cubic foot or more. This stone is also soft on the surface and hard when broken into.

From the last hill to the top of Mount Chachao, which reaches an elevation of 1,046 feet, the surface is almost entirely some form of clay, ranging from the thin strata of soft paste to large masses of light-gray stone, easily cut by a knife, and of low specific gravity.

From Mount Chachao to Mount Tenjo it is necessary to traverse a backbone a mile long and about 850 feet above the sea. Along the lower part of this ridge only clay stones are seen, but on the last climb to the top of Tenjo, 1,000 feet high, fragments of flint quartz are scattered about, and the backbone is formed of a ledge of trap-like rock, giving it the appearance of a knife edge. Tenjo has three little peaks, and between them may be seen quartz strata or veins dipping in opposite directions.

On the western slope of Tenjo thick ledges of rock can be seen from the coast, which appear to have a general dip to the eastward of about 10°, and are lost to view in the foothills below Chachao.

II. ETHNOLOGY, FLORA, AND FAUNA.

The natives of Guam are called Chamorros. Their vernacular is called the Chamorro language. The word Chamorro is derived from Chamorri or Chamoli, the ancient name for "noble." They themselves, in speaking of their language, call it *Fino-jaya*, or "idiom of the south," in contradistinction to Spanish, which they call *Fino-lago*, or "idiom of the north," the Spaniards having first appeared to them as coming from the north.

The language appears to be intermediate between the Philippine and the Melanesian linguistic groups. Internal evidence, such as their use of the Sanscrit names for rice and the betel nut, tends to show that the ancient Chamorro race migrated from the Malay Archipelago later than the Polynesians, who took their departure before the introduction from India of either rice or betel nut.

The ancient Chamorros were Malays. The present inhabitants are a very much mixed race, with the Malay strain predominating. The average native has a brown skin, straight black hair, dark eyes, oval face, well-formed features, smooth skin, prominent nose and lips, short stature (below that of Europeans), well-padded flesh, but with no tendency to corpulency. The women are somewhat shorter than the men, are in general somewhat stronger, and, at least when young, have clearer light-brown complexions, with straight, well-oiled hair, which they do after the fashions prevailing in Manila.

Many of the natives have an infiltration of Chinese blood, which may be seen in the prominent cheek bones and decided oriental cast of the eye.

No pure-blooded Chamorro probably exists in Guam to-day. The present inhabitants are mainly descended from the Spanish, Mexican, and Philippine soldiery who were brought to Guam to subdue the natives. During the conquest nearly all the native men were butchered, but many of the women became wives of the conquerors,

and as few foreign women found their way thither, it was from their Chamorro mothers that the children learned to talk, and the language was thus preserved.

The various races have amalgamated pretty thoroughly, and even descendants of Englishmen and Scotchmen call themselves Chamorros. The language has been entirely modified by Spanish influence, just as Hawaiian has been influenced by English. Many English words are rapidly being introduced to the language since the coming of the Americans.

For further information the reader should consult "The Chamorro Language of Guam," by W. E. Safford, published at Washington, D. C., 1909, which contains besides an etymology of the language a grammar of the idiom spoken by the inhabitants. A dictionary of the language is now being compiled, and will probably be ready for printing in a few months.

The following on the flora and fauna of Guam is taken entirely from the complete work entitled "The Useful Plants of Guam," by William E. Safford, published at Washington, D. C., 1905, as "Contributions from the United States National Herbarium, Volume IX."

INDIGENOUS AND SPONTANEOUS ECONOMIC PLANTS.

Among the plants growing without cultivation on the island are *Cycas circinalis*, the nuts or seeds of which furnish the natives with food in times of famine; the wild fertile breadfruit (*Artocarpus communis*), having edible chestnutlike seeds; wild yams (*Dioscorea spinosa*), which in places form impenetrable thickets; the betel-nut palm (*Areca cathecu*), which is abundant in some of the rich valleys in the southern part of the island; and *Pariti tiliaceum*, which furnishes the natives with cordage. Besides these a number of plants of minor importance have escaped from cultivation and are spreading over the island, such as the guava, the bullock's heart, the orange berry, *Pithecolobium dulce* (which yields fine tanbark), and *Biancaea sappan*, which is important as a dyewood.

CULTIVATED FOOD AND STIMULANT PLANTS.

Garden plants.—In addition to their small farms, nearly all the natives of Guam have a town house. Adjacent to many of these are gardens in which grow perennial eggplants, red peppers, bananas, plantains, various kinds of beans, squashes, gourds, watermelons, melons, peanuts, tomatoes of a small and inferior kind, balsam pears, mustard, and perhaps yams and a few vines of betel pepper. Among the fruit trees in gardens the most common are lemons, limes, the sugar apple, and the sour sop. Pomegranates are grown more for ornament than for use, although a very refreshing drink is made from the acidulous pulps surrounding their seed. In some of the gardens giant taro (*Alocasia*) is grown for the sake of its leaves, which are used instead of paper for wrapping up meat and fish. Banana and plantain leaves deprived of their stiff midrib are used for the same purpose, and for cordage strings are stripped from their stem, or the leaves of the textile *Pandanus* are used, a plant which is sometimes grown in the garden for convenience. Radishes, onions, garlic, and lettuce are sometimes planted.

Cereals.—The only cereals cultivated in Guam are rice and maize. The natives cultivated rice in considerable quantities before the discovery. It was among the supplies furnished to Magellan and Legazpi. The Dutch navigators, who came after them, in 1600 and 1621, complained that the bales were increased in weight by the addition of sand and stones. These bales weighed on an average from 70 to 80 pounds.

At present not sufficient rice is grown on the island for the use of the natives, though there are several localities well suited for its culture. The methods followed are very much like those of the Filipinos. Carabaos are used for plowing. The plow is of wood with an iron point, usually fashioned by the blacksmith of Guam out of an old gun barrel. It has but one handle. Many of the best rice growers on the island within recent years have been Filipinos. At present rice is imported from Japan, Manila, and the United States. This would not be necessary if a little greater effort were made on the part of the planters. As a rule they plant only enough for their own use and do not lay by a surplus. The result is that when the crop is ruined by a hurricane or a drought, which not infrequently happens, there is a dearth of rice on the island. One reason for the small size of the crops is the difficulty of obtaining labor. Nearly everybody has a ranch of his own and prefers to reap all the benefits of his own labor rather than share them with an employer.

Maize was introduced from Mexico at a very early date and soon became the principal food staple of the early missionaries and the soldiers sent to assist them in the conquest of the islands. With maize came the Mexican metate and mano, a low inclined stone slab supported on three legs on which tortillas are prepared and a stone rolling pin, cylindrical in shape, with the ends slightly tapering.

Maize is now the most important crop. On the higher land it is planted at the beginning of the rainy season. In the lowland, as in the valley of the Talofofu River, it is planted at the beginning of the dry season. As soon as it is harvested it is shelled and spread out on mats in the streets to dry in the sun. Then it is stored in earthen jars as a protection against dampness and against rats and weevils. In places where the soil is deep enough the land is prepared for maize by plowing. On the higher land the weeds and bushes are cleared, dried, spread over the field, and burned. This process serves to kill many weeds and at the same time to fertilize the land. The only instrument of cultivation used in such places is the fosinos, or scuffle hoe, which consists of a wide transverse blade placed T-like on the end of a long slender handle, the stem of the T being a hollow socket into which the end of the handle fits tightly. This is thrust ahead of the laborer and serves to clear away bushes and to cut the weeds. After the corn is once planted the surface is easily kept clear of weeds with the fosinos, the natives usually covering at one thrust a space of 6 feet in length and the width of the blade. The use of this implement is universal. Even the women are adepts and tiny fosinos are made for the little children.

Edible roots.—Among the edible roots of the island are taro (*Caladium colocasia*) and yams (*Dioscorea spp.*), both of which are cultivated by the natives and are a resource for them during the

periods of famine which usually follow hurricanes. Taro is cultivated either in swamps or in newly-cleared ground. Certain varieties, the best of which has purplish stems and is called Visayan taro, "sunin visaya," are grown on hillsides and are of fine consistency and flavor. The closely allied *Alocasia indica* and *A. macrorrhiza* are not so commonly cultivated, but grow wild in many places. They are very acrid and are only eaten in cases of necessity.

The cultivated yams are probably varieties of *Dioscorea alata*, *D. sativa*, and *D. aculeata*. Closely allied to the last is the wild gado or nika cimarron (*Dioscorea spinosa*), which forms thickets in many places on the island. Yams are more difficult to cultivate than taro and are therefore not planted so commonly by the natives.

Sweet potatoes are far superior to the best varieties of yams and of taro. Several varieties occur in Guam. Unlike the yams and taro, which grew on the island before the discovery, sweet potatoes were introduced by the Spaniards. One variety was brought from the island of Agrigan, where it had been introduced by settlers from the Hawaiian Islands.

Among other plants with starch-bearing roots are the indigenous *Tacca pinnatifida*, or Polynesian arrowroot; the true arrowroot (*Maranta arundinacea*); and the mandioc plant (*Manihot manihot*), which yields cassava and tapioca.

Starchy fruits.—The principal starchy fruits are those of the sterile breadfruit (*Artocarpus communis*), called "lemae" or "rima" by the natives, and the well-known plantain (*Musa paradisiaca*). Of the plantain there are several varieties. The fruit differs from that of the banana in being starchy instead of sweet, and it must be cooked before eating. When baked it has somewhat the taste and consistency of a potato, but is inferior to it in flavor.

As both the breadfruit and plantain are seedless they must be propagated by suckers. This is readily done with both plants. They both grow with little care and produce abundantly in Guam. As the breadfruit is in season only during certain months of the year, some of the natives lay in a store of it for the rest of the year by slicing it and drying or toasting it in ovens, making a kind of biscuit of it, which they call "bischocho de lemae." If kept dry this will last indefinitely and may be eaten either without further preparation or cooked in various ways. It is fine food for taking on a journey, as it is light and conveniently carried.

Squashes and pumpkins are grown, but they do not occupy a prominent place in the economy of the natives.

The nuts of the *Cycas circinalis*, called "fadang" by the Chamorros and "federico" by the Filipinos, yield a nutritious starch. As these nuts are poisonous in their crude condition, there was considerable prejudice against them on the part of some of the Spanish governors of the island. In other countries, however, a fine sago, or arrowroot, is made from them, which is declared to be superior to that made from the pith of sago palms.

Tree fruits.—The principal fruits are oranges, bananas, mangoes, papayas, and sugar apples (*Annona squamosa*), all of which are of fine quality. In the vicinity of Agat and the harbor of Apra there are inferior varieties of oranges, but in the districts of Santa Rosa and Yigo, in the northern part of the island, and in Yona, on the eastern coast, the oranges are excellent.

Lemons and limes produce continuously in great quantities all the year round. Among the introduced Annonaceæ, the soursoap (*A. muricata*) is used for making jellies and preserves, and the bullock's heart (*A. reticulata*) is eaten as a fruit, but it is inferior to the sugar apple above mentioned. Citrons, pomelos, shaddocks, and bergamots are abundant. *Acerrhoa carambola*, improperly called "bilimbines" by the natives of Guam and the Filipinos, bears a translucent oblong fruit, with the cross section of a five-pointed star, which has a pleasant acidulous flavor. Guavas grow spontaneously and produce abundantly. Little use is made of the fruit, however, owing to the scarcity of sugar on the island. Among introduced trees are the cashew (*Anacardium occidentale*) and the tamarind (*Tamarindus indica*), neither of which have spread upon the island, but which are found only near villages or on the sites of ranches either in cultivation or abandoned.

Coffee and cacao.—Coffee and cacao have been introduced and thrive well in Guam. Coffee receives little care. It will grow in various situations and in almost any soil, and yields abundant harvests. Often most of the houses of a village, as at Sinajana, are seen surrounded by coffee bushes, and the fresh seeds sprout spontaneously beneath the parent plant or if thrown upon the surface of the soil in a shady place. There are no large plantations in the island, each family planting enough only for its own consumption. The berries are gathered, pulped, and hulled by hand.

The cultivation of cacao is more difficult. The plants are very tender, they have a long taproot which is easily broken, and do not bear transplanting well. They are very sensitive to violent winds, and must be planted in sheltered valleys. Both coffee and cacao must be protected from the sun when very young. The use of shade trees is not necessary in Guam, though, in starting a cacao or coffee plantation, the intervening space between the rows of plants is usually planted in bananas, which yield fruit and at the same time serve to protect the tender young plants from the sun.

Narcotics.—The principal narcotics cultivated on the island are the betel palm and the betel pepper, which grew on the island before the discovery, and tobacco, which was introduced by the Spaniards from America. The betel palm, although frequently planted by the natives, also grows spontaneously. Thousands of young plants may be seen in the rich valleys of the southern part of the island where seeds have fallen from the palms. The betel pepper is a vine with glossy green leaves closely resembling the common black pepper (*piper nigrum*). It occurs only in a state of cultivation, but requires little care, the natives propagating it very easily from cuttings and allowing it to creep upon stone walls and to climb over trees.

Toddy, or tuba, is a fermented drink made from the sap of the coconut. Before the arrival of the Filipinos brought by the early Spaniards to assist in the conquest of the islands the use of tuba was unknown. Until the arrival of the Americans an inferior brandy was distilled from fermented tuba, but its manufacture has been prohibited.

Nearly every family on the island has its tobacco patch, each raising barely enough for its own consumption. The seeds are ger-

minated in nurseries and transplanted to spots near the plantations, where they are kept shaded by canopies of muslin, and then are set out in fields, each plant shaded by the segment of a coconut leaf. All hands assist in its cultivation—parents, children, and grandparents—and it requires constant attention and no little effort in fighting against weeds and tobacco worms to make the crop a success.

Oil-yielding plants.—The coconut is the principal source from which the natives derive oil. Coconut oil is used for cooking, lighting, and anointing. In taking the place of lard fresh coconut oil imparts an agreeable flavor to many articles of diet. Nearly every house on the island has its patron saint enshrined in a niche or side room, with a light of coconut oil burning before it. The oil is contained in a goblet half filled with water, which keeps the glass cool. The wick is supported on a float. Oil used for massaging the body (a custom which Guam shares with many Pacific islands) and for anointing the hair is often perfumed with flowers of various kinds. Dried coconut meat, or copra, is exported from the island. Most of it is used for oil which enters into the manufacture of candles and soaps, and is an ingredient of a number of medicines. Among other oil-yielding plants are the castor bean (*Ricinus communis*), the physic nut (*Jatropha curcas*), and the candle nut (*Aleurites moluccana*), which has been sparingly introduced.

Timber trees.—The ifil (*Intsia bijuga*) is the most important timber tree in Guam. The heartwood of the tree is very hard and heavy, but not elastic. It is cross-grained and hard to work. It is very durable and is used for the posts of the best houses. The wood is yellowish at first, then it turns rust color, and finally assumes a dark color with time, resembling that of black walnut. Although of coarse grain, it takes a fine polish. Nearly all of the better houses of the island have tables and settees made of it, and even floors, which are kept beautifully polished by rubbing them with grated coconut wrapped in a cloth through which the oil oozes. The wood has the virtue of resisting the attacks of termites, or white ants. Trunks 9 meters long and 1 meter in diameter are sometimes found, but they usually vary from 2.5 to 5 meters in length and from 30 to 60 centimeters in diameter. Houses made of newly sawn ifil are not whitewashed or painted until the wood has had time to dry and season on account of the brown coloring matter which discolors the surface. As it grows old the wood becomes so hard that holes must be bored into it for nails. The trees are becoming scarce in the island and their felling for timber is strictly regulated by law.

Other hardwoods used in carpentry and joiner work are chopag (*Orchrocarpus obovalis*), principally used for ceilings and interiors, also for joiner work; ajgao (*Premna gaudichaudii*), used as supports for the poorer class of houses and for live fence posts; ufa (*Heritiera littoralis*), used for spokes of wheels, knees of boats, and especially for plows; daog (*Calophyllum inophyllum*), used for the solid wooden wheels of the carts drawn by oxen and carabao; and dugdug (*Artocarpus communis*), or seeded variety of the breadfruit, which grows everywhere in Guam. The seedless variety is too valuable as a fruit tree to destroy it for timber.

TEXTILE AND THATCH PLANTS.

Fiber plants.—Among the monocotyledons yielding fiber are the coconut (*Cocos nucifera*), from the husks of which is derived the coir, which is twisted and braided into cords and sennit; the pineapple (*Ananas ananas*), the leaves of which yield a beautiful, fine, silky fiber, which the natives of Guam twist into thread for making the finer fish nets; the abaka, or manila hemp (*Musa textilis*), introduced from the Philippines, and growing without care on the part of the natives, but not utilized by them on account of the labor and skill necessary to extract its fiber; and a species of agave, called "lirio de palo," evidently introduced from Mexico, the leaves of which yield an excellent fiber, which in Guam is utilized only for wrapping cigars. In addition to these, a palm called "cabo negro" has been introduced from the Philippines. This species, which is known to commerce as the "gomuto," is *Saguerus pinnatus*. Its stem when young is entirely covered with sheaths of fallen leaves and black, horsehairlike fibers, which issue in great abundance from their margins. As the tree increases in age these drop off, leaving a columnar stem or trunk. Cabo negro ropes are said to be more durable than any other kind when subjected to repeated wetting. At the base of the leaves there is a woolly material suitable for calking the seams of vessels. The species grows well in Guam, but on account of the abundance of other fibers it is not utilized by the natives.

Among the dicotyledons the principal fiber plants belong to the Malvaceæ, Tiliaceæ, Urticaceæ, and Moraceæ. The chief of all is *Pariti tiliaceum*, a tree widely spread over the tropical regions of the world, from the inner bark of which ropes and twine are twisted. Its use for this purpose is so extensive in Guam that there is scarcely a family which does not possess a rope-making apparatus similar to the simpler forms of those used in ropewalks elsewhere. On the east coast of Guam, in traveling from Pago to the southern extremity of the island, it is necessary to cross the mouths of several rivers. Balsas (rafts), composed of several layers of bamboo, are used for this purpose. The cables by means of which they are pulled across are made from the fiber of *Pariti tiliaceum*. Though this fiber is not easily worn out in its natural condition, its strength and durability are increased by the application of tar, such as that used on board ship. Among other members of the mallow family are several species of sida, called "escobilla" by the natives. They grow without cultivation on the island in waste places and along the roadsides. They yield a good, strong fiber, but on account of the abundance of other material, the natives do not use it. Allied to these in general appearance and use are several species of Tiliaceæ, including *Triumfetta procumbens*, which is called "masigsig" by the natives, allied to the species which produce the jute of commerce, so extensively used in the manufacture of gunny sacks, matting, and carpets. They are not, however, utilized in Guam.

The principal member of the Urticaceæ, or nettle family, is the celebrated rhea fiber plant (*Boehmeria tenacissima*). In Guam it grows to the height of a shrub or small tree, though in many other parts of the world it is herbaceous. Though allied to the nettles in appearance and inflorescence, it is not armed with stinging hairs.

The closely related *Boehmeria nivea*, which yields the China "grass cloth" fiber, is a plant of temperate regions, the lower surface of the leaves being covered with white down, like felt. The leaves of the Guam plant, though pale beneath, are not coated with felt. This plant, though of great importance in other parts of the world and growing in Guam rankly and without care, is in this island not utilized at all, except for medicine.

The last species I shall mention is the principal member of the Moraceæ, the breadfruit tree (*Artocarpus communis*). In addition to its importance as yielding the principal staple of food, excellent wood, fodder for animals, and a gum suitable for paying the seams of canoes and for use as a medium in mixing paints, it yields a tough, leathery bark, which in the olden times was made by the natives into aprons or breechcloths.

Mat and hat plants.—At least four species of pandanus occur in Guam, two of which, called "pahong" and "kafo" by the natives, are widely spread in the forests and furnish food to the fruit-eating bats and wild rats. The third species furnishes leaves which, when young and tender, are cooked with vegetables as a flavoring. The fourth species is called "aggag." Its leaves are remarkably strong and pliable. They are used for lashing together the parts of a house or hut and for string; and when divided into narrow ribbons they are braided into hats, sleeping mats, mats upon which corn and other seed are dried, and bags for holding corn and rice. Only one sex of this plant occurs in Guam. It is propagated by cuttings, limbs when cut off taking root readily in almost any kind of soil. The leaves of the other species are inferior and are scarcely at all used.

A coarse kind of mat is made by weaving or wattling the stems of a reed which grows in marshy places (*Trichoon roxburghii*), called "karriso" by the natives. These mats are often used to cover the walls of lightly constructed houses and are sometimes coated with a kind of clay.

Thatch plants.—The majority of houses in Guam are thatched with coconut leaves, but those of the better class with the leaves of *Nypa fruticans*, an interesting trunkless palm introduced from the Philippines, which has established itself at the mouth of every stream of importance in the island. When there is a dearth of coconuts and nipa, sword grass or "neti" (*Xiphagrostis floridula*) is used.

Coconut leaves to be used for thatching are gathered, dried, and split down the midrib, the two halves being placed together in reverse direction and the leaflets interwoven diagonally. Women are usually employed in this work. Leaves thus prepared are lashed to the framework of the roof with strips of pandanus leaves, beginning at the eaves and ending at the ridgepole, the leaves being placed so close together that they form a thick imbricating thatch. Coconut thatch is not very durable. As a rule it lasts only three or four years.

In preparing the leaves of the nipa palm the leaflets are detached from the midrib or rachis, cured by drying, and attached to reeds in the form of a fringe. These are laid on the timbers of the roof frame in the same way as the coconut leaves, but closer together. Neti is prepared in the same way. The thatch thus formed is more homogeneous, compact, waterproof, and durable than the former.

FORAGE PLANTS.

As garden patches are not inclosed, cattle, horses, carabaos, and pigs can not be allowed to run at large. They are kept tethered and consequently require to be cared for, fed, and watered. Often the available pasturage in the vicinity of a town or village is exhausted, and it is necessary to take the animals a considerable distance before a good grazing place can be found. Usually forage is gathered and brought to the animals. Besides several species of grasses the best forage plant is the breadfruit (*Artocarpus communis*), great quantities of the leaves of which are gathered for this purpose. The branches of several leguminous shrubs and of *Moringa moringa* are much relished by cattle, and the plants of the cultivated *Phaseolus mungo* and of peanuts form excellent forage. Attempts have been made to cultivate alfalfa (*Medicago sativa*), but this plant evidently flourishes best in dry climates where irrigation is practiced. It does not thrive in Guam. The nearest approach to clover on the island is the tiny *Meibomia triflora*, which grows close to the ground and forms a thick sward in places where the grass does not crowd it out.

Cattle and hogs are very fond of the fruit of *Artocarpus communis*. After hurricanes, when the ground becomes covered with breadfruit, hogs eat great quantities of it and become very fat. The sweet pods of *Pithecolobium dulce* are also eaten by animals. *Prosopis juliflora*, which is an important forage tree in the Hawaiian Islands, has not yet become established in Guam. Cattle and horses feed upon its foliage as well as upon its pods, and there is no reason why it should not thrive on the island.

Among the grasses the most nutritious is Bermuda grass (*Cyniopsis dactylon*), called "grama" by the natives. It grows luxuriantly in the sandy soil of the lowlands. *Dactyloctenium aegyptiacum* and *Eleusine indica* are edible but coarse and not much relished by horses. Stalks of green maize and the leaves of ripe maize are excellent for food. Many of the coarser grasses growing in damp places which horses and cattle will not eat are eaten by carabao. Reeds (*Trichostema roxburghii*) are often collected for fodder and are especially relished by carabao. When old they are rather coarse for cattle, but the young shoots are eaten by them. Para grass has been introduced lately and thrives well.

Among the plants elsewhere reputed to be injurious to animals is *Leucaena glauca*, an introduced shrub, which is very common in the Bahama Islands.

WEEDS.

The number of tropical weeds which have found their way to Guam is remarkable. In waste places, along the roadsides, on the borders of rice fields, and among growing vegetables, nearly all the weeds are of species widely spread over the warmer regions of the world. Some of them, like the malvaceous *Urena* and tiliceous *Triumfetta*, have prickly, burrlike fruits with hooked spines; others, like the milkweed (*Asclepias curassavica*) have silky pappus attached to the seed, which provides for their dispersal by the wind. There are also composites (*Glossogyne*), with retrorsely scabrid bristles attached to their achenes, and marsh plants, with seeds which readily adhere to the feet or feathers of birds. These peculiarities undoubtedly

account for the wide dissemination of many of the weeds. Many of the marsh birds and shore birds visiting Guam are migratory, and it is very probable that they have brought with them seeds or fruits from other regions.

It is pleasant to note the absence of the troublesome sensitive plant (*Mimosa pudica*) and the *Lantana camara* from the flora of Guam. Other shrubby plants of wide distribution occur in Guam, however, especially the guava, the two common species of indigo, *Leucaena glauca*, and several American species of cassia. Nearly all the composites on the island are introduced weeds, belonging to the genera Vernonia, Elephantopus, Adenostemma, Ageratum, Eclipta, Glossogyne, and Synedrella.

ANIMALS OF THE ISLAND.

MAMMALS.

Bats.—There are no indigenous quadrupeds in Guam. The only mammals in prehistoric times were two species of bats, the large fruit-eating *Pteropus keraudreni* (Q. and G.), or “flying fox,” called “fanihi” by the natives, and a small insectivorous species, *Emballonura semicaudata* (Peale), called “payesyes.” The fanihi flies about in the daytime, flapping its wings slowly like a crow. It has a disagreeable musky odor, but this leaves it when the skin is removed, and the natives sometimes eat it. The flesh is tough, but not unsavory. The principal fruits eaten by it are guaves, fertile breadfruit, the drupes of the fragrant screw pine, called “kafo,” and custard apples (*Annona reticulata*), which it has undoubtedly helped to spread over the island. *Emballonura semicaudata*, the insectivorous bat, is nocturnal in its habits, and flutters about very much like our own common species. It remains in caves during the day and ventures forth at twilight.

Rats and mice.—The Norway or brown rat (*Mus decumanus* Pallas), called “chaca” by the natives, was probably introduced into the island through the agency of ships. It is very abundant and is a great pest, especially in plantations of maize and cacao. It also destroys young coconuts, ascending the trees and often making its nests there. The common mouse (*Mus musculus* L.) has also been introduced. It apparently causes little harm.

Deer.—A species of deer (*Cervus mariannus*) was introduced by Don Mariano Tobias, who was governor from 1771 to 1774. Its flesh has a fine venison flavor, and was a favorite food for the natives. Since the general introduction into the island of sporting arms its numbers have rapidly diminished, and it has become necessary to protect the deer by game laws.

Domestic animals.—Carabao (water buffalo), cattle, horses, mules, pigs, goats, cats, and dogs have been introduced. The water buffalo (*Bubalus buffelus* L.) are used for carrying burdens, drawing carts, and for plowing rice, just as in the Philippines. Their flesh is seldom eaten in Guam, and their milk, which is of excellent quality and in some countries is an important food staple, is seldom used. They are very strong animals, but awkward and more difficult to manage than oxen. It is a common sight in Guam to see a small boy riding a carabao bull. As the huge, ungainly, great-horned animal

goes galloping along the road it suggests some monster of prehistoric times. The carabao can not endure long periods of drought. They love to wallow in swamps, and, if hot and dry, will sometimes lie down with their riders when crossing a marsh.

Many of the Guam cattle bear a general resemblance to Jerseys in size and color, though their udders are much smaller. Both bulls and cows are used as steeds and for drawing carts. A foreigner is especially struck with the speed developed by some of these animals. It is a common sight to see a dainty, smooth-skinned cow, saddled and haltered, trotting along as swiftly as a horse, with her calf galloping at her side. With the exception of a few herds of cattle and carabao in the interior of the island, all animals in domestic use are kept tethered, to keep them away from the unfenced garden patches and cornfields of the natives. They are subject to the attacks of wood ticks (*Acarina*), so that they must be frequently examined. The natives rub their skins and curry them like horses. Sometimes a neglected animal dies in consequence of the attacks of these pests.

Horses do not multiply on the island. Colts are born, but do not thrive, due almost entirely to lack of care. Goats are not plentiful. Wild hogs roam the forests in the northern part of the island. They live on fallen wild breadfruit and various roots. It is interesting to note that they eat the exceedingly acrid rootstocks of the great *Alocasia*, which grows wild in the forests. Hogs kept on ranches and fed on coconuts, breadfruit, and other vegetable substances are prized for food. The excellent flavor of the Guam pork was much praised by early navigators. Dogs are pests in the island. They are not well cared for as a rule, and get their living by foraging. Cats have gone wild, and sometimes destroy the eggs of sitting hens and catch young chickens and turkeys. Dogs and cats are fed upon coconuts when other food is not available.

BIRDS.

Land birds.—The most beautiful bird on the island is the rose-crowned fruit dove (*Ptilopus roseicapillus* Less.), called "tottot" by the natives, and closely resembling the manutangi of Samoa (*P. fasciatus* Peale). The general color of its plumage is green. Its head is capped with rose-purple and the lower surface is yellow and orange, with some purple on the breast. The sexes are similar. When it utters its mournful sobbing note it presses its bill against its breast and swells the back of its neck. Birds kept in captivity would frequently cry out in the middle of the night. Their favorite food was the fruit of the ilangilang (*Canangium odoratum*), cestrum berries (called "tintanchino"), and orange berries (*Triphasia trifoliata*). They also eat the plumlike fruit of *Ximania americana*, called "piut" by the natives.

Another fruit dove is *Phlegoenas xanthonura* (Temm.), the female of which is smaller than the male and is of a uniform reddish-brown color, while the male has a white throat and olive-green reflections on its breast. Another dove, which was probably introduced from the Philippines, is *Turtur dussumieri* (Temm.). It is quite common in the open stretches of the mesa, and is called "palumanjalom-tano," or wild pigeon, by the natives. It is a graceful, dove-colored

bird resembling the common turtle dove, to which it is closely allied. Another introduced bird is the beautiful little pigmy quail (*Excalfactoria sinensis* Gm.), called "bengbeng" by the natives, from the peculiar whirring noise it makes in flying. This little bird, which is only 5 inches long, is remarkable for the large size of its eggs. They are of a brownish color, sprinkled with deeper brownish dots, broadly ovate in form, and 1 inch through in their greatest diameter.

Terrestrial kingfishers.—One of the commonest birds in Guam is *Halcyon cinnamominus* (Swains.), called "sijig" by the natives. It is of a beautiful blue and tawny color, the female differing from the male in having white on the belly. This bird is allied to the "tio-tala" of Samoa (*H. pealei*). It feeds upon insects and lizards, and is said to eat young birds and to pick out the eyes of young chickens. It utters a strident rattling note, which is often heard in the middle of the night. An allied species, *Halcyon albicilla*, occurs in the northern islands of the group.

Other birds are the edible-nest swift, *Collocalia fuciphaga* (Thumb.), called "yayaguag" by the natives and "golondrina" by the Spaniards, which in Guam makes nests of leaves stuck together with a secretion from the mouth very different from the typical nests used for food by the Chinese; the fan-tailed flycatcher, *Rhipidura uranie* (Oustalet), called "chichirika" or "chichirita" by the natives, a pretty little bird which follows one along the road and spreads its tail as though wishing to attract attention. Another little flycatcher frequenting shady woods, *Myiagra freycineti* (Oustalet), called "chiguangan"; the starlinglike sali, *Aplonis kittlitzi*, closely allied to the Samoan miti-uli (*Abrevirostris*); a crow, *Corvus kubaryi* (Reichenow), called "aga," which is fond of terminalia nuts and does much damage to the maize crops of the natives; two honey eaters, the little red-and-black *Myzomela rubratra* (Less.), called "eguigui," which frequents the blossoms of bananas, coconuts, and scarlet hibiscus, and the olive-green and yellow *Zosterops conspici-lata*, called "nossac" by the natives. The only real song bird on the island is the ga-karriso, or ga-piao, a reed warbler, which is well named *Acrocephalus luscinia*. It nests among the reeds of the large swamp near Agana known as "la Cienaga," and has a song of exquisite sweetness.

Shore birds.—Among the shore birds are a peculiar bittern, *Ardetta sinensis* (Gmel.), called "cacag" by the natives; the common reef-heron of the Pacific, *Demigretta sacra* (Gm.), called "chuchuco," which is not rare but wary and hard to approach; two rails called "koko" *Hypotaenidia owstoni* (Rothschild), and *Poliolimnas cinereus* (Vieill.), both of which are caught by the natives by means of snares laid in paths; the widely distributed water hen or gallinule, *Gallinula chloropus* (Lath.), called "pulatat" by the natives, excellent for food and easily distinguished by a red shield on its forehead; three birds called "kalalang," the Pacific godwit, *Limosa lapponica baueri* (Naum), the Australian curlew, *Numenius cyanopus* (Vieill.), often seen on newly tilled fields, and the oriental whimbrel *Numenius phaeopus variegatus* (Scop.), somewhat smaller, usually seen at periods of migration; and the widely spread snipe, *Gallinago megala* (Swinh.). Among the shore birds called by the general name "dulili" are the gray and white Asiatic wandering tattler, *Heter-*

actitis brevipes (Vieill.); bullhead or black-bellied plover, *Squatarola squatarola* (L.); the well-known Asiatic golden plover, *Charadrius dominicus gularis* (Gm.), very common on cultivated fields and along the shores of the island; the Mongolian sand dotterel, *Aegialites mongola* (Pall.); and the common turnstone, *Arenaria interpres* (L.), which may be easily distinguished from the rest by its bright yellow feet. A duck, *Anas oustaleti* (Salv.), called "nganga" by the natives is peculiar to the Mariana Islands. It is closely allied to species occurring in Hawaii and Samoa.

Sea birds.—No gulls are found in the vicinity of the island. Noddies, *Anous Leucocapillus* (Gould) and *Anous stolidus* (L.), called "fajang," by the natives, are common. The beautiful snow-white tern, *Gygis alba kittlitzii* (Hartert), called "chunge" by the natives, breeds on the island in great numbers, not making a nest but laying its single white egg on the bare branch of a tree. The common booby *Sula sula* (L.), is common in the vicinity of the island. Great numbers of them may always be seen off the coast of Orote Peninsula, and the red-footed booby, *Sula piscatrix* (L.), with white plumage, also occurs. They pursue flying fish, and dart into the water from great heights. The frigate bird, *Fregata aquila* (L.), called "payaaya" by the natives, is not rare, but is seldom seen near the shore of Guam. The tropic bird, *Phaethan lepturus* (Daudin), nests on the northern islands of the group.

REPTILES.

There are few reptiles in Guam. The most conspicuous is a large lizard (*Varanus* sp.) about 4 feet long, of a black color, speckled with lemon-yellow dots. The combination of these colors gives to the animal a greenish appearance as it runs through the bushes. As in the Guam kingfisher or "sijig" we have a lizard-eating bird, so in this animal, called "jilitai" by the natives, we have a bird-eating lizard. It is a great pest, frequently visiting the ranches of the natives, eating the eggs of fowls and young chickens, and robbing birds' nests. It is a common thing on walking through the woods of the island to hear an outcry among the birds and to discover one of these creatures in the vicinity of a nest which he has just robbed. Several pigeons belonging to the author were caught and killed by jilitais, their wings having been clipped to prevent their flying away from a ranch to which they had been carried. These lizards are eaten by Filipinos living in Guam, but the natives look upon them with disgust.

All houses of Guam are frequented by small lizards called "gualig." They are harmless creatures and are welcomed by the natives on account of their habit of catching insects. Their toes are so constructed as to enable them to run upside-down on the ceiling and rafters with great rapidity. At night they may be seen quite motionless, lying in wait for moths and other insects which may be attracted into the houses by the light. Three or four often pursue the same insect, approaching it stealthily like cats after their prey. From time to time they utter a chattering noise, which has won for them the name of "island canary birds."

In the woods is a pretty blue-tailed skink (*Emoia cyanura* Lesson), a small lizard with a tail the color of turquoise and with lon-

gitudinal bronze lines along the back. The only snake on the island is *Typhlops braminus* (Dandin), a small species, with microscopic eyes and mouth and covered with minute scales. It is sometimes called "blind-worm," from its general resemblance to a large earth-worm, and is found in damp places, under stones and logs. Turtles are common in the sea, and are sometimes taken.

FISHES.

General notes.—The fishes of Guam have been collected by Quoy and Gaimard and Mr. Alvin Seale, of the Bernice Pauahi Bishop Museum of Hawaii. Although the natives do not devote themselves to fishing so extensively now as was formerly the case, yet many of them have case nets with which they catch small fish swimming in schools near the beach, and a few have traps and seines. The ancient custom of trawling for bonitos and flying fish has nearly died out, but the natives still resort occasionally to the method pursued by their ancestors of stupefying fish with the crushed fruit of *Barringtonia speciosa*, a narcotic widely used for this purpose in the islands of the Pacific. The fruit is pounded into a paste, inclosed in a bag, and kept overnight. The time of an especially low tide is selected, and bags of the pounded fruit are taken out on the reef the next morning and sunk in certain deep holes in the reef. The fish soon appear at the surface, some of them lifeless, others attempting to swim, or faintly struggling, with their ventral side uppermost. The natives scoop them up in nets, spear them, or jump overboard and catch them in their hands, sometimes even diving for them. Nothing more striking could be imagined than the picture presented by the conglomeration of strange shapes and bright colors—snake-like sea eels (*Ophichthus*, *Muraena*, and *Echidna*); voracious lizard fishes (*Synodus*); garlike houndfishes (*Tylosurus*), with their jaws prolonged into a sharp beak; half-beaks (*Hemiramphus*), with the lower jaw projecting like an awl and the upper one having the appearance of being broken off; long-snouted trumpet fishes (*Fistularia*); flounders (*Platophrys pavo*); porcupine fish (*Diodon hystrix*), bristling with spines; mullets of several kinds (*Mugil*), highly esteemed as food fishes; pikelike *Sphryraemas*; squirrel fishes (*Holocentrus*) of the brightest and most beautiful colors—scarlet, rose-color and silver, and yellow and blue; surmulletts (*Upeneus* and *Pseudupeneus*) of various shades of yellow, marked with bluish lines from the eye to the snout; parrot fishes (*Scarus*), with large scales, parrotlike beaks, and intense colors, some of them a deep greenish blue, others looking as though painted with blue and pink opaque colors; variegated *Chaetodons*, called "sea butterflies" by the natives; black-and-yellow banded banner fish (*Zanclus canescens*); trunkfishes (*Ostracion*), with horns and armor; gaily striped lancet fish (*Teuthis lineatus*), called *hiyug*; leopard-spotted groupers (*Epinephelus hexagonatus*), like the *cabrillas* of the Peruvian coast; cardinal fishes (*Apogon fasciatus*), striped from head to tail with bands of black and flesh color; hideous looking, warty toadfishes, "nufu," armed with poisonous spines, much dreaded by the natives; and a black fish (*Monoceros marginatus*), with a spur on its forehead.

As many young fish unfit for food are destroyed by this process, the Spanish Government forbade this method of fishing, but after the American occupation of the island the practice was revived; but the Spanish law is now again enforced.

In the mangrove swamps when the tide is low hundreds of little fishes with protruding eyes may be seen hopping about in the mud and climbing among the roots of the *Rhizophora* and *Bruguiera*. These are the widely spread *Periophthalmus koelreuteri*, belonging to a group of fishes interesting from the fact that their air bladder has assumed, in a measure, the function of lungs, enabling the animal to breathe atmospheric air.

MARINE INVERTEBRATES.

Guam offers most favorable conditions for the study of marine invertebrates. On the western coast of the island there are broad fringing coral reefs and level platforms, covered even at high tide with only a few feet of water and at low water bare over considerable areas. Here a collector in a boat or wading, with his feet protected from the sharp spines of sea urchins and the rough branches of the coral, can always get abundance of material. When the reef is covered with a foot of water and there is no breeze to ruffle the surface the bottom appears like a garden, the corals and marine annelids expanding like beautifully rayed composites. On the bottom lie fungia corals, like huge inverted mushrooms, with pale green tentacles expanding from their radiating laminæ; indigo-blue, five-fingered starfish; sea urchins; and holothurians. Some of the latter creep about like huge brown slugs. If one attempts to pick them up, they thrust one of their extremities between the branches of coral or into a crevice of the rock, and by forcing water to that part of the body distend it and wedge it so tightly that it can not be removed without being torn in two. A long translucent holothurian (*Synapta*) moves through the water so rapidly that it is caught with difficulty. When lifted from the water it hangs limp and helpless, like a skin full of water, its internal organs showing distinctly through the body wall. As soon as it is dropped back into its native element it makes off at a great speed and soon finds shelter in some hole in the reef. Among the mollusks are a number of handsome olives, cones, and many small cowries, which evidently feed upon the coral. There are also naked mollusks that protect themselves by spurting forth clouds of purple fluid. Filefishes, tetrodons, and other fishes are always seen nibbling at the coral. Sometimes a great sea porcupine makes for them, and off they all swim as though afraid for their lives.

The natives eat many kinds of marine animals, but they do not depend upon the reef to the extent that the Samoans and Caroline islanders do, having become essentially an agricultural people, and few of them find it to their advantage to neglect their fields for fishing. In former times several governors found it profitable to collect and dry certain kinds of holothurians, called "balate," "trepang," or "beches de mer," and ship them to Manila or Canton.

Crabs of several kinds abound, most of them of wide distribution in the Pacific. Some of them ("alimasag") have shells brightly decorated with orange-red spots (*Zosimus aeneus* L.); others are covered with spines, and others when they fold in their claws look like

smooth, water-worn boulders. Scrambling over rocks along the shore are *Grapsus tennicrustatus* (Herbst.) of a deep red color, speckled, and striped with yellow. Spiny lobsters or crayfish (*Panulirus*), with long antennæ and carapax covered with spines, abound at certain points along the coast; and in the fresh-water streams on the islands are delicate semitransparent prawns (*Bithynis*), which move about the pools in a stealthy, ghostlike manner, and are almost invisible to the casual observer. Both the spiny lobsters and the prawns are valued as food.

Among the land crabs is *Cardisoma rotundum* (Q. and G.), which burrows in the ground and does great damage to gardens. This is caught in traps made of bamboo by the natives. It visits the sea at regular intervals to deposit its eggs, going after nightfall in straight lines and climbing over all obstacles in its way. Among the hermit crabs are *Aniculus* (Herbst.), with red carapax ornamented with deep red spots, and *Dardanus punctulatus* (Olivier), prettily marked with blue ocelli with white centers. The most interesting of all the land crustaceans is the well-known *Birgus latro* (L.), or robber crab, called "ayuyu," which is kept in captivity by the natives and fattened on coconuts for the table.

No general investigation has been made of the mollusca inhabiting the littoral of Guam, but such an investigation is to be made in 1917 by a naturalist from the University of Wisconsin.

INSECTS.

The insects of Guam have never been systematically collected. Many of those now occurring on the island have undoubtedly been introduced since the discovery. The butterflies are not especially striking to the casual observer. Among them is the widely spread tawny-colored milkweed butterfly, *Anosia plexippus* (Fabr.), which has found its way to Guam, together with the introduced *Asclepias curassavica*, on which its larva feeds. Both the plant and the insect, although of American origin, now occur on many islands of the Pacific Ocean. Among the night-flying lepidoptera there is a large sphinx moth (*Protoparce ceteus* Hbrt.), the larva of which feeds on the tobacco plant and resembles very closely the tobacco worms of America. It is possible that this insect may have lived on the island before the introduction of tobacco, feeding upon some solanaceous plant, but it is probable that it came to Guam with the tobacco. Possibly its eggs were brought on dried leaves of the plant. Among the other pests introduced by the foreigner are clothes moths (*Tinea pellionella* L.). In the zoology of the Freycinet expedition several butterflies collected in Guam, including an *Argynnis* and two species of *Danais*, were described as new.

Among the hymenoptera there are several interesting species of wasps and ants. One wasp, probably a species of *Polistes* (*P. hebraeus* Fabr.?), is social in its habits. During the greater part of the year it frequents open fields, building its nests in bushes a foot or two from the ground, attaching them to a limb by a peduncle with the mouth of the cells pointed downward, and not covered by a papery wall, as in our hornets' nests. In these cells the eggs are laid and the larvæ are fed. When about to undergo transformation the larvæ spin a covering which seals up the cell. The males differ

from the female in appearance and are stingless. Besides the males and perfect females there are workers. Both the females and the workers sting, but their sting is not very severe. These insects are very abundant all over the island, especially in abandoned clearings grown up to guavas and other low bushes. It is almost impossible to cross such a field without stirring up a nest or two, and one of the commonest occurrences on an excursion is to hear a loud outcry on the part of your guide, whose naked legs are covered with the stings of the "sasata," as they are called. In revenge he usually finds a dry leaf of a coconut, which he converts into a torch and burns the nest. These wasps are not very pugnacious, and will only sting when they think their nest is attacked. After it has been burned they fly around and around the place without attempting to take vengeance. In the wintertime (the month of December) they flock into house in great numbers and settle upon some prominent point on the ceiling or on a chandelier, clinging together in masses like swarming bees. There they remain for a month or two in a state of torpidity. They are disagreeable guests, as they have a habit of dropping to the floor from time to time, and it is not unusual on getting out of bed in the morning to step on one of them, too stupid to fly but lively enough to sting. On one of the Government vessels, which had visited Guam in January, were found some of these wasps after her arrival in San Francisco. They had sought an asylum while she lay in the harbor of Apra, and remained hibernating during the return voyage of the vessel. Another species found on board was a solitary wasp, a species of *Odynerus* or an allied genus. The mother had made a series of mudlike cells in a pamphlet, which had remained rolled up, and in each cell she had deposited a small green caterpillar, the larva of one of the smaller moths of the island, laying an egg and sealing up the cell and then making another cell on top of it and repeating the operation. In Guam these cell-making wasps are very common. Every hole in the wall of a house is plastered up by them; rolled-up magazines or newspapers lying on the table, bamboos, empty cartridge cases, even gun barrels—everything which is tubular in shape is filled by their cells. Their sting stupefies the caterpillar, but does not kill it, and their larvæ in eating their animal food are much more active than those of pollen-feeding species, turning their heads from side to side and living for some time after having been taken from their cells.

Among the ants ("otdot" or "utdut") there is one (*Solenopsis* sp.?) of which the workers are very small and sting severely. The females are considerably larger. These little creatures, when out on foraging expeditions, travel in lines and sting every animal that crosses their path. Sometimes young chickens are killed by them. They are common in houses, and it is not unusual on turning in at night to find a line of them crossing the bed. In another species belonging to the same family (*Myrmicidæ*), probably of the genus *Pheidole*, there is a form with enormously developed cubical heads and strong jaws, called "soldiers." It is very interesting to watch these insects swarm. They come out of the ground in great numbers. Both the males and females are winged. The females are very much larger than the males and the workers are smaller. The soldiers, which are very conspicuous, are sometimes called "workers major,"

and the common small-headed form "workers minor." Soon after swarming the sexes mate. They then lose their wings and establish new colonies. Another stinging ant, much larger and of a black color, is called "jating."

The Diptera are represented by several species of flies and at least two mosquitoes. It has been asserted that the early natives blamed the Spaniards for having introduced both flies and mosquitoes to Guam. This is probably false, since the vernacular names of these insects in Guam are etymologically identical with the names of the same insects through the greater part of Melanesia, Polynesia, and New Zealand, and have evidently the same origin as the modern Malayan.

Mosquitoes are very troublesome both day and night in Guam. The day-flying species avoids the sunlight, but makes life a burden in the shade. All Europeans sleep under mosquito nets, and the natives habitually make a smudge in their houses after dark to smoke out the night-flying species. This is effective if the lights in the house are first extinguished and not relighted.

Fleas are not common; the climate is probably too damp for them to flourish. The author passed a year on the island without seeing either a flea or a bedbug. Neither do lice appear to be abundant. This may be owing to the habit of the natives of frequently washing the hair with soap, oranges, and bergamots.

Among the Hemiptera, besides lice there are plant lice of several kinds, large water bugs (*Belostoma*) in stagnant pools, and swarms of *Ploteres*, which skip over the surface of the water. Several varieties of roses have been introduced into Guam, but happily the rose aphid (*Siphonophora*) has not reached the island.

Among the Neuroptera are several handsome dragon flies, one of which is bright red. Termites, or "white ants," called "annai" by the natives, are pests. They do great injury to books and furniture and to the woodwork of houses, often building covered galleries of mud along the walls of a room. In construction wood must be chosen which will resist the attacks of these insects. It is not an uncommon occurrence for a chair or table to collapse, and to find that it has been honeycombed by termites. Sometimes they form continuous galleries through a whole shelf of books or a pile of manuscript. These insects do not confine their attacks to deadwood; they attack living trees and are among the insects injurious to the cacao.

Among the Coleoptera may be mentioned the weevils, which destroy great quantities of corn, rice, and other farinaceous food. Grain must be thoroughly dried in the sun and then stowed in earthen jars for protection against these pests.

The Orthoptera are represented by several species of grasshoppers, which furnish excellent food for chickens and turkeys, and which do not seem to cause much injury to the crops of the island. Mole crickets (*Gryllotalpæ*) are very common.

SCORPIONS, SPIDERS, AND CENTIPEDES.

A small scorpion is common in Guam. Its sting is painful, but not dangerous. Among the spiders one of the most interesting is a large dark-brown species, probably belonging to the *Epeiridæ*,

which carries about with it a white disk-shaped membranous case filled with eggs. There are no tarantulas nor other dangerous spiders. Wood ticks (*Acarina*) are great pests and sometimes infest cattle to such an extent as to cause them to sicken and die.

Centipedes, called "saligao" by the natives, are common. They inflict a very painful but not dangerous bite. They are usually found in damp places under stones or rotten wood, the mother often surrounded by a brood of brightly colored young, similar to her in form. Like spiders and crustaceans they cast their skins in growing. The jaws are modifications of a pair of legs. They are sharp, prehensile, and fanglike, and are perforated at the tip so as to inject their venom into the wound inflicted by them. Their body is flattened, so that they can force their way into small cracks, under stones, and beneath the loose bark of trees in search of their insect prey. They are carnivorous and seize their victims with their pincer-like jaws, injecting their venom. They are very quick in their movements and tenacious of life. When one is cut in two each part makes off in an independent direction at full speed, but the posterior part does not get very far.

For further information as to the flora and fauna of Guam the reader is advised to consult the complete work, "Useful Plants of Guam," mentioned above.

III. CLIMATE.

The climate of Guam is healthful and on the whole pleasant. The northeast and east-northeast trade winds prevail for six months of the year, during which time the rain is relatively little. The driest month is frequently April, yet in this month the mean quantity of rainfall, drawn from the last nine years, is an inch and a half with a minimum average of eight rainy days. From June to November the southwest monsoon blows at more or less frequent intervals influenced by the typhoons and depressions rather numerous at this time of the year. These warm winds bring very abundant precipitation, the monthly average of rainfall varying during this rainy season from 5 to 15 inches, and that of the rainy days from 16 to 24. The yearly mean total of rainfall of the last nine years amounted to 81 inches, of which 60 per cent fell during the six rainy months. The greatest monthly fall during the said period was 26 inches (August, 1914), and the greatest in a single day 9 inches, on the 13th of July, 1907; the most prolonged drouth, 24 days, February and March, 1907.

The mean annual temperature is 81, and it is nearly constant along the year; the daily variation is very small, the mean maximum being 88 and the mean minimum 72. There is always a constant breeze, especially during the clearest and hottest months, and one may be comfortable when sheltered from the sun.

Although very often during the rainy season the island is within the sphere of influence of typhoons because of its location within the limits of the region of the western Pacific wherein the most of them originate, yet only at long intervals is it visited by severe ones which cause loss of property or life. One of the most disastrous in the memory of the inhabitants occurred on November 13, 1900, and destroyed all crops, fruits, and many wooden houses. The U. S. S.

Yosemite, station ship at Guam, in the early hours of the storm was driven on the reefs inside Apra Harbor in front of the town of Sumay and severely damaged. During a later shift of wind, the ship was blown out to sea over the Calalan Bank near the Spanish Rock, and although the vessel was drawing 40 feet forward the rocks were never touched. Here she lost her remaining anchor. At 4 o'clock the next morning, when the storm subsided, it was seen that the *Yosemite* was a total derelict; her boats were gone, her rigging torn to pieces, her rudder was gone, and the propeller was so badly damaged that it was impossible to make more than 2 knots an hour. After drifting helplessly for 36 hours the crew were finally taken off by the U. S. S. *Justin*, which had weathered the storm in safety. As the *Yosemite* could not be towed into port, she was sunk after removing all the Government property that could be saved. The loss of life in the island amounted to 20, of whom 4 were members of the crew of the *Yosemite*. Two years after this event the coconut trees in the island were just beginning to recover from the effects of the storm.

Prior to the typhoon of 1900 the most recent occurred in November, 1895. In 1871 there was one of the most severe, and recently—November, 1914—some buildings of the island were damaged by a typhoon.

As in the Philippines, earthquakes are of common occurrence; the island being at the southern end of the submarine chain or ridge extending northward to Japan, and surrounded south and southeast by the Challenger Deep, one of the deepest oceanic depressions known, must be considered as very unstable. Light shocks, unnoticed during the noises and distractions incident to the day are of frequent occurrence once each week or two. It is known that a violent earthquake occurred in 1779 which first destroyed the cathedral and palace at Umatac, but little else is known of it than the record written on the tablet of bluestone embedded in the ruined wall.

The older inhabitants tell of two severe earthquakes which occurred in 1825 and 1834, which did damage to buildings. About 2.56 p. m., June 25, 1849, an earthquake shock, described by Ibanez as "terrible," was experienced in Guam, and all houses of mamposteria were destroyed. Ibanez also says that a curious person counted 550 succeeding shocks and trembles between January 25 and March 11 of that year. This earthquake again destroyed the governor's palace, church, and forts of Umatac.

Later, June, 1862, and May, 1892, the island was again violently shaken by damaging shocks. On September 22, 1902, an earthquake occurred, which ruined or badly damaged every masonry house on the island, wrecked highway bridges, blocked roads, and scarred the mountains with great landslides. There were two shocks, each of about a minute's duration and separated by about the same interval of time. The loss of the inhabitants was great, and that to the insular government so great that, with the failure of the Federal Government to grant the requested aid, it was necessary to send the American school-teachers home, suspend all native schools, suspend all public works in progress, and curtail expenses in every possible way. More recently some less violent earthquakes were felt—February, 1903, and December, 1909.

**IV. DISCOVERY, OCCUPATION, AND MISSIONARY WORK,
1521-1670.**

On March 6, 1521, the island of Guam was discovered by Fernando de Magallanes, then on his historic voyage around the world. His crew was in a sorry state, for provisions were exhausted and water running short. It was his purpose to land and revictual his ships, and he dropped anchor and furled sail, probably in the lee of Cocos Island. The natives swarmed out and around the ship, manifesting a lively and fearless curiosity. The canoes excited the admiration of the adventurers, who speak of them as "flying proas," on account of their great speed; and because of their huge triangular sails, the group of islands was named by Magellan "Lateen Sails Islands" (Islas de Velas Latinas). However, this name did not long endure, for, as a result of the natives appropriating everything portable upon which they could lay hand, and particularly the disappearance of a ship's boat, the Spaniards landed under arms and fired upon the natives, killing half a dozen, recovered the missing boat, and sailed away in high dudgeon, rechristening the islands "Ladrones." Although subsequently called the "Marianas" (late in the seventeenth century) in honor of Maria Ana de Austria, the name of Ladrones has remained in common use, even until now. The islands were always referred to officially by the Spanish Government as "Marianas," and this name was confirmed by the United States Navy Department; but the probability is that to the world at large they will always be known as the "Robber Islands." The island is now officially Guam, without group designation.

In spite of this first unfavorable impression, the situation of these islands and the facilities for obtaining fresh provisions were such that succeeding expeditions to the Philippines and Moluccas made it a stopping place, beginning an intercourse with the inhabitants, which in time grew more friendly and mutually profitable. The attention of the age, however, was so occupied with the conquest of the Moluccas, rich in spices, and of the Philippine Archipelago, abounding in minerals and every variety of fruit, that, though considered of value, no attention was given to the little Marianas, and it was not until 1565 that anything like a formal occupation was attempted. Philip II of Spain, becoming interested in the smaller lands of recent discovery, ordered an expedition for the purpose of investigating them, and on the 21st of November, 1564, three ships sailed from the port of the Nativity in New Spain under the command of Miguel Lopez de Legaspi, who was vested with the title of governor of all lands he might conquer. On January 22, 1565, they sighted the Marianas and took possession of the same in the name of the Crown of Spain. They remained on the island of Guam only long enough to take on water and fresh vegetables. On January 25, 1565, the Augustinian fathers celebrated the first mass in the islands. Irregular communication with the islands was kept up by vessels stopping for provisions en route to and from Acapulco and the Philippines, but no form of government was established until later.

In 1588, on the 3d of January, Guam was visited by the English privateer Cavendish, who traded with the natives for fresh provisions. He speaks admiringly of the natives' skill as seamen and swimmers, and of the quality of the provisions he received, but his

admiration did not prevent his shooting a gun at them "to be rid of them."

In 1638 the ship *Concepcion* was wrecked on the shores of Tinian but the survivors, with a few exceptions, made their escape in a small boat to Manila. Some of those who remained made their way eventually to Guam; one of whom, a man named Pedro, was found there when the first mission arrived on the island 30 years later.

In the year 1662 the ship *San Damian*, bound with Jesuit missionaries from Acapulco to the Philippines, stopped at Guam for water. Among the missionaries was a Padre Diego Luis de Sanvitores, who was so much impressed with the condition of the natives in the canoes that surrounded the ship that he determined to dedicate himself to their conversion to Christianity. He proceeded to Manila, and after overcoming much opposition from the insular government succeeded in obtaining a royal decree ordering a vessel and means for the establishment of a mission to the Ladrone Islands. To his disappointment the ship was ordered to Peru before going to the Ladrones, and contrary winds compelled them to put in at Acapulco instead of Peru, where Sanvitores and his assistant found themselves in January, 1668. Here he met with more opposition from the viceroy of Mexico, who declined to honor the royal decree by furnishing funds. Even these last troubles were overcome, however, by furnishing 18 wealthy bondmen, by the donations of the Society of Jesus in Mexico, and finally by a timely earthquake which was, according to the astute churchman, direct evidence of God's anger.

Sanvitores and his party of missionaries started their expedition from Acapulco on the 23d of March, 1668, and sighted Guam at nightfall on the 15th of the following June. They landed and found the natives to be friendly, through the good offices of Pedro, the sole survivor of the ill-fated *Concepcion*. The party consisted of Sanvitores and four other fathers, a lay brother, a few laymen, a captain, and 32 soldiers, made up of Spaniards and Filipinos. A chapel and a dwelling of wood were built, but nothing of a military character.

The natives received the missionaries and the new religion in a friendly manner, and the work of converting and baptizing progressed satisfactorily until they met their first obstacle in the "libels of a Chinaman named Choco," the only survivor of a wrecked sampan which had been driven on the island some 20 years prior to the advent of the Spaniards. This Choco had settled at Paa, a town that formerly existed near the site of the present village of Merizo, in the southern part of Guam. He had, on account of his superior knowledge, attained some prominence in his district, and fearing for his influence he worked on the superstitions of the natives and made them believe that the sacrament of baptism was a work of sorcery and the water used a subtle poison. The fathers put an effective end to this trouble, as far as the island of Guam was concerned, by the simple method of converting and baptizing Choco himself, but the disaffection he had started spread to the northern islands and continued to cause opposition, finally ending in the death of two soldiers and the wounding of one of the fathers.

This first fatal clash between the natives and missionaries led Sanvitores to attempt a personal tour of the northern islands. He started in October, 1668, and in six months he and his assistant,

Father Morales, visited the islands of Rota, Saipan, Tinian, Anatajan, Sariguan, Alamagan, Pagan, and Agrigan, a notable feat when it is considered that their vessels were the island canoes, manned and navigated by the native boatmen, and in seas beset by varying winds and strong currents.

On his return from this expedition Sanvitores commenced a church, with funds amounting to 3,000 pesos provided by Queen Maria Ana of Austria, whose generosity also provided the sum of 21,000 pesos to maintain the defenses of and to promote intercourse with the islands, besides 3,000 pesos for the establishment of a college for the instruction of the natives. The church was built of stone and lime, and was formally opened on the 2d of February, 1669, and named Dulce Nombre de Maria. (Monsignor Jose Palomo, a native of Agana, and for the past 50 years a priest of the church, is of the opinion that the present church Dulce Nombre de Maria in Agana, is the original church referred to in the text, and that the tablet over the main door, which bears the date 1779,¹ is misleading, having been placed there by the Augustinian friars many years after the church was built. He furnished the following interesting information on the subject: In 1668 the Jesuit fathers landed in Guam, Mariana Islands, and in 1669 a report was made by them to Her Majesty the Queen of Spain, Maria Ana de Austria, stating that a church had been built in Agana. Upon the expulsion of the Jesuits from Spain and her possessions in 1767, Augustinian friars were sent out to replace them, arriving in Guam in 1769, and remaining until 1899, when they were sent away by the then governor, the late Capt. R. P. Leary, United States Navy. No record exists of the building of a church in Agana by the Augustinian friars. An examination of the pillars of the main altar shows that all the carvings formerly thereon have been chiseled off. It is known that this was done in compliance with an order from Friar Aniceto Ibanez, Augustinian, at the time in charge of the parish. The pillars on the altars of St. Mary and St. Joseph, upon which, it is well known, were carved the double-headed eagle, the arms of the royal house of Austria, were removed from the church to the convent, and were destroyed within the memory of living men. It is improbable that the Augustinians would have carved there the coat of arms of the house to which that order was as violently opposed as were the Jesuits to the house of Bourbon, of which King Charles III of Spain, who signed the royal decree of expulsion, was a member. It is, therefore, reasonably certain that the church in question is the original church built by the Jesuits in 1669.) The school, begun about the same time as the church, was built of the same material, and received the name Royal College of San Juan de Letran.

The work of converting the natives went on steadily, though against constantly growing opposition, as it became more and more apparent to the liberty-loving inhabitants that the new religion, which was based on love, mercy, and humility, was, as administered by the zealous priests, a strict code of living, which deprived them of their freedom and threatened to change in every respect their customs, habits, and even manner of dress. Whatever may have been their true characters, and notwithstanding the fact that their reports show

¹ In the records of the Augustinian Recoletos it is stated that the church was restored in 1793.

a total of 32,000¹ baptisms during the first eight months of their work, 11 of the party met violent deaths at the hands of the natives during the years 1668-1672.

One of these deaths was the direct cause of the first open warfare between the Spaniards and the natives, and came about in this wise: A native convert, one Jose Peralto, having been sent into the woods to cut wood for crosses, was set upon and slain. In order to avenge his death the Spanish soldiers arrested several suspects, which action so enraged the islanders that they gathered about 2,000 men and attacked the mission. The whites erected stockades and barriers, and, mounting their two fieldpieces, made their defense. Sanvitores tried in vain to make peace, holding aloft the crucifix, but they fired volleys of stones and darts at the image and charged the defenses. Having been repulsed in their assault, they discharged burning lances and stones wrapped in combustible material against the thatched roof of the church. When the situation appeared desperate the Spaniards prayed fervently to St. Michael, according to the statement made by the old fathers in their report, and a heavy rain fell, quenching the flames. Despite this divine intervention, the islanders persisted in their attacks, when a second demonstration of Providence, in the way of a destructive typhoon, which lasted upward of 24 hours, finally convinced them that "neither by force nor craft could they hope to resist the Christians," and they accordingly made peace in October, 1670.

V. REBELLIONS AND WARS, 1670-1696.

The disaffection did not disappear with the making of this peace, however, and the Chamorros still hoped to throw off the yoke of the conquerors. This feeling was fostered by the chiefs and macajnas, who saw the new régime usurping their power and authority. In the year following five of the missionaries met martyrdom, one of whom, a Nicolas de Figueroa, was killed in Ypao, near the site of the present leper colony. These troubles culminated on April 2, 1672, in the murder of the president of the mission, Padre Sanvitores, and his servant at Timbon, a spot on the beach of Tumon Bay near Lovers Point. The old padre was macheted while in the act of baptizing a child by Matapang and Hirao, two chieftains or nobles of the people. His body was thrown into the sea and floated ashore at a spot on the beach one-fourth of a mile east of Agana, and rude wooden crosses mark this place to-day.

A detachment from the galleon *San Diego*, which stopped at Guam on its way to Acapulco, marched to Tumon to arrest the murderers of Sanvitores. They reached the locality, and after a fruitless search started to return to Agana. The natives had in the meantime gathered in their rear and obstructed the woods in order to force the Spaniards to march on the beach, which they ambuscaded. The Spanish captain, to avoid the danger, marched his men in the water breast deep, only to find his dangers increased thereby, as a fleet of canoes, commanded by Matapang himself, attacked their seaward flank, while from the cover of the bushes and trees along the beach they received volleys of poisoned lances tipped with human bones. They kept up a running fight around

¹ It is generally considered as an exaggeration.

Saupon Point, and finally gained the road to Agana, but not until many of their number were wounded, all of whom, except the captain, subsequently died from the poison.

This warfare was kept up incessantly until November, 1673, when to all appearances the natives again became pacified. Eloquent appeals were made to the home government for reinforcements, but, although an order was sent to Manila for 200 Pampangos, none had arrived up to this time. This apparent state of peace was disturbed by the murder of Padre Esquerra and five companions on the road between Cetti and Fouha (supposed to be between Umatac and Agat) on February 2, 1674.

In June, 1674, Don Damian de Esplana arrived with 30 men and, assuming the office of military commandant, undertook the conquest of the rebels. He defeated them on several occasions and burned the towns of Chochoga, Pepura, Sidia-Aty, Sagua, Nagan, and Ninca, with many isolated homes and ranches. The peace which followed this punishment was marked by the building of churches at the towns of Ritidian, Tarague, and Tepungan, in addition to those already built in Merizo, Pagat, Paicpouc, and Ngachang. In June, 1675, the galleon *San Telmo* arrived, bringing a new superior, Padre Boreus, with Padre Bustillos and 20 soldiers. Several schools were established in the villages and the children taught Spanish and the elements of religion. Outbreaks continued at intervals, however, and in December, 1675, the church, pastorage, and school at Ritidian were sacked and burned, and Padre Diaz, with two companions, cut to pieces with machetes, which brought in retaliation the destruction of the village by the Spaniards. In January, 1676, Padre San Basilio, while trading with a native of Upi, accused the latter of cheating and was slain with clubs, and his arm bones used to point arrows. The villagers of Tarague in revenge burned the town of Upi.

In June, 1676, the ship *Acapulco* arrived at Guam and left Capt. Francisco Irrisarri, the new governor, 5 priests, and 74 soldiers. This governor, warned by previous experience, began his administration by a campaign against the natives in which he killed five persons of Talisay and burned many houses. The introduction of Christian rites of marriage was made during this governor's time.

The first wedding was celebrated in the town of Orote, the contracting parties being a Spaniard and a native maiden of that town. This event caused another outbreak, which proved to be the most serious yet encountered. The father of the bride objected to the marriage, because thereby he lost the price of his daughter's chastity, which, according to their customs, he would have sold, before marriage, to the bachelors. The priest tried in vain to appease his claim by offering more money than the unmarried men could afford to pay, and the trouble resulted in the murder of a Spaniard. The governor had ordered that the father of the bride be garroted, which so incensed the natives that they organized a new insurrection on a larger scale. They attacked Father Monroy and six soldiers in Sumay, but the natives would not fight in the open for fear of the Spanish firearms, and the padre might have escaped to Agana had it not been for the treachery of the Chamorro, Cheret, who was regarded as friendly. This Cheret, under the pretense of taking them to safety, decoyed

them into his boat, and when out in the bay he overturned them and wet the powder of their guns. Cheret and his natives then made short work of the fugitives with sticks and lances. At the same time the city of Agana was attacked. The garrison was besieged in the church and several of the stone houses, from which it made sorties, and succeeded in repulsing the natives with great loss. Judicial punishment was meted to the prisoners, which so disheartened the natives that the siege was raised.

In June, 1678, Don Juan de Salas arrived as governor and brought with him 30 soldiers. His first act was to sack and burn the villages of Punton, Tipalao, Fouha, Orote, Sumay, and Taleyfac, with other smaller towns and many ranches. In their report the Jesuit fathers thus described the manner of the warfare waged :

Our handful of men was opposed by multitudes. Although our arms were superior, we had to meet them in the defiles of the mountains, where they were at home. We fought adversaries who never presented a battle front, but preferred the cover of ambuscades, attacking with lances and stones, which they hurled upon our heads in clouds.

The Spanish inflicted much punishment, however, and a peace was effected in the latter part of 1679 by which the padres were allowed for a time to go about the island unmolested.

In 1680 Gov. Jose de Quiroga arrived in the island, relieving Gov. Salas. The new governor brought with him articles of instruction issued by the viceroy of Mexico, and in compliance therewith he began to arrest and punish all malcontents and to pillage their homes. He discovered that many rebels had fled to Rota, and sending an expedition he brought back to Guam more than 150 fugitives, among whom were Matapang and Hirao, murderers of Sanvitores, and Aguarin, the leader of the last insurrection and the slayer of Padre Monroy. All of the latter paid the penalty of their patriotism with their lives. Roads were opened throughout the island of Guam to facilitate intercourse, and the country farmers were compelled to come together and form villages in places convenient for the administration of government. Churches were erected in Jinapsan, Umatac, Pago, Agat, and Inarajan. At all villages were assigned municipal officers, and everything ran smoothly for a brief space. In February, 1681, however, the government house and church of Jinapsan were burned, and, as the authors could not be apprehended, the natives fled in fear to Rota, where the governor's agents followed, burning many houses and killing many of the refugees.

Don Antonio Saravia succeeded Quiroga as governor, and his short administration was marked by complete pacification of the island. Encouraged, he next attempted the subjugation of the northern islands, but on his way to carry out these plans he suffered exposure to a violent storm, and died in November, 1683.

Don Damian de Esplana succeeded Saravia and pushed the work of conquest, visiting Tinian and Saipan, burning towns, killing those of the natives who offered opposition, and building forts and churches. The refugees on Rota fled to Saipan and Tinian, and from there increased numbers fled farther north. The operations in the north caused a division in the forces, which the Chamorros were quick to take advantage of by organizing another expedition, under the leadership of Antonio de Yura, headman of Apurguan. Per-

suading them that only the sick and weak remained in Agana, he drew about him a company of 30 men, and under pretense of attending mass on Sunday, attacked the unsuspecting Spaniards. Gov. Esplana was badly wounded on the plaza, the sentinels were slain, houses broken open, and the streets filled with frenzied people. The priests and soldiers managed to reach the college (the college of San Juan de Letran stood to the east of the plaza, about 200 yards from the site of the present hospitals) and tried to defend themselves, but two of the priests were killed and four wounded, until the "college was bathed in blood." With the aid of Hinesi, a friendly islander, and his followers, the rebels were finally driven off, after their leader was slain. The headman of Ritidian dispatched agents to Zarpana to incite the people of that island to rebellion, with the result that more than 70 canoes arrived at Guam to assist the insurgents. The insurrection in the meantime had spread to Saipan, where Maj. Quiroga was leading the expedition sent out by the Government for the conquest of the northern islands. The Spaniards under Quiroga were attacked in a little fort they had built, and after a hard fight succeeded in beating off their assailants and embarking for Guam. They arrived at Agana in November, 1684, and in the nick of time to reinforce the garrison at that place. The natives, in the face of this opportune help, abandoned the siege and repaired to the mountains. The city of Agana was left free from danger by the energy of Quiroga, but his services brought him only jealousy and persecution from Gov. Esplana. Jose Tapia, with a detachment from the northern islands, was returning to Saipan when the natives who manned his boats, desiring to aid their countrymen, upset them and only 6 out of the 25 soldiers escaped.

To recuperate his health, Esplana went to Manila and left Quiroga as governor pro tem. The soldiers, demoralized by the recent revolts, had become undisciplined and were living in disorder. Quiroga attempted to put a stop to this, but the soldiers, fond of their licentious mode of living, seized the acting governor and put him in the jail, liberating him after a time at the solicitations of the priests. Quiroga punished some of the offenders, and, when occasion offered, sent the others to the Philippines. He rebuilt the churches that had been burned and sent an expedition, under Alonzo Soong, to search for the Carolines, news of their discovery having reached him in 1680. This expedition, however, returned without having located the islands in question.

In June, 1690, the ship *Nuestra Senora del Pilar*, having on board a number of criminals bound for New Spain, was wrecked on Cocos Island. These criminals plotted to seize the arms of the presidio, where they had been placed for security, and, on Santa Rosa day, to kill the governor, officials, and missionaries, making themselves masters of the islands. The Manila ship arriving before it was expected, however, postponed their plans until, one of their number having turned informer, the whole party was captured. On the 11th and 12th of September, 1690, by the order of Gov. Esplana, who had previously returned to the island, 20 were executed in Agana and 3 others in Umatac on the 13th of the same month. Gov. Esplana failed to find his health in Manila and died in August, 1694, having nominated Jose Quiroga in his stead.

Quiroga immediately recommended his old work of subjugating the northern islands and began a campaign in Zarpana, Saipan, and Tinian, which culminated in a decisive battle on the little island of Aguiuan, lying near Tinian. All the rebels had gathered on this almost impregnable rock and for some time kept the Spaniards at bay. A bold assault finally resulted in the surrender of all on the terms that they should return to Guam and become Christian subjects of the Spanish King. This battle occurred in 1695 and marked the final conquest of the islands.

VI. LATTER COLONIAL ORGANIZATION, 1696-1898.

The conquest consequently began June 16, 1668, and entirely ended in the last victory of the valiant Don Jose Quiroga in Aguiuan July, 1695.

Gen. Jose Madrazo became governor in August, 1696, and his administration was without event, with the exception of a small expedition to quell certain disturbances in the north in the year 1698.

From this time on the islands were in a peaceful state, and the work of organizing a colonial government was carried on by the Spaniards.

The government was administered by an officer, usually of the army (in two cases naval officers were appointed), who was appointed by the Crown as governor, at first subordinate to the viceroy of Mexico. After the independence of Mexico, the captain general of the Philippines was the immediate superior of the governor of Guam. A code of Spanish laws, similar to that provided for the Philippines, was adapted to the Marianas. The insular officers consisted of the governor and his aide, a judge of the court of first instance, a treasurer and auditor, and justices of the peace, commissioners, and deputies in each town. Appeals were submitted to the viceregal courts of Mexico, and later to the court of appeals in Manila. The work of improving the island was pushed, and roads were built connecting all towns, more as military means of keeping the natives under subjection than of facilitating communication among the islanders. The natives were not required to pay a money tax (tribute), but were called upon for so many days' work during the year. They did pay a tithe to the church, but this was reduced in later years to amounts charged for church services, such as christening, marrying, funerals, and special masses. Every able-bodied native between 18 and 40 years of age was called upon for service in the militia.

A short time prior to 1769 the Jesuits, who were first instrumental in the effort to civilize and Christianize the islands, were expelled by the order of the Crown.

In 1788 a number of canoes, containing Caroline islanders, landed in Talofofa Bay. They were pleasantly treated, and after trading with the Chamorros departed, promising to return the following year. They said that commerce had been carried on between the two groups prior to the Spanish conquest, and that, although communication had ceased a hundred years before, the sailing directions had been preserved in their songs. According to their story, they sailed first to Fogo, an island which they described as lying to the north of Lamureck, and thence to Guam, requiring five days for a voyage of 500

miles on the open sea. The following year they repeated the visit, but were lost on the return voyage, and the intercourse was dropped for 18 years. In 1807 they again began making annual trips, and for several years thereafter 18 canoes left the Lamureck group in April of each year, and after trading with the people of Guam returned in May.

In the nineteenth century, two governors stand out from the rest as having worked hard and well for the benefit of the island, i. e., Don Francisco Ramon de Villalobos, 1831-1837; and Don Felipe Maria de la Corte, 1855-1866. They were both devoted to the interests of the people, and both tireless and honest workers. Don Francisco Ramon de Villalobos was sent to Guam in 1828 from Manila. He was a captain of artillery at the time. Mexican independence had just been established, and the incumbent governor, Don Jose de Medinilla y Pineda, had asked instructions as to the governmental future of the Marianas, formerly under the viceroy of Mexico. To investigate conditions in Guam and report the state of affairs to the captain general of the Philippines was the object of Villalobos's visit. He seems to have found much to investigate and much to correct, for as a result of his report Medinilla was recalled and Villalobos appointed governor in his place. The six years of his incumbency were a busy six years for Guam. He systematized the affairs of the treasury, especially the schedule of port fees; he personally superintended the building of roads and bridges; with his own money he built a pottery; he opened the Atantano Valley for the culture of rice; he studied agricultural conditions and taught the planters how to better their crops. History gives but a bald view of men and events, but we get a clear picture of this man from his recorded actions, and can easily imagine him, nervous, vigorous, hurrying from one task to another, driving his workmen and himself as well to the point of exhaustion, and yet beloved by them; very much the aristocrat, but wandering alone over the island and stopping to talk crops with the poorest *ranchero*.

Don Felipe Maria de la Corte, a captain of engineers with the rank of lieutenant colonel, came to the island in 1855. His great aim was to alleviate the dire and prevalent poverty of the Chamorros.

In 1856, in a report to the captain general of the Philippines regarding economic conditions, he speaks of the pitiful hand-to-mouth existence of the natives and of the fact that good and bad years alike they starved for some part of the year. His first plan was to establish great granaries in which surplus crops might be stored. He attempted to establish sugar making as a resource of the island, but the soil was not of the right sort for the culture of cane and the experiment failed. The 11 years of de la Corte's term were a succession of economic experiments, many of which were useless except as a lesson of the limitations of the island's powers of production. As de la Corte himself quaintly remarked in one of his later reports, "I have the faculty of making errors." However, although many of his schemes and much of his work seemed barren of result, his service here was not without great benefit to the island. He had taught the spirit of agriculture and had encouraged effort toward a competent and economic land culture. He left the natives poor, perhaps as poor as he found them, but he had taught them to

look forward and, whenever possible, to provide something against a "rainy day." He was relieved in 1866, at his own request, by Don Francisco Moscoso y Lara. De la Corte's Memoria Descriptiva de las Marianas, published by the Spanish Government, is probably the best account of these islands ever printed.

In 1856, during de la Corte's administration, smallpox was introduced into the island from Manila, and the ensuing epidemic swept away more than half the population. The scenes occurring during this terrible plague are recalled with the utmost horror by the oldest inhabitants, who describe them with much vividness.

The Spanish for many years used Guam as a place of confinement for prisoners from the Philippines. Early in December, 1896, the steamship *Venus*, one of the mail steamers that in those days plied between Manila, the Caroline Islands, and the Marianas, left in Guam about 120 prisoners who had been sent over from Manila. The prisoners were confined at night in the buildings now occupied as the marine barracks, Agana. On Christmas Eve one of the Filipino soldiers in the insular artillery reported to the commanding officer and governor that he had overheard the details of a conspiracy that had been entered into by the prisoners to revolt that evening, kill their guards, assassinate the governor, and take charge of the island until they could arrange for means to escape. The details having been verified, the guards were ordered to exercise extraordinary precautions and the force on watch was doubled. One of the guards, having detected some movements which he thought were the beginning of the revolt, opened fire on the prisoners and the fire was immediately taken up by the whole guard of soldiers. Before the firing ceased 40 prisoners had been killed and nearly all of the remainder were wounded. The survivors were returned to Manila by the same vessel that brought them over.

The following list of governors of Guam up to the year 1898 is taken from the records of the island:

MILITARY COMMANDERS.

Capt. D. Juan de Santa Cruz.....	June 16, 1668
Capt. D. Juan de Santiago.....	May 2, 1672
Capt. D. Damian de Esplana.....	June 16, 1674

GOVERNORS.

Capt. D. Francisco de Irisarri.....	June 10, 1676
Capt. D. Juan Antonio de Salas.....	June 21, 1678
Maj. D. Jose Quiroga.....	June 5, 1680
Capt. D. Antonio Saravia.....	1681
Maj. D. Damian de Esplana, by death of predecessor.....	Nov. 3, 1683
Maj. D. Jose Quiroga.....	1688
Lieut. Gen. D. Damian de Esplana.....	June, 1690
Maj. D. Jose Quiroga, by death of predecessor.....	Aug. 16, 1694
Gen. D. Jose Madraso.....	Aug. 1, 1696
Maj. D. Francisco Medraso y Asiam.....	Sept. 15, 1700
Maj. D. Antonio Villamor y Vadillo.....	Sept. 1, 1704
Lieut. Gen. D. Juan Antonio Pimentel.....	Sept. 1, 1709
Capt. D. Luis Antonio Sanchez de Tagle.....	Nov. 21, 1720
Capt. D. Juan de Ojeda.....	Apr. 4, 1725
Gen. D. Manuel Arguelles Valda.....	Sept. 28, 1725
Maj. D. Pedro Laso de la Vega.....	Feb. 12, 1730
General of the fleet D. Francisco Cardenas Pacheco.....	Aug. 21, 1734

Maj. D. Miguel Fern. de Cardenas, by death of predecessor	Apr. 2, 1740
Capt. D. Domingo Gomez de la Sierra	Sept. 21, 1746
Lieut. (Navy) D. Enrique de Olavide y Michelena	Sept. 8, 1749
Gen. D. Andres del Barrio y Rabago	Nov. 6, 1756
Lieut. (Navy) D. Jose de Soroa	Nov. 20, 1759
Lieut. (Navy) D. Enrique de Olavide y Michelena	June 9, 1768
Maj. D. Mariano Tobias	Sept. 15, 1771
Maj. D. Antonio Apodaca	June 15, 1774
Capt. D. Felipe de Cerain	June 6, 1776
Lieut. Col. D. Jose Arlegue y Leon	Aug. 21, 1786
Lieut. Col. D. Manuel Muro	Sept. 2, 1794
Capt. D. Vicente Blanco	Jan. 12, 1802
Capt. D. Alejandro Parreño	Oct. 18, 1806
Lieut. D. Jose de Medinilla y Pineda	July 26, 1812
Capt. D. Jose Montilla	Aug. 15, 1822
Capt. D. Jose Ganga Herrero	May 15, 1823
Lieut. Col. D. Jose de Medinilla y Pineda	Aug. 1, 1826
Captain of Artillery D. Francisco Ramon de Villalobos	Sept. 26, 1831
Lieut. Col. D. Jose Casillas Salazar	Oct. 1, 1837
Maj. D. Gregorio Sta. Maria (died Apr. 4, 1848)	Oct. 1, 1843
Treasurer, acting governor, D. Felix Calvo	Apr. 7, 1848
Lieut. Col. D. Pablo Perez	Sept. 8, 1848
Capt. Engineers, rank of lieutenant colonel, D. Felipe Maria de la Corte	May 16, 1855
Lieut. Col. D. Francisco Moscoso y Lara	Jan. 28, 1866
Colonel of Infantry D. Luis de Ybañez y Garcia	Aug. 17, 1871
Lieutenant Colonel of Infantry D. Eduardo Beaumont y Calafat	Mar. 24, 1873
Lieutenant Colonel of Cavalry D. Manuel Brabo y Barrera	Jan. 15, 1875
Lieutenant Colonel of Infantry D. Francisco Brochero y Parreno	Aug. 15, 1880
Colonel of Infantry D. Angel de Pazos Vela-Hidalgo	Mar. 14, 1884
Captain Commandant of the Garrison D. Antonio Borreda, by death of predecessor	Aug. 4, 1884
Lieutenant Colonel of Infantry D. Francisco Olive y Garcia	Nov., 1884
Lieutenant Colonel of Infantry D. Enrique Solano	July 17, 1884
Lieutenant Colonel of Infantry D. Joaquin Vara de Rey	Apr. 20, 1890
Lieutenant Colonel of Cavalry D. Luis Santos	Aug. 14, 1891
Lieutenant Colonel of Infantry D. Vicente Gomez Hernandez (died Sept. 1, 1893)	Aug. 23, 1892
Lieutenant of Infantry, acting governor, D. Juan Godoy	Sept. 1, 1893
Lieutenant Colonel of Infantry D. Emilio Gallsteo Brunenque	Oct. 26, 1893
Lieutenant Colonel of Infantry Jacobo Marina	Dec. 24, 1895
Lieutenant of Infantry, acting governor, Angel Nieto	Feb. 15, 1897
Lieutenant Colonel of Infantry Juan Marina	Apr. 17, 1897

VII. GUAM UNDER THE UNITED STATES.

Owing to the remoteness and isolation of Guam the inhabitants heard little of the negotiations between the United States and Spain preceding the Spanish-American War and were totally unaware of the declaration of war. The last mail steamer that visited the island about the middle of April, 1898, brought advices that the trouble between the mother country and the Americans was in a fair way toward settlement.

It was therefore with some degree of curiosity, but not with any feeling of fear, that the authorities sighted on the morning of June

20, 1898, in front of Agana four vessels flying the American flag, of which one, at least, was a warship. The vessels in question were the cruiser *Charleston*, commanded by Capt. (afterwards Rear Admiral) Henry Glass, United States Navy, escorting three transports with troops proceeding to the assistance of Admiral Dewey at Manila.

The *Charleston* steamed into the harbor and opened fire on Fort Santa Cruz, which the Americans had been informed was the principal defensive work of the harbor. As a matter of fact, the fort had been abandoned, and no shots were, of course, returned. It was reported to the governor that the *Charleston* was saluting the port, but later on, the true identity of the mission of the *Charleston* having been determined the inhabitants, at least the poorer and more ignorant classes, began migrating to the bush, as they had been informed by the Spaniards that the Americans were savages, and that they might expect all sorts of ill treatment at their hands.

Shortly after the ships were sighted the captain of the port, an officer of the Spanish Navy, and the army doctor went to Piti with the object of making the usual boarding call on the approaching vessels if they were intending to call at Apra.

From Piti they took a boat and proceeded out to the *Charleston*, which was already in port. When on board they were much surprised to learn that war existed between the United States and Spain, and were directed to return to Agana and request the governor of Guam to surrender the island and his command to Capt. Glass within 24 hours.

The visitors on their way from Piti met a lieutenant of artillery with a detachment dragging behind them two small field pieces. The officer in command informed them that he had been ordered to Piti to reply to the salute of the American vessel. He was then informed that no salute was necessary, as the firing of the *Charleston* had been with hostile intent.

On the morning of the following day, June 21, 1898, the governor, Don Juan Marina; the captain of the port, Francisco Garcia Gutierrez; Dr. Don Jose Romero; and the governor's aide, Don P. M. Duarte, in compliance with the demand of Capt. Glass, proceeded to Piti where they were met by Lieut. Braunersreuther of the *Charleston* in command of the landing force from that vessel. They there surrendered and were taken out and placed on board one of the transports as prisoners of war. Capt. Glass also called for the surrender of the troops in Guam, about 110 in number, who were composed of Spanish marines and a force of insular artillery. On June 21 the troops surrendered at Piti to the American forces and were made prisoners with their commanding officer and lieutenant. The Spanish soldiers were carried away as prisoners of war, but Capt. Glass contented himself with disarming the insular force. The *Charleston* and convoy sailed the same day for Manila.

Mr. Francisco Portusach, a naturalized American citizen, residing in Guam, states that Capt. Glass directed him to look out for the affairs of the island, he being the only American citizen then residing in Guam. His commission, however, not being in writing, was not recognized by the remaining Spanish officials in the island, and the treasurer, Don Jose Sisto, assumed charge of the administration. For several months this state of virtual anarchy continued. On January

1, 1899, the collier *Brutus* came into port and the officer in command, Lieut. Commander (now Rear Admiral, retired) Vincendon L. Cottman, United States Navy, was appealed to by both factions. He decided that the legitimate governor was Jose Sisto. The *Brutus* remained in port until the arrival, on February 1, 1899, of the cruiser *Bennington*, whose commanding officer, Commander (now Rear Admiral, retired) Edward D. Taussig, United States Navy, took formal possession of the island in the name of the United States and hoisted the American flag over the palace at Agana. In the interval between the capture by Capt. Glass and its formal occupation by Commander Taussig, the future status of Guam was considered by the United States to be assimilated to that of the Philippine Islands and dependent upon the final decision as to the disposal to be made of those islands. When finally settled by the United States Government that the Philippines would be retained by the United States some attention was given to Guam. Its excellent harbor and strategic position, lying as it does very nearly on the great circle between Honolulu and the Straits of San Bernardino, made it at once desirable as a base for the United States Navy. Accordingly, on December 23, 1898, the President of the United States, by Executive order, placed the island of Guam under the control of the Department of the Navy and directed the Secretary of the Navy to take such steps as might be necessary to establish the authority of the United States and to give Guam necessary protection and government. In pursuance of this order the island was formally taken over by Commander Taussig.

Early in the spring of 1899 the President of the United States, on recommendation of the Secretary of the Navy, commissioned Capt. Richard P. Leary, United States Navy, as governor of Guam, and directed him to proceed to that island and establish therein "the Naval Government of Guam." The U. S. S. *Yosemite* was designated a station ship and fitted out with Capt. (now Rear Admiral, retired) George E. Ide, in command, and sailed from the navy yard, New York, on May 10, 1899, with Capt. Leary on board. On the day the *Yosemite* sailed President McKinley and a party, including Capt. Robley D. Evans and other officers, and Miss Helen Gould (now Mrs. Finley J. Sheppard) visited and inspected the ship and crew. After an uneventful voyage across the Atlantic and stops made at Gibraltar, Port Said, Colombo, and Singapore, the *Yosemite* reached Manila about the middle of July. The stop in Manila was short, and, sailing for Guam, that island was reached on the 7th day of August, 1899, nearly three months after leaving the United States.

After formally taking over the island, Capt. Taussig appointed Mr. Joaquin Perez in charge of the affairs of the island, with the title of "commissioner." The *Bennington* then sailed.

On the morning of March 1, 1899, the collier *Nanshan*, in command of Ensign (now Commander) L. A. Kaiser, United States Navy, arrived with orders to take charge of the affairs of Guam pending the arrival of a duly appointed governor. Ensign Kaiser recalled the appointment of Don J. Perez and appointed as acting governor one William Coe, a half-breed Samoan, who arrived on the island subsequent to the departure of Commander Taussig. Coe remained in charge until the arrival of Capt. Leary.

Upon arriving in Guam the officers and men of the *Yosemite* were in general very much surprised at the conditions existing in Guam. Very little could be learned about the island in the United States, and most of the newcomers expected to find it peopled with savages of the same sort as those residing in the Solomon Islands. Their surprise can well be imagined when they found several inhabitants who could speak English. The surprise was, however, mutual, as the natives had been led by the Spaniards to believe that the Americans were a barbarous and heretical race, and that they might expect the most miserable fate under their government.

The *Yosemite* brought out with her a fresh-water distilling and ice-making plant and the erection of these and other modern improvements was immediately begun at Agana. About the site of the first distilling plant the present so-called navy yard at Agana has been built up.

After the signing of the treaty of peace with Spain the United States, an entirely new mother country, set about the business of governing her newly acquired possessions beyond the seas. Colonies were a new thing to us, dependent peoples had previously formed no part of our scheme of things, and we found the new work not easy. Perhaps nowhere else did our colonial governors find so much labor before them as in Guam. Many things long a matter of course with other governing nations were not only new but distasteful to us. Illiteracy, unhygienic conditions, unfamiliar and appalling diseases were found to exist in Guam to a degree characterized as horrible by the first American comers. As in every case of change in sovereignty, the interregnum brought forth its crop of abuses with which the American governor had at once to deal. Our troops, new to conquest and familiar with only one race other than their own, needed a great deal of control and correction in matters unofficial and nonmilitary, and they were in many cases lawless and turbulent. Undoubtedly the usual complement of adventurers who invariably infest a recently disputed territory were here represented.

Capt. Leary, the first American governor, before attempting any change or reorganization of forms of government then existing, turned his attention to the reestablishment of law and order. In General Order No. 1, issued from the Government House August 16, 1899, he forbade the sale of intoxicants to "any person not a resident of this island prior to August 7, 1899," thus beginning his house cleaning among his own garrison. General Order No. 2 prohibits the importation of intoxicants except by special authority. Next Gov. Leary provided against the machinations of carpetbaggers. Having safeguarded the island against the Americans of the undesirable sort, then, and only then, did Gov. Leary turn to the reformation of the government. His first move in this direction was to divorce the church and State and to institute civil marriage. He ordered all couples to marry at once according to law.

In order to prevent a failure of food supplies, menaced by the interrupted traffic during the war, he forbade the exportation of foodstuff and ordered that everyone without a trade should have "at least 12 hens, 1 cock, and 1 sow," and should plant fruit or vegetables sufficient to provide for one family. He opened the Government lands for occupation of those without ranches. He then took up the

unlicensed sale of intoxicants to natives, ordered all dogs to be licensed, and reformed the method of collecting the land tax. Things were well underway by that time, and during the remainder of Gov. Leary's time here he occupied himself in enforcing the new reforms. An order dated January 19, 1900, addressed to the Americans, stating that the natives of Guam are not "damned dagoes" "nor niggers" shows that the education of ourselves as a ruling nation was not overlooked in his efforts toward the education of our new wards. He also abolished peonage, promulgated sanitary laws, regulated the schools, and lifted the export tariff on copra.

In July, 1900, Gov. Leary was relieved by Commander Seaton Schroeder. This officer busied himself with revising the taxes and the code of laws concerning property, not overlooking education and hygiene. From August 11, 1901, to November 2, 1901, while absent in the United States, he was temporarily relieved by Commander William Swift. Commander Swift's only order, other than his confirmation of previous general orders, regulated, in the interests of sanitation, the peddling of foodstuffs. Gov. Schroeder on his return took up the work where he had left off. He began a cadastral survey of the island, but this has from time to time been suspended on account of lack of funds. It is still going on. During his term a system of accountability for the naval government of the island of Guam was approved by the President and put in force. The first hospital was begun and built largely through the efforts of Mrs. Schroeder. Under his government the Tumon Leper Colony was established and all lepers formerly unrestricted were secluded there. Commander Schroeder was relieved February 6, 1903, by Commander W. E. Sewell.

Gov. Sewell carried on the work of revision of the laws energetically, with especial regard to taxes and fines. He reformed the prison laws and promulgated orders for the control of commercial corporations. He also published game laws and began the revision of the Criminal Code. On January 28, 1904, Gov. Sewell was invalided home, dying soon after he reached the United States. Lieut. Raymond Stone, United States Navy, acted as governor until a relief for Commander Sewell was sent out. During Stone's incumbency of three months he issued orders relating to the unauthorized selling of drugs and attempted to regulate the extortionate prices then prevailing. Commander G. L. Dyer, United States Navy, assumed command May 16, 1904.

Gov. Dyer found the bulk of code revision on the way to completion and affairs beginning to shape themselves so that some more drastic changes were now ripe for promulgation. He established and defined the duties of the department of public health and strengthened the compulsory-education laws. In 1905 he abolished the supreme court of the island and substituted therefor the court of appeals. About this time the Spanish titles of *governadorcillo*, *teniente cabeza*, and *suplente* were abandoned in favor of their English equivalents. The excise was the subject of several of Gov. Dyer's orders. In August, 1905, he disbanded the insular artillery and established the police force. Late in 1905 he was relieved by Lieut. L. McNamee as acting governor. During the four months of Lieut. McNamee's incumbency the court officials were placed on

salaries from the island government and all fees and fines directed to revert to the treasury. The costs of criminal actions were thereby much reduced. Lieut. McNamee imposed a tax on vehicles and excluded swine from Agana.

In March, 1906. Commander T. M. Potts assumed the reins of government. Gov. Potts first took up the question of treatment of the disease known as gangosa, then believed incurable, and had the sufferers therefrom segregated and confined at Ypao. Through his efforts an appropriation for the care and medical treatment of the natives of Guam was obtained from Congress. It was largely due to his wise and beneficent efforts that this frightful and devastating disease, gangosa, was finally conquered and that it is now in a fair way to be banished from the island. Capt. Potts also issued a law against the practice of usury and established quarantine regulations. Excise, education, taxes, and court procedure, claimed a great deal of his attention, in general in the nature of amplifications or amendment of previous orders which the light of experience had proved necessary. In the fall of 1907 Gov. Potts was relieved, Lieut. Commander L. McNamee again acting as governor until the arrival of Capt. E. J. Dorn (retired) in December, 1907.

A vast number of new laws and rulings mark the term of Gov. Dorn. While education was his especial care, no point of law, sanitation, municipal regulation, excise, commerce, or agriculture was too small or petty to escape his attention. Reform of court procedure, the registration and taxation of real property, revision of criminal code, new license-regulation revision, the extermination of insects and vermin were only a few of the things that had a share of his consideration. He was detached in October, 1910; Lieut. Freyer acted as governor until January 12, 1911, when the *Supply* brought Capt. G. R. Salisbury from Manila. Capt. Salisbury devoted his energies mainly toward road building and the encouragement of agriculture, which had been steadily declining for many years, and the laws issued by him were mainly to that end. Capt. Salisbury was relieved on April 30, 1912, by Commander (afterwards Capt.) R. E. Coontz, United States Navy, who administered the affairs of Guam until September 23, 1913. Capt. Coontz devoted his attention principally toward public works and inaugurated many improvements in public utilities, both insular and Federal. He began a comprehensive scheme of public works, looking toward the improvement of the whole island. He also made a few needed changes in revision of penalties prescribed by law which were no longer in accord with modern ideas, and promulgated the Guam insolvency law.

Commander A. W. Hinds succeeded Capt. Coontz, and remained as governor until March 28, 1914, when he was relieved by Capt. W. J. Maxwell, United States Navy. The efforts of Gov. Hinds were mainly directed toward the carrying out of the projects of Capt. Coontz, many of which he, as public works officer, had first suggested. Capt. Maxwell established the Bank of Guam and the insular patrol. He reorganized the method of levying taxes and raised the assessments of property in order to meet the increasing needs of the government. He also took a great interest in road building. Capt. Maxwell was relieved by Lieut. Commander W. P. Cronan,

United States Navy, the senior officer present on April 29, 1916. Capt. R. C. Smith, United States Navy, had been previously commissioned as governor of Guam as the relief of Capt. Maxwell, and pending his arrival in Guam the Navy Department directed Capt. Edward Simpson, United States Navy, the commandant of the naval stations Olongapo and Cavite, to take charge of the affairs of the island. Capt. Simpson arrived on May 8, 1916, and was relieved by Capt. Smith on May 30, 1916.

Don Jose Sisto.....	acting	} June 23, 1898.
Don Francisco Portusach.....	acting	
Don Jose Sixto.....	acting,	Jan. 1, 1899.
Don Joaquin Perez.....	acting,	Feb. 1, 1899.
Mr. William Coe.....	acting,	Apr. 20, 1899.
Capt. Richard P. Leary.....	U. S. N.,	Aug. 7, 1899.
Commander S. Schroeder.....	U. S. N.,	July 19, 1900.
Commander W. Swift.....	U. S. N.,	Aug. 11, 1901.
Commander S. Schroeder.....	U. S. N.,	Nov. 2, 1901.
Commander W. E. Sewell.....	U. S. N.,	Feb. 6, 1903.
Lieut. F. H. Schofield.....	U. S. N.,	(acting) Jan. 11, 1904.
Lieut. R. Stone.....	U. S. N.,	Jan. 23, 1904.
Commander G. L. Dyer.....	U. S. N.,	May 16, 1904.
Lieut. L. McNamee.....	U. S. N.,	(acting) November 2, 1905.
Commander T. M. Potts.....	U. S. N.,	Mar. 8, 1906.
Lieut. Commander L. McNamee.....	U. S. N.,	(acting) Oct. 3, 1907.
Capt. E. J. Dorn.....	U. S. N.,	(retired) Dec. 28, 1907.
Lieut. F. B. Freyer.....	U. S. N.,	(acting) Nov. 5, 1910.
Capt. G. R. Salisbury.....	U. S. N.,	Jan. 12, 1911.
Capt. R. E. Coontz.....	U. S. N.,	Apr. 30, 1912.
Commander A. W. Hinds.....	U. S. N.,	Sept. 23, 1913.
Capt. W. J. Maxwell.....	U. S. N.,	Mar. 23, 1914.
Lieut. Commander W. P. Cronan.....	U. S. N.,	(acting) Apr. 29, 1916.
Capt. E. Simpson.....	U. S. N.,	(acting) May 8, 1916.
Capt. R. C. Smith.....	U. S. N.,	May 30, 1916.

VIII. THE ANCIENT INHABITANTS.

The earliest accounts of the natives of Guam are almost unanimous in their description of the people, their houses, their boats and their mode of life. In fact, no other race has been described by the old-time navigators with such consonance of opinion, and we may safely draw our picture without fear of great error.

The first characteristic noticed by the historians was the natives' skill in fashioning and handling their boats. These crafts were from 20 to 30 feet in length, not more than 3 feet beam, were double-ended, and steadied by outriggers. Some of them had rudely carved figureheads, supposed by some to be images of gods, but more probably merely ornaments, or, like the "winged hats" of the Saxon rovers, intended to lend an inspiring and warlike appearance to the boat. These canoes were propelled at great speed by huge triangular sails of woven palm fronds; and various words of the Chamorro tongue confirm the tradition that voyages of great length were made in them, even Hawaii being reached. Voyages to the Philippines are known to have been made in 14 days.

The strange appearance of the ships and their bearded crews apparently struck no terror to the native mind, for they at once came aboard and showed no hesitation in getting acquainted, nor when the quarrel came with Magellan's men, backwardness in joining battle with the newcomers.

Legaspi, the leader of the expedition in 1565 called the natives amphibious, as they "lived in the water half the time, and even drank salt water." He states that rice and fish were plentiful, but that there were no animals, wild or tame, that the only meat used by the natives were fish and large bats, or flying foxes, which abound in the interior of the island to-day. Two persons of Legaspi's expedition describe the houses of the islanders as lofty, well built, and well divided into compartments, and state that they were always elevated from the earth by strong pillars of stone. In addition to the dwelling houses, they had others for their canoes, likewise supported on stone pillars. One of these was near the spot where the sailors procured fresh water, and it contained four of their largest canoes.

The island is thickly dotted to-day with the remains of the ancient houses described by Legaspi, and in every direction are to be encountered clusters of stone pillars ranging in height from 2 to 5 feet. The best examples are found southeast of Mount Sasalaguan. Here may be seen the remains of a large village. There are several rows of foundation stones, some 7 feet in height. In the surrounding country many stone celts and slingshot stones have been picked up. Another example is met with near the source of the Fonte River in a district called by natives Libugon. If it was once a house, as described above, it must have been about 11 by 45 feet in plan, and the height of the floor at least 6 feet from the ground. The ruins are composed of two rows of stone columns spaced 11 feet apart, and in each row are five stones about 5 feet in height. The material of the columns is madreporic rock, rectangular in section, and tapering toward the top. At or near the bases, and partly buried in the earth, are rounded stones, possibly intended as spheres of the Ilic ironstone. Although Legaspi's report would lead to the conclusion that these ruins were originally used as dwelling houses, not a few persons who have studied the ethnology of the Chamorros, express the opinion that they had some religious significance, and that the boulders on the ground were spheres, or hemispheres, and had been placed on the tops of the pillars after the fashion of some yet to be seen in the island of Tinian. That this may have been the case in at least some instances may have been possible, as among the ruins at the mouth of the Atantano River, and which must have been the watering place referred to by Legaspi, there is one pillar of about 4½ feet in height, which has at its base a well formed hemisphere nearly 2 feet in diameter. Almost perfect hemispheres of the same size, cut from the Pigo bluestone, are to be found half buried in the ground here and there all over the island.

It appears that the aborigines of Guam did not know the use of the bow and arrow nor did they use war clubs, swords, or shields in warfare. According to information derived from contemporary accounts regarding these people they had spears of wood points and hardened with fire or pointed with spear heads of bone. These bone spearheads were barbed, but none of them have ever been found in recent times. Great quantities of celts are to be found buried in localities near which ancient villages undoubtedly stood. Hammers, adzes, hatchets, mortars, pestles, chisels, and slingshot stones have been found in Guam. All these celts, except some of the slingshot stones, are of a hard granitelike rock, with a beautiful finish. How they

were made remains unexplained, as none of the old writers mention the methods used in manufacturing them. The sling stones are oval in shape, and of three different materials; some of hard rock, some of clay, and some of coral rock. Some smaller utensils such as spoons and knives have been found which were cut from shell.

On the arrival of the missionaries in 1668 the natives had known, and carried on an intermittent intercourse with the Spaniards for a hundred years, furnishing water and fresh vegetables to the passing galleons in return for articles of iron and other things of value to them. They still retained their ancient government and customs of living, however, as related in the reports of the Jesuit fathers of the first mission, published in 1683, some 15 years after they first arrived, and which furnished the only information in existence.

They lived in towns or villages scattered throughout the island. The coast towns had each from 50 to 150 houses, while the inland towns had an average of 20. The houses were clean, roofed with coconut leaves, and divided into four rooms by mats woven in one piece. The men were taller than the average European of that day, and very corpulent, so much so that they appeared swollen. In spite of their fatness, they were active and strong, "yare and nimble," according to one account, and shaved their heads with the exception of a sort of scalplock which they allowed to grow very long and tied in one or two knots. They were of a tawny color. The women were lighter in color, tall, slenderly built and graceful. They are said to have stained their teeth; and both men and women bleached their hair to a reddish yellow. The hair of the women was remarkably long, one historian (Pigafetta) stating that it fell to the ankles.

There are the usual accounts of their longevity, records of the Jesuit fathers noting the baptism of a large number at 100 to 120 years of age; but such stories must, also as usual, be taken with a grain of salt. Primitive peoples age rapidly, and a native of 50 or even 40 might easily present to Caucasian eyes, the appearance of 80 or 100. And birth records are even now at times unreliable.

Notwithstanding their obesity, they were elegant in stature and physical constitution—the common people less so, since they were less given to athletic sports. They were expert swimmers, runners, and climbers. The women of the higher class were not so handsome, and aged rapidly. The country was divided into districts composed of a number of villages each village being presided over by a noble, and the confederation ruled over by a chieftain. Society was divided into three classes, and dividing lines were rigidly drawn. The highest class, that of the nobles, was called the Mataos, the intermediate class the Achotes, and the lowest class Mangtchangs. The Mataos were distinguished by a love of honor and truth, and held homicide and theft in great horror. Their vanity knew no bounds, and their pride bordered on insolent arrogance. They lived according to rigid rules which regulated every act. If a Matao committed a crime, or in any way dishonored his class, he became for a longer or shorter period, according to the sentence of the tribunal which tried him, an Achote, and as such was supported as a kind of high-class serf on the farm of some noble. Under no circumstances, however, could a man who had once been a Matao ever fall to the state of Mangtchang. The Mangtchangs were virtually slaves, unclean and

almost unmentionable. They were forbidden to pass the vicinity of a noble without prostrating themselves, and they could not approach within a certain distance of a noble's house or touch an article of his food. They could touch no implement other than stones or staves, could work for themselves no land, and were forbidden to catch or eat any sea fish. They were allowed to catch only river eels with sticks, and only at night. The nobles possessed all the coconut and rice farms, the estates passing to the eldest surviving male relative. The Achotes and Mangtchangs worked the fields and did all manual labor. The Mangtchangs, at mealtime, would approach within the allowed distance and beg for the food which was thrown to them. The principal town was Agana (Jagatna), the location of which was selected on account of the stream of fresh water which empties into the sea at this place. Arrogance and pride were strongest in that city, and the people of other towns held those of the capital in fear and respect.

They worshiped various spirits or ghosts of the mountains, of their crops and plants, of the sea and rivers, and finally, of their houses. They invoked these spirits in their daily work and actions, and worshiped also the souls of their ancestors—calling on them for aid, and offering a sacrifice to them—a trace of which custom they retain in their memory to this day. Their dead they buried at the foot of a great tree in the forest, and the groves used for this purpose were honored and feared by all. Whenever they entered such a district to cut wood or hunt they always asked permission of the dead beforehand, believing if they omitted this ceremony they would be attended by misfortune.

In their religious rites each family constructed a hut and adorned it with flowers and lights. They congregated here and made prostrations and other acts of worship, accompanied by the clamor of musical instruments. After this the hut was destroyed and an orgy of feasting and drinking was begun. The priestesses (women only officiated in religious ceremonies) prepared the sacred food for the feast. They believed in the custom of offering a sacrifice for the purpose of curing the sick. A house was built at the expense of the patient, in which he was placed, and a priestess killed an animal to be sacrificed, which, according to Ibanez y Garcia in his *Historia de las Marianas*, was a pig, an ox, or even at times a slave. This statement may well be doubted, however, as the earliest navigators who visited the island state that there were no animals prior to the arrival of the Europeans. Whatever may have been the victim of the sacrifice, the accounts state that the patient was smeared with the blood and the future read in the entrails. If the prognostication was unfavorable, he was consoled by the assurance that the gods desired to take him for the purpose of making him an Anito, the name applied to the spirits they revered. They believed that the souls of their ancestors left their bodies and returned after death to hold intercourse with the living, but they did not believe in the transmigration of souls to living species. It seems certain that they looked forward to living another life varying in the degree of its pleasures according to the merit possessed by the individual, and that they also believed in a place of punishment for the wicked. They held that the human race had its origin in Guam, and that all

strangers were descended from wanderers who had strayed away from the island and forgotten the language. All evil they believed to have come from abroad. The world, in their mythology, was created by the sister of a gigantic being named Puntan out of his body after death. The earth was his back, the sky his breast, and his eyes the sun and moon. Even these miraculous persons were in no way deified, however, but were merely supposed to be wonderful beings; as indeed they must have been.

They were not brave, but excitable and exceedingly high-tempered. For trifling causes a few villages would declare war against others, and proceed to battle in this manner: The peasantry collected all arms and ammunition and carried them to the place of meeting, often agreed upon beforehand; the nobles then appeared, and the peasants, debarred from the use of weapons, retired until again wanted for use as beasts of burden; both sides would form in line, and much time would be spent in haranguing and calling upon one another to surrender. If neither side was satisfied with this, and matters finally came to a crisis, the fight began. They used lances tipped with human bone, which the priests assert were very poisonous. These generally broke off inside the flesh in such a way "that they were not able to find means to cure them." With the iron they were able to obtain from Spanish ships they made machetes, or cutlasses, and such weapons were highly prized. The principal ancient weapon, however, was the sling, which they were reported to have used with "admirable force and precision." All over the island to-day are to be found the egg-shaped sling stones used by the old warriors, ranging in size from a boy's toy to the polished white oval, 2 inches long by $1\frac{1}{2}$ inches in diameter. Their battles were not of long duration, for as soon as two or three were killed the side receiving the loss sent forward ambassadors with tortoise shells, a sign of submission. The conquerors celebrated their victory with noisy clamor and songs, in which they taunted the defeated and exaggerated their own prowess.

They were a sociable people, fond of festivals, and any pretext was sufficient to cause a gathering. They met together to play at mimic warfare, and to exercise themselves in the use of their weapons, as well as athletic sports, at which they were very adept. They ran races, held jumping contests, and vied with each other in feats of strength, agility, and endurance. Food, in the shape of rice, fish and roots, was distributed, together with a drink made of rice and grated coconut, called atule. The women also met together, adorning themselves with necklaces of flesh-colored shells, strings of shells, and fringed sashes made from the fibrous roots of trees. They formed a ring of 12 or 13 persons, and, without moving from their positions, chanted their histories and antiquities in meter. They sang with jingling shells, which they rattled with a clicking noise like that of castanets.

They were monogamous, and when married were true to their spouses, but before marriage chastity was not required. Spanish and Tagalog words have been incorporated in the language to meet the needs of an increasing vocabulary; but these importations are inflected and reduplicated according to the ancient rule, and the grammar and syntax of modern Chamorro is practically the same as that of 400 years ago. The passing of the old spirit worship has left its

train of superstitions of a peculiar sort. Ghosts, as we understand them, are no part of Chamorro psychics; the only two instances known both being of Spanish origin. The ancient dead come back in another guise. These barbarian forefathers, the Chamorro calls "taotaomona" (people of before time), "gente del monte" (as the Irish speak of the hill people), or "ancianos," the ancients. These are the "people of before time" in the flesh, not really dead, but immortal and endowed with miraculous qualities. They are some 20 feet tall; chameleon like, they can be black or white at will, and can as they choose, appear or remain invisible. When treated according to a strict etiquette, they are innocuous; but are very sensitive and vindictive. They have no objection to being seen in the open, but to look at a taotaomona through a window or a knothole is to insult him; and is followed by a wasting sickness to the offender. One may converse freely with a taotaomona when he opens the conversation; but he who speaks to one without waiting to be addressed is rendered dumb for life. The ancients at times choose a friend from among the mortals and will aid him in his daily work, finally carrying him away to the "bush," there to make him immortal. The price of this uncanny friendship is lifelong celibacy. There are certain localities which no native will willingly visit after nightfall, notably Missionary Point, Cocos Island, and a hill near Pago.

Along the paths and trails in the unsettled interior are to be found everywhere the old stone mortars used by the ancients for grinding rice or roots; also the half-buried hemispheres, the exact use of which is now unknown, and numberless slingstones, and fleshers, or axes. Whenever a native accidentally touches one of these old relics without having asked permission he dreads a period of misfortune. Civil Engineer Leonard M. Cox, U. S. N., once tried to obtain a fine mortar which was nearly imbedded in the trunks of two trees grown together but when the ranch owner was asked for permission to cut it out he made various excuses, finally promising to bring it in the next day. He fulfilled his promise, but when questioned as to his method of obtaining it, he was obstinate for a while, finally explaining that it had been necessary for a male member of his family who had done no wrong to ask it of the spirit of the tree, otherwise the hand of the despoiler would have been shriveled. When asked which member of his family had never sinned, he replied, "My youngest son, 3 years old, went to the tree at sunset and said, 'Oh, ancient one, I come to you without sin and ask for this stone,'" whereupon the father cut it from the trunk. That permission was granted seemed to him evident from the fact that his hand was uninjured.

There is only one kind of actual ghost known in Chamorro superstition. This is "Biju," the uneasy spirit of one who dies with unsettled financial affairs. The "biju" of a departed debtor will appear to his creditor and appealingly go through the motions of counting money until assured that he is forgiven; and similarly to those who owed him in life, "biju" will appear until he has received a satisfactory excuse for not having received his money.

They have a few songs which the students of the Chamorro language consider good examples of the old ones, naturally modified to some extent by intercourse with foreigners. They are in a plaintive minor, and are well sung, in parts. They are, as a rule, untranslatable, and are sung by only the lowest classes.

They seem singularly poor in legendary lore, or if they have such, it is extremely difficult to get the reticent native to relate examples. There are a few sample tales told, as explaining the names of certain spots, of which the following is a fair sample: "A gente del monte named Donao lived on a hill back of Inarajan. He was a very wicked gente and persecuted the people. Another gente del monte, who was good, and often defended the natives from Donao, lived in a cave across the bay from Inarajan, where ancient characters are yet to be found carved on the walls. One night Donao stole down from his hill and, coming to the cave, stabbed the good gente in his sleep; the latter was very brave and, with the knife still in his wound, pursued Donao as far as the conical red mound on the edge of the highland, and there fell dead." The mound and surrounding mesa is called Asdonao from this legend. "There was also a family of giants called Asgordos, who lived on the western coast. Now, there was one particular Asgordo who developed great strength while quite a youth. The fame of the young giant's strength, as well as his well-known goodness, excited the envy of Donao when it reached his ears. He went incognito to Asgordo's ranch and, sitting on the doorstep, teased the young man. Asgordo was trying to cook something for the stranger's entertainment, and, becoming tired of Donao's remarks on his poverty, he asked him to open a coconut and give him the milk to cook with. Donao replied that he couldn't open it without a machete, and that his host seemed too poor to own one; whereupon the youth, taking the nut in his hand, squeezed the milk through the shell and the heavy husk. Donao, astonished, fled and was seen no more in the land."

IX. PRESENT INHABITANTS, POPULATION.

Social classes in Guam can not be drawn in most cases along the usual lines of cleavage. Practically all of the inhabitants are landowners; many of the lower classes have recognized good blood, and no family in the island can be called wealthy. The distinction, roughly speaking, falls between those who live merely from day to day and those who are thrifty and provident. The better class are exclusive, cultured, and refined. They are usually large landowners, their ranches being rented on shares to persons of lower class, but the bulk of their income is usually from small shops or the rental of houses. Their customs and mode of life are those of Europeans of the better classes, and they are the last to accept American ideas of society and social affairs. This class furnishes the island officers, such as treasurer, island attorney, judges, clerks, and minor offices.

The citizen of the middle class is a comfortable person whose ranch furnishes him with a competent livelihood. This he adds to by skilled labor such as silver and gold smith work or cabinetmaking or work in the navy yard. He dresses in white drill coat with a military collar and tails like a shirt, loose trousers, a straw hat, and, when at home, half slippers without stockings. His wife and daughters are notable housekeepers and models of convention and propriety. Their dress is usually a trailing skirt of silk or muslin, and a full, low-necked, wide-sleeved blouse of stiff piña cloth. His younger daughters are often dressed in American fashion. This class is temperate, though rarely abstemious; and the use of betel nut, or of tobacco by women, is not sanctioned.

The lower classes differ even in appearance from the higher, which is possibly accounted for by the fact that there is less foreign blood in their veins. They may be less intelligent than the Tagal, and less energetic, but they are a peaceful, good-natured, law-abiding people, industrious in their own way and on their own work; sensitive and clannish to the point of protecting miscreants from the law when they themselves are the victims of the wrongdoing. They are slow to make friends, and a little suspicious of advances, but once having formed a friendship they are staunch and true. It is a fact that farmers have sold copra to a friend for $3\frac{1}{2}$ cents per pound when rival merchants have offered as high as 4 cents. After a two years' experience in handling Chamorro laborers, no instance is recalled of a single direct falsehood, though instances of promises made and not fulfilled were frequent. The native cook sometimes steals, and so may the house boys and cook's assistants, but they steal nothing more valuable than food, and regard it as part of the privileges of the office.

The rancher will never make a business success until he abandons his present practice of living in town and running out to his ranch on working days. This custom owes its origin to two causes: First, to the fact that the early Spaniards made it compulsory to live in the vicinity of a church (it was much easier in that way to collect taxes); and, second, it was important to be near a water supply. All through the southern half of the island water is accessible, and in the northern part there are few places where wells could not be driven successfully; but the difficulty of attending church will be the obstacle in the way of a change until better and more roads are constructed from ranch districts to neighboring villages and until those who actually work the ranches become accustomed to living upon them instead of returning to villages each night. If a ranch is within an hour's walk of the town, its owner will spend two hours of his day on the road to and from his work; if at a greater distance, he will spend a day or two, or even a whole week (at certain seasons) on his farm, but will never fail to reach his village for church Sunday morning and evening, and the Sunday afternoon cockfight.

In town the laborer's costume differs from that of his well-to-do neighbor only in the quality of material. He wears the same shirt-like coat on the outside of his trousers, which are of blue "jeans," a straw hat, and on Sunday he adds a pair of half slippers. In the country he wears sandals composed of a leather or fiber sole piece, held by a thong which passes over the instep, around the heel, and between the great and second toes. At work on his ranch he dispenses with shirt as well as hat and rolls his trousers to his hips, leaving his bronzed body naked, except for the trunks formed by what is left to view of his trousers. In town he lives in a plank or bamboo house perched some 2 or 4 feet from the ground, and consisting usually of only one room, ventilated by three or four small openings for windows, which he closes by sliding wooden shutters. Only the more prosperous boast the possession of a Filipino bed, the majority being perfectly contented on a grass mat without covering. Whole families, including sons, daughters, and their husbands and wives, sometimes sleep in one room with the doors and windows tightly closed. The natives fear the night air and prefer

the poison of poor ventilation to the risk of imaginary fevers or cold. Both men and women sleep in the same clothes they have worn during the day. Each house has a thatched lean-to at one end beneath which they do their cooking. The stoves consist of a stone inclosure filled with earth, on which they build a fire. A number of smaller stones of proper shape serve as supports for the vessels.

The women of the poorer classes wear on feast days or Sundays a long trailing skirt of brilliantly colored calico and a white piña or muslin blouse over a short chemise. On their heads they wear a folded handkerchief of cheap quality. On working days their dress is of the same style, but older, with the train of the skirt tucked in at the waistline. They wear no stockings and discard even the half slippers when indoors. At their ranches they tuck the skirts up above the knees and do all the harder kinds of labor with the freedom and ease of a man. It is no uncommon sight to see a woman climbing a coconut tree by the notches cut in the trunk, going hand over hand to a height of 40 feet, her skirts gathered about her waist, and a short, black pipe held between her teeth. The women stand in the water waist deep and pound the clothes against wooden tables set over the stream. After washing the clothes are spread upon the ground to dry, and finally ironed with a queer little charcoal flatiron from the Japanese trading store.

The men are short of stature but well formed and strong in the legs. They have great endurance but not much strength in the arms and back, and are not good at lifting weights or striking hard blows. They can walk great distances in the hot sun and carry quite heavy burdens. The women are well formed, very erect in carriage, and almost without exception have beautiful black hair, of which they take great care and are very proud.

The children in many cases dress in exactly the same style as their elders. The usual garment for small children consists of a one-piece dress of about the same pattern for both sexes. Little girls of from 5 to 10 years of age often wear long trains and have their hair knotted on the back of their heads. The little boys wear long trousers with shirts, the tails of which hang outside the trousers. In Agana and in the more traveled sections of the country the children are rapidly adopting American dress, and the native costume will probably disappear in a few years. Many of the native games formerly played have been abandoned in favor of those introduced by the Americans. Baseball, marbles, spinning tops, rolling hoops, and flying kites are the principal games of the children. Baseball, introduced to Guam by the marine detachment, has become the most popular of all sports among the children, boys, and young men. The native baseball team regularly carries off the pennant. Nearly every school has a baseball team, and games between different schools are regularly played. Baseball uniforms for the schoolboys are provided by the Government. The little girls also play ball, but, of course, have no regularly organized teams. Each school is provided with a playground, with the usual swings, merry-go-rounds, and gymnastic appliances found in the playgrounds of American schools. The playgrounds are very popular and are continuously in use during the day.

The cockpit is the attraction on Sundays and holidays, and the crowds about the entrance to the inclosure give it all the appearance

of a country fair in America. The pit is a sandy space about 25 or 30 feet square, inclosed by a low bamboo fence. On one side is the entrance and the shed covering the owner in charge of the gambling. There is a table divided into two sections by a low combing, and the bettor places his money on the side assigned to the bird he selects. The fight never comes off until the money on each side balances, and the betting is therefore even. This condition they are often unable to bring about, and consequently there is much delay and wrangling. The birds are armed with knife-shaped gaffs $2\frac{1}{2}$ inches long by $\frac{1}{4}$ inch wide, and sharpened to a razor edge. The fight is usually of short duration and results in the death of one or both of the combatants.

The Chamorro has very little idea of the value of money; he has no idea of economics, and the prices he charges you for anything you wish to purchase are largely dependent on what he thinks you will pay. He spends his money freely on articles of clothing or adornment for his house or for his wife and children. He is very prone to buy all kinds of goods on credit, and while cases of fraud have been known among the younger generation, nothing is further from the average respectable Chamorro's mind than the avoiding of payment of his just debts, but the creditor must at times strain his patience almost to the breaking point.

Since the opportunities for importing goods from the United States have so much increased, all kinds of American goods are now found in the home of even the poorest Chamorro. The houses of the well to do are as well furnished as houses of the like kind in the United States, and many of the people possess automobiles and motorcycles, and in general live as well as do the American residents. All classes are purchasing American furniture, musical instruments, sewing machines, graphophones, and many other novelties to Guam.

All classes stand in great awe of the law, and manifest the greatest respect for its humblest officer. No threat of personal violence may move a stubborn Chamorro, but a mention of the law will end all opposition and make him a willing prisoner, if not a doer. The governor, or "y magalaje," as he is known, is the personification of power to him. The governor and the American colony are his standards in everything, and his ideas of Americans and American customs are formed from his observation of them. The natives are as quick to learn the best as the bad, and it is a matter of the greatest importance to furnish these people with the very best examples as regards morality, gentility, and ordinary methods of living.

It is not just to the Chamorro to call him lazy. He does not like to work it is true, but until within the past few years he needed money only for the purpose of paying his taxes; there were very few things which his money could buy beyond rice during famine times.

a little sugar now and then as a luxury, and a plug of tobacco as a great extravagance. Matters have changed greatly since the introduction of goods of all classes, and the importation, free of duty, of all articles of American origin, and he now works his eight hours per day for the wages with which to pay for things for which a want has thus been created.

It is a daily sight on the road between Agana and Piti to meet the laborers who have walked to their work, a distance of 5 miles, walking home at the conclusion of their eight hours' work at unloading

coal or stores, or repairing the roads, for all feel that they must live at Agana, irrespective of where their work lies.

As has already been said, he walks to and from his ranch—unless he is the fortunate possessor of a bull cart—and works in the hot sun, not steadily it is true, but enough to produce the food he and his family need; seldom does he produce a surplus for sale. As a workman he is very unreliable, the ranch calling him from his work at times most inconvenient to the contractor, and holidays invariably claiming him. You may drop in at the shoemaker's or silversmith's for an order faithfully promised for to-day to find that the artisan has gone out to his ranch and will complete the order later in the week.

The idea that one set of men can be artisans and another farmers; that the shoemaker can remain at his last continuously, and with his earnings buy the necessaries of life from the farmer, seems beyond the Chamorro mind, but until it is adopted more or less dissatisfaction will always result to intending purchasers and loss of opportunity to the artisans.

There is little trouble in getting domestic servants in Guam, although like every other place in the world good cooks are scarce. The number available is, however, about equal to the demand. House boys, nurse maids, and personal maids are plentiful.

According to a report of the Jesuit historian Murillo, but contradicted by other Jesuits, and specially by the historians of different monastic orders, the population of all the Marianas was not less than 50,000 in 1668, when the missionaries first arrived. In 1710, on account of the wars against rebellious towns waged by the Spaniards, the consequent emigration or flight of numbers of the inhabitants to the Carolines, epidemics, and also, according to some writers, infanticide, the population dwindled to 3,539. In 1816, under Gov. Jose Medinilla y Pineda, it was 5,389, although Zuniga (1800) and other historians of the same period state it at 7,500. In 1849 the population of the island of Guam amounted to 7,940, and was so distributed; Agana, 5,620; Anigua, 217; Asan, 190; Tepungan, 73; Sinajana, 250; Mongmong, 102; Pago, 273; Agat, 287; Umatac, 224; Merizo, 358; Inarajan, 346. Since then it has slowly increased until 1902 the number of persons in the island of Guam alone exceeded 10,000. The Official Guide of 1898 gives 10,116. In 1901, by order of Gov. Schroeder, an accurate census of the inhabitants was taken, which included statistics of condition, occupation, nationality, and education. The result of this census showed on October of 1901 a total of 9,675, including only natives and foreign permanent residents. This was taken as a basis, and an accurate account has ever since been kept of all changes in the population from whatever cause. The figures of the population at the close of the fiscal year, June 30, 1916, which are as follows, may be accepted as reliable:

Native population	13, 285
Increase over preceding fiscal year	317
Births, native	609
Birth rate per thousand	45. 8
Deaths, native	292
Death rate, per thousand	21. 9
Marriages, native	90
Population, foreign	206

(The above does not include the officers and men of the military and naval establishments and their families.)

The percentage of illegitimate births was 12. This rate has remained about constant for several years. In this connection it is to be remembered that there is no race suicide in Guam, and divorce is practically unknown. The commissioners, moreover, do not recognize in reporting births the validity of common-law marriages, and, in general, report as legitimate only those children born to couples married by the parish priest. There is, furthermore, no attempt to conceal illegitimate births.

X. THE CAPITAL CITY OF AGANA.

No one knows how old the capital, Agana, is, since the earliest navigators report the existence of a village on its present site. This village was the most important on the island and was the home of the chieftains and nobles. The site was doubtless originally chosen on account of the little stream of water that makes its source in a large spring 2 miles inland. The city is situated on a low sandy beach that skirts the bay of the same name. It extends for a mile east and west, and is limited on the south by a line of coral bluffs, densely covered with trees and shrubbery, which rise to an elevation of 200 feet above the sea. The highest point in the city is only 7 feet above average high tide, and there are few points that exceed 6 feet in elevation.

The seat of government is in Agana and the most imposing structures are the palace, now the Government House, Marine Barracks, hospitals, and the Catholic Church. The city is laid out with some attempt at system; the streets are named and all lots are numbered. The names given the streets are usually taken from the names of Spanish governors, explorers, generals, and missionaries. The city is divided into five districts or barrios but has no independent municipal government.

The approach to Agana from the landing at Piti is in an easterly direction, over an excellent, winding, cascajo road, kept in good condition by the Federal Government. It runs close to the beach through coconut groves, past the neatly kept villages of Tepungan, Asan, and Anigua, entering Agana by the main street, Legaspi, which becomes San Juan de Letran as it reaches the center of the town, the Plaza de España.

The plaza is an open green about 100 yards square, bordered on all sides by rows of coconut palms. Before the American occupation one corner of it was used as a dumping ground, and part of it was a vegetable garden. It is now leveled and sodded. It is used as the parade ground of the marine detachment, and as an athletic field. On the west side is the band stand, where the station band plays each night, and where spectators of the baseball games find shady seats—for baseball has taken firm root in Guam, a league of four or six teams competing yearly for a pennant. On the opposite side of the plaza from the grand stand are two tennis courts, of cement.

The old "palace," now called the Government House, in which on the ground floor are located the executive offices, fronts north on the plaza, as does the older building to the eastward which houses the post office, the pay office, and the high school. On the west front.

Agana has a modern sewerage system and good water system (furnished from two different sources), an electric light plant, and in general all the conveniences of an American city of the same size. Owing to the small extent of level ground available, the city is considerably overcrowded and there are practically no lawns and few gardens in the city. Beautiful residence sites are available on the bluffs to the southward of the town, but have not so far been utilized owing to the lack until very recently of water and sewerage systems.

The port of Agana is Piti, from which it is distant 8 kilometers. There is an anchorage off the city, but the holding ground is not good and is exposed to the northward. All water shipments now pass through Piti, where the customhouse is located.

Other towns on the island in order of importance are, after Agana, Sumay, Agat, Merizo, Inarajan, Umatac, Asan, Piti, and Sinajana, each of which is mentioned in the next chapter.

XI. TOWNS AND VILLAGES, ROADS.

The road leaving Agana for Piti passes through Anigua, a little suburb of the capital, and due west through coconut groves to the mouth of the Fonte or Pigo River for a distance of about a mile. This river is spanned by a 30-foot timber bridge with concrete abutments.

The Catholic cemetery is located at this point, and to the westward the road branches. The left-hand road leads up through the hills to the Government farm, the new radio station, and Mount Tenjo, a distance of about 7 miles. This road is by far the most interesting in the island for tourists, as from it the best and finest views of all parts of the island are obtained.

The Piti road then passes Point Adelup, or Missionary Point, a projecting spur of the cascajo bluff which forms the western limit of Agana Bay; thence southwest for a quarter of a mile along the beach, with coconuts on either side, to Cape Horn, where the bluff again approaches the sea. During a heavy typhoon of 1905 this portion of the road was entirely destroyed but was rebuilt by the Federal Government and now sweeps around the base of the cliff, a magnificent bit of road with a retaining wall to seaward, affording the best view of the beautiful sunsets for which Guam is noted.

A few hundred yards beyond the sea wall the village or barrio of Asan begins. At the eastern end of the village a road branches off to the left across the rice paddies of the town. This road leads to the Asan Spring Reservoir, from which the greater part of the water supply of Agana is taken. The reservoir was completed in 1916. The water which comes from this spring, situated at an elevation of 117 feet in the hills in rear of Asan, is clear, cool, and uncontaminated. The spring has never been known to fail, and the flow has so far been sufficient to afford a plentiful supply through all seasons of the year. Previous to the construction of this reservoir the city of Agana was dependent on a reservoir formed by a dam near the source of the Fonte or Pigo River in the hills back of the city. The supply frequently failed during the dry season and it was always necessary to put the town on short allowance during about one-half of the year. Since the construction of the Asan Spring Reservoir no difficulty

has been experienced through lack of water. The overflow from the reservoir is piped to Asan, Piti, and Cabras Island.

The town of Asan stretches along the road for over one-half mile and is constantly being extended in both directions. The Agana-Piti road is its only street. The town boasts of a church, schoolhouse, and a number of houses of mamposteria. A short distance to the westward of the town of Asan the Presidio of Asan is located. This is an inclosure belonging to the Government, which was formerly the site of a leper isolation colony. When, in 1900, the United States decided to send political and military prisoners from the Philippines to Guam, barracks, quarters, kitchens, etc., were built for their accommodation and a guard of marines placed in charge. When the Philippine insurrection was finally put down and a general amnesty proclaimed, the prisoners were allowed their freedom. A few of them settled in Guam and have become prosperous and influential citizens. At the present time the Presidio of Asan is maintained as a depot for the marine command, and a detail from the various companies is constantly stationed here. In addition a target range has been laid out to the southward of the road, and a large number of men are generally camped at Asan undergoing instruction on the target range.

Crossing the little river that drains the rice fields, another cascajo bluff makes the road hug the sea. This bluff is almost vertical and rises to a height of about 150 feet, while its top is ornamented by a tower-like pinnacle, which gives the whole the appearance of an old ivy-grown castle in partial ruins. A cascajo quarry is opened here, but its product is not as good for road building as that from the quarry at Missionary Point.

The road continues from this point for half a mile to the village of Tepungan, which contains several substantial mamposteria houses, most of them occupied by the descendants of a thrifty old Chinaman, who was one of the colony imported for labor in the fifties and who acquired much valuable land in this section.

From Tepungan to Piti the road runs parallel to the beach through a wide flat bottom land, cultivated and planted to bananas, coconuts, and rice. The United States Department of Agriculture maintains, on the south side of the road, an agricultural experiment station. Several buildings for offices, residences, and barns are located on this tract, which is cultivated in the same manner as American farms, and the few scenes caught at intervals through the high hedge of kapok trees reminds one forcibly of a farm in the Middle West of the United States. Visitors are always welcome at the station.

The road to Agat branches from the Piti road about a quarter of a mile from the latter village proper, and from the junction of the two roads to the boat landing at Piti picturesque native huts line the western, or seaward, side of the road. At Piti there are several storehouses owned by trading companies, a naval storehouse, quarters for the beachmaster and a few enlisted men, the customhouse, several small repair shops, and a slip for hauling out steam launches. There are two landing wharves, one for freight and one for passengers.

On Cabras Island, opposite the landing, is the quarantine station where, if necessary, suspected cases can be isolated. The United States Government coal shed is about 1,500 yards to the westward.

A causeway has been built from Piti to Cabras Island, having a passage wide enough to permit boats to pass through. East of Piti and adjoining the village is a large rice swamp, water for which is led from a dam built in the hills, impounding the headwaters of the Masso River. To the southward the mangrove swamp begins and holds its own almost without a break around the Bay of Apra to the landing place of that name.

The road from Piti to Agat was rebuilt in 1908, to join with the road from Agat to Sumay and thus connect the naval reservation at Piti with the tract purchased by the Federal Government in 1903 for a naval station. The old Spanish road had fallen into bad repair and for most of the distance was scarcely passable, although much money had been spent on it; much of the old roadbed was used, but several short cuts and easier grades were made, and after crossing the Atantano River the new road winds off to the left along a gentle ascent instead of leading off to the right over the hill.

The road from the junction, with the Agana-Piti road, extends in a southeasterly direction through rice fields to the ravine of the Sasa River, over which a new bridge has been built to replace the old Spanish wooden bridge destroyed by the earthquake of 1902. Leaving the Sasa River a turn is made to the southeast, and a half mile of good bottom land, cultivated at two or three points in sugar, leads to the edge of the wooded land just back of the mangrove swamp that skirts the bay. The road here was formerly hardly more than a trail, ankle deep in sticky mud during the wet season, and at many places so narrow, on account of the encroaching vegetation, that it was impossible to pass through it except on foot. It is now a fine, well-laid road over which a procession of bull carts is constantly passing, especially on Sundays and holidays, and which is responsible for the material increase of land under cultivation in maize and rice. Many new clearings are met with, and some fine looking trees, called by the natives "nonag," it being not uncommon to see trunks 4 feet in diameter and 30 feet to the first branch. Unfortunately, this wood is of no use whatever for construction purposes.

About halfway between the Sasa and Atantano Rivers, on top of a small rise, the road branches. The left-hand branch leads over the hills to Camp Barnett, at which a detachment of marines is maintained. The view from the Camp Barnett road of the harbor and the surrounding country is hardly surpassed anywhere in Guam.

The right-hand branch, after a little over 2 miles, passes through a short stretch of mangrove swamp and comes to the Atantano River, which is here spanned by a new bridge supported by masonry piers, rebuilt to replace those of the original bridge which were destroyed partly by the typhoon of 1900 and partly by the earthquake of two years later. At the eastern approach of this bridge stands a small shrine consisting of two stone tablets mounted on a masonry base and surmounted by a cross. They bear the following interesting inscriptions, showing the origin and age of the original road:

El Gobernador Don Felipe Cerain, Q. E. D. hizo construir esta difícil calzada años, 1784 y 1785 planto los cocales del comunidad y predigo innumerables beneficios á estas Islas. Ruegan á Dios por su alma.

Translated: Governor Felipe Cerain, R. I. P., ordered the construction of this difficult road in the years 1784 and 1785, planted the

coconuts of the community and produced countless benefits for the island. Pray to God for his soul.

El Gobernador Don Francisco Villalobos; Los Gobernadoreillos Don Antonio Guerrero, Don Juan de Rivera y Don Lucas de Castro y todos los Cabezas de Barangay de Agaña que con el auxilio de sus vecinos logaron desde el año 1832 a 1834, establecer las primeras siembras de palay en esta fértil vega.

Suplican agradecidos la protección de la Virgen Madre de Dios y a honor de tan soberana Reyna descansen nombre en adelante cienega de la purísima.

Translated: Governor Francisco Villalobos, the Commissioners Antonio Guerrero, Juan de Rivera and Lucas de Castro and all the deputy commissioners of Agaña with the help of the inhabitants, succeeded in raising the first rice crops in this fertile valley in 1832 and 1834. Thanks to the Virgin Mother of God and in honor of her Majesty the Queen, this swamp shall in the future be known as the "Swamp of the Immaculate Virgin."

The tablets and the base had also suffered from the shock of the earthquake, but were carefully repaired.

A native shelter, thatched with coconut leaves, has been built over the shrine where burns usually a small, crude, oil lamp, replenished by devout passers by.

Near the Atantano River the road branches, the original road continuing on to Agat. The newer section to the right hand leads to the westward along the shores of Apra Harbor to the town of Sumay, distant about 3 miles. This newer road was constructed at a considerable cost in 1912 to reduce the distance between Piti and Sumay. This road, while the most direct, does not afford so much varied scenery as does the old road to Agat.

This latter road after crossing the Atantano River winds through the river valley. This valley is entirely given over to rice cultivation and is the largest single area in Guam devoted to this crop. The valley is watered by irrigation ditches from the river and its tributaries and since the completion of the new road the cultivated area has greatly increased. The road crosses the paddies on a well-built dike 5 feet above their level, the old Spanish roadbed, the masonry abutments of the old bridges being utilized. It is between 6 and 7 miles from Piti to Agat, the last part of the road leading over little hills covered with cogon or sword grass, and near Agat, through thickly planted coconut groves. There is nothing to obstruct the view of the brown slopes which stretch up to the top of the mountains from Tenjo, in the southeast, to Sasalaguan in the southwest, some 2 or 3 miles apart, and to the right, the northward, spreads out a beautiful view of rolling country, the villages of Apra and Sumay, with the buildings and tall towers of the cable station, near the latter, the sheltered harbor, formerly San Luis de Apra, now Apra Harbor, protected on the northward and westward by Luminao Reef.

Inside, at her buoy, will probably be seen the station ship *Supply* and beyond the fringe of surf the Pacific Ocean stretches out to the horizon. The entrance to the harbor lies close along the bluffs and stretches of sandy beach at the foot of Orote Peninsula; the white beacon on the old, dismantled Fort Santa Cruz upon which the *Charleston* fired on entering, indicating the course for entering.

Agat is a town of about 800 inhabitants and has 15 or 20 houses of mamposteria, including a church, an old parish, and a public school, together with a hundred or so plank or bamboo houses with

nipa roof. It is built along the road beach for a distance of one-fourth of a mile and is about three streets in depth. It is in the center of a good agricultural district, lying between the sea and the foothills of the main range of mountains, and extending from the Atantano River on the north to about 2 miles below Agat. Coconuts, sweet potatoes, corn, and rice are the principal products, and are grown in the bottoms east and south of the village, as well as on the neck of the Orote Peninsula. One or two of the wealthier citizens own cattle ranches in the foothills of the mountains where the bunch grass thrives. Good fishing is afforded by the coral shallows of Agat Bay, and fish are to be seen inside the reef, while near the houses on the beach great nets drying in the sun are always a part of the view in good weather. The spiritual welfare of the inhabitants is looked after by one of the Capuchin friars.

From Agat to Sumay is about $3\frac{1}{2}$ miles over an excellent road, which, however, has several steep ascents and descents: It passes in a northeasterly direction through a half mile of beach land closely cultivated, a mile of higher but good land on the neck of Orote Peninsula, partly cultivated and partly wooded, and finally $1\frac{1}{2}$ miles of upland with poor, red soil on coral formation. Though this last stretch is not so fertile, many ranches of maize and sweet potatoes line the road.

The village of Sumay has a population of about 1,000 and presents a prosperous appearance. A considerable number of its houses are of mamposteria and it has a pretty church and a school. A detachment of marines is encamped on the west side of the town. To the northward and westward lies the property of the Commercial Pacific Cable Co., on which is located the cable office, barracks, and residences of the superintendent and employees of the company. Cables from Midway Island, the Philippines, Yokohama, and Yap are landed here. All the shallows in front of Sumay are dotted with fish weirs and quite a number of the inhabitants make a living by fishing.

Some of the best land for farming purposes on the island is to be found where the peninsula joins the mainland; good tobacco is grown here, also maize, sweet potatoes, coconuts, and bananas.

Beyond Agat the road, which is no longer passable for vehicular traffic, follows a southerly direction for a distance of about seven and one-half miles, of which the first miles lie along and on the sandy beach. Coconut, sweet potatoes, and maize are grown along the sea, with some rice and an occasional sugar field in the well-watered valleys near the hills. At one time there was a road of some character extending from Agat to Umatac and evidences of its existence are still to be seen along this part of the way. Especially worthy of note are two stone arch bridges, in perfect condition to-day, the supports of which are of cut stone and of the best workmanship. The present road, if it may be called a road at all, since it is no more than the beach itself, with an occasional trail leading around rocky points, does not follow the old route, and the bridges referred to are not in use to-day. The beach is broken by Facpi Point, making it necessary to go inland over the hills. This point is a spur of the mountains and projects out into deep water, allowing no room for a road around it. It is 50 feet high at its extreme point and increases

in elevation shoreward. It is of soft, friable sandstone rock, and a road could be easily cut in its face, well out of the way of the waves in stormy weather. To pass this obstruction the road leads up over several steep hills, the highest of which is 350 feet in elevation, barren of vegetation, except for scattered bunches of sword grass, and impossible for vehicles of any description. The trail, for it is nothing more than that, now descends into a fertile valley and, passing through a good coconut grove, fords a little stream and begins to climb again. A succession of small hills with intervening stretches of beach are passable, and the road winds around an occasional point of rocks before climbing over the promontory which forms the northern boundary of Umatac Bay. Standing where the road crosses the backbone of this spur, a most beautiful view meets the eye. The little bay runs east from its mouth nearly a half mile and is from 1,200 to 1,500 feet in width. Its surface varies in color from deep blue at the anchorage ground to the pale green of the coral shallows. The hills on either side rise steeply up to the jagged peaks and crags of the main range, and the foothills form a picturesque little amphitheater, inclosing the bay, while nestling at their feet the brown-thatched roofs of the village appear between the tops of waving palms.

Umatac was originally selected as the site of the capital of Guam; its harbor was safe and convenient for the sailing vessels coming from Acapulco or Manila, with arms and recruits for the garrison. A palace for the governor, a cathedral, and the necessary fortifications for the defense of the harbor, were built and, although Agana had meanwhile been made the capital, the governor and his official staff, as the time for the arrival of the galleon approached, moved to Umatac, remaining there until the departure of the galleons.

Later on Umatac was used as the summer capital during the prevalence of the monsoon, being more comfortable in that season than Agana. The palace, through whose basement floor flowed a small brook, and the cathedral which, judging from the ruins remaining, must have possessed considerable architectural merit, were both destroyed by the earthquake of 1779, and a subsequent earthquake destroyed the town on February 25, 1849; in 1864, according to the chart of the harbor, there were about a dozen huts on the site.

The harbor is small—measuring but 2 cables (400 yards) between the points of the entrance and less than 1 cable between the 5-fathom curve on either side.

From the point sheltering the bay on the north, around to the head of the bay, the land is low and sandy for a breadth of about 100 yards between the water and the foot hills. At the head of the bay, where the Umatac River makes its mouth, the beach is formed of large round gravel about 2 inches and under in size, together with fine black sand. From the mouth of the river to the southern point a low madreporic ledge runs down to the water's edge. From about the center of its length to its mouth the bay is from 5 to 7 fathoms in depth, with a sandy bottom; this ground runs out into the roadway for a mile or more before striking greater depth. The harbor is safe for boats under 30 tons during the dry season, when prevailing winds are from the north to northeast, but with the westerly

edge. The shore is protected by coral reefs and numerous little islets, which, with its position in the lee of the island, makes the water usually smooth and glassy. Now and then a ranch is passed and rows of fish, split and drying in the sun, tell of the principal occupation of the ranchers. It looks delightfully cool and comfortable in the shade of the trees, the green turf (a rarity in Guam) invites to repose, while just inside the belt of ironwoods the waving tops of the coconut palms promise a refreshing drink.

Another little inlet ends this grove, and several rocky points separated by sights of the sea are passed before reaching Ajayan Bay. This bay is about half a mile in circumference and contains a small island called Agrigan near its western shore. It has an opening in the reef for small boats, has about 50 feet of water in its narrow mouth and from 60 to 20 feet inside. There is a cluster of ranches here, which is called Sumay Merizo, though it can not be classed as even a small village. The beach near the numerous points on this side of the island is often strewn with fragments of broken coral, very hard on beasts and on the shoes of pedestrians. The road climbs over Ajayan Point, and running a little north of east for a mile on the dividing line between the sabana land of the foothills and the productive lowlands, finally descends to the broad sandy beach of the eastern coast of the island. The direction then changes to the northward and follows the beach to Agfayan Point. The beach here is 200 yards wide and is bare of vegetation, except the tenacious sea bean, which makes walking a difficult feat, and the green sprouts from numerous dead ironwoods.

Agfayan Point is a finger of madreporic rock covered by a dense thicket of scraggly trees and lemonchina bushes, and it forms the southern limit of the bay of the same name. The road crosses over the neck of this point and descends into the little valley at the head of the bay. A shallow river empties here, and at its mouth it is 80 feet in width by 4 feet in depth, with coral rock bottom. It was formerly crossed by a footbridge formed of bamboo poles placed lengthwise and bound by bark thongs to bamboo bents placed directly on the bottom. When the wind was from the east the sea washed into the mouth of the river and periodically destroyed the crude bridge built by the neighboring ranchers. The island government therefore, in 1907-8 built a substantial bridge over this river, and in addition, two other bridges across the Sumay and Liyog Rivers, and one at Merizo, beside three culverts, making it now possible for carts to make the trip between Merizo and Inarajan during the rainy season. Several minor bridges and culverts have since been constructed and the road along the beach at the Inarajan end abandoned.

Agfayan Bay is about a quarter of a mile long and from 15 to 20 feet in depth. The valley of the little river is broad and well watered, extends nearly a mile, and could be utilized for the cultivation of rice, instead of being left, as it is now, an uncultivated swamp. From Agfayan to Inarajan the beach is broken by rocky ledges and islets, and as the reef here lies only a short distance from shore, the sea dashes violently against them and makes a striking picture.

The town of Inarajan, which has about 800 inhabitants, is situated on the south side of the bay of that name, and has been a place

of some importance. It has a pretty Catholic church, recently completed to replace the one destroyed by the typhoon, and has several houses and a parish house. The American Baptist Foreign Mission Society maintains a small Protestant mission at Inarajan.

There are about 100 houses of plank or bamboo on the two streets, extending about a fifth of a mile in the direction of the beach. The bay is about half a mile in length by a quarter of a mile in width at its mouth. It has a small anchorage ground with sandy bottom, and from two to three fathoms in depth, and a narrow opening in the reef guards the entrance. It is exposed to the east and southeast winds and is dangerous. Two small rivers empty into the head of the bay, and the beach here is of a black or brownish sand brought down by the streams from the highlands. These streams have broad valleys, which are very productive in rice, sugar, sweet potatoes, corn, tobacco, and fruits. The principal industry of the people is farming, fishing, and hunting. Besides the deer of the mountains and the ordinary reef fish, there is caught here a species of crayfish, the size and appearance of our lobster, which is highly prized by the natives of the village and is also marketable in Agana. Sea turtle abound in certain seasons in deep water about the reefs both here and at Merizo and Umatac, but the natives are not expert in taking them, and they are not often seen in the markets.

In 1909 Inarajan was supplied with wholesome water piped down from a reservoir formed by a concrete dam built in a small gorge in the hills about 2 miles to the westward of the town. Public shower baths were constructed and a marked improvement in sanitary conditions has resulted.

Inarajan has a public school with about 100 pupils of both sexes and a dressing station in charge of the principal of the school.

A telephone line connects Inarajan with Agana by way of Merizo, Umatac, Agat, Sumay, and Piti.

Both the southern and northern points that bound the bay of Inarajan are bluffs of madreporic rock, and as the coral reefs lie close in they are continually lashed by the waves of the sea. Near the extremity of the northern point is a small cave formed by the water, on the walls of which are to be found certain characters. There is no doubt that the characters are genuine, as similar marks, apparently representing men and women have been found in the caves near the Talofofa and elsewhere by Capt. E. H. Ellis, United States Marine Corps, and as these characters are, moreover, similar to the petroglyphs found in caves in the Hawaiian Islands, there is no reason to think that they are not ancient. The figures were apparently cut into the rock and have been subsequently covered with lime precipitated from the water that percolates through the coral formation, thus giving them the appearance of what looks like a white pigment. The figures in the cave at Inarajan are all white, having been filled by lime in a similar manner to those found by Gov. Fritz, of Saipan, in caves on the island of Tinian and described by him during a visit to the cave at Inarajan. Those found in some of the other caves have not been so washed with lime and thus remain true petroglyphs.

Proceeding on the road northward, the rivers empty at the head of the bay are crossed on substantial wooden b

after crossing the low valley, with rice fields on either side, the climb to the top of the mesa is begun. The road is impracticable for carts and is no more than a series of foot trails, a new one being adopted as the old one becomes too soft from rains. After a short climb the bottom loam and its vegetation give way to the red soil of the mesa, with its covering of brown sword grass, and the sword grass gives way, in turn, when the top is reached, to scattered clumps of short bunch grass on an otherwise barren soil. The mesa at this point is about 350 feet in elevation, and standing where the road first reaches the summit a splendid view of the southeastern corner of the island is obtained. The coast, with its little bays, points of shrub-covered coral rock, and stretches of sandy beach is spread below like a map, while to the southwest, west, and northwest lie extensive pasturage plains, sweeping upward to the timbered sides of the mountains on the west coast. Beyond the timber belt the brown peaks of Sasalaguan, Bolanos, Jumullong Manglo, and Tenjo stand out in profile against the clear tropical sky, with Alifan standing between the last two, covered entirely with timber, its sharp peak surmounted by two sentinel-like trees. The rivers can be traced by the winding strips of green which mark the timbered valleys against the brown of the mesetas.

The road passes to the northward for a mile to Pauliluc Creek, a little mesa stream which furnishes water for the cattle ranches near by and which just below where the road fords it falls in a series of pretty cascades to the level of the sea. The native name of the creek signifies "smells of iron," and its waters are impregnated with that material, while the bed rock, from its weight and appearance, must be the source of supply. About a mile beyond this creek is a ranch house, situated on the top of a high butte formed by the wash of the rains. On three sides the approach is nearly vertical and 50 feet higher than the surrounding plain. The washed sides of the butte are bright red in color, and the house, with its cluster of fruit trees and two lone coconut palms on the top of this red mound, makes a landmark visible from all elevated points on the island. In the plain below are two small ponds, or lakes, where a species of wild duck peculiar to the Marianas Islands make their home, feeding in the adjacent rice paddies and fresh-water swamps of Inarajan and Merizo. The ranch in question comprises about 1,000 hectares, or 2,400 acres, of this land, and has at present from 125 to 150 head of cattle and carabaos. The road to Agat branches off the main road near Dandan (the name given to this district): leaving Dandan, the road passes through the timber land which skirts the sabanas along the east coast and, after crossing one or two wooded ravines, climbs the southern point of Talofofu Bay. The coast line between Talofofu and Inarajan is marked by almost vertical madreporic cliffs, with the coral reef so close to their feet that the waves in stormy weather break high up on their faces. The bay of Talofofu is about half a mile long by 1,200 feet in breadth, is bounded on the north and south by high madreporic bluffs and on the west by the fertile valley of the Talofofu River. The coral reef follows the bluffs inside the bay, leaving a mouth 800 feet in width, with 50 to 60 feet of water on mud bottom. Farther in the water is 25 to 30 feet in depth, with bottom of sand and cascajo. Both the north and south points are

guarded by high peaks connected with the mesa by a ridge composed of sharp rocky points and rounded knobs. The peak Malilog is said to have historical associations connected with the early history of the island. Two rivers empty into the bay; one, a small stream of no great length, has its mouth near the entrance of the bay on the south side; while the Talofoto River, the largest and longest on the island, makes its mouth at the head. The valley of the Talofoto here is wide and contains fine groves of coconut trees for nearly a mile of its length toward the interior. The river is crossed on a bamboo raft, propelled and guided by a "pago" rope stretched from bank to bank.

Leaving this bay, the road climbs the side of Malilog and, rounding its eastern face at a height of 250 feet above the water, descends to the beach at a steep grade. A short part of this descent is by the aid of rough stairs cut in the coral rock of the mountain, which is the only remaining evidence of the old military road built by the Spaniards in the beginning of the eighteenth century, when the island was first completely pacified. It is a picturesque spot, with its almost vertical walls on either side, and it is an interesting sight to see the bulls and carabaos make their way down the crude steps in safety. For the next 2 miles the road lies on a broad sandy beach from 600 to 1,600 feet in width planted in coconut trees. This plantation, containing 18,000 trees, is the largest on the island. It is owned by a Japanese, Mr. J. K. Shimizu, of Agana.

The beach is terminated by another point of coral rock, beyond which lies the Ylig River. Ylig Bay is a small indentation surrounded by reefs, with an opening for small boats. It is bounded on the north and south by coral bluffs and on the west by the low bottom of the Ylig River, the second in point of size on the island. The Ylig River is about 50 feet wide at its mouth and is crossed on a bamboo raft, similar to the one described at Talofoto. The valley is fertile, but not wide, and is cultivated here and there in coconuts. The road climbs the mesetas after leaving Ylig and passes through cultivated highlands for a little over a mile and a half to Pago Bay.

Near the highest point of the meseta and about one-half mile from the Ylig River is the schoolhouse of Yona, which has an attendance of about 50 pupils of both sexes and a dressing station in charge of the principal of the school. A new road is now (1916) under construction between the Ylig and the Pago Rivers by way of the Yona school and this road from Pago has now reached the top of the meseta. From this point on an improved road is found all the way to Agana. A bridge over the Pago River (now projected) will supply, when completed, the last link of an excellent wagon road between Yona and Agana. A village is proposed in the vicinity of the school and it is likely that one will soon come into existence. The inhabitants of the district have already begun the construction of a church or chapel a short distance from the school. Many ranchers live in this vicinity engaged in raising coconuts, corn, bananas, poultry, and hogs.

Pago Bay is a semicircular sweep of sandy beach between two headlands, and is inclosed to seaward by the reef which has an opening for small boats some 50 feet in width. The water inside has no great depth, and only the smallest boats and canoes can enter. The Pago River empties at the head of the bay, is 40 or 50 feet wide at the

mouth, and is crossed on the usual bamboo raft. The river valley is wide here, but narrows a short distance above, so that it does not offer space for extensive cultivation.

Pago at one time was a flourishing village but was abandoned after the terrible scourge of smallpox which visited the island in 1856 and caused the death of a large portion of the inhabitants. Two-thirds of the people of Pago died therefrom, and the priest in charge recommended the abandonment of the chapel and school. The survivors moved to Sinajana and Agana.

The typhoon of 1900 caused great havoc among the coconut trees, and for a while only a few salt-boilers lived on the site of the village, mostly in the small caves in the cascajo bluff. Recently a few settlers have again located at Pago and begun the cultivation of coconuts.

From this point to the north the east coast is an unbroken line of high coral bluffs escalloped by crescent-shaped bights, but without a boat harbor of any kind or beach lands suitable for cultivation. The reef, where it exists at all, lies close under the cliffs, and as a consequence this part of the coast is dangerous for small craft for the greater part of the year.

From Pago toward Agana the road passes for a short distance through the wooded valleys of the Pago River and then climbs the higher ground of the interior in a direction almost due north. A series of little hills, alternating with muddy creek bottoms, are traversed, the greater part of the way being through dense jungle growth. The woods are left behind at the point where the road crosses a swampy bottom near the source of one of the tributaries of the Agana River. From here a long rise is climbed, and from its top to the village of Sinajana cultivated tracts with coconut groves and sweet-potato patches are more and more frequently met with.

From Sinajana the road winds through the rolling country back of the coast toward Agana. The soil is mostly thin, poor, and red, covering cascajo from 6 inches to 2 feet below the surface. There is very little of this land under cultivation, a few ranches being situated in the groves of breadfruits, coconuts, and camachili. The majority of it is pasturage, covered with lemonchina shrub. The road follows approximately a ridge of hills until, passing through a deep cut, it pitches down the bluff at a steep and tortuous incline into the barrio San Ramon of Agana. A short distance from Agana the cascajo road to the old radio station leaves the Sinajana road and strikes across a broad savanna, thinly wooded and scrubby, to the slope of Mount Macajna, which is covered with sword grass—"cogon"—extending nearly to the summit. The road winds around the hillside on a gradual slope, at times cut from the rock, until the summit, where the old radio station is situated, is reached. Notwithstanding the precipitate sides of Mount Macajna, this road has nowhere a grade of more than 13 per cent.

The roads in the northern half of the island radiate from the barrio of San Antonio of Agana and are grouped in two systems, the main branches of which are known as the Barrigada and Yigo roads. The first-named road turns inland from the edge of the town and proceeds in a general direction across the island slightly east by north toward the east coast. It passes through rolling country with a gradual rise to the northern plateau, which for some distance from

Agana, as far as the upland jungles, is practically all under cultivation to corn, beans, sweet potatoes, taro, and yams, with an occasional banana patch or grove of coconuts, betel nuts, or cacao. This road has several branches leading short distances into the farming country. At a distance of about 2 miles the road forks, the branch to the right being known as the Sabana Maagas and the one to the left known as the Tiyan road. Each leads into the country for a mile or more. A mile and a half farther the road again branches; the right-hand road, known as Lalo, leads for about 2 miles into the country, terminating a short distance from the coast.

The Yigo road leaves Agana in a northerly direction, changing to northeast. For about 2 miles it hugs the shore closely, separated from the beach by a narrow strip of coconut grove. As the road leaves the coast line it begins a gradual and steady climb up to the northern plateau. This continues with few breaks as far as the road now extends. Shortly after turning inland, a branch to the left hand strikes toward the sea and ends at the Tumon Colony, formerly maintained as a leper isolation colony. All lepers have now been removed to Culion, P. I., and the buildings formerly occupied by them have been destroyed or removed. A short distance to the westward of the Tumon Colony there is an interesting geological formation popularly termed "Hole in the ground" (by the natives known as "Liyang"). This is an earth bubble, the vertical depth of which is about 200 feet. The opening into it is only about 50 feet in diameter, but a short distance below the surface the diameter increases to several hundred feet. The bottom is filled with water. Several such formations have been found in Guam, but none are so remarkable as this one near Tumon.

From the point where the Tumon road branches the road continues in a northeasterly direction for a distance of $2\frac{1}{2}$ miles, where it again forks, the left-hand fork continuing for a distance of about $2\frac{1}{2}$ miles past the Dededo schoolhouse toward a locality known as Finaguayac. The right-hand branch continues for a distance of $4\frac{1}{2}$ miles toward Mount Santa Rosa. A short distance before passing the Yigo schoolhouse a branch leads off to the northward through the forest country toward a large ranch, known as "Upi," owned by Commander E. L. Bissett, United States Navy (retired).

The whole northern portion of the island is densely forested and clearings occur at only long intervals and do not extend far on either side of the road.

XII.—ARTS AND CRAFTS, RELIGION AND EDUCATION.

After the priesthood, the highest calling in the eyes of the Chamorros is the law. There are no native physicians and, after the law, the highest ambition of the native is to become a clerk or writer in some one of the departments of the Federal or Insular Government. The pay for this class of service is very small, but the prestige is counted upon to make up the deficiency.

Before the advent of the Americans, carpenters were scarcely as efficient as our unskilled labor. They were untrained and used antiquated tools. Those who have had the advantage of working under American foremen, however, have learned the use of modern tools,

and are now capable of doing all ordinary house carpentry as well and as quickly as could be desired. In building a house the same plan is followed that was introduced by the Spanish missionaries long ago. Heavy ifil posts, of length sufficient to reach to the eaves of the finished structure, are sunk into the ground at intervals of from 9 to 11 feet. At the desired floor elevation, usually 6 to 8 feet from the ground, holes are cut in the posts to receive a 3 by 5 inch ifil stringpiece, that serves as a sill. This sill overhangs the end posts by at least 3 feet, to support the gallery which is always found on all four sides of the better Guam houses. On the sills, 2 by 4 inch ifil joists are laid, and these support a floor of planks of about 1 inch, of varying widths, thicknesses, lengths, and degrees of smoothness. Notches in the tops of the posts are cut to receive a heavy horizontal key or roof cord, extending transversely across the building. This key is at least 4 by 5 in section and acts both as a tie and to resist typhoons or earthquake shocks. A plate of the same size caps the posts, and on this the rafters are spaced 4 feet apart. If the roof is to be tiled the pitch is flat, and besides, 3 by 2 inch ifil purlines, light secondary rafters, are provided, spaced for the width of the tile. Beneath the roof rafters are provided, spaced for the width of several rooms which are usually ceiled with dugdug planks often rather carelessly matched. After the frame is completed the masons begin to lay up the walls in a kind of concrete, made by placing coral boulders in a mortar of the native lime and beach sand.

The walls are made 18 to 24 inches thick from the foundation to the floor and 14 to 20 inches above and, when dried, smoothed by a coating of lime plaster. If properly protected from the hard rains until thoroughly seasoned, this wall has considerable strength, though no more perhaps than sun-baked adobe. The entrance to the house is usually from the rear, by way of steps leading to the terrace connecting the house and kitchen. The latter is always in a small detached building. Windows are usually closed by solid wooden shutters, provided also with sliding shutters.

Besides the small skill required in house building, the native mason possesses the ability to do first-rate stonework. The old Spanish arch bridges, still defying storms and earthquakes, are good testimonials to their handiwork.

Plank houses are formed on the same plan, but lighter than the stone houses. They never use tile for roofing on account of the weight. Thatch is preferred, though the American practice of using galvanized corrugated iron is gaining favor among those who can afford it. The bamboo houses are framed, floored, and sided with bamboo fastened by strips of nipa or "pago" bark. The siding is prepared by making numerous alternate longitudinal slits in a section of bamboo in such a manner that it may be opened out, forming flexible slatting. A house of this sort is erected and roofed in one day, and the occasion is made a lively one. All the neighbors are invited to assist, and with laughter, songs, and jokes, aided by a good dinner, they make short work of the building.

The shoemakers tan their own leather, by the aid of the tannin in the bark of the camachili tree, and carry it through every operation to the finest shoe, machete belt, or harness strap. The heelless

slipper, crudely made and of coarse material, is their commonest product, although a few can turn out finished work.

The native silversmith does remarkably good work when his materials, tools, and lack of training are taken into consideration. His crude material is the Mexican dollar, which he melts and hammers and saws into knives, forks, spoons, bracelets, belt buckles, silver-mounted coconut glasses, chains, and a variety of useful articles, as well as other novelties.

The Chamorro blacksmith has little knowledge of tempering and makes a poor shift at forging. His best work is shown in the manufacture of machetes from steel scrap. When the silversmith and the blacksmith work together, a very good weapon is turned out, with a well balanced blade and a carabao horn handle inlaid with silver devices.

Some of the women sew well, and there is scarcely a household that does not boast of a little hand sewing machine, which they treasure above everything else that they own. They have infinite patience and will spend a year on one piece of intricate embroidery, but they can not hurry over any sort of work. They can copy anything, and are very apt in making things for their homes instead of sending to Manila or Japan for them. For instance, they have been known to spend a year or more in making lace curtains by covering net with designs of flowers and fancy stitchings. The women are also expert in making baskets of plaited grass, as well as in the manufacture of straw hats, baskets, and floor mats.

The islanders are very devout Roman Catholics, and the influence of the priests of that church has always been very great and guides the Chamorro in all the important acts of his life. The island church was until a recent period under the authority of the Bishop of Cebu, but that city being 1,500 miles away and means of communication extremely rare, this part of his diocese was practically never visited by him. The venerable Padre Jose Palomo, a native priest of Agana, who on the occasion of his golden jubilee in 1909 was created monsignor by the Pope, was for many years the vicar of the bishop, with authority, under special papal dispensation, to perform the rites of confirmation and such other duties as are usually assigned to the bishop.

After the Augustinian friars left the island the missionary work was continued by Padre Palomo, aided by some Capuchins from the Carolines. In 1908 a German Capuchin was sent out from Germany as apostolic prefect of the Marianas, with headquarters at Saipan. He paid many visits to Agana, but the people of Guam did not look with favor on the substitution of German for the Spanish Capuchins who had faithfully served them since their arrival in 1902. They resented, also, the apparent relegation to a subordinate position of their beloved parish priest, Padre Palomo, who from the time of the expulsion of the Augustinian friars in September, 1899, until the arrival of the Spanish Capuchins, did all the work for the church, unassisted, in spite of his years. He is a most excellent man, looked up to by the natives and foreigners alike, a man of considerable education, untarnished reputation, great piety, and a powerful advocate among his people for progress, better civilization, and American

ideas. His assistance along these lines has been appreciated by successive governors, all of whom speak most highly of him.

In 1911 an apostolic vicar, titular bishop, was designated to the Marianas from the same Spanish Capuchin order, and the Agana Church was chosen as his cathedral.

Besides the "cathedral" in Agana, already described, there are churches in Sumay, Agat, Umatac, Merizo, and Inarajan and chapels in Sinajana, Anigua, Asan, and Piti, most of them built of mamposteria and in the style of Mexican and California monasteries. All through the island are found shrines and rude crosses, often placed to commemorate some event in the history of early missionaries but at times merely to remind the traveler of his religious duties.

As in all Spanish countries, fiestas or feast days occur with astonishing frequency, and every native feels it incumbent upon himself and family to attend the services held at the cathedral and then devote the rest of the day to pleasure. A prolonged ringing of the church bells at noon of the day preceding the fiesta warns those who might possibly have forgotten the coming event. The number of these days has greatly decreased since the American occupation. The first naval government abolished all public celebrations of the feast days of patron saints of villages and ordered that only the holidays authorized by the United States laws be observed. This drastic law was, however, modified a year later so as to permit the public celebration of feast days by special permit of the governor, the same not to be construed as giving this day the character of a public holiday.

One of the principal feast days is that of Corpus Christi, celebrated with a great parade, when nearly every able-bodied man, woman, and child in the island is in line; it is a spectacle to be remembered to see 5,000 persons, dressed in the liveliest of holiday costumes, bearing candles, images, crosses, and banners, parading through the streets of Agana, halting for a short service before each of the four temporary and highly decorated booths, called "ranchos," erected in the several quarters of the town by the devout inhabitants.

Good Friday is celebrated with the largest procession of the year. The second Sunday after Easter, the "Promesa" in fulfillment of a vow made after the earthquake in 1858, is also a processional day. To the omission to parade on that day in 1900 many lay the disastrous typhoon of that autumn.

On nine days of the school year beside the national holidays the attendance of children is not compulsory in the public schools, and none fail to take advantage of this privilege, most naturally, as child nature is the same all over the world, although the children of Guam are, as a rule, very fond of their schools.

Until March, 1910, the American Board of Missions maintained a Congregational missionary in Agana, but has withdrawn its representation. Previous to the withdrawal, the Right Rev. C. H. Brent, missionary bishop of the Philippines, paid a visit to Guam to look over the field, but his decision was unfavorable to establishing a mission by the Episcopal Church.

A Baptist congregation of about 100 has recently been formed and is in a thriving condition. Some of the members of this church are

drawn from the American colony but a large majority are Chamorros. The pastor in charge is sent out by the Baptist Board of Missions.

Ever since the advent of the early missionaries schools have been maintained in every town and village of the island, while in Agaña was the College of San Juan de Letran, founded by Queen María Ana de Austria in 1668 and endowed from her private fortune with an annual income of 3,000 pesos. Unfortunately, this sum gradually dwindled through misappropriation and dishonesty until the annual income of the college shrank to barely enough to pay one teacher. Naturally, with the American occupation it ceased entirely.

The college does not seem to have been popular with the Spanish governors, many of whom disapproved of the higher education of the natives, being quite content with the course which, at the period, was outlined to consist of instruction in "music and primary letters," and in giving a few boys sufficient instruction to serve as acolytes for the priests.

One governor suggested to the captain general that the college be abolished and that the funds be applied to "general education, to repairs and ornaments of the churches, and to the improvement of Government buildings and priests' residences on the island." He also recommended that the schoolhouse be converted into an inn or great house for the entertainment of strangers, and that the fixed income therefrom be applied to Government purposes.

The pupils, it was asserted, were injured rather than benefited by their education and rendered unfit for future usefulness. On entering the college they soon forgot the misery and poverty of their homes, and during their stay of five or six years became accustomed to good food, clothing, and lodging, without learning any trade by which they might afterwards earn a living and without forming habits of industry. The discipline was declared to be bad, and everything tended to make the students incompetent to earn their living, discontented with their lot, and, the more quick-witted among them, thorns in the side of the governor, who was often obliged to impose "correctional punishment" upon them.

Another governor recommended that the education of the natives be limited to the merest rudiments, to avoid their acquiring a superficial knowledge of the more advanced branches of learning, which would lead to pretensions on their part to be men of education. Such persons, he declared, gave more trouble to the authorities than any other class and were a disturbing element among the natives. In spite of these recommendations, however, the captain general at Manila did not see fit to divert the fund from its original object.

From these and other extracts from the archives it is easily seen that the Spanish governors of the island of Guam discouraged the higher education of the natives, not because they thought them incapable of receiving it, but because they believed they would be more tractable if they remained ignorant.

The village schools appear to have been of small account when judged by our standard, but were vastly better than no schools at all. As a result of their work the majority of the people could read and write a little Spanish. In later years a free-school system was maintained by liberal appropriation and shortly after the change of

sovereignty an attempt was made to continue the old Spanish school system, for a want of better, under American administration. A family of American teachers was brought out to Agana in 1901, and organized the school system on American lines, but, after a year, it was found that the revenues of the island were not sufficient to permit of this added expense, and all efforts to obtain Federal aid having failed, the teachers returned to the United States.

As at present organized a naval officer is head of the department of education, with a superintendent of public instruction as administrative officer. Through the liberality of the Navy Department a number of Federal employees have been allotted to the naval station, it being understood that their duties will comprise, for part of the time, teaching in the public schools. They are assigned to the more important schools and classes. The remaining teachers are natives educated in the public schools. The latter are naturally lacking in correct methods and their pronunciation in many cases is open to criticism, but they are faithful and zealous in their work. All are compelled to attend a normal school, the faculty of which consists of naval officers and American teachers, and in a few years it is expected that they will be as well equipped as most of the country common-school teachers of the United States. Licenses to teach in the public schools are required. The qualifications for licenses are about the same as for third-grade licenses in the Middle Western States.

The laws require compulsory attendance at the public schools of all children between the ages of 7 and 12. As a rule only half-day sessions for each sex are practicable, both on account of the prejudices of the people and on account of the lack of school room. There are at present over 2,000 school children in Guam and nearly all school buildings are overcrowded. New school buildings are being constructed as rapidly as the meager funds of the government of the island will permit. At present (1916) there are, outside of Agana, seven village and four rural schools. In general, two teachers are assigned to each village school and only one to each rural school. Three teachers are employed at the grammar school at Agana and 10 in the other city schools.

The instruction given in the primary grades is elementary, the purpose being to give the children a practical working knowledge of every-day English and the rudiments of arithmetic. The course in the grammar school embraces English grammar, geography, United States history, and more advanced arithmetic. Children beyond the age limit of compulsory attendance may continue in the schools on application.

A limited number of boys between the ages of 14 and 20 are accepted as apprentices for the several trades—carpenters, machinists, blacksmiths, harness makers, and gardeners.

As a rule the children are fond of school and make fair progress, although their natural shyness militates against their applying practically the knowledge acquired, especially when addressed by strangers or those in official positions: Questions which, in the school-room would be answered without hesitation, are apparently beyond their understanding when put to them on the street or elsewhere, but a little patience and kindness of manner usually result in a satis-

factory, if diffident reply: Until quite recently the children at the close of school walked sedately homeward, the little girls carrying their absurd, long trains in hand or sweeping the streets with them, but since an order went into effect compelling the shortening of dresses for school wear, new life seems to have come with the greater freedom of movement, and running games and games of ball—in which a green orange or lime serves as the ball and a piece of bamboo as the bat—are vigorously played by the girls as well as by the boys.

XIII. GOVERNMENT PAST AND PRESENT, COURTS AND LAWS.

Under Spanish administration, the Marianas were governed by an appointee of the Crown, almost invariably an army officer. The governor, from the time of the Spanish occupation until 1821, the year of Mexican independence, was subordinate to the viceroy of Mexico; after that date, to the governor general, or "adelantado mayor" of the Philippines. The code of laws in force was, like that of all Spanish over-sea possessions, based on the code used in the mother country, adapted to fit the peculiar needs of the colony. Guam, as the largest of the group, was the seat of government, and Agana was the capital city and residence of the governor. Before the destruction of the forts and palace by earthquake, Umatac was used as a capital during the months of the southwest monsoon.

The governor was assisted by a secretary and an aide, both of which offices were frequently combined in the same person. This aide was also an officer of the army. The insular officers consisted of a treasurer, who was always a Spaniard, and an auditor or "interventor;" a chief of public works, whose duties were sometimes filled by the aide; a judge of the court of first instance, usually a Spaniard, but once a Filipino lawyer; and a health officer, customarily an officer of the army.

The powers of the executive were limited. Besides his subordination to the Philippine government, he was also bonded in the interests of the islands, and his conduct and policy were examined at the close of his term by a traveling judge. The treasurer had custody of all moneys belonging to the government, derived from taxes, fines, and licenses. There was no Crown appropriation for the Marianas, and no import or customs other than port charges. He was strictly governed in his disbursements by the budget prepared annually in Madrid for the Pacific Islands; and beyond these sums, he dared not go. No payments of any sort could be made by him without the cognizance and countersignature of the interventor. The chief of public works had control of the distribution of personal tax labor, and the application, though not the disbursement, of such sums as were designated for public works. The judge of the court of first instance presided over that court, and was the highest judicial authority of the islands. Capital sentences required the review and approval of the court of appeals in Manila and supreme court in Spain before being executed. The commonwealth's attorney and the registrar of lands were usually appointed from among the natives.

The present government of Guam, with the exception perhaps of American Samoa, is unique under the supreme authority of the United States. The governor is the only duly appointed and com-

missioned officer. All officers, judicial and executive, are subordinate to him and are appointed and removed at his pleasure. The governor is the only legislative power. He administers the island by virtue of a commission from the President of the United States and is, in theory at least, responsible only to the President in the latter's capacity as Commander in Chief of the Army and Navy of the United States.

By virtue of the treaty of Paris, which terminated the Spanish-American War, the status of Guam was assimilated to that of the other territory acquired from Spain. The civil status and political rights of the inhabitants were specifically reserved, to be determined by the Congress of the United States. So far Congress has in general failed to legislate concerning Guam; and the inhabitants therefore are still, so far as civil status and political rights are concerned, under the common law of Spain, or at least of the Spanish law as it existed in 1898.

The following extracts from various decisions of Attorney Generals of the United States are of interest regarding the peculiar political status of Guam:

The political status of these islands is anomalous. Neither the Constitution nor the laws of the United States have been extended to them, and the only administrative authority existing in them is that derived mediately or immediately from the President as Commander in Chief of the Army and Navy of the United States.

On December 23, 1898, the President placed the island of Guam under the control of the Department of the Navy, with directions that the Secretary "will take such steps as may be necessary to establish the authority of the United States and to give it necessary protection and government"; and in pursuance of the authority thus conferred, the then Secretary appointed a naval officer as "naval governor of the island of Guam," this duty being in addition to your (his) duty as commander of a division of the Asiatic Fleet.

Congress has not yet extended the laws of the United States relating to entry, clearance, and manifests of steamships, and other similar laws, to Guam.

Guam is an unorganized territory of small extent, concerning which Congress has abstained from legislating almost wholly; and I do not think, in view of this inaction of the legislative body, that we should search among old statutes for fragments of law which we can, by construction, apply to the island. Congress will doubtless at the proper time take up the subject and legislate for Guam, either by special laws fitted to its situation and condition or by extending to it, as it did in the case of Alaska, Porto Rico, and Hawaii, the general laws of the United States not locally inapplicable.

Within the absolute domain of naval authority, which necessarily is and must remain supreme in the ceded territory until legislation of the United States shall otherwise provide, the municipal laws of the territory in respect to private rights and property and the repression of crime are to be considered as continuing in force and to be administered by the ordinary tribunals as far as practicable. The operations of civil and municipal government are to be performed by such officers as may accept the supremacy of the United States by taking the oath of allegiance, or by officers chosen, as far as may be practicable, from the inhabitants of the island.

These instructions seem not to have been superseded in June and July, 1900.

Their recognition of the continuance in force of the municipal laws of the territory was not intended as more than a recognition of what would have been presumed in the absence of instructions, and can not be regarded as intended to deny the power of the governor to alter the laws. They were continued in force as to the inhabitants among themselves, but not to control the governor; that is to say, the government itself. His power as a military governor was intended to be plenary. He had authority to do what the exigencies of military government required, and hold the supreme legislative, executive, and judicial

authority of the island. At that time, in that distant and little-known island, the President could not do otherwise than leave him a large discretion, and his acts should not be held void upon strictly technical reasons.

The official title of the government of the island is the "naval government of Guam," and the title of the chief executive is the "governor." The governor is also commandant of the naval station. The entire island was made a naval station at the time it was turned over to the Navy Department. This step was necessary in order to comply with certain laws regarding expenditures from the United States Treasury. As a matter of fact, only a very small portion of the island is actually used by the Federal Government. Its status as a naval station does not, in general, affect in any way the residents other than the members of the Army, Navy, and Marine Corps. From time to time, as the complexity of the government increased, new offices have been established, until the organization at present is very similar to that of a county in the United States. The names of the officers, in general, are the same as those of the average American county, with a few exceptions. For administrative provision the island is divided into six districts, namely, Agana, Yona, Agat, Sumay, Merizo, and Inarajan. These districts are each in charge of a commissioner. Where necessary, an assistant or deputy commissioner is appointed to assist the commissioner. Their duties are not exactly the same as the commissioners of townships in the United States, but they are in many ways similar.

The highest court of law in the island is the court of appeals, consisting of a chief justice and two associate justices. The trial court is known as the island court, and is presided over by a judge who is a native of the island. Minor offenses are punished by police court, also presided over by a native judge. In addition to these, there is a court for the trial of equity cases, presided over by an officer of the naval service.

The following-named codes of laws and procedure, as amended by Executive, general, and special orders issued from time to time, are in force in Guam:

Translation of the mortgage law for Cuba, Porto Rico, and the Philippines (1893).

Translation of the penal code in force in Philippines (act No. 190 of the Philippine Commission, entitled "An act providing a code of procedure in civil actions and special proceedings in the Philippine Islands").

Translation of the code of commerce in force in Cuba, Porto Rico, and the Philippines, as amended by the law of June 10, 1897, including the commercial registry regulations, exchange regulations, and other provisions of a similar character, with annotations and appendices.

Translation, compilation of the organic provisions of the administration of justice in force in the Spanish colonial provinces and appendices relating thereto (1891).

The police force of Guam consists of a chief of police, who is generally an officer of the Marine Corps, assisted by a sergeant and corporal and 8 to 10 privates of marines, known as "insular patrolmen." These last named are stationed at various points throughout the island for the purpose of enforcing the laws and educating the people in matters of sanitation, agriculture, and forestry. In addition, a native force consisting of 18 men is maintained, principally, for police its suburbs.

All matters of sanitation, hygiene, and quarantine are under the control of the senior medical officer attached to the naval station, who has, besides the pharmacist's mates, certain native sanitary inspectors detailed to assist him.

Besides the officers and men of the Regular Navy and Marine Corps assigned to duty in the island, a native force of about 40 men regularly enlisted and under command of a warrant officer of the Navy are stationed at Piti. They man the station craft, have general care of the naval facilities at Piti and in Apra Harbor, and assist in the discharge of freight from Army transports and other vessels visiting Apra Harbor.

In addition to the above the station ship (the U. S. S. *Supply*) when not absent on her commercial or health trips, is generally moored in Apra Harbor and her crew assist in maintenance of aids to navigation and moorings.

The marine detachment assigned to Guam is stationed at present at four or five different localities where their services are most necessary. The officers and their families live generally in Agana or Sumay. The families of other officers and enlisted men of the Navy, including the American civil employees, usually reside in Agana, although a few live in Piti and Sumay.

XIV. REVENUES, PRODUCTS, IMPORTS, AND EXPORTS.

The commercial needs of Guam are served by the Army transports, which stop on their westerly trips to the Philippines; by the station ship, which makes frequent trips for the purpose of conveying freight and passengers to and from Manila and other points in the Orient; by a line of sailing vessels under the management of the firm of Atkins, Kroll & Co., which sail at more or less regular intervals from San Francisco, and by another line of small Japanese sailing vessels under the management of the firm of J. K. Shimizu & Co., which ply between Guam and Yokohama. Statistics of the foreign commerce of the island for the fiscal year ending June 30, 1916, are given below:

Imports from—	
Japan.....	\$29,557.98
China.....	1,473.33
Great Britain.....	2,142.78
Germany.....	44.00
Philippine Islands.....	45,262.15
Hawaiian Islands.....	24,310.14
United States.....	226,712.85
Total.....	<u>329,503.23</u>
Exports to—	
Japan.....	30,748.95
Philippine Islands.....	385.10
United States.....	34,766.37
Other countries.....	667.78
Total.....	<u>66,568.20</u>

The above does not include material imported by the United States Government for the needs of the naval and military forces stationed in Guam.

The principal Guam product exported was copra, of which 958,958 pounds was shipped to Japan and 982,610 pounds to the United States. The island at present produces very little toward the support of the Naval Establishment. As the whole military and naval forces of Guam may be considered as nonproductive, and as they constitute by far the greatest purchasing class, their presence operates to increase the balance of trade against Guam.

Due to the lack of adequate transportation facilities which followed the closing of the port of Apra to foreign vessels, the trade of Guam has steadily decreased so far as products of its own soil are concerned. For many years the island has not been self-supporting. It is believed that it could be made so, and the efforts of the government are directed toward this end.

Besides copra there are many articles of produce which have proved successful in Guam in the past and need only a market to establish themselves. These articles are as follows:

Cacao of excellent quality has been raised and commanded good prices in the Manila market. This article could be raised in sufficient quantity to supply the local demand and to export at least 50 tons annually.

Coffee of good quality grows all over the island in groves of fair size. In the past this coffee commanded a higher price in Manila than the Mindanao product. The possible export is not less than 75 tons annually.

Sugar cane has been grown in Guam, but has never proved a success in the manufacture of sugar on account of the shallowness of the soil. However, it has been found excellent for the distillation of rum and alcohol. This industry, formerly of comparatively respectable size, has been entirely abandoned.

Other articles which have never been made the subject of export but for which there are large possibilities in the line of production for market are:

Pineapples. This fruit is planted in very small quantities in Guam and is not in sufficient abundance to fill the local demand. It has been found, however, to grow well in all parts of the island and is of very superior flavor. Those who have eaten Guam pineapples consider them sweeter and better than the Hawaiian article.

Tabasco peppers. Never cultivated for market in recent times, but used by the natives. These peppers grow wild in great profusion along the roads and trails all over the island. The peppers are of large size and excellent flavor. A sample submitted to a seed merchant in the United States was declared by him to be unusually fine. Tons of these peppers could be gathered annually.

Cotton of several varieties grows largely uncultivated in Guam. Egyptian cotton of fine quality has been grown successfully. Bush cotton grows wild in large quantities; the shrubs attain a height of about 8 feet. They bear perennially, a single bush bearing buds, blossoms, green and ripe bolls at the same time. The bolls are round, about 2 inches in diameter, and the fiber is soft, about 7 inches in length. Dwarf cotton is also found in small quantities, and the shrub grows about 18 inches in height; the bolls are small and the fiber short.

In addition to the above, kapok trees are found all over Guam. These trees attain a height of from 60 to 70 feet, bearing annually. The bolls are large, and the fiber, about 5 inches in length, is fine and silky. At present the trees are so widely scattered that the expense of gathering the pods is greater than the market value of the fiber.

Vegetable ivory (marble palm) grows in fair quantity and large size.

Trepang exists on all the beaches and reefs in limitless amounts.

Dugdug, a variety of the breadfruit tree, grows in profusion over the entire island. The sap of this tree has been found to contain 18 per cent of rubber, but it is not known whether it is of quality sufficient to make it of commercial importance.

Produce which is raised for the local market comprises rice, corn, garden vegetables, alligator pears, mangoes, oranges, limes, papayas, tobacco, etc. Production of these articles at present is not sufficient to fill local demand.

Poultry raising is done on a small scale, but is difficult on account of rats and iguanas, which overrun the entire island.

The total receipts of the government during the fiscal year 1916 were \$91,816.40, of which the principal sources were as follows:

Taxes.....	\$15,270.24
Licenses and fees (excluding excise).....	10,171.87
Fines and court fees.....	8,081.75
Excise.....	9,657.45
Customs (including liquors).....	7,997.00
Receipts from sales of electricity, water, ice, etc.....	33,967.53

The ordinary expenditures were:

Agriculture.....	5,153.42
Customs.....	1,044.17
Executive.....	13,075.14
Civil registry.....	885.36
Education.....	8,354.46
Judiciary.....	6,022.91
Police.....	4,887.88
Public works.....	21,429.60
Treasury.....	1,826.80
Maintenance of municipal and government undertakings (principally ice plant, water system, electrical plant, government farm, etc.).....	24,379.18
Total ordinary expenditures.....	87,058.92
Excess of receipts over ordinary expenditures.....	4,757.48

XV. MISCELLANEOUS INFORMATION FOR VISITORS AND PROSPECTIVE SETTLERS.

The harbor of Apra, which is the port at which ships call, is unimproved. While large and commodious, the depth of water, many shoals, and absence of breakwaters make it insecure during typhoons. At present ships either moor to buoys or anchor some 2 miles from Piti. Passengers and freight are ferried through a shallow channel dredged across the reefs from deep water to the landing.

At Piti several automobiles or other conveyances for hire at moderate rates by the trip or by the hour may always be found.

There are no hotels in Guam, but meals may be obtained at the Civil Club or at the Officers' Club in Agana. The Agana Lodge of Elks has a very large clubhouse, and members of this order are always welcome at the clubrooms.

In general, officers or others coming to Guam are taken to some private home until permanent lodgings can be obtained. A few persons can be accommodated at the Officers' Club, but with this exception no beds can be obtained.

The number of houses built or equipped in American fashion is never equal to the demand, and it will generally be found necessary to rent some native house and refit and refurnish it to make it habitable for Americans or Europeans. On account of the scarcity, both of desirable houses and of good household servants, it is strongly recommended that persons coming to Guam write or cable in advance of the arrival of the transport to some friend with request that arrangements for house and servants be made.

Outside of Agana living conditions are of course much less comfortable, and a great deal of readjustment will generally be found necessary. There are no Government quarters except for the governor, the commanding officer of marines, and the beachmaster at Piti. There are no quarters for married enlisted men.

There are no furniture stores, properly speaking, in Guam; and while there are facilities for manufacturing nearly all kinds of heavy furniture, no stock is kept on hand, and settlers are strongly recommended to bring with them a complete outfit of kitchen, bedroom, dining-room, and sitting-room furniture. Houses of over five rooms are not obtainable in Guam, and furniture for larger houses will not be found necessary. On no account should a small kitchen range and a refrigerator be omitted from the furniture brought out to Guam. At the present time electrical appliances are of little use, as the supply of electric current is limited and power is not available to private consumers except during the evening hours. The voltage of the electric plant is 250, direct current.

On account of the climate, only the very lightest of summer clothing is ever worn, but due to the rapid cooling off during the evening hours blankets may sometimes be found very useful. Linen and cotton clothing should be brought rather than silk or other fabrics which are much more liable to attack by insects and mildew. Canvas shoes or low-quarter oxfords are generally worn, although a pair of heavy-soled high shoes are necessary for use in tramping through the bush or walking in the country. There are several good tailors and a few dressmakers whose prices are very much lower than in the United States. The price of cloth and dress goods is of course much higher in Guam than in the United States.

The cost of living is in general higher than in the United States on account of the high cost of foodstuffs, most of which are imported from the United States or foreign countries. The privileges of purchasing supplies from the Government commissary, including the cold storage, is granted to all Federal Government employees and, in a limited degree, to all Americans residing in Guam.

A knowledge of Spanish is unnecessary, as only about 5 per cent of the population can speak it, and a much larger number speak

English. The language of the people is Chamorro, one of the Polynesian tongues.

Automobiles or motorcycles, while not absolutely necessary, are very desirable in Guam on account of the lack of public transportation facilities and the great distances between various scenes of activity. It is recommended that persons coming to Guam bring with them a light automobile or motorcycle with side car. Stocks of gasoline and tires and spare parts for the more popular types of light cars are carried by private dealers in Guam. Repair facilities are good. Native chauffeurs are available and may be hired for a very moderate compensation.

Health conditions in Guam are good. Leprosy existed in the island until the last few years. Since the lepers were secluded at Culion, P. I., a sporadic case occurs now and then among the natives. The diseases known as yaws and gangosa occur among the natives, but are now all under observation, and these diseases readily respond to a specific treatment.

Some forms of tropical dysentery occur from time to time, and it is necessary to exercise reasonable care in eating. Drinking water should be boiled. A limited supply of distilled water is available at Agana.

Many varieties of intestinal parasites infest Guam, including Uncinariasis (hookworms). Most residents of Guam, especially children, become infected with one or more kinds after a time, but the treatment is effective.

All medical treatment is administered by the medical officers of the United States Navy.

Malaria, yellow fever, plague, cholera, and other common fatal diseases of the Tropics are unknown in Guam.

The insular government operates a bank, known as the Bank of Guam. This bank maintains both a general banking and a savings department. Money may be remitted through it by check or cable. No other similar institution exists in Guam. The bank's representative in the United States is the Wells Fargo Nevada National Bank of San Francisco, Cal.

The insular government also publishes at Agana, monthly, a semi-official periodical called the Guam News Letter. The subscription price of this publication is \$1.00 per annum. Besides chronicling the news happenings, this paper contains much varied information about Guam.

The public lands of Guam are about 67,200 acres in extent, about 33,600 of which are at present leased and more or less under cultivation. It is mostly timberland and savanna, and a fair portion of it is fertile. However, Guam is not a good place for prospective settlers and home seekers, for the following reasons:

As almost every native of the island owns land or has a plot leased from the government, it is difficult to locate tracts of sufficient size to appeal to settlers in good land.

The rapidity of jungle growth over most of the island makes constant clearing necessary, and renders it impossible for one man to care properly for more than a small patch; and it is almost impossible to hire farm laborers. The natives when not employed as laborers

on roads or other public works, have all small ranches of their own to which they devote their attention.

The shallowness of the soil (an average of 12 to 18 inches only down to the *casajo*) makes scientific farming, as Americans understand it, out of the question.

A native considers himself prosperous, and really is so, under conditions which would barely permit a settler to live. A native who can obtain a diet of vegetables for himself and his family, two or three new suits of blue denim or white drill in a year, and \$50 cash annually considers himself very well off indeed. He is satisfied with a hut of woven bamboo and palm leaves, without sanitary arrangements, without water beyond what he carries home on his shoulder in a long bamboo, with a pile of stones under a thatched lean-to for a kitchen, and a constant war against the vermin and insects that mutilate or destroy a large part of his crop.

The native population is increasing, but is not beginning to turn again to agriculture as its main support. Owing to the cheapness of their mode of life, the native ranchers can afford to and will sell their products at prices which would bankrupt a white man who was depending upon his ranch for his entire sustenance.

Government land in Guam can be acquired by lease for a definite period, but is subject to withdrawal at any time when it may be needed for government purposes.

APPENDIX.

1. INTERESTING DOCUMENT.

A quaint document in the possession of Mr. José Herrero of Agana, is worth insertion here. It is entitled "Victims sacrificed by the natives of the Marianas Islands because of their propagation of the holy Catholic faith among them." and is as follows:

ISLAND OF GUAM.

José de Peralta, killed in the hills, September, 1671.

Diego Bazan, a native of Mexico, in Chochocho, March 31, 1672.

Manuel Vangel, a Spaniard, in Chochocho, March 31, 1672.

Nicolas de Figueroa, in Ypao, March 31, 1672.

Damian Bernol, in Tumon, March 31, 1672.

Manuel de Nava, in Guae, March 31, 1672.

Diego Luis de Sanvitores, Jesuit priest, a native of Burgos, 45 years old and his servant Calasor, a Visayan, killed in Tumon, Saturday, April 2, 1672, between 7 and 8 in the morning.

Francisco Esguerra, Jesuit priest, native of Manila, 30 years of age; D. Luis de Vera Pizarro, merchant, of Manilla; Sebastian de Rivera, soldier, of Manila; Matías de Segura, soldier, of the town of Los Angeles; Pedro Alego, soldier; Matías Altamurano, soldier of Guam, killed at 1 o'clock on the road between Gati and Tufana, on their arrival in Sagua, 2d February, 1674.

Pedro Diaz, Jesuit brother, of Talavera; Corp. D. Isidro de Leon, of Seville; Nicolas de Espinosa, soldier, of Mexico, in Ritidian, December 9, 1675.

Antonio M. de San Basillo, Jesuit priest, January, 1676.

A soldier killed in October, 1676.

Sebastian de Monroy, Jesuit priest, of Andalucia; Lieut. Gov. D. Nicolas Rodriguez Carbajal, of Austria; Santiago de Rutia, soldier, of Mexico; Juan de los Reyes, soldier, of Pampanga; Alonzo de Aguilar, soldier of Los Angeles; José Lopez, soldier, of Querétaro; Antonio Perea, soldier, of Cuernavaca; Antonio de Vera, soldier, of Cholula, in the sea before Sumay, October 6, 1676.

Forty or fifty Spanish soldiers killed in the plaza and streets of Agana; and Manuel Solariano, Jesuit priest, native of Estremadura; and Baltazar Dubois, Jesuit brother, of Flanders, killed in the college, Sunday, July 23, 1684.

Teofilo de Ángeles, Jesuit priest, 33 years, of Triana, killed in Ritidian, July 24, 1684.

ISLAND OF ROTA.

Carlos Boranga, Jesuit priest, born in Vienna, killed in Agor, October, 1684.

ISLAND OF TINIAN.

Agustin Strobach, Jesuit priest, native of Moravia, and 18 Spanish soldiers, names unknown, in August, 1684.

IN SAIPAN.

Sergt. Lorenzo Castellanos, a Spaniard; Gabriel de la Cruz, of Manila, soldier, killed August 19, 1668. (First martyrs in the conversion of these islands.)

Luis de Medina, Jesuit priest, of Malaga; and Ypolito de la Cruz, soldier, a Visayan, January 29, 1670.

Two Filipino soldiers, in 1672.

Two Spanish soldiers in 1684.

José de Tapia, merchant, and 20 Spanish soldiers, violently drowned off Saipan, September, 1684.

Pedro Comans, Jesuit priest, 47 years of age, killed in July, 1685, the last of the martyrs.

ISLAND OF ANATAJAN.

Companion of Father Sanvitores, Lorenzo Malabor de Morales, August, 1669.

2. CAPTURE OF GUAM BY THE NAVAL FORCES OF THE UNITED STATES.

[June 21, 1898.]

June 20, 21, 1898.—The following is an extract made from the official report of Capt. Glass, United States Navy, commanding the U. S. S. *Charleston*, concerning the capture of this island:

Arriving off the north end of the island at daylight, June 20, I first visited the port of Agana, the capital of Guam and of the Mariana group, and finding no vessels there of any kind, proceeded to San Luis D'Apra, where it was expected that a Spanish gunboat and a military force would be found, a rumor to that effect having reached me while at Honolulu. Arriving off the port at 8.30 a. m., it was found that Fort Santiago, on Orote Point, was abandoned and in ruins, and I steamed directly into the harbor, having ordered the transports to take a safe position outside and await instructions. A few shots were fired from the secondary battery at Fort Santa Cruz to get the range and ascertain if it was occupied. Getting no response, ceased firing and came to anchor in a position to control the harbor, and it was then found that this fort also was abandoned.

The only vessel in port was a small Japanese trading vessel from Yokohama.

An officer had just shoved off from the ship to board the Japanese vessel and obtain information as to the condition of affairs on shore, when a boat was seen approaching the ship, through the reefs at the head of the harbor, flying the Spanish flag and bringing two officers, the captain of the port, a lieutenant commander in the Spanish Navy, and the health officer, a surgeon of the Spanish Army. These officers came on board, and, in answer to my questions, told me they did not know that war had been declared between the United States and Spain, their last news having been from Manila, under date of April 14. I informed them that war existed and that they must consider themselves as prisoners. As they stated that no resistance could be made by the force on the island, I released them on parole for the day, to proceed to Agana and inform the governor that I desired him to come on board ship at once, they assuring me that he would do so as soon as he could reach the port.

While awaiting the return of these officers, an examination was made of the harbor, the only dangers to navigation were buoyed, and the transports came in during the afternoon.

At 5 p. m. the governor's secretary, a captain in the Spanish Army, came on board, bringing me a letter from the governor, in which he stated that he was not allowed by law to go on board a foreign vessel, and requested me to meet him on shore for a conference. This letter is appended, marked "A."

As it was then too late to land a party, from the state of the tide on the reef between the ship and the landing place, I directed the secretary to return and say to the governor that I would send an officer ashore with a communication for him early next day.

A landing force was organized to be ready to go ashore at 8.30 a. m. next day, when the tide would serve, the force being composed of the marines of the ship, those sent out in the *Peekin*, and two companies of the Second Oregon Infantry Regiment, placed at my disposal by Gen. Anderson.

At 8.30 a. m., on June 21, Lieut. William Braunersreuther was sent ashore, under a flag of truce, with a written demand for the immediate surrender of the defenses of the island of Guam and all officials and persons in the military service of Spain. (Copy hereto appended, marked "B.")

Mr. Braunersreuther was directed to wait half an hour only for a reply, to bring the governor and other officials on board as prisoners of war in case of surrender, or in case of refusal or delay beyond the time given, to return and take command of the landing force, which he would find in readiness, and proceed to Agana. (Copy of order appended, marked "C.")

At 12.15 p. m. Mr. Braunersreuther returned to the ship, bringing off the governor and three other officers, his staff, and handed me a letter from the governor acceding fully to my demand. This letter is appended, marked "D."

Mr. Braunersreuther's report of his actions on shore is appended, marked "E." Appended, marked "F," is a list of persons and property captured. As the natives are quiet and inoffensive and thoroughly well disposed, I approved Mr. Braunersreuther's course with regard to them after they had been disarmed.

Having received the surrender of the island of Guam, I took formal possession at 2.45 p. m., hoisting the American flag on Fort Santa Cruz and saluting it with 21 guns from the *Charleston*.

From a personal examination of Fort Santa Cruz, I decided that it was entirely useless as a defensive work, with no guns and in a partly ruinous condition, and that it was not necessary to expend any mines in blowing it up.

The forts at Agana, San Luis D'Apra, and Umata are of no value, and no guns remain in the island except four small cast-iron guns of obsolete pattern at Agana, formerly used for saluting, but now condemned as unsafe even for that purpose. Appended, marked "G," is a plan of Fort Santa Cruz.

No Spanish vessel of war has visited Guam during the last 18 months.

No coal was found on the island.

From want of berthing space on board this ship I considered it advisable to send the prisoners to the Army transport *City of Sydney*, which vessel had ample accommodations for the officers and men, and this was done by arrangement with Brig. Gen. Anderson. (Copy of my letter appended, marked "H.")

Appended, marked "I," is receipt from Lieut. Commander T. S. Phelps, Jr., on duty on the *City of Sydney*, in whose charge the prisoners were placed for transportation to Manila.

Having completed the duty assigned, the *Charleston* sailed on the 22d instant from San Luis D'Apra for Manila, with the transports in company.

I would respectfully invite the attention of the department to the officer-like conduct and excellent judgment displayed by Lieut. Braunersreuther in his discharge of the important duties intrusted to him.

The chief engineer of the ship being ill at the time she reached Guam, I accepted the services of Passed Asst. Engineer H. G. Leopold, who, on the probability of an engagement, volunteered for duty in charge of an engine room under his junior Passed Asst. Engineer McKean, acting as chief engineer.

Going into the port of San Luis D'Apra, Mr. T. A. Hallett, third officer of the steamer *Australia*, being familiar with the place, volunteered to act as pilot and performed the duty efficiently.

Very respectfully,

HENRY GLASS,
Captain, U. S. N., Commanding.

The SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

A.

[Translation.]

[Private.]

GOVERNMENT "P. M." OF THE MARIANNE ISLANDS,
Agana, June 20, 1898.

Mr. HENRY GLASS,
Captain of the North American Cruiser *Charleston*.

By the captain of the port in which you have cast anchor I have been courteously requested, as a soldier, and, above all, as a gentleman, to hold a conference with you, adding that you have advised him that war has been declared between our respective Nations, and that you have come for the purpose of occupying these Spanish islands.

It would give me great pleasure to comply with his request and see you personally, but, as the military laws of my country prohibit me from going on board a foreign vessel, I regret to have to decline this honor and to ask that you will kindly come on shore, where I await you to accede to your wishes as far as possible, and to agree as to our mutual situations.

Asking your pardon for the trouble I cause you, I guarantee your safe return to your ship.

Very respectfully,

JUAN MARINA.

C.

U. S. S. "CHARLESTON,"

San Luis D'Apra, Guam Island, June 21, 1898.

SIR: You will take command of a landing party composed of the marine guard of this ship, the marines from the steamer *City of Pekin*, and two companies of the Oregon Regiment of Volunteers from the steamer *Australia*, and proceed to Agana, the capital of this island, for the purpose of capturing the governor of the island, other officials, and any armed force found there.

You will bring the prisoners captured to this ship, destroying such portions of the defenses of Agana as practicable in the time at your disposal and such arms and military supplies as can not be conveniently brought off.

You will see that private property is respected as far as possible, consistently with the duty assigned you, and will prevent any marauding by the force under your command.

The greatest expedition must be used, and it is expected that the men of the landing party will be able to return to their ships before dark to-day.

The men landed will be supplied with rations for one day and be equipped in light marching order.

Very respectfully,

HENRY GLASS,

Captain, U. S. Navy, Commanding.

Lieut. W. BRAUNERSREUTHER, U. S. Navy,
U. S. S. Charleston.

B.

U. S. S. "CHARLESTON,"

San Luis D'Apra, Guam Island, June 20, 1898.

SIR: In reply to your communication of this date, I have now, in compliance with the orders of my Government, to demand the immediate surrender of the defenses of the island of Guam, with arms of all kinds, all officials and persons in the military service of Spain now in this island.

This communication will be handed you to-morrow morning by an officer who is ordered to wait not over one-half hour for your reply.

Respectfully,

HENRY GLASS,

Captain, U. S. Navy, Commanding.

SEÑOR JUAN MARINA,
Governor of Guam.

D.

[Translation.]

GOVERNMENT "P. M." OF THE MARIANNE ISLANDS,
Piti (Agana), June 21, 1898.

I am in receipt of your communication of yesterday, demanding the surrender of this place.

Being without defenses of any kind and without means for meeting the present situation, I am under the sad necessity of being unable to resist such superior forces and regretfully to accede to your demands, at the same time protesting against this act of violence, when I have received no information from my Government to the effect that Spain is in war with your Nation.

God be with you.

Very respectfully,

JUAN MARINA,

The Governor "P. M."

The CAPTAIN OF THE NORTH AMERICAN CRUISER "CHARLESTON."

E.

U. S. S. "CHARLESTON,"

San Luis D'Apra, Guam Island, June 21, 1898.

SIR: I have the honor to make the following detailed report of my actions in compliance with your orders dated June 21, 1898, and to inclose herewith a communication signed by Henry P. McCain, first lieutenant and adjutant. Four-

teenth Infantry, acting assistant adjutant general. Referring to this communication, I desire to call attention to the fact that it was handed to me while I was on my return to this ship, after having in my possession in writing the complete surrender of the Spanish territory under the jurisdiction of the governor general of Guam, who was (at this very time) with his entire staff a prisoner of war in my boat about 12 m.

On reaching the landing at Petey, under a flag of truce, I was met by the governor general with his staff, and, after a formal introduction, I at once handed to the governor your ultimatum, noting the time, 10.15 a. m. I called attention to the fact that but one-half hour would be given for a reply and casually informed the governor that he had better take into consideration the fact that we had in the harbor three transports loaded with troops and one war vessel of a very formidable nature. He thanked me and retired to a building near-by with his advisers. Twenty-nine minutes later he reappeared and, handing me a sealed envelope addressed to commanding officer of *Charleston*, informed me that that was his reply. I broke the seal. While doing so he again and very hastily remarked: "Ah! but that is for the commandante." I replied, "I represent him here," and requested the governor to read his letter. He did so, and after studying it a few moments I said: "Gentlemen, you are now my prisoners; you will have to repair on board the *Charleston* with me."

They protested, pleading that they had not anticipated anything of the kind; had no clothing other than that they then had on; that they all had property interests and families; and numerous other protests. I assured them that they could send messages to their families to send clothes and anything else they might desire, and that I would have a boat ashore at 4 p. m. ready to take off for them anything sent down. I would even secure passage for such of their families as they might desire and give them a safe return to Petey.

The governor, after a short consultation with his advisers, protested against being made a prisoner, saying I had come on shore under a flag of truce for an interchange of ideas on the condition of affairs, and that he now found himself and his officers prisoners. I replied I came on shore with orders from my commanding officer to deliver to him (the governor) a letter, and I had now in my possession his reply thereto, making a complete surrender of the entire place under his command. This alone, if it meant anything, permitted me to make any demands I desired and deemed proper to make. He agreed and I then gave him 10 minutes in which to write an order to his military authority in Agana, directing him to have at this landing at Petey at 4 p. m. the 54 Spanish soldiers with their arms, accouterments, and all ammunition, together with all the Spanish flags in the place (four in all), the two lieutenants of the companies to march the soldiers down. This letter was written, read by me, and sent to Agana. A general demur was made at the hour fixed upon, but I insisted that it must be done.

I then gave all the officers an opportunity to write letters to their families, which letters were by me considered private, and which left their hands unread by anyone but the parties concerned.

This being concluded at 11.30, I embarked with the governor and his staff, consisting of a doctor, the captain of the port, and the secretary to the governor.

On my return, when within signal distance of one division of the landing party which had been organized for use in case of emergency, I signaled them to "return." When within less than a mile of the ship I stood to the windward to send the same message to the second division of landing party in tow of steam launch. In reply I was requested to come alongside to receive a message from Brig. Gen. Anderson (appended, marked "A"), making signal "Surrendered" to *Charleston* as soon as I came within signal distance.

Having returned on board with prisoners and reported verbally my actions, I was directed to hold myself in readiness to carry out the remainder of the conditions of surrender at 4 p. m.

Leaving the ship with four boats and all the marine guard of this ship, in charge of Lieut. Myers, U. S. Marine Corps, and with Ensign Waldo Evans, U. S. Navy, as my aid, I left the ship at 3.30 p. m. for Petey, disarming the Spanish soldiers, and embarking them in a scow pressed into service for their transportation to the *Charleston*. The native soldiers, a couple of whom brought down the rifles of two absentees, supposed to be ill, manifesting such great joy at being relieved of their arms and giving away to men in my force buttons and ornaments on their uniforms, thereby conveying to me the impression that they were equally glad to be rid of Spanish rule, were allowed by me to return to their homes without any restriction whatever, which action

on my part will, I trust, meet with your approval. Fifty-four Spanish soldiers and two lieutenants were brought on board at 7 p. m.

The following is a list of the articles captured: 7,500 ball cartridges, 7-millimeter clips, Mauser; 2,000 ball cartridges, Remington; 52 belts, Mauser rifles; 45 bayonets and scabbards for same; 64 cartridge boxes, Remington; 54 leather belts, Remington; 60 bayonets and scabbards, Remington; 52 Mauser rifles; 3 swords; 62 Remington rifles; 4 Spanish flags.

In closing my report I desire to call attention to the absolute obedience and splendid discipline of all the force (30 marines and 16 sailors) I had with me, particularly to the efficient aid received from Lieut. J. T. Myers, U. S. Marine Corps, and Ensign Waldo Evans, U. S. Navy.

Both of these gentlemen were fully alive to the dangers and necessities of the occasion and rendered most valuable assistance.

A casual glance at the class and number of rifles captured, together with the quantity of ammunition, will demonstrate the care that had to be exercised in disarming and making prisoners of a force of men more than double the number I had with me, and will also call attention to the fact that the entire undertaking was neither devoid of danger nor risk.

Very respectfully,

WM. BRAUNERSBREUTHER,
Lieutenant, U. S. Navy.

Capt. HENRY GLASS, U. S. Navy,
Commanding U. S. S. Charleston.

A.

HEADQUARTERS FIRST BRIGADE, U. S. EXPEDITIONARY FORCES,
Steamer Australia, June 20, 1898.

The COMMANDING OFFICER SECOND OREGON INFANTRY, U. S. VOLUNTEERS,
Steamer Australia.

SIR: The commanding general directs that you prepare Companies A and D, one medical officer, and one hospital private of your regiment to go ashore to-morrow at 8.30 a. m., under the senior line officer, who will report upon landing to the senior officer of the landing forces from the *Charleston*. This force will be used in the discretion of the commanding officer in such operations on land as may be necessary to carry out orders from the captain of the *Charleston*.

The troops will be in light marching order, with rations for one day in the haversacks and 40 rounds of ammunition.

You will also detail from your regiment 25 rowers to take this detachment to and from shore. These men, under the command of a first lieutenant, will be equipped in the same manner as Companies A and D, and will remain with the boats until the return of the landing force.

On completion of the above duties the troops will return to this ship.

Very respectfully,

HENRY P. McCAIN,
*First Lieutenant and Adjutant Fourteenth Infantry,
Acting Assistant Adjutant General.*

COMMANDING OFFICER LANDING FORCE FROM THE CHARLESTON.

Prisoners and property captured at San Luis D'Apra, Guam, June 21, 1898:

Señor D. Juan Marina, lieutenant colonel, Spanish Army, governor of Guam.

Don Pedro Duarte, captain, Spanish Army, governor's secretary.

Don Francisco Garcia Gutierrez, lieutenant commander, Spanish Navy, captain of port.

Don Jose Romero, surgeon, Spanish Army, health officer.

Lieut. Ramos, Spanish naval infantry.

Lieut. Berruezo, Spanish naval infantry.

Fifty-four noncommissioned officers and privates.

Four Spanish flags.

Fifty-two Mauser rifles.

Sixty-two Remington rifles.

Three swords.

Forty-five bayonets and scabbards for Mauser rifles.
 Sixty bayonets and scabbards for Remington rifles.
 Fifty-two belts for Mauser rifles.
 Forty-five leather belts for Remington rifles.
 Sixty-four cartridge boxes, Remington.
 7,500 ball cartridges, 7-millimeter clips, Mauser.
 2,000 ball cartridges, Remington.

H.

U. S. S. "CHARLESTON,"
San Luis D'Apra, Guam Island, June 21, 1898.

SIR: In consequence of the want of berthing space on board this ship, I request that the prisoners of war taken at this port to-day be received on board the transport steamer *City of Sydney* for passage to Manila, where orders for their final disposition will be given by the commander in chief, United States naval force on Asiatic Station.

The cost of subsisting these prisoners will be borne by the Navy Department. I transmit herewith list of the officers and men captured.

Very respectfully,

HENRY GLASS.

Captain, U. S. Navy, Commanding.

Brig. Gen. T. M. ANDERSON, U. S. Army.

U. S. S. "CHARLESTON," SECOND RATE,
Port San Luis D'Apra, Island of Guam, June 21, 1898.

List of officers and men, prisoners of war:

Lieut. Col. Marina, Spanish Army, governor.
 Capt. Duarte, Spanish Army, secretary.
 Lieut. Ramos, Spanish naval infantry.
 Lieut. Berruezo, Spanish naval infantry.
 Lieut. Commander Garcia Gutierrez, Spanish Navy, captain of port.
 Surg. Romero, Spanish Army.
 Fifty-four noncommissioned officers and privates.

Received the above-named officers and men from the U. S. S. *Charleston*.

T. S. PHELPS, JR.

Lieutenant Commander, U. S. Navy.

3. PRONUNCIATION OF LETTERS IN CHAMORRO.

- A as in Italian (a in "father").
 B as in English, except for a slight tendency toward v.
 C hard before a, o, or u; soft before e or i.
 D as in English, but softer.
 E like a in "fate."
 F as in English.
 G hard before a, o, or u; like a strongly aspirated h before e or i; final g almost like k.
 H silent.
 I like ee in "meet." In final syllables, e and i are almost interchangeable, and frequently confused in spelling.
 J like a strongly aspirated h.
 K as in English.
 L as English.
 LL as j in English, with a slight nasal twang.
 M as English.
 N as English.
 Ñ as ni in "onion."

NG as in "song"; never as in "finger." To obtain the latter sound the g must be doubled.

O as in no.

P as in English.

QU before e or i, like k.

R as English.

RR rolled.

S always hissed. Never as in "reason."

T as English.

U like oo in "hoot." In final syllables, u and o are similar and practically indistinguishable.

X as English.

Y as j in "joke."

Z exactly as s. It is not hisped as in Spanish, or buzzed as English.

In common speech the letter r is disappearing and is being replaced by l. Some words of Chamorro, mostly imported from other islands, are spelled with an apostrophe ('); to indicate halt or catch in the voice. This, as in Samoa, shows the elision of an obsolete k.

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