SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
Bulletin 134

MATERIAL CULTURE OF THE PEOPLE OF SOUTHEASTERN PANAMA, BASED ON SPECIMENS IN THE UNITED STATES NATIONAL MUSEUM

BY

HERBERT W. KRIEGER
Curator, Division of Ethnology, United States National Museum

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The scientific publications of the National Museum include two series, known, respectively, as *Proceedings* and *Bulletin*.

The *Proceedings*, begun in 1878, is intended primarily as a medium for the publication of original papers, based on the collections of the National Museum, that set forth newly acquired facts in biology, anthropology, and geology, with descriptions of new forms and revisions of limited groups. Copies of each paper, in pamphlet form, are distributed as published to libraries and scientific organizations and to specialists and others interested in the different subjects. The dates at which these separate papers are published are recorded in the table of contents of each of the volumes.

The *Bulletin*, the first of which was issued in 1875, consists of a series of separate publications comprising monographs of large zoological groups and other general systematic treatises (occasionally in several volumes), faunal works, reports of expeditions, catalogues of type-specimens, special collections, and other material of similar nature. The majority of the volumes are octavo in size, but a quarto size has been adopted in a few instances in which large plates were regarded as indispensable. In the *Bulletin* series appear volumes under the heading *Contributions from the United States National Herbarium*, in octavo form, published by the National Museum since 1902, which contain papers relating to the botanical collections of the Museum.

The present work forms No. 134 of the *Bulletin* series.

ALEXANDER WETMORE,
Assistant Secretary, Smithsonian Institution.

WASHINGTON, D. C.

TABLE OF CONTENTS

MATERIAL CULTURE OF THE PEOPLE OF SOUTHEASTERN PANAMA, BASED ON SPECIMENS IN THE UNITED STATES NATIONAL MUSEUM

By Herbert W. Krieger
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INTRODUCTION

Southeastern Panama is historically the oldest region of continental America. Here, early in the sixteenth century, in so-called Darien, the country extending from the Chepo or Bayano River on the Pacific slope near the Canal Zone southeastward to the Atrato River on the Caribbean slope near the Colombian border, were made the first Spanish explorations and settlements. Within a few years, indeed as early as 1518, the Spanish were forced to leave Darien because of conflict with native tribes and, later, with English buccaneers and freebooters. They then established themselves at Panama City, more than 100 miles farther west along the Pacific coast.

History of collections from southeastern Panama in National Museum.—Ethnologically, southeastern Panama has remained practically unknown. It is therefore the object of this handbook to catalogue and to describe the several ethnological collections from this region now in the United States National Museum. Aside from the William Markham collection in the Tioga Point Museum, Athens, Pa., partially described in the Bulletin of Tioga Point Museum, January, 1925, and the A. Hyatt Verrill Collection in the Museum of the American Indian, New York, described in Indian Notes, October, 1924, no catalogue of collections illustrative of the material culture of the native tribes of southeastern Panama has been published.

Collections of W. M. Gabb.—The western half of the Panamanian Republic, from the Canal Zone westward to Costa Rica, is better known anthropologically, and several well-known studies relative to the archeology and ethnology of the aboriginal tribes have been published. As early as 1873 Dr. W. M. Gabb had studied the Bribri, Talamanca, and other tribes of Costa Rica and had forwarded to the United States National Museum a collection of necklaces,

clothing, and textiles, gourd-work, headdresses, basketry, pottery, stone carvings from ancient graves, weapons, musical instruments, and articles of household and domestic use.

Collections of A. Bienkowsky and Mrs. William H. Bell.—Western Panama, including the provinces of Bocas del Toro, Veraguas, and Chiriqui, is represented by a series of ethnological collections from the Guaymie, Talamanca, and other aborigines, dating back to a collection by John S. Lamson in 1883, including textiles, pottery, bows and arrows from the province of Chiriqui. A number of woven bags from Los Remedios, Chiriqui, was presented by Col. D. D. Gaillard, U. S. A., in 1907, also by Mrs. D. E. Wright of Winchester, Va., in 1925. The Guaymie Indians of Bocas del Toro are represented by a collection of musical instruments, basketry, and gourdwork secured by Frank E. Read in 1909, while specimens of bark clothing, dance masks, and other objects, collected by A. Bienkowsky in 1907, represent Veraguas. Mrs. William H. Bell presented to the Museum in 1909 a collection of native weapons and textiles from the Guaymie of Bocas del Toro.

Collections of H. Pittier, William Markham, and other minor collections.—Southeastern Panama, interchangeably referred to as Darien in this handbook, is separated from the tribal groups of western Panama by the beaten path of the Canal Zone. Several smaller ethnological collections from the Darien, or southeastern Panamanian, tribes were contributed by Charles L. Bullman in 1890, by Mrs. Caroline E. Bates in 1916, by Mrs. O. W. Barrett in 1918, and by others. Mrs. H. C. Curl, of Washington, D. C., collected a number of baskets in 1909; textiles consisting of woven bags from the Chucunaque River valley were collected by Col. David D. Gaillard in 1911; a large number of objects representative of the culture of the Chocó Indians of the Sambu River valley, South Darien, collected by H. Pittier for the Department of Agriculture and transferred to the United States National Museum in 1912, consist of basketry, gourds, musical instruments, children's toys, bark clothing, and weapons.

It was not until 1924 that the ethnological material from Darien became at all adequately representative of the various native tribes living there. The year was remarkable in that three collections were presented to the museum; the first one, by the Hon. Hoffman Philip, consisted of a small collection of ear ornaments worn by the Chocó of the Cauca River valley, Colombia, William Markham, a resident of Cristobal, Canal Zone, for 15 years, presented a large number of articles from the Tule Indians of the San Blas section of the Caribbean coast; included are earrings, nose rings, necklaces, bark cloth mats, textiles, gourd work, musical instruments, and bows and ar-

rows. The largest collection of the year, however, was secured by the Marsh-Darien Expedition.

Marsh-Darien expedition.—The largest collection of material objects from the Darien Indian tribes, probably the largest collection of material objects pertaining to the ethnology of southeastern Panama now extant was obtained by the Marsh-Darien expedition and presented to the National Museum in December, 1924, through Richard Oglesby Marsh, of Brockport, N. Y. The Smithsonian Institution was represented on this expedition by John L. Baer, of the Division of Physical Anthropology of the National Museum. The party included R. O. Marsh, leader, J. L. Baer, anthropologist, Maj. J. A. Johnson, naturalist and taxidermist, Charles M. Breder, Señor Raul Brin, the representative of the Panama Government, Charles Charlton, the Pathe photographer, and others. The expedition sailed from Panama City eastward along the Pacific coast and spent seven weeks exploring southern Darien and studying the Chocó natives of the lower Chucunaque River basin, also the Cuna of the upper Tuyra River valley. At the end of March, 1924, the base camp at Yavisa, on the lower Chucunaque River, was broken and the journey of ascending the upper Chucunaque and of crossing the Cordillera was begun. During this trip the party was reduced by sickness, death, and desertion. Señor Raul Brin was attacked by fever, returned to Panama and died. Mr. Baer had been weakened by blood poisoning and died at Caledonia Bay, on the Carribbean coast. After crossing the mountains, Mr. Charlton, Maj. Johnson, and Mr. Marsh continued the journey up and down the San Blas coast, where they obtained the confidence and friendship of the Tule Indians and secured a large collection of ethnological material. The material gathered among the Chocó had been forwarded to Panama before the ascent of the Chucunaque and the crossing of the mountains was begun. The ethnological collection gathered by this expedition comprises several hundred objects, and is representative of the Tule of the Caribbean coast, the Cuna of the interior highlands, and of the Chocó of the Pacific slope, including the Tuyra River basin.

GEOGRAPHY OF SOUTHEASTERN PANAMA

Location.—The Republic of Panama lies between the two continental land masses of North and South America, and shares to some extent the plant and animal life of the adjoining areas. The great transverse curve in the longitudinal axis of the Panamanian isthmus causes this region to face the continental areas horizontally rather than vertically, presenting thus a frontage of several hundred miles at right angles to Mexico on the north and to Colombia

on the south. The elevation of the southeastern half of Panama, that is, of Darien, is low, the central continental divide being broken up into disconnected mountain ranges with low lying intermediate passes. This low altitude, together with its situation near the mouth of the San Juan, the Atrato, and the Magdalena, and several other South American rivers, tends to give to southeastern Panama a flora and fauna predominantly characteristic of the tropical low-lying forest region of Colombia adjoining it on the south.

A like observation may be made with respect to the native aboriginal population of Darien, which shows a much greater resemblance to the neighboring Indian tribes of South America in speech, physical type, and ethnic traits than to the tribes dwelling beyond the Canal Zone to the north and west.

Altogether the Republic of Panama is more than 500 miles in length, it averages considerable less than 100 miles from its Caribbean coast on the north to the Pacific on the south; it resembles in contour a semiinverted letter S, thus ∽, with its most northerly position situated only three degrees north of its most southerly projection. With its greatest length to the east and to the west, Darien lies due south of eastern Cuba and in the latitude of northern Borneo and Ceylon. If the curves of the recumbent S-shape coast line might be straightened, the mistaken statement, attributed to Balboa, referring to the Pacific as the Southern Sea, would be correct.

The narrow crossing between the cities of Colon on the Caribbean, and Panama on the Pacific coast was formerly called the Isthmus of Panama, while the other crossings farther east were called the Isthmus of San Blas and the Isthmus of Darien, respectively 31 and 46 miles in length. The use of the term "Isthmus of Panama" to include the whole country between the Caribbean and the Pacific from Costa Rica to the boundary of Colombia is now prevalent.

Caribbean coast.—About 100 miles down the Caribbean coast eastward of Colon, at the narrowest part of the Isthmus, is the Gulf of San Blas, 20 miles long and 10 miles wide. At the entrance of the bay are grouped the islands known as the Mulatas Archipelago, low lying, sandy, coralline islands known as cays, extending along the coast to the east and south and numbering about 600, most of which are too small for habitation. Still farther east along the Caribbean coast lies Caledonia Bay. It was here that William Patterson, under the auspices of "The Company of Scotland, trading to Africa and the Indies," settled in 1698. Living on friendly terms with the native tribes, Patterson and his colonists had to abandon the settlement after two years on account of the hostility of the Spanish further west and lack of support from England.

The bay was named Caledonia, a term which included the surrounding country as well.

The term "Darien" was originally applied to most of the country that we now call the "Isthmus," with the exception of the Province of Veraguas; to-day only those portions of the Provinces of Colon and Panama that lie between the Bayano or Chepo and the Mandinga Rivers on the west and the Colombian border on the southeast are included. The provinces or governmental departments of the Republic of Panama that lie within these limits are Colon

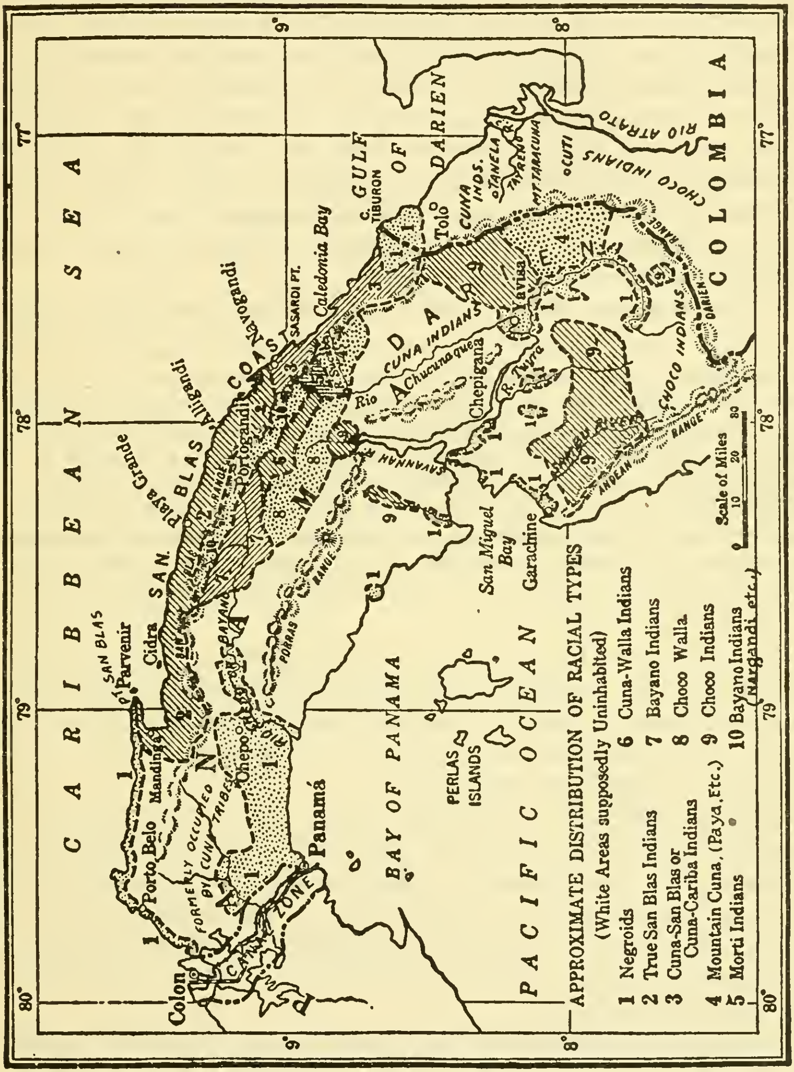

Fig. 1.—Map of the Panama Region

on the Caribbean and Panama on the Pacific slope. These provinces, however, extend westward beyond the Bayano River and the Canal Zone to the adjoining Province of Veraguas. The term "Darien" also applies to a gulf some distance down the Caribbean coast southeast of Caledonia Bay; this gulf also known as Uraba cuts deeply into the Atrato River valley of northern Colombia.

Pacific Slope.—Turning to the Pacific or southern coast of southeastern Panama, one finds the harbor of "Darien" at the inner reaches of San Miguel Bay. Into Darien Harbor flow two great rivers, one, the Tuyra, entering from the south; the other, the Savannah, flowing from the north. The Bay of San Miguel is several miles across at its mouth. Inside it broadens out to a much greater width. The shores are irregular with precipitous banks that get higher as one journeys inland.

William Dampier, in his New Voyage Around the World, wrote:

> The Gulf of St. Michael * * * is a place where many great rivers having finished their courses, are swallowed up in the sea * * *. On either side the gulf runs in towards the land somewhat narrower and makes five or six small islands, and good channels between the island, beyond which further in still, the shore on each side closes so near with two points of low mangrove lands as to make a narrow or straight, scarce half a mile wide. This serves as a mouth or entrance to the inner part of the gulf, which is a deep bay, two or three leagues on every way, and about the east end thereof are the mouths of several rivers, the chief of which is that of Santa Maria; this is the way that the privateers have generally taken as the nearest between the North and South Seas.

The entrance to Darien Harbor is blocked by a large island separating the two channels, Boca Chica and the Boca Grande; the latter entrance was used by the American fleet in 1907 when it anchored in Darien Harbor. The native trading and fishing boats employ the Boca Chica entrance.

Geology: Mountain ranges and passes.—When one studies the geography of the interior of southeastern Panama, several outstanding features present themselves. Geologically the region is markedly different from the territory farther south. The lowlands rest upon a coralline substratum, while the mountains belong to a hypogene formation consisting mainly of granite and syenite, igneous rocks now exposed to erosion.

The highest elevations on the isthmus are on its western portion, where there is an extension of the Costa Rican system. There is a decline in elevation toward the Canal Zone, where the Culebra Pass reaches an altitude of only 290 feet above sea level. There is again a rise in altitude toward the Colombian border. The isolated peaks and mountain ranges of southeastern Panama are not a continuation of an Andean range. In general, some of the Provinces of Panama are mountainous while others have level plains. The

ranges are often but little more than a chain of hills that give rise to low passageways through the Cordillera. Three of these passes are well known; the most westerly is the route from Colon, on the Caribbean, to Panama, on the Bay of Panama on the Pacific; the second pass constitutes the portage between the Mandinga and Bayano Rivers; the third, extending from Caledonia Bay on the Caribbean to the Gulf or Bay of San Miguel, by way of the Sucubti, Chucunaque, and the Tuyra Rivers. It was in the mountains surrounding this pass that Balboa's famous peak, of which Keats wrote, was located.

The heavy rainfall, which reaches an annual total of 130 inches at Colon on the Caribbean, but with a much smaller annual total of only 71 inches at Panama on the southern side of the divide, together with the character of the local rock formations, serves to account for the flood plains formed by the erosive action of the water. Most of the large plains were formerly arms of the sea that have now become flood plains. The heavy rainfall, with consequent erosion, has covered the flood plains with a superimposition of alluvial débris upon the coralline substratum of the low-lying river valleys. In the valley of the Tuyra River and southward the volcanic formations are accompanied by a faint odor of hydrogen disulphide in the spring water, sometimes with as high a temperature as 110°. Such springs are used by the natives to effect cures of itch and other diseases.

Robert T. Hill[1] writes:

> Cross sections, via the drainageways and dividing cols, across the mountains from the Gulf of San Blas and Caledonia Bay give the impression that the country is composed of the older Tertiary sandstone and clays which have been vertically folded and through which has been pushed a mass of "syenite." This "syenitic" axis of the Cordillera San Blas is some 14 miles in width, extends in an east and west direction, and is bordered on both sides by the sandstones and clays through which it has been intruded. The Tertiary sandstones in places are highly metamorphosed, forming a quartzite. Around Santa Marta the Sierra is largely composed of eruptive granite.

In the same article Hill refers to the known heights of the various intercoastal mountain passes, as follows: The Culebra Pass, 287–295 feet above the sea level; the Atrato-Sucubti Pass, 583 feet; the Atrato-Napipi Pass, 778 feet; Caledonia Pass, 1,003 feet; the San Blas Pass, 1,142 feet; and, finally, the Atrato-Morte Pass as reaching the height of 1,143 feet.

In Edward A. Goldman's work on the mammals of Panama assertion is made that the geological structure and history of Panama and Central America in general are, as yet, very imperfectly known. "The attenuation of the isthmian region and the slight

[1] Bulletin, Museum of Comparative Zoology, vol. 28, p. 211.

elevation of various transisthmian passes, irrespective of other data, suggest the probable former isolation of the two greater Americas. Some of the passes are less than 500 feet above sea level, and a subsidence of 1,000 feet of the present continental mass would establish interocean connections at various points. Beginning on the south some of these are marked by gaps in the mountains at the source of the Rio Napipi, a tributary of the Rio Atrato, at the Sucubti, an affluent of the Rio Chucunaque, at the Canal Zone, and farther north at Lake Nicaragua and at the Isthmus of Tehuantepec. Such a division would leave a chain of islands, several of the more southern of which would be 3,000 to 4,000 feet high, and it would isolate the high mountains of Costa Rica and Guatemala.

"Geological investigations, especially those pursued in connection with Panama Canal construction, indicate that oceanic waters did in fact extend across, at least at the Canal Zone, during the Oligocene period; but the date of land emergence has not been very definitely determined. The slight depth of the water to submarine escarpment far out along the coasts of Panama, and the present rapid rate of erosion, indicate that the Isthmus was formerly much broader than at present. The encroachment of the sea is well shown along much of the northern coast line, where cliffs receive the full battering effect of the waves swept in by the northerly trade winds. Southerly winds are less dominant, but the southern coast is constantly subjected to the erosive influence of tremendous tides."

Rivers.—The more important rivers of the Caribbean slope of southeastern Panama, as mentioned before, are the Mandinga and the Cardi entering the Gulf of San Blas, and the Atrato flowing into the Gulf of Darien. The mouths of the Atrato are obstructed by a bar, but within the bar the channel is broad and clear to the confluence of the Napipi and as far as Inibdo. The valley of the Atrato, once an arm of the sea, has been gradually formed by the disintegration of the hills upon either side, and by the vast masses of vegetable matter that yearly spring up and thrive. In the lower portion of the valley this process is still going on, and there are vast swamps extending for miles upon each side of the main channel, filled with coarse granulate grass growing in many places so thickly as to prevent the passage of boats and presenting the appearance of an immense meadow; yet underneath a deep strong current sets steadily seaward. It is not before reaching some 60 miles from its mouth that firm banks are found, but beyond that point they extend in unvarying monotony 10 to 12 feet high, and without a sign of a hill or highland in any part. On both sides of the river stretches a level country covered with an unbroken forest filled with hard woods, rubber trees, and valuable dye woods. Now and then may be seen a dugout or flat-bottomed craft crowded with naked negroes,

who propel their vessel lazily against the current, walking fore and aft the deck with their long pole paddles and keeping step to a wild, monotonous chant. These are known as Bungoes, trading between the various river towns and accepting gold, rubber, vegetable ivory, orguilla, and dyewoods in exchange for an assortment of cotton prints, knives, guns, notions and trinkets, implements and domestic utensils, hardware and fishing equipment of metal.

There are many rivers and streams flowing into the Caribbean along the coast extending from the Canal Zone to the mouth of Atrato River, but these are mostly short and swift streams navigable for but a short distance from their mouth. The Pacific slope has similarly many short streams terminating on its coast. Between the Caribbean and Pacific slopes there is a large central plain lifted up between the encircling mountains. In this plain several larger rivers take their rise. As the central plain is considerably nearer the Caribbean than the Pacific slope, these rivers extend practically across the Isthmus. Chepo or Bayano River debouches not more than 30 miles east of Panama Bay; further down the coast to the southeast, emptying their waters into Darien Harbor, are the two rivers, Savannah, which is really the extended northern arm of Darien Harbor, and Tuyra River with its many tributaries, making up the southern arm. Its chief tributary stream is Chucunaque, extending almost due north toward the mountainous region near the opposite, Caribbean, coast. The valley of Sucubti, a chief tributary of Chucunaque, together with many other tributaries of Tuyra, were thoroughly explored by the Marsh-Darien Expedition in 1924.

Climate.—The climate of Darien is not a satisfactory one to the white race. A reaction from the stimulation ascribed to the intense light, combined with the continuous heat and great humidity, sets in and paves the way for the peculiar tropical diseases that are barriers against the settlement, even by natives, of the humid lowlands. Another barrier to settlement are the obnoxious insects and dense jungle vegetation. The mountain uplands, likewise the island cays, are free from many of these disabilities.

There are two distinctly marked dry seasons. The months of January, February, and March are the most pleasant and have least precipitation. April marks the beginning of the rainy season; during July rainfall decreases again; from August to September the climate is dry; the months of November and December again have a heavy rainfall. The entire Caribbean or north coast of Darien is much more subject to rainfall than is the south or Pacific slope. The town of Colon on the north has an annual average of 196 rainy days, while at Panama City, on the southern slope, the number of rainy days is but 141.

"During the wet season, beginning usually about the latter part of May and ending about the first of December, southerly winds become dominant and rains are more general throughout the Isthmus. At the Canal Zone, which is a cross-section of the Isthmus about 50 miles in extent, the annual rainfall on the Atlanic coast is about double that on the Pacific coast. Official records for 1909 show a total rainfall of 93.06 inches at Balboa, and 183.41 inches at Cristobal; but the average for 13 years at the former station is 71.67, and for 40 years at the latter station 130.03. This relative humidity of the two sides probably obtains as far west as the Costa Rican frontier, but in eastern Panama the difference is less marked. In much of the Darien region the total rainfall is increased to an annual precipitation of perhaps more than 200 inches which renders this area one of the wettest in America.

"Under the stimulating influence of frequently recurring showers and continuously moist conditions throughout the year, the Atlantic watershed maintains a much more exuberant growth of vegetation than the Pacific watershed, where long periods of drought check vegetative vigor. At the height of the dry season these climatic differences are manifested in the contrasting aspect of the forests on the two slopes. While the trees of the Atlantic forest are clothed with brilliant evergreen foliage, those of the Pacific forest, truly deciduous for the most part, present bare stems and the landscape has an autumnal appearance, relieved to some extent along the borders of the streams. It is in this dry forest that one notes the strange habit, possessed by various unrelated species, of producing flowers and ripening fruits while the trees are in a leafless condition."[2]

Plant and animal life.—Zoologically, southeastern Panama belongs to South America rather than to North America. The northward course of the great rivers of Colombia and the adjoining north coast of South America with its island outposts facilitates the transfer northward of plant life as well.

The southern and eastern provinces of Panama have a fauna typically South American, while the fauna of the north and west is Central American, the two types meeting at the narrowest and least elevated part of the Canal Zone. Although there are no distinct lines between these faunal zones, certain species are never found west of the canal and others never occur to the east of it.

Some of the animals frequenting the Pacific side of Panama are species of deer, jabali or peccary, paca, tapir, curassow, and various game birds. Along Tuyra River on the Pacific coast every isolated tree has great numbers of long, pendant, pouch-like nests of

[2] Smithsonian Miscellaneous Collections, vol. 69, No. 5, p. 23.

the yellow-tailed cacique, a species of the family Icteridae. Other birds found are varieties of eagles, kites, toucans, trogons, parrots, macaws, parakeets, flamingos, white egrets, herons, and others.

Among the birds that frequent mountains and uplands in western Panama is the quetzal or resplendent trogon, the sacred bird of the Aztecs. The upper covert feathers of the tail are sometimes a yard long; it has a recurved crest and fern-like wing covers of a metallic emerald green, with breast feathers of a vivid scarlet.

During the winter months many of our common North American birds arrive as migrants and pass the winter season in a tropical environment.

Insect life is found in a multitude of varied forms and species. Conical white ants' nests 10 to 15 feet high dot the plains. Foraging ants may be seen on their journeys marching in single file, each ant carrying bits of flower or a leaf. Cockroaches, red bugs, ticks (garrapatas), jiggers (*Pulex penetrans*), sand flies, screw worms, all contribute wholly or in part to the prevalence of such diseases as ground or "spigotty" itch, foot rot, and other skin troubles, while mosquitoes, often a pest in themselves, may carry other diseases.

The jungle fauna includes such species as armadillo, sloth, species of agouti, varieties of monkey, such as the red and black howler, spider monkeys, white-faced, and owl or night monkeys, marmosets, giant lizard or iguana, jaguar, cougar, giant anteater (*Myrmecophaga*), Baird's tapir, a small and a large species of peccary or jabali, coati, kinkajou, or honey-bear, small ant-eating bear, and a large number of other species occupying a much wider range, such as snakes of the pit viper variety, the otter; and some smaller mammals.

Like the numerous varieties and species of animal life, great in its diversity, but preponderantly South American, plant life in southeastern Panama has its distinctive characteristics. According to Pittier, *Cavanillesia platanifolia*, or cuipo tree, once a part of a huge and dense forest, now stands the isolated remnant of a primeval forest that at one time extended northward beyond the Isthmus. Its trunk is huge and straight, its crown insignificant and flat. The wood, as light as cork, is spongy and much affected by termite tunnels. It is found here at the extreme northwestern areal limit of the species which extends eastward in Colombia, along the reaches of the Magdalena River and southward as far as Peru. A wood similar in texture, much used by the natives for carvings and in their wood sculpture, is that of the Panama species of balsa or corkwood (*Ochroma limonensis*).

Nowhere in southeastern Panama is there a Transition Zone such as occurs in the flora of the upper mountains of the Province of

Chiriqui, in western Panama, where a reduced endemic element mingles with representatives of the flora of northern countries and of the South American Andes.

The great variety in plant life is evidenced by the large number of flowering trees such as royal poinciana [3] (*Delonix regia*), which is covered in June with brilliant red flower clusters. The lignum-vitae [4] (*Guaicum sanctum*) is a tree with spreading branches and wistaria-colored blossoms; its wood is very hard. Among herbaceous plants found in the mountainous interior are numerous species of vines and epiphytic orchids. The iron withe, bejuco hierro, is much employed for tying the poles and wattling of native houses and in basketry.

Plants employed by native tribes in arts and those that are valuable for food, also those used in the practice of primitive medicine, will be referred to in subsequent sections.

POPULATION: THE SPANISH, NEGROES, AND ASIATICS

The size, location, and configuration of the Isthmus of Panama have made possible its utilization as a natural highway joining continent with continent and ocean with ocean. Other geographical factors, such as a humid tropical climate, combined with a jungle vegetation, have retarded settlement and the building up of a dense population along this natural highway. Were it not for such factors one might expect to find here at the crossroads of the New World the high culture that sprang up instead far to the south in Peru and to the north in Mexico. In pre-Columbian times many tribal migrations across the Isthmus must have taken place, for the variety of physical and cultural types in aboriginal South America is great and the presence of the Indian in that continent is too recent to account for such dissimilarity. But few traces of early migrations are known to exist in southeastern Panama. No ancient stonework has been uncovered; no ancient burial places offering a wealth of archaeological data have been found such as have been discovered and studied in the urn burials "huaca" and the pottery offerings in the Province of Chiriqui in western Panama. Similarities and dissimilarities in speech, cultural traits, and physical types that exist in the living native tribes of southeastern Panama, both one to another, and to the great aboriginal cultural centers to the north and to the south, and to which they are marginal, constitute the only reliable guide to the unfolding of their past.

With the coming of Columbus and the historical period it becomes possible to trace the ethnic elements entering Darien more satisfactorily. Each group of invaders left not only cultural traces, but a

[3] This tree was introduced from Madagascar. [4] This comes from the West Indies.

new physical type as well. As one travels away from the beaten paths of migration, away from the interoceanic passes, a more and more primitive, likewise older, ethnic stratum is encountered.

Spanish influence in Darien.—The Caribbean coast of Darien was first discovered by Rodrigo de Bastidas about the beginning of the sixteenth century. Columbus later visited the north coast on his last voyage to the New World and founded a colony on the Belen River, which was soon destroyed by Quiban, a native chieftain. Columbus discovered the San Blas coast with its numerous islands, which he named "Islas Berbas." He found the coast densely inhabited. Starting from the small settlement at Santa Maria del Antigua, Balboa, in 1513, then serving as governor, crossed the isthmus and discovered the Gulf of San Miguel on the Pacific. The Bayano River is named after a fugitive slave who, uniting with other fugitives, waged warfare against the Spanish; the river is also called Chepo, from Cheapes, a chief met by Balboa. Balboa found the southern coast similar to the north coast, densely populated and the tribes divided into clans, some of the names of which are to-day perpetuated in the names of rivers and other topographically descriptive terms; tribal designations applied by later arrivals were derived from rivers upon which the tribes lived. Examples on the Carribbean coast are the Caledons and the Sasardi; upon the Pacific slope are the Sucubdi, Asnati, Morti, Chucunaques, Paya, and Bayanos.

The western half of Panama from the Canal Zone to Costa Rica, and from the Pacific coast to the central mountain range is scantily populated. Occasional small hamlets occur along the coast fringes, at the mouths of navigable rivers, and adjacent to fresh water.

On the Pacific side are several important towns of several thousand inhabitants, such as Penonome, Los Santos, Santiago, and David, as well as others of less importance. On the Carribbean coast, near the Costa Rican border, is the American plantation of the United Fruit Company at Bocas del Toro.

Panamanians.—The inhabitants of the towns on the Pacific Coast west from the Canal Zone are what have come to be known as Panamanians, a mixture of Spanish, Indian, and Negro, with occasional pure Spanish or other European stock.

"Some of the interior Cordillera towns of western Panama still treasure the old 'cross' money, silver or brass shoe-shaped stirrups of the grandees, ancient swords, and bits of armor worn by the first hidalgoes who penetrated the interior. People still live and dress as did their ancestors centuries ago. An example of these towns is San Francisco, with its church built in 1522. Some of the isolated towns in Veraguas have descendants of old Spanish settlers who speak pure Castilian, where men still wear loose blouses and

short trousers of homespun cotton, and the women appear in the attractive pollera."

The inhabitants of the Caribbean coast villages west of the Canal Zone are principally Negroes or negroid, with a small admixture of Spanish and more of Indian, while the leading village storekeepers are largely Chinese.

Many of the Spanish explorations and settlements in Darien were prompted by a desire for precious metal, notably in consequence of the discovery of the Pearl Islands near the Bay of Panama by Balboa, who, after having seen the canoe of the chief, Tumaco, richly ornamented with pearls, demanded to be shown where they came from. Also settlements were made within the confines of San Miguel Bay and the upper reaches of the Tuyra River at Santa Cruz de Cana, where ancient native gold mines were taken over and worked by the Spanish. The mine called Potosi by Bancroft was the chief cause of many raids by the Indians and the buccaneers until it was closed in 1685. The founding of other settlements, such as Porto Bello and Nombre de Dios on the San Blas coast was due to the need for storehouses from which shipments of treasure to Spain might be made. Old Panama was founded in 1519, and, although outside the boundaries of southeastern Panama (Darien), is of interest because of its influence on the lives and fortunes of the natives of Darien. The cruelty practiced on the enslaved Indians resulted in the death of thousands of them, who had been forced to work in mines as carriers and to do other hard tasks to which they were ill adapted, and led to the revolt of the tribes living along the San Blas coast as early as 1518 and the expulsion of the Spanish from that region.

The "Gold Road" led from Porto Bello on the Caribbean to Old Panama; over this roughly paved route flowed all the traffic from Spain to the settlements along the west coast of South America, likewise all the loot from Peru and western Mexico, and diverted Spanish interest and Spanish settlements away from the unfruitful Darien, where the Indian gold mines soon proved unprofitable. "Over this highway passed armor-clad soldiers, proud hidalgoes, sandaled monks and friars, and hardy Conquistadores. And flowing in the opposite direction was the stream of heavily laden mules, of fettered slaves, of returning Dons, carrying the treasures of New Spain to fill the coffers of the Spanish Crown."

Negroes.—Before 1570 the natives had rebelled and fled from their oppressor in Old Panama and in the mines. Negro slaves from the Guinea coast were imported to take their place. This proved to be the undoing of the Spanish, as the Negro slaves soon outnumbered the white Spanish colonists and in other ways contributed to the undermining of Spanish rule. Many Negro slaves escaped

and fled to the jungle, where, in the lower river valleys and along the coast, they gradually pushed back the Indian natives. Along the Caribbean there are many settlements of the descendants of former West Indian and Spanish slaves, notably at Porto Bello, Nombre de Dios, Palenque, and Viento Frio. Negroes also live along the banks of the Atrato or near the mouths of its tributaries, where they cultivate bananas, plantains, corn, sugar cane, and breadfruit.

The Pacific coast of Darien has also numerous settlements of Negroes at Chepo, Chiman, Garachine, as well as in the Tuyra River basin. White blood is intermingled to some extent with that of the Negro, so that mulattoes as well as zamboes, that is, a Negro and Indian hybrid, are found living with the more pure blooded Africans. At Garachine, on the east shore of San Miguel Gulf, a typical Panamanian Negro settlement, the houses are built of reeds on the ground level, so low that during the rainy season it is possible to travel from house to house by boat. Under and around the houses is a varied assortment of garbage rotting in the sun, pigs, chickens, and other live stock. Cock-fighting and loafing occupy the time of the inhabitants. Similar conditions prevail in such villages as La Palma and El Real with their circular huts of vertical reed walls and thatched conical roofs reminiscent of Africa. An ethnic map of southeastern Panama would show that the area occupied by the negroid population at the present time is equal to that occupied by the native Indians. An entirely different cultural level exists among the Negroes inhabiting the Caribbean coast northwest of the Gulf of San Blas and beyond the Canal Zone at Palenque, where the descendants of fugitive slaves are more industrious and also good woodsmen.

Buccaneers.—The buccaneers, Watling, Wafer, Sharp, Bullman, Dampier, Coxon, Baskerville, and their followers disappeared from Darien as suddenly as they came, leaving no settlements or traceable element in the population. The term, "buccan," employed by the Indians to designate smoked meat, later became "buccaneer" in the English language as applied to the cattle hunters on the West Indies who were gathering ships' meat supplies. Their unsavory reputation grew and the term began to be applied to the privateers (as Wafer refers to himself) whose main purpose was the seeking of Spanish gold. In their sporadic journeying across the Isthmus they were assisted by natives who had many reasons in wishing the destruction of the Spanish. Wafer's and Dampier's accounts of their travels and of the Indian tribes are still valuable.

Newer immigrants.—As early as 1719 Jesuit missionaries had penetrated into the heart of Darien, only to be massacred by the Indians. Hostility to the Spanish continued and villages were built

along the Tuyra and lower Chucunaque, at Yavisa, Chepigana, Pinogana, Real, and Molineca, which finally led to the establishment of a complete chain of well garrisoned forts across Darien, but which were subsequently abandoned and are to-day in ruins. These towns are now inhabited by Negroes and half-breed Indians.

The discovery of gold in California in 1849 marks the beginning of another phase in the racial history of the Isthmus. Thousands of gold seekers took the Panama route and crossed the Isthmus from Porto Bello to Panama by way of the "Gold Road" and the Chagres River. Later followed the attempt by the French to build an Isthmian canal, which together with the prior building of the interoceanic railroad from Panama City to Aspinwall (Colon), brought thousands of Asiatics, southern Europeans, and Negro laborers to the Isthmus from the English, French, and Dutch West Indian possessions. Many of these laborers remained in Panama and settled either in the towns adjacent to the canal or along the coast. Their children intermarried or mingled with the Indian natives, producing consequently a high degree of hybridization. The Asiatics, represented by the Chinese and Japanese chiefly, and a smaller number of Hindoos, do not intermarry to the same extent as did the West Indians, though there is some hybridization of Oriental, Indian, and Negro in towns adjacent to the Canal Zone. The Oriental is the trader or merchant, an occupation that has been followed to some extent by the Negro along the great rivers of the interior.

Along the northern side of the Tuyra river there are extensive tidal forests. In these forests there are many varieties of useful trees. Among them is the "cocobola" (*Dalbergia retusa*), the hardwood of which is utilized in the making of handles for machetes and knives. The Chinese have engaged in this industry as they have in other trades, such as that of gold-beaters for the Tule for whom they shape earrings and other ornaments. They are essentially traders, and along with the Negro trader buy up the Indian's supply of turtle, ivory nuts (*Phytelephas*), and other products such as coconuts.

POPULATION: THE NATIVE TRIBES.

Tribal boundaries; linguistic stocks.—Pinart assumed that all of the Indians of Panama belonged to the Carib linguistic stock. He also believed that no difference existed between the tribes of the Venezuelan coast and the Cuna and Guaymie from the standpoint of physical characteristics. This assumption has been disproved both as to linguistic affiliations and with regard to physical types so far as the Cuna tribes of Darien are concerned. Pinart correctly defines the boundaries of the former habitat of the Cuna as extending over most of Darien, including the northern portion of the

valley of the Cauca in Colombia. Toward the east their territory extended to the mouths of the Atrato and Acarica rivers; to the southwest to the Sambu River valley near the Gulf of San Miguel, occupied by the Chocó-Sambu tribes; toward the west the old boundaries extended to the Chagres River on the Caribbean and the Mountains of Chorrera on the Pacific slope of the isthmus. Thus the western as well as the eastern boundary extended entirely across the isthmus. Pinart erroneously speaks of the Cuna language as a branch of the Carib linguistic stock, and seems to be unaware of the cultural affiliation of the Cuna with the South American west coast tribes, with the Maya of Yucatan and the old Cueva peoples to the north (Cueva is an old Spanish term for Cuna).

Andagoya refers to the Cueva (Cuna) language as being spoken in the provinces of Comogre and Beruqueta, on Pearl Islands, about the region surrounding the Gulf of Miguel, and in the province of Coiba.

The Chocó Indians of the Sambu River valley, south Darien, are related with the South American Chocó Indians of the San Juan and Atrato River valleys. They number about 500 individuals or more but have intermarried to a great extent with the Panamanian and Negro. The Chocó stock, also known as the Noanama, or Citarae, inhabit the valleys of the Chocó and the Cauca and are numerous in the Colombian states of Cauca, Boliviar, and Antiquia.

In Bulletin 44 of the Bureau of American Ethnology, by Thomas and Swanton, reference is made to the boundary line that separates the South American languages from the linguistic stocks of North America. It should be noted in this connection that as with many other culture areas in North America linguistic boundaries do not coincide with the general diffusion of culture traits, nor with physical characteristics. The factors contributing in this lack of a parallel development of language and culture are often obscure, due to the migration of tribal groups; often geographical influences determine the food getting habits along with religious practices. In general it may be said that material culture is much more flexible than is linguistic change, so that a true ethnic boundary is more often a linguistic boundary as well. This linguistic boundary line is traced by Thomas and Swanton.

"Beginning at the extreme northwestern corner of Honduras, where it meets the bay, it runs thence southeast almost in a direct line to the eastern end of Lake Nicaragua; and thence in nearly the same direction to the head of the Gulf of Dulce on the southern coast of Costa Rica. This demarkation, allowing for the following modification, is accepted: Carry the line from the east end, or near the east end, of Lake Nicaragua almost directly south to the mouth of the Gulf of Nicoya, the tribes east of this line—the Jicaque, Paya,

the Ulvan tribes, the Carib, Mosquito, Rama, and all the tribes of Costa Rica (except the Orotina), and those of Panama, being considered as belonging ethnically to the southern continent."

When it comes to determine the boundaries existing between the Panamanian and northern South American material culture areas the line is not so clearly drawn. In general the rule is that maize culture and loom weaving as contrasted with loomless handicrafts and manioc culture are the distinguishing factors; tribes belonging to both groups being of South American extraction.

In the report upon the survey of the Isthmus of Darien for an interoceanic ship canal, Admiral, at that time Commander T. O. Selfridge writes about the native Indian population:

"The whole of the Isthmus of Darien, except a small portion of the valley of the Tuyra, comprising the towns of Chipigana, Pinogana, Yavisa, and Santa Maria, and a few scattering inhabitants on the Bayamo (Chepo) near its mouth, is uninhabited except by the San Blas or Darien (Cuna stock) Indians. It is on account of their jealous exclusion of foreigners that so little is known of the country. In 1719 the Catholic missionaries had succeeded in establishing a number of towns on the Atlantic coast and upon the rivers flowing into the Gulf of San Miguel, but they were all destroyed by the Indians. In 1790 a treaty of peace was made with the Indians of Darien, in compliance with which the Spaniards abandoned all their forts in that district, in which no white man has since settled. They have the usual characteristics of the North American Indians, being rarely met with over 5 feet 6 inches in height. They are a muscular race, capable of great exertion, for which their life in canoes, or the broken nature of their mountain homes, peculiarly fit them. They are very peaceable in their natures, and I could learn of no conflict between the villages, but yet independent and resolute against foreigners. They inhabit the whole Atlantic coast from San Blas to the Tarena, mouth of the Atrato, and in the interior from the Sucubti to the upper parts of the Bayamo. There is no head or chief of the whole tribe, as commonly reported; but though the language and customs are similar, each village or tribe has its headman, or chief, generally the oldest man of the tribe, to whom all pay great deference."

The term *Darien Dariena* or *Tarena* appears to have first been applied to the Atrato River by the Indians of that region. The first of the Conquistadores to enter the Gulf of Uraba or Darien was Bastidas in 1501. The village of the cacique, Cemaco, was located near by and it was here in the region which was later termed Castilla del Ora by the Spanish that there occurred the first clash of arms between the Indians and Spaniards under Enciso. Cemaco with 500 of his Cuna (San Blas) warriors stood their ground

until compelled to retire inland before the superior arms of the Spaniards. The village of the Indians became the first seat of Spanish power on the Caribbean coast of Darien. Captives taken in the battle with Cemaco were compelled to gather gold and to work in the fields. Plentiful supplies of gold and cotton were found stored in the village, and the adjacent fields were found to furnish ample provision. Along the river banks, secreted in caves were found many gold ornaments. This settlement of the Spanish near the Gulf of Darien was grafted upon the old Indian village, even the houses of the natives being occupied by the conquerors. The name given to this first white settlement was Santa Maria de la Antigua del Darien.

After various encounters with native caciques, Balboa, who by 1512 had become governor of the new colony, was forced to admit that "thirty caciques have already been slain in the attempted pacification of this country, and now that I am obliged to penetrate still farther in search of food, I must kill all who fall into my hands: otherwise, our colony can not exist while waiting relief."

Many of the caciques have given their names to the territory over which they ruled, and the older writers have invariably referred to a district in terms of the name of the ruling chief. Thus were coined such tribe names as Comagre, Chepo, and others along with such true Indian tribal terms as Darien, Coiba, and Uraba.

A study of the language of the San Blas coast Towali or Tule was recently made by John P. Harrington, of the Bureau of American Ethnology. In the Smithsonian Miscellaneous Collections,[5] he makes the following linguistic classification:

> The Tule Indians, also known as the Cunas, Comogres, and San Blasenos, live along the Caribbean coast of Panama, from Murru (San Blas Point) to Armila (Port Obaldia), a distance of 120 miles. They still have their own tribal government from Kwibgandi to Cacardia, a strip of coast 30 miles in length. They formerly held the coast from the region of Eskarban (Port Escribanos), 15 miles west of San Blas Point, to include the delta region of the Rio Atrato. The tribe also holds the San Blas range, which parallels the coast at a distance varying from 5 to 20 miles, from San Blas Point to the region about Taracuna Mountain, including portions of the Pacific slope of the range. The linguistically related Coiba held the isthmus to the west, including Panama. The linguistic stock to the south was the Choco Indians, who now inhabit much of the Savana, Chucunaque and Tuira River drainages.

There are two outstanding aboriginal ethnic groups in southeastern Panama: The Chocó, also known as Chocoi, Chokoe, or Sambu-Chocó living on the southern or Pacific slope; and the Cuna, variously termed Mountain Cuna, Paya, Cunas Bravos, etc., inhabiting the region of the upper Chucunaque and its tributaries, the central uplands and mountain ranges, and the Towali of the

[5] Vol. 77, No. 2.

Caribbean island studded coast, known also as the Tule or, more popularly, the San Blas, "Samballoes" (Wafer). The name was given by Christopher Columbus in honor of Saint Blasius, to the island archipelago which they inhabit. They represent a large tribal group belonging to the Cuna stock.

As has been noted before, there are many tribal names known to the Indians themselves and many additional names that have been given to the Indians of particular localities. Where culture and physical type of the native groups are identical, it is confusing to thus use purely local names as tribal, so that in this handbook but three tribal designations are employed: Chocó, as applied to the natives of the southern slope; Cuna, designating the interior groups; and Tule, including the Caribbean coast natives from the Gulf of San Blas southeastward to the Gulf of Darien on the Colombia border.

The occupation of the present area of the Canal Zone by an intrusive white element as early as 1519, the later encroachments by the enslaved Negroes; and the still more recent influx of laborers of all races and nationalities during the building of the Panama Canal, has separated the native Indian tribes into two groups and has led to the extinction of at least one tribe, the Doraskeans, in Chiriqui Province, western Panama. The Guaymie, Talamanca, Guatuso, and other tribes live in western Panama and are separated by the Canal Zone and the surrounding country, which is occupied by the Whites and Negroes, from southeastern Panama. The ethnology of these tribes will be only casually referred to here. Linguistically, they belong to the same Indian ethnic stock as do the Cuna and the Tule, namely, the Chibchan; their culture, however, differs in many essentials and resembles more that of the Costa Rican tribes than the culture traits of the Darien Indian tribes.

The Tule or Towali Indians.—The Indians, 8 in number, 5 adults and 3 children, that R. O. Marsh brought with him on his return from the San Blas coast in 1924, were measured anthropometrically by Dr. A. Hrdlička, of the National Museum. He finds that the measurements taken indicate a similarity in physical type to the Maya of Yucatan, Mexico, on the north and to the ancient Peruvians on the south. Whatever their past tribal connections may have been, the Indians of the San Blas coast have no tradition of any other tribal origin or racial affiliations than that they were created by the God, Olokkuppilele, at Tacarcuna Mountain, west of the mouth of the Atrato River. The Tule have a well organized political organization under the control of seven chiefs. The chief of all the Tule speaking Indians of the coast is known as "Sakla Tomale." The chief, Igwa Nigdibippi, claims to have 20 islands under his control. The chief is elected by unanimous vote of the married

men in mass meeting and serves during his lifetime. His son may succeed to the chieftainship if he shows ability. Among the Tule the chief acts as instructor to his tribe; an aspirant to the office sometimes fits himself through travel, serving as a sailor on foreign ships, etc.; another qualification lies in diligently learning the tribal songs and traditions.

The San Blas Indians call themselves the Tule or Towalis, meaning "sky," also a "Cuna man." They also refer to themselves as Cuna. They are a short, stocky, dark reddish-brown skinned people. The body is unusually long in proportion to the limbs, which are short, giving them their short stature. A high cephalic index is indicated by the round head, which is proportionately rather large. The zygomatic arches are prominent; the nose long and often aquiline; the hair is jet black and is worn cropped short while the men sometimes have the whole mass bobbed at the neck. Girls wear their hair long (pl. 17).

The buccaneers were accepted by the natives on friendly terms, partly due to their desire to make common cause against their mutual enemy, the Spanish. The Cuna-Cuna, whom history and tradition assign an area much more extensive than that occupied by them to-day, also received favorably the settlement in 1698 of the Scotch under Patterson at Caledonia. Americans are classed by them with the Spanish conquerors of old as unsympathetic. At present no foreigner is permitted to pass the night on the land in their territory.

Property rights are vested among the Tule partly in the community or village, in which case any individual in the village has a right to use the wood, fruit, or hunting rights, as the case may be. A second class of property, such as the more tangible or movable objects, is the hereditary property of women. At marriage the couple goes to the home of the bride to live. Ownership of money and crops, such as coconuts and bananas, which find a ready sale in Colon and other towns, is vested in the enterprising males that have the will and energy to plant and care for the plantations. Such young men are urged upon the young girls as desirable for prospective bridegrooms.

Location of settlements and population.—The Tule live in villages on the small islands along the coast; the plantations are on the mainland where men also go to hunt game. The San Blas coast approximately is 100 miles in length, while the mainland up to the continental divide is only 10 to 15 miles in width.

The following statistics regarding the Tule population were compiled by R. O. Marsh. The villages cited are listed in the order of their position on the San Blas coast beginning at the Gulf of San

Blas east of Nombre de Dios and extending southeastward to the Colombia border.

Town and island (coterminous)	Estimated population Tule Indians
Islands of Parvenir, capital in charge of Panama, and Cardi	5,000
Modinga, 4 islands	1,000
Chucumbale, 2 islands	600
Soledad	120
Gallinazo	60
Cidra, 2 islands	2,000
Azucar	300
Nargana, 2 islands	2,000
Tigre	150
Tecantici	150
Maqui	100
——, new village	100
Playa Grande and vicinity	2,000
Perro	50
Playon Chico	250
Mono, new town	250
Cuigandi—plantation village occupied intermittently by Indians from Aligandi.	
Aligandi (160–170 houses)	2,000
The two islands of Banana and Punta Brava	500
Cuidi or Mosquito Island	500
Portogandi	2,000
Navagandi Island	2,000
Pinos	250
Sassardi Vieho(home of Ina Paguina, head chief)	1,500
Sassardi Nuevo	1,000
Caledonia, or Agla	250
Point Escoces (old Scotch settlement).	
Carreto	200
Anachucuna	200
Bernado	15
Chotinaca	40
Pito	20

The last village before reaching the Colombian boundary, which begins at Cape Tiburon, is Port Obaldia. This village is occupied entirely by Negroes. The total population listed in this summary of the Indian population of the San Blas coast is 24,155. This does not include the inland villages which are wholly or in part occupied by the Tule Indians. No estimate is attempted with regard to the number of white Indians who are reported as occupying segregated villages some distance from the coast. The total number of Indians belonging to the Tule tribes has been estimated by Markham and others as not exceeding 25,000 individuals. The region of the headwaters of the Bayano river is occupied by the villages of Matoongandi, Seebooti, and Nargandi located on the upper branches of the Bayano from which they take their name.

Place names of the island villages along the San Blas coast are in part Spanish and part Indian. There are noticeably no terms with the ending "agua," a suffix to place names that is quite common to the north of Darien in such terms as Veraguas, Nicaragua, Managua, etc.

Each of the widely dispersed habitation groups among the Tule are under the control of a chief or "cacique," with the "lele" as second in command, succeeded in turn by the "comotoro" and "urumia." The lele is the magician and healer, the comotoro is the official musician appointed by the chief, having charge of the dances and ceremonies; the urumia is a policeman, or rather the chief's messenger. He must also keep strangers away from the village and warn the inhabitants of the approach of danger. The policeman is a general utility man, notifying the village population concerning meetings called by the chief, also to announce the approach of a wedding or other ceremonies. Other functionaries are the assistant musicians and the official chicha taster who supervises the making of the beverages to be consumed at weddings and harvest celebrations.

In the towns and villages along the San Blas coast, especially in such settlements as Alligandi, which is the political center of a strong combination of Indian villages under the rule of an "over chieftain," all female members of all living generations of a family, together with their husbands and children live in the same house. Harris says in the American Journal of Physical Anthropology that women hold a high position in Tule society being considered the foundation of the family and consequently, tribal life. When a young man is married he can not be said to "take a wife" for the girl "takes the husband," though not without his consent and that of the family. Upon marriage the young man leaves his mother's house and goes to live in his wife's family's household. This holds true for the husbands of all the daughters of a household, the granddaughters, and even the great granddaughters, in case there are any with husbands. Furthermore, as a rule, the male members of the line marry within the village. Tule Indians consider first cousins as brothers and sisters; uncles and aunts are often called fathers. Husbands are invariably kind to their wives.

Immediately upon marriage, the groom is ordered by the father-in-law to chop some hardwood in the forest. This he does and brings it back to his new home, which is with the relatives of his wife. His tasks outside the home are regulated by the father-in-law, while inside the house he takes his orders from the bride's maternal parents. The "lady of the house" always receives first consideration when gifts are distributed. If he is unwilling to abide with this arrange-

ment, he goes back to the home of his mother, and the bride is considered a widow. Her position now is not an enviable one, as she will find it difficult to find another husband. The bride always has her hair cut to a length of a few inches as a symbol of her new position.

Cuna of the interior.—The Mountain Indians, or Bravos, as styled by the Spaniards, are more numerous than generally supposed. On the Sucubti branch of the Chucunaque the Selfridge expedition found three large villages, that could not have contained less than one thousand inhabitants. The most warlike, as well as the least known, and probably the most numerous, are the Chucunas (Cunas) and Navagandis, in the center of the Isthmus. The interior, back of San Blas coast, is uninhabited; neither are Indian settlements met with until one ascends the Bayano some forty miles.

Selfridge writes concerning the Darien Indian tribes:

"The Coast Indians, from contact with foreigners, are very docile and tractable, and by a conciliatory course I found no difficulty, after becoming known, in obtaining guides and all the information they possess of the interior; but they stand in awe of the Mountain Indians, and would never accompany me into their territory. They live principally upon fish, plantains, and bananas, with Indian corn and a kind of cassava. Some sugar-cane is raised, the juice of which, extracted in a rude way between two poles, upon one of which an Indian jumps, they mix with cocoa for a beverage.

"At one time, no doubt, the whole of the valleys of the Tuyra and Chucunaque were inhabited by the Darien (Cuna) Indians, but they have disappeared entirely from the former, excepting the Paya tribe, on the river of that name. These Indians are less averse to strangers than any I had met with previously, owing, no doubt, to their long intercourse with the Spaniards, of whom, however, they are perfectly independent, and with whom there are no signs of amalgamation. They do not number more than 400.

"On the Chucunaque there are now no villages of Indians below the Sucubti River, which was visited by the expedition in 1870.

"On the Atlantic slope near the Tarena mouth of the Atrato, we have the villages of Arpeti, Cuti, and Tanela, all under the chief of the latter. The Indians of these villages are as isolated as those of the interior, and have all the latter's dislike to white men. They have no dealings with Europeans; their towns are only approached through small streams in the marshes of the Atrato, where one is almost devoured by mosquitoes, and their only glimpse of the outer world is when they visit Pisisi to trade for the few wants they may require. These Indians were described by those of the expedition who visited them as the finest that had been met with in Darien.

De Puydt asserts to have descended to the Tanela village and even beyond; but, on the other hand, their chief, Suza-le-Lele, who was very unwilling that Lieutenant Commander Schulze should explore their domain, told him that he was the first white man who had ever penetrated so far.

"The Indians of the Atrato Valley, called Chocó, are of a much milder disposition than the Darien. They (Chocó) were entirely subjugated by the Spaniards, and under these hard taskmasters were almost depopulated, and lost their tribal organization. Here and there families are to be found upon the rivers. They are quite inoffensive, and ready to offer their services as boatmen or guides. They are not averse to labor, and at Cupica Bay (on the Pacific coast) I found them tilling the ground by the side of the Spanish negro, whom, in their present degraded condition, they consider a superior being. There are still at Cupica two or three families of Chocó Indians, the remnants of a numerous tribe who once peopled the whole Atrato Valley. Cupica Bay is one of the best anchorages on the Pacific coast of Darien and lies some forty miles beyond the Serrania del Darien Mountains southeast of the southern boundary of the Panaman Republic. It was one of the points proposed for a canal terminus by means of the Napipi River which rises about 5 miles from the Pacific coast and flows eastward into the Atrato."

The term Cuna-Cuna formerly was applied to include the various tribes now known as the tame Cunas or Mountain Cuna, the Cunas Bravos or wild Cuna, of whom even the tame Cuna of the upper Chico River and lower Chucunaque are afraid, and many other tribes, including the Caribbean coast Tule or San Blas Indians, all of whom, with slight variations, speak the same language. Originally they may have been independent tribes, and even to-day old people of different tribes can not be understood by members of other tribes. The symbol of the Cuna, according to George G. Heye in Indian Notes (October, 1924, p. 195), is a 4-pointed star to symbolize the four confederated tribes and typifying the cardinal points of the compass; the Towali in the north; the Tupi-Towali in the east; the Cuna in the south; and the Teguala in the west. At the present time the Teguala and the Tupi-Towali dwell about the headwaters of rivers, although many members of these tribes have migrated to the island keys of the Caribbean and mixed with the Towali and Tule, or San Blas Indians. The Cunas Bravos are powerfully built, pale yellow skinned, living between the upper Bayano and the Membrillo Rivers. The Cuna men wear their hair long and gathered in a huge bunch or knot at one side of the head, where it is secured by cleverly made ornamental combs, or sometimes they wear their hair closely cropped (pl. 35).

The "tame" Cuna fear their "wild" kinsmen and never dare to enter their country, though "wild" Cunas Bravos occasionally visit their villages.

The Bayano and Sucubdi River Cuna tribes of the interior possess in many respects a culture superior to that of the south Darien coast and Tuyra River basin Chocó Indians. Contact with the white trader is less among the Cuna of the interior than is the case with the island dwelling Tule. Their antagonism and antipathy to the Spaniard, the Panamanian, and the foreigner in general is however equally great. While the Chocó Indians are to a great extent fishermen, the Cuna devote more time to agricultural pursuits than do either of the two other Indian tribal groups; crop raising, however, is carried on to a limited extent by all of the Darien Indian tribes. Hunting is a minor source of food supply. Among the agricultural products of southeastern Panama are cassava (*Manihot esculenta*), sweet potatoes or yams, cacao (*Theobroma cacao*), cotton, tobacco, bananas and plantains, pineapples (*Ananas ananas*), papaya (*Carica papaya*), sugar cane, indigo, corn, rice, and many varieties of fruits.

They have domesticated animals and fowls such as pigs, turkeys, chickens, and ducks, but no cows or horses. Dogs are variously employed as pets, as watch dogs, and on the chase after big game animals such as the tapir and the peccary.

History and tradition assign as the former habitat of the Cuna tribes an area as far west as the valleys of the eastern reaches of the Chagres River, also both sides of the continental divide between the Canal Zone and the bay of San Miguel and the Atrato River. Today they have lost much of this territory. Epidemics of smallpox and probably of influenza have further contributed to this decline within recent years. The encroachments of the Spanish and Negroes have also contributed to the migration of some of the so-called Cunas Bravos from the upper Tuyra to the region of the Sucubdi River.

Chocó Indians.—The Chocó live along the southern or Pacific slope of Darien and inland northward to the mouth of the Atrato River. They are a trusting and hospitable people, contrasting favorably with the more suspicious and intractable Tule of the opposite coast. Their skin is brown, but fairer than that of the Cuna and Tule or coast Towali. They are short in stature, though taller and better proportioned than the Cuna and the Tule. They allow their hair to grow to natural length, while some men have it bobbed at the neck. Both men and women have fine white teeth, sometimes dyeing them black by chewing some of the numerous wild peppers (*Piper*, species) that grow in the forest. The men have well developed shoulders and chest. The bulging stomach and abdominal region together with the flattened facial featured give the Chocó

women a more South American cast of features and type of bodily development than is found among the Chocó men.

The Chocó Indians of the south Darien coast resemble culturally the Guiana Caribs and the tribes of tropical Brazil. Measurements taken by Dr. A. Hrdlička indicate a close relationship of the Tule, not with the Caribs and Arawak of the adjoining coast, but with the ancient Peruvians across the mountain divide to the south. Just what factors, environmental or cultural, have brought about this double crossing can not be determined at this time. Culturally, the Tule of the San Blas coast are superior to the Chocó of the south Darien slope and to the Cuna of the interior. They live in better houses on islands, are free from the endemic disorders of an insect-infested jungle coast; their social solidarity is more marked; their practice of monogamous marriages, the proud preservation of their tribal isolation, their ability to travel from one island to another by way of water transport, all combine toward lifting their cultural horizon. The Cuna and Tule Indians of the time of the early Spanish explorers probably knew something about the great culture of Peru and of the Peruvians, for they stimulated the curiosity of Balboa and of Pizarro through stories about the precious stones, the gold, and the glory of ancient Peru,[6] but the civilization of the Incas remained a mere rumor to them and intercourse through trade or otherwise did not exist.

Physical characteristics of Darien Indian tribes.—A preliminary survey of the physical measurements of the Chocó and Cuna tribes, made by John L. Baer while in Panama with the Marsh-Darien Expedition, shows a marked contrast between the two tribes in respect to stature and head form; the Chocó being the taller with correspondingly longer and narrower skulls, while the Cuna are shorter in stature and have broader skulls. The average stature of the Chocó males measured by Baer was 156.4 cm. (60.4 in.), with a maximum of 166.5 cm. and a minimum of 148 cm. The average stature of the Cuna adult males was 154.7 cm. (59.5 in.). A similar discrepancy was found in the stature of the female Cuna when compared with the average stature of the female Chocó. The average stature of the Cuna female, 143.2 cm. (55 in.), was surpassed by the Chocó female stature of 145.3 cm. (56 in.). The broad head form that accompanies the shorter stature of the Cuna is seen in the high cephalic index of 85.5 for the males, with a still higher index average of 87 for the females, while the longer head form of the Chocó is evidenced by an index of 80.7 for the males and 80.6 for the females. It is apparent from these measurements that there are two distinct physical stocks

[6] Peter Martyr: De Orbe Novo, translated from the Latin by Francis MacNutt, N. Y., 1912, vol. 1, pp. 220–223.

in aboriginal southeastern Panama. The ethnic relationship of the Caribbean coast population on the northern slope of the isthmus, that is, the Cuna and Tule, being with the ancient high-cultured peoples of Peru and Yucatan, while the ethnic relationship of the Pacific coast population, the Chocó stock, on the southern isthmian slope, is physically with the South American tropical lowland tribes, the Caribs and Arawaks.

The overlapping and borrowing in these two stocks of many cultural manifestations becomes apparent from a detailed study of their arts, but here again a great diversity of social practices and material culture is found.

In the American Journal of Physical Anthropology Dr. A. Hrdlička writes: "The type of the inland people, the Chocós, nears that of the Nahua, while that of the coastal Cunas (Tule) is evidently very close on one hand to that of the Mayas of Yucatan, and on the other to that of the Yungas who extended for a great distance along the western coast of South America, to below Nasca. The characteristics and differences between the two will be seen from the following:

THE CUNAS	THE CHOCÓS
On the average of small stature.	Slightly taller.
Very brachycephalic.	Meso-to moderately brachycephalic.
The head is low.	The head is high.
Arms and legs rather long.	Arms and legs shorter.
The head absolutely and relatively slightly larger.	Head slightly smaller.
Face similar in the two.	
Nose longer.	Nose shorter.
Nasal index lower.	Nasal index higher.
Mouth, chest, and hands similar in the two.	
Foot slightly longer and narrower; index lower.	Foot slightly shorter and broader; index higher.
Temperature similar in the two.	
Pulse and respiration somewhat more frequent.	Both somewhat slower.
Ears markedly shorter; index higher.	Ears longer, trace narrower; index lower.
Muscular strength somewhat less.	Strength somewhat greater, especially in males.

"Of the two types of Panaman Indians here shown, that of the coast is particularly interesting. It is a short, sturdy, round-headed type with characteristic physiognomy. They are of about medium brown color, have straight black hair, scraggy beard or mustache, and but little hair on the body. The forehead is generally more or less sloping, eyeslits are commonly perceptibly oblique, the nose in the males is as a rule convex, the malars relatively large and rather

prominent, the lips medium to above medium in thickness, and the lower part of the face rather short and not heavy. In all of these characteristics they much resemble the Indians of the San Blas coast, with whom in fact they appear to be identical. But what is even more noteworthy is that in general this type appears to be close to that of the Mayas of Yucatan, so close as to constitute a strong suggestion of original identity of the two groups. The measurements of eight recent Maya skulls of the United States National Museum collections show the same essentials as seen in the Cuna tribes of Panama, namely marked brachycephaly and low vault with a rather short lower facial region."

Albinism prevalent among Tule.—The light skin color of many of the Tule Indians is striking. The hair is blond, ranging from auburn and brown to white; eyes have hazel, dark blue, or dark violet irises; the skin appears flushed on cheeks, and freckle-like copper colored pigment spots of varying size, location, and number are present on face, limbs, and body; the gums are pink. This condition was first noted by Wafer in 1699. R. O. Marsh and members of his expedition saw many of these white-skinned Indians in the interior of Darien and along the San Blas coast living among the Tule. He aroused the interest of the scientific world to a condition that appears to be not infrequent among tropical Indian tribes. Koch-Gruenberg notes a similar light, almost white skin color among the Yekuana in the Orinoco basin. He does not ascribe this to miscegenation with Europeans, as in other respects the individual possesses purely Indian features. He thinks it clearly a case of hereditary poverty of pigmentation. R. G. Harris, of the Biological Laboratory at Cold Spring Harbor, N. Y., is of the opinion that these White Indians express a form of albinism which has been termed imperfect or partial. "Its hereditary nature is demonstrated clearly in the hundred or more matings, the history of which I obtained during my residence in San Blas." The long segregation of the Tule Indians suggests that the albino strain is a well differentiated type. The white Indian children brought to the National Museum by R. O. Marsh had brown skinned parents. Similarly, white Indian parents may have either white or brown-skinned partially-albinotic children. Some attempt is made by the Tule at segregation of the white children on the mainland in the interior at puberty, but mixed marriages are common. Harris enumerates a total of 138 albinos among the San Blas coast Tule.

Among the religious concepts recognized by the Tule is the universal flood myth and the former mythical presence of the God-man teacher "A-oba." After the Great Flood had subsided, there descended through the clouds to the top of Mount Taracuna a white

man and woman, a light brown man and woman, and a dark brown man and woman. These individuals repopulated the world and were the progenitors of the several races. A-oba was white-skinned, hence the white Indians enjoyed greater prestige than was accorded the darker-skinned people. The coming of the European and the cruelty meted out to the Tule Indians contributed to the lowering of the position of A-oba's white Indian kinsmen, and may have led formerly to the putting to death by infanticide or to the segregation of white Indian children.

A peculiarity in the albinism observed among the Tule Indians is that some of the white Indians are not the ordinary standard "chepus" type but have a white skin that tans; others have white skin and brown eyes and black hair. Each hereditary trait seems to be a separate mutant factor.

In summarizing his conclusions relative to the peculiar phenomenon of the unusually large numbers of albinos living among the Tule of the San Blas coast, Doctor Harris says that "the San Blas Indians studied, due to relatively close inbreeding, to purity of blood, and to the presence of a clearly differentiated group in their midst, offer unusual opportunities for the collection of valuable genetic and anthropological data.

"The partial albino Indians are the frequently reported white Indians of Darien. Their appearance is obviously the expression of a homozygous recessive condition, due originally to a mutation in one or more genes. They can not be considered the result of previous miscegenation with Caucasians as they are clearly Indians, not hybrids.

"That the condition of white Indians is genetical in nature is amply demonstrated by the data contained in the family histories. The white Indians thus hold potentialities for race production.

"Due to the fact that they do not reproduce themselves, on account of artificial restrictions, and, since they do not occur by themselves in definite geographical areas there may be some question as to the desirability of calling the white Indians a race.

"Their present large number is maintained for the most part by frequent matings of related recessive-carrying browns."

DOMESTIC AND AGRICULTURAL ARTS

Houses.—The Tule build large houses with wattling of cane walls and palm-leaf thatched roofs. Such houses are divided into compartments, each designed to shelter one family. The island dwelling places are villages made up of houses of this type built close to the shore and so nearly adjoining one another as to completely cover the island (pl. 36, No. 1). When the need for a hut or dwelling place

in proximity to the small plantations on the mainland arises, temporary houses are constructed. These houses are built on the coast or near to some river estuary. The dense forest growth reaches almost to the water's edge, nevertheless, new village sites in time become permanent habitations (pl. 3), although the diseases contracted by the natives through the proximity of an insect-infected jungle often lead to their desertion; the establishment of new plantations may also lead to the abandoning of the small coast settlements.

In constructing a house, the Tule erect rectangular walls of vertically placed reeds and sticks (pl. 36, No. 2). The gable, "asivri" (Tule), is heavily thatched, "soska" (Tule), with overlapping palm leaves placed over a framework of poles resting on a sill, "sorsenik" (Tule), and terminating in a central ridge-pole extending from one gable end to the other. The houses of the Tule Indians as usually built are characterized by a high gable (pl. 36), sometimes reaching as high as 30 to 40 feet from the ground. Directly under this ridge is a large alley running between two ranges of high pillars which support the middle part of the structure. Two low doors open one at each end of the building. The walls, built of sticks and reeds, are tied together, as are all parts of the building, with iron withe, a mountain plant. A building may shelter from 16 to 20 families and is as much as 50 feet wide and 150 feet long. Henry Pittier gives these measurements for houses he saw on two islands at Nargana. The floor is hard-packed earth but slightly elevated above the ground level outside the house (pl. 36). The dirt floor is covered with sand which is swept daily and kept neat and clean.

The Chocó houses are dissimilar in detail to those of the Tule just described. Built on foundation posts, the floor is raised several feet above the ground level (pl. 36, No. 3). The rough floor is of split cane, and the roof is made of heavily thatched palm leaves resting upon a framework of poles and sticks supported by a row of palm-wood poles driven into the earth. The walls are not filled in with upright reeds, as in the Tule houses. Access is gained by means of a notched pole (pl. 36, No. 3), which is turned over when it is desired to keep the dogs out of the house and also to denote the absence of the family. Mosquito bars are hung on sticks that project through the floor to the ground below. Bark mats are used for bedding; places to sleep are allotted to parents and babies, girls, and boys.

Hung up wherever a projecting stick or support pole protrudes are baskets, bunches of dried corn, pots, bundles of head rice, bunches of the soft inner bark of the rubber tree, which the Chocó use as beds, bows, and arrows, etc. In one corner squatting women keep alive a fire on a hearth of clay, upon which a pile of stones is placed to be used as a stove, while an old woman stirs the food cooking in

a large pottery vessel. The household gods, carved from blocks of balsa wood and painted in black and yellow designs, are fastened to posts by nails fashioned from bits of chonta palm wood or tucked into crevices of the thatch. A railing (pl. 36, No. 3), of four or five horizontally placed poles tied to the wall posts with iron withe, prevents children and adults from falling from the house to the ground. Every family dwelling has a palm-leaf inclosed toilet built out over the water. There is also a shallow well dug near the house. The water is brackish and may be used only for cooking and washing purposes. For bathing a gourd is dipped into the water and then poured over the head and body.

The cooking apparatus of the Tule and of the Chocó consists of iron pots secured from traders or in Panama City, of locally made pottery vessels, chiefly cooking pots and stoves, canteens, and storage jars, and of calabash or gourd ware. There are no knives or forks and everyone eats with one's fingers. A small building is usually erected in the rear of the large family dwellings for cooking purposes.

The Cuna houses of the interior mountainous uplands resemble more the Tule type than Chocó. Vertical walls of short poles of quite irregular length often falling short by several feet of reaching the roof are held together by two horizontally placed poles (pl. 3, No. 1). The houses are rectangular, not so large as the Tule houses, except the tribal council or community houses, which are very large structures capable of containing hundreds of people.

Wafer in 1699 wrote about the architecture of the Panamanian native tribes, and in not very complimentary terms referred to the buildings as all irregular. There was no chimney, but the fire was made in the middle of the house on the ground, the smoke going out at a hole through the top or at crevices in the thatch. The house was not divided into rooms, but was constructed of one room only, and there were no doors, no shelves, and no other seats than logs of wood. Every one of the family had a hammock tied up under the roof and reaching from one end of the house to the other. All girls have cedar chests, boxes, or bags for storing their dresses and personal belongings. Large forts were formerly built as a protection against the Spanish and native tribes. It was a great inconvenience that these forts were easily set afire, and the Spaniards shot into the thatch arrows with long iron shanks made red hot for that purpose. There was usually a family of Indians living in this war house as a guard and to keep it clean. The war houses were used also to hold their councils or other general meetings. This double function of fort and council house no longer applies. The Darien tribes have not been known to wage warfare against one another within historic times, and as a gathering place

of refuge against the encroachments of intrusive ethnic elements, such as the Spanish and the Negroes, this council house proved of little value. It is possible that Wafer read into the temporary employment of the council house as a fort in cases of emergency, a practice that never existed generally, and for which such buildings were never erected.

Illumination.—In lighting their houses at night or to entice game on hunting expeditions, and to attract fish to the surface of the water, the Tule employ torches, "kwinnur" (Tule) (pl. 2, Nos. 1, 2, 3, and 4).

These torches are made by stringing a number of nuts of the candlenut tree (*Licania arborea*), on rudely aggregated slivers of palm wood. The candlenut tree grows along the Pacific coast of Mexico and Central America, where it is everywhere used by the natives for purposes of illumination. The nuts when ignited burn slowly with a yellowish flame, giving off no smoke and but little odor. The palm wood sliver is from the chonta palm, employed to a great extent in the material culture of Central and South American native tribes; it acts somewhat like an absorbent wick. When enough heat has been generated to melt the oil of the nut, sufficient oil is absorbed into the palm wood to make a continuous flame as each preceding nut becomes charred. The longest torch illustrated (pl. 2) contains a series of 20 nuts, each nut being about 3.5 cm. (1.4 inches) in length and 1.8 cm. (0.7 inch) in diameter.

Another type of torch, described by Henry Pittier, is made by dipping a piece of cloth in honey and then wrapping it in a tight roll. Lanterns burning kerosene are sometimes purchased in the cities to the west of Darien, in Panama City, or Colon. Negro and Chinese traders and storekeepers sell kerosene oil in the well-known tin containers retailed by the American oil-exporting concerns. The "tin can" stage of civilization is reached when these tin containers are utilized by a primitive people for many purposes, sometimes supplying the only available source of metal, and substituting for other materials in use before acculturation began.

Calabash ware and decorative design.—Throughout the area of tropical America the use of the fruit of the calabash tree (*Crescentia cujete*) is general wherever the Indian population predominates. Sometimes employed in combination with other materials, but more often without their addition, it serves in various forms as a container, as a domestic utensil and dish, and as an object for the recording of decorative design.

Indian tribes of temperate zones have never been known to cultivate or propagate the tree. The colonial pioneers found in close proximity to Indian villages groves or thickets of wild plum and

cherry trees, from which an annual harvest was gathered and often preserved. The nut-gathering may have aided in the diffusion of many varieties of nut-bearing trees, but nowhere do we find evidence of conscious effort toward their cultivation or diffusion. In tropical America, however, many fruit trees show traces of long-continued cultivation, the fact that the numerous varieties of the fruit of *Spondias* and *Persea* are so different in color, form, size, taste, and time of maturity testify to their age.

Among the native fruit trees of tropical America the calabash tree (*Crescentia cujete*) plays an important rôle. It ranges from Florida south through the West Indies, Mexico, Central and South America, to southern Brazil. It grows to a height of 15 to 25 feet, and when laden with green fruit bears a slight resemblance to an apple tree. The fruit is ordinarily round and about the size of a man's head; if of a smaller variety it is ovoid or bottle-shaped. The term "calabash" is of Spanish extraction. The Aztecian term, "Xical," or "jical," in Spanish transformed to jicara, should not be applied to the *Crescentia* but to the fruit of a vine belonging to the family *Cucurbitaceae*, which is gourd-shaped and easily distinguishable from the calabash. Because of its shape and size, the fruit of the calabash must have early focussed the attention of the primitive Indian, and its hard shell served undoubtedly as one of his earliest eating and drinking vessels. It served also as an early model for the pottery vessels of these regions, where many pottery types of the present portray the characteristic forms of the local calabash variety.

In the Museum collections the varied uses to which the calabash is put by the Darien tribes are represented by receptacles, telescoping containers, cups, spoons, stirrers, ladles, sieves, strainers, rattles, and water canteens.

There are several reasons why the calabash is more useful than is the gourd or coconut: Its shape and size make it more adaptable as a dish or canteen; its hard and thin shell is less fragile than that of the gourd; another advantage lies in the yellowish surface that, after the removal of the green outer covering, serves admirably for the affixing of decorative design. The paucity of decoration on the pottery of the natives of southeastern Panama is evident in their calabash work as well. The method employed in preparing and decorating the objects (pl. 1) is as follows: When the fruit becomes ripe it is removed carefully from the tree. The shell is then cut to the dimensions of the object for which it is destined. The watery soft pulp with the included seeds is removed. The next step is to engrave on the still green cortex, or outer layer, by means of a mussel shell (*Arca*, species) the comparatively simple design.

This is accomplished by rocking the shell tool rapidly forward until the simple geometric designs, such as triangles, bisected triangles, series of concentric circles, zigzag lines, or a series of parallelograms are incised into the white-colored, woody shell. Occasionally another procedure is employed (pl. 8, No. 1), where, in addition to the usual method just described of cutting incisions in series, entire sections of the cortex are removed, leaving exposed the white-colored base of shell as the design motive. This method is intrusive in Darien and not characteristic of most of the native work, but is practiced in Costa Rica and Nicaragua along with still another method, whereby the outer skin, or cortex, is entirely removed and the remaining shell surface then painted.

Museum No. 327534 (pl. 1, No. 1) is a calabash spoon cut from a shallow longitudinal segment of calabash decorated with a design of incised zigzag lines in concentric series and in parallel. Some of the similar spoons from Darien have incised lines recognizable as human, animal, or bird figures. These were collected by the Marsh-Darien expedition from the Tule of the San Blas coast. The spoon is 33.7 cm. (13.3 in.) in length and 11.9 cm. (4.7 in.) wide. The native name is "wesara" (Tule).

Museum No. 327528 is a calabash cup 12.9 cm. (5.1 in.) in diameter, decorated with an incised circle and extemporized lines at the bottom (pl. 1, No. 2).

Museum No. 327522 is a calabash container known to the Tule as "kuguli" (pl. 1, No. 3). It is made from the truncated longitudinal sections of two oblong calabash fruits, one somewhat smaller in section than the other and telescoping into it as a lid or cover. The smaller vessel is almost entirely cut off near one end; it is 11.3 cm. (4.4 in.) in length by 8.7 cm. (3.4 in.) in greatest diameter. The larger fruit used as a telescoping lid or cover is 11.4 cm. (4.5 in.) in diameter. A crack at two places near the rim has been repaired by the natives by means of a cotton cord laced through two round perforations made nearby. Both parts of this telescoping container are ornamented with rocketed incised lines with a serrated mussel shell in zigzag parallel lines designed to represent some animal form.

Museum No. 327526, a calabash drinking vessel 16.8 cm. (6.6 in.) in greatest diameter, has the characteristic ornamental design made by rocking a grooved mussel shell forward over the calabash shell while it is yet soft (pl. 1, No. 4). The incised parallel concentric lines are bisected so as to form triangular geometric figures.

When brought to the Museum by the Marsh-Darien expedition from the San Blas coast, Museum No. 327524, a calabash receptacle, contained a quantity of coarse native rice meal that had been ground

on a stone metate. The container is 21.8 cm. (8.6 in.) in longitudinal diameter. The mouth is but 3 cm. (1.2 in.) across and is encircled by concentric circles of incised zigzag lines from which project short lines at right angles, like emanating light beams. About the lateral sides of the vessel are arranged characteristic zigzag incisions in series of semicircular loops (pl. 1, No. 5).

Museum No. 327531 (pl. 1, No. 6), a calabash spoon, "wesara" (Tule) is made from a segment of a large calabash shell. The slender handle portion is recurved, probably through drying unequally on the inner and outer surfaces. An ornamental design is employed in which rectangular diamond-shaped figures are brought into low relief by the incising of series of two parallel lines in characteristic zigzag detail around their margin; by so doing the incised lines and the untouched cortex between both become parts of the decorative motive. In this design the Tule duplicate the decorative pattern of the Chocó of the South Darien coast, but employ incised calabash shell where the Chocó employ caruto and anatto dyes in black and yellow on balsa wood.

Museum No. 127131 (pl. 1, No. 7) is a spoon cut from a section of jicara fruit 16.6 cm. (6.5 in.) in length and 4.5 cm. (1.75 in.) in greatest diameter. When placed alongside of objects from Darien, this specimen from Dutch Guiana shows a contrast with the typical Panamanian design in that it has a wide margin the full length of the spoon from which the surface skin has been removed. This procedure brings into low relief the central portion with its more yellow outer skin color, which thus becomes the ornamental design rather than the incised portion, as is the case with the Central American method.

A strainer, "puyhu" (Tule), 25.2 cm. (10.2 in.) in greatest diameter at rim, made by cutting a calabash in halves and removing the pulp, was collected by the Marsh-Darien expedition from the Tule of the San Blas coast and is catalogued as Museum No. 327529 (pl. 1, No. 8). The bottom up to the diameter of 16.3 cm. (6.4 in.), nearly half way up the lateral walls, is perforated with small round holes in series of parallel concentric circles. The wide margin is unperforated but is ornamented with several semicircular incised lines not in the characteristic broad zigzag pattern, but made with a sharp-pointed instrument, leaving narrow, clean-cut lines as in calabash rattle Museum No. 327386 (pl. 8, No. 1).

Museum No. 327525 (pl. 1, No. 9), a decorated calabash receptacle or dish 22.5 cm. (8.8 in.) in diameter, is made from a halved calabash shell. The outer bottom surface is covered with a series of three sets of concentric incised circles, each set consisting of three circles, each circle made in the form of a characteristic broad transversely

zigzag incised band with an instrument shaped from the corrugated outer surface of a mussel shell.

Calabash spoon, Museum No. 327533 (pl. 1, No. 10), collected by the Marsh-Darien Expedition on the San Blas Coast, embodies on its profusely decorated outer surface a summary of the ornamental work found in part in the other objects described. The designs are ordinarily geometric, but some few realistic animal-form tracings on calabash shell do occur. The means employed in reaching the end desired are always limited to the conventionalized pattern of transversely zigzag incised parallel lines. The inner surface of the shell is never incised and is usually rubbed smooth by use.

Employment of canes and bamboo.—No historical record exists relative to the time and place of the introduction of Asiatic bamboo into the New World. Bamboo is propagated usually as shoots of young plants rather than as seedlings, so that considerable difficulty must have been encountered and great care exercised by the Spanish in transplanting it from the Philippine Islands to Mexico. Bamboo grows to-day in many regions of tropical America alongside the native varieties. Above El Real on the Upper Tuyra River there is much flat and rolling country, which is covered with canebreaks and low scrub. It is often difficult in such thickets to determine whether the different canes are native or introduced.

A bamboo receptacle, Museum No. 327519, was collected by the Marsh-Darien Expedition on the San Blas coast. This object is 58.7 cm. (23.1 in.) in length and 4.5 cm. (1.8 in.) in diameter. It is made from a section of bamboo stem so cut that a nodal septum serves as the bottom of the container, while immediately in front of the next occurring nodal septum the stem is cut off, leaving an open end or top. Miscellaneous objects are stored or carried by the Tule and other Darien Indians in such containers, even the long macaw tail feathers for the pompons of the feathered headdresses. There is no handle attached nor other indications of any other than an extemporaneously improvised method for attaching it to the belt. Such containers are more suitable for storing articles out of harm's way and for keeping them dry than as carrying receptacles. Indian Notes, published by the Museum of the American Indian, Heye Foundation, New York City, issue of October, 1924, (p. 197), illustrates a similar container made from a bamboo flute. The two finger holes near the closed end have been closed with a gummy substance. In later sections on weapons and musical instruments, further references will be made to the native use of bamboo, canes, and reeds.

Beverages.—To the use of cacao, coffee, and chicha, previously mentioned, may be added tea, used to a limited extent by the Tule, the Chocó, and Negroes living on the south coast. Plantain juice is

also boiled, sweetened, and drunk. A young infant may be given a preparation of sweetened corn juice or water in which cacao beans have been boiled. Chicken broth is later fed to the young child. The child is also allowed to chew a stock of sugar cane; it may be found on the floor probably fighting with the pigs for possession of the juiciest stock of cane. The first solid food given to the child consists of boiled fish or sweet potatoes.

The native drink, chicha, "chee-sa" (Tule), is made from the fermented juice of the sugar-cane, banana, or corn. The juice is cooked in kettles placed over a slow fire. This operation is assigned to men skilled in their task, who watch the boiling kettles until they pronounce the taste of the concoction satisfactory. It is then placed in jugs which are covered with leaves to aid in the steeping process that it now passes through. Before the boiling of the juice is begun, women chew the corn and mix it with saliva until a proper consistency is reached, when they spit it into the cooking vessels. After a few days the fermenting process is completed, and the chicha is ready for consumption.

Wafer, writing in 1699, describes the method of preparation then in use by the central Darien tribes as follows:

> They make a drink also of their maize, which they call chichah Copah; for Copah signifies drink. They steep in a trough of water a quantity of maize bruised, letting it lie so long till the water is impregnated with the corn, and begins to turn sour. Then the women, usually some old women, who have little else to do, come together, and chew grains of maize in their mouths, which they spit out each into a gourd or calabash; and when they think they have a sufficient quantity of this spittle and maize in the calabashes, they empty them into the trough of water, after having just taken out the maize that was infused in it; and this serves instead of yeast, setting all the trough of liquor in a small ferment. When it has done working, they draw if off clean from the sediment into another trough, and then 'tis ready for use.

A considerable variety exists among the tribal groups in their food-getting habits. The San Blas coast Tule have an accessible market for turtle shell, bananas, and coconuts; in exchange, trade guns, powder, matches, canned goods of various kinds, etc., are obtained.

The Tule who live in the valleys of the Mandinga and Nercalagua and other inland localities are more farmers than traders, depending almost wholly on their crops and other local supplies. The same applies to the Sucubdi of the Sucubdi River Valley, in the upland interior. The Chucunaque and Morti at the head of the Chucunaque River, living more isolated and apart, are more given to the hunt and are known as more warlike and unstable. The same reputation is shared by the Cuna group called "bravos," or "wild" Cuna, living in the upper valleys of the Pucro, Paija, and Capeti of the central Cordillera, although Mr. Marsh found their chief

speaking English, having traveled extensively in England and the United States. The "tame" Cuna on the upper Chico River will guide travelers over the trail through passes to the Caribbean coast, avoiding the region occupied by the wilder tribal groups who have established a "deadline" at the Membrillo River, beyond which Negroes and other traders may not pass. The Pacific coast Chocó, together with the many Indian, Negro, and oriental half-breed Cholos, accept intruders on a more friendly basis, and the wares of the traders, such as iron-pointed spears, are everywhere in evidence. La Palma, near the entrance to Darien Harbor, has in its population some 200 negroids, some heavy featured Cholo half-breed Indians, one Spanish family, and several Chinese storekeepers. The "deadline" between the Tule and Negro territory on the Caribbean coast is more definitely marked racially than culturally, the Tule accepting trade wares, but restricting the incoming Negroes to the west of Point San Blas on the Gulf of San Blas, so that villages to the west, such as Portobelo, Nombre de Dios, Palenque, St. Isabela, and Viento Frio, have a predominating Negro element which is not found to the east of the Point.

Domestic utensils and implements of wood.—Among the woods most useful to the Darien Indians is that of the black-grained chonta palm. It is used in the manufacture of various domestic implements, such as wooden spoons or stirrers, rice pounders, pestles of various shapes and designs, boat paddles, weaving paddles, shafts for spears and arrows, seats, and various forms of artistic carvings of animals, birds, and of the human figure.

Among the wood implements in the Museum collection used by the Chocó of the Pacific slope are various pestles, paddles, and the hundreds of carved and painted images that are partly utilitarian and partly religious in their use. The Chocó frequently make use of the balsa wood and to a much greater extent than do the Caribbean coast tribes. This may point to a difference in the local flora, as it is so easily worked as to be preferable to the harder woods, provided the supply be plentiful. It is very soft and not durable, being subject to the almost positive attack of the termites or white ants. These "ants" eat out the heart of the soft wood, leaving only the outer shell. The Chocó nevertheless employ this wood to a great extent.

In the preparation of foods, the manufacture of bast mats, in weaving, and the varied utilitarian and industrial arts, many types of wood pestles and paddles are employed. In the museum collections of the Chocó industrial objects is a wooden pestle (Cat. No. 327503), 42 cm. (16.5 in.) in length and 8.5 cm. (3.3 in.) in basal diameter, carved with a machete from red wood lighter in color

than that of the chonta palm, but heavier in weight and as durable. One side of the pestle is a flattened and smooth surface, the opposite side is ornamented with a decorative design of incised geometric lines (pl. 5, No. 1), throwing into relief a series of floral designs extending from near the basal end to where the tapering lateral edges terminate in the constricted neck or handle. The basal end is rectangular in section with the two corner segments of the decorated surface removed. A wide median ridge is thus formed, reaching to the handle, which is several inches in length, round in section, and surmounted by an enlarged knob-like carving representing a human head. Projecting from the top is another smaller head carving similar in design. As this pattern is found repeatedly in the wood carvings of the Chocó, it will be more fully described under that caption. The employment of incised lines and dots to form the outline and rib veins of a leaf; the joining together at a focal point of elliptic incised lines in low relief; the cutting of zigzag lines, either singly or concentrically in parallel, alternately convergent and divergent, to form triangles or diamond-shaped figures in low relief is the essence of the art motive of the Chocó. To say that all and each of these geometric figures have been derived from a prototype based on a modeling of life forms is to read into the artistic technique of the Chocó something that may or may not have transpired. It is apparent, however, that the geometric designs here found epitomize the art motive of the Chocó. It is found repeated again and again on wood, pottery, and on textiles.

A medicine pestle (Cat. No. 327504, U.S.N.M.), "ina sarsowedi" (Tule), used by the Tule for making medicine, is dissimilar to the Chocó pestle in form and has no decorative design in incised figures. It is carved from a block of hard red logwood 30.5 cm. (12 in.) in length. The lateral surfaces are flattened and smoothly polished. From the basal end, which is double lobed or heart shaped, the lateral edges taper to the handle, rounded in section, which is surmounted by a knob-like guard with flattened sides (pl. 5, No. 2).

A paddle, much lighter and thinner, used by the Chocó (Cat. No. 327511, U.S.N.M.), 41.2 cm. (16.2 in.) in length and 6.2 cm. (2.4 in.) wide at the basal end, has flattened lateral surfaces, without a median ridge, and is undecorated. It is characteristically of Chocóan outline and dimensions, with a human figure head carving on handle guard (pl. 5, No. 4).

A rice pounder carved from a heavy dark brown wood, 19.7 cm. (7.8 in.) in length with a basal diameter of 5 cm. (1.9 in.), is conical in section and has a smoothly finished surface. The decorative work consists of a series of parallel incised lines placed diagonally to the longitudinal axis and intersecting another series of similarly incised lines at an acute angle on a circular collar elevated one-third of an

inch above the adjoining handle surface and one inch in length. The diamond-shaped guard knob at the top of the handle is similar in size and outline form to another figure on the surface of the handle at its center (pl. 5, No. 3). The diamond-shaped elevation of the surface of the handle is found in pestles made by tribal groups in Panama other than the Tule. The geometric series of diagonally incised lines on a raised section of the handle is simple enough to have been hit upon by almost any primitive people working with similar material; however, in Darien, it is employed alone by the Tule and occurs in several of their wood carvings.

A large wooden stamper or pestle (Cat. No. 327506, U.S.N.M.), carved by the Mountain Cuna of the village of Sucubti from a block of heavy brown hardwood 40 cm. (15.7 in.) in length with a basal diameter of 6.3 cm. (2.4 in.), is in general use for domestic purposes, such as the mashing of ripe plantains. Cruder in workmanship than similiar implements in use by the coast tribes, it reveals the same design and technique. A like statement may be made regarding Cuna pottery and other products of their material culture as well. To ascribe this inferiority in the craftsmanship of the Cuna potter and wood-carver to the lack of proximity to channels of trade is to make the broad generalization that primitive arts improve with racial and cultural contacts. History, to the contrary, usually records, after such contacts, a deterioration in art design and in the industrial arts of the more primitive culture. The Cuna of the interior and the Tule are alike in their desire for and success in the curbing of the intrusive ethnic and cultural elements. We should therefore rather look for a geographical or historical basis as causal in explanation of an inferior culture whenever or wherever it exists.

A wooden pestle for mashing plantains, in use by the native San Blas coast group, and locally known as "orsala" (Tule), is 50.5 cm. (19.8 in.) in length and 9.2 cm. (3.6 in.) in diameter at its base (Cat. No. 327508, U.S.N.M.). Similar in its general outline (pl. 5, No. 6) to the pestle in use by the Cuna of the interior, it is more smoothly curved and polished than the corresponding implement of the Cuna. There are two disk-like projections encircling the pestle at its center circumference. The Cuna carve but one disk on their pestles (Cat. No. 437507, U.S.N.M.) (pl. 5, No. 7).

A type of pestle carved from hardwood and shaped like an hourglass with a central hand hold and either end suitable for use as the working basal end is employed by the Chocó for miscellaneous uses as a stamper and in threshing out rice from the paddy. (pl. 35, No. 2).

Methods of food preparation.—In obtaining oils and fats the Tule boil the milk of the coconut until the oil therein rises to the top,

when it is skimmed off with a wooden or calabash vessel and stored away in pottery jugs or glass bottles. This oil is valued for use in frying fish. The young, juicy coconuts are plucked from the tree before they are ripe, as the ripe nuts fall to the ground and sometimes are split open. Fish are sometimes preserved by rubbing salt into the scraped flanks and then drying them on a slab frame over an open fire.

An admixture of grated coconut meat and cornmeal sweetened with sugar-cane juice is shaped into a long roll and baked on an open stove. A form of "sugar plum" is made of corn meal boiled in a solution of sugar-cane juice until the mixture thickens. Sugar-cane sirup, made by boiling the raw sugar-cane juice for several hours, is a staple article in the Tule diet.

Permanent fire for cooking is kept in the corner of the house reserved for it or in the separate cook house. The fire is kept by placing four logs with their ends meeting at right angles. When the fire has burned the projecting ends, the logs are again pushed together, so that the fire is continually burning. A rack is fashioned over the fire logs for smoking meat or fish.

Food is consumed without any seasoning other than salt. Most of the food is boiled in water. A hawk, for example, will be picked and cleaned and boiled. The head and legs are not cut off but are left protruding to serve as a handle, as there are no forks available. A large quantity of tobacco is smoked by the entire population. heavy plug tobacco sold by the trader is the kind of tobacco most commonly smoked.

Agriculture.—Lionel Wafer, in his book previously cited, mentions planting and care for crops as being particularly the work of women. The men first clear the plantations and bring them into order, but the women care for them afterwards. As Wissler has pointed out, agriculture is primarily the task of women throughout aboriginal America, except in those areas where, as in southwestern United States, the chief dependence for food supplies rests on agriculture.

At the present time both men and women work in the field at harvest time. With the Tule planting and harvesting is carried on in a cooperative manner, all working together in season and stimulating one another to increased efforts in a competitive and socialized undertaking. In southeastern Panama corn is planted in April and harvested in September or October. Wafer writes: "I saw the maize of the preceding harvest laid up in the husk in their houses. They use flour on many occasions; parching the corn and grinding it between two stones, as chocolate is made." An upper and a nether grinding or mealing stone (Cat. No. 327579, U.S.N.M.), were collected by the Marsh-Darien expedition and are now in the National

Museum. The Tule call the upper stone "Akkwa siskwa" and the nether stone "akkwa nana." This latter stone is 35.6 cm. (14 in.) long and 23 cm. (9.1 in.) broad, and 9.2 cm. (3.6 in.) thick. It is of very heavy, vesiculated, gray sandstone with a rough surface. The upper mano stone, fitted to the hand hold, is much smaller, with its lower surface shaped to fit the slightly concave upper grinding surface of the nether, or metate, stone. The rice meal used by the Darien tribes is very coarse, some of the kernels are merely broken fragments. Sometimes a small hand mill is secured from a trader and is used instead of the mealing stones. Small cakes of meal are shaped with the addition of water, pulverized coconut meat, and honey. Such cakes are baked in small pottery stoves over a slow burning fire. Women have charge of all such tasks of food preparation. Wafer wrote that this was especially true of the older women, "for such work as they are able to do, as cooking, washing, and the like. And abroad also the women are to attend their husbands, and do all their servile work. When they come to the place where they are to lodge, the wife dresses supper, while the man hangs up the hammocks."

The meat of the cacao bean (*Theobroma cacao*) "siagwa" (Tule) is ground in a manner similar to corn and rice between the grinding stones just described. It is then baked in a small pottery oven with stove or fire compartment attached. These stoves will be described in a later chapter. A cake of prepared cacao, "siyagwa kwamakkaledi" (Tule), is about 18.7 cm. (7.4 in.) in length, 8.8 cm. (3.4 in.) in width, and 3.6 cm. (1.4 in.) thick (pl. 23, No. 2), just large enough to be slipped into a small oblong carrying basket, "pirkakka," (Tule) made especially for carrying cacao, which is in general use, as a beverage along with coffee and the fermented intoxicant, chicha. Cacao has also a ceremonial use, especially at festivals, when cacao beans are burned in small stove censers to ward off the evil spirits that continually hover about. Musicians require especial protection on festival occasions; the Tule at weddings place before each musician one of these little stove censers burning a cacao bean. If the wedding festival is prolonged, an additional censer is provided for each day that the celebration continues, as related by the Tule Indians brought to Washington by R. O. Marsh. Pittier says that the Chocó have invocations which they make to their lele, in which the various kinds of cacao pods are enumerated—a sly hint that a bountiful harvest is expected.

Corn and rice are quite generally cultivated, however, the manner of caring for these crops is a primitive type of hoe culture. When a small plot of ground is cleared in the forest some trees, valued for their fruit or fiber, are permitted to remain standing. A hard,

flinty, undented corn (*Zea mays indurata*), rather than flour corn (*Zea mays lacea*), is grown. Most of the ears have supernumerary rows of kernels, some having 12, some with 16, and others with as many as 18 rows (Cat. No. 327593). The cob is short, 13 cm. (5.1 in.) average length, and is not covered at its small end with the small and short kernels usually found there. The corn is yellow with some ears red. The Tule name for corn is "ova." Their term for rice is "oroso," from the Spanish *arroz*. This probably signifies that although in universal use in Darien, the introduction of rice may be ascribed to the Spanish. The grain is heavy, rounded and not at all similar to the native wild rice of America with its long, narrow, black and brown grain (*Zizania*, species). The fine bunches of head rice brought to the National Museum by the Marsh-Darien expedition (Cat. No. 327370) are in contrast to the inferior quality and inbred maize collected from the same area.

In addition to corn and rice, sugar cane, yams, manioc, "mania" (Tule), the sweet potato, tomatoes, "ka'ottsi" (Tule), pumpkins, and vegetables are grown. Contrasted with a lack of berries is the large number of native fruits, as the pineapple,[7] orange,[7] banana,[7] mango,[7] alligator pear, guava, papaya, sapote, melon,[7] breadfruit,[7] granadillo. Varieties of pepper (*Capsicum*) and other plants, some of them medicinal, receive some attention and care. This is necessary as the many pests and marauders, such as squirrels, birds, and wild pigs, must be frightened away by traps and scarecrows.

Methods of food preservation.—Storehouses are sometimes erected near the field, or again the crop may be taken to the village and stored in the individual dwelling. During the rainy season it becomes a problem to keep the grain from moulding. Wafer mentions the building of fires to dry out the grain, a practice which is still continued, when fire is built under a storehouse. He relates also their method of curing meat.

> When they take a beast or bird (on hunting expeditions), they pierce it with the lances, or shoot arrows into it, to let out the blood. Then they quarter it (first cutting off the head); and if it be a peccary they scald off the hair with hot water: if a warree, they fleece it. From some of the birds they strip the feathers only, from others the skin also and this not regularly, while the carcass is whole but piece-meal, after they have dismembered it.
>
> If they intend to preserve any, having little salt, they erect four forked sticks 8 or 9 feet asunder, on which they lay two parallel staves that shall be above a foot from the ground and so make a barbecue. Across these staves they lay the pieces of the beasts or birds, and spread underneath a few live coals, to make which they burn a parcel of wood on purpose, and turn the same pieces, and renew this small fire for three or four days, or a week, till the meat be as dry as a chip, or like our smoked beef. Men help the women to carry home the venison. These pieces will keep a great while, and when the stock is almost out, they go again a hunting. They make a barbecue at home

[7] These are cultivated, though not indigenous to southeastern Panama.

also, heaping up these dried pieces across, and often putting some embers underneath, to keep them from giving, or growing mushy.

Along the lower Chucunaque are scattered huts on the river banks surrounded by a small one-half acre clearing planted to plantains, yuca, and occasionally hill rice. Tame chickens, turkeys, ducks, and domestic pigs are found in all settlements in Darien, but there are no horses. West of the Canal Zone, where the impenetrable jungle gives way to a barren, semiarid district, the horse and donkey are the constant companions of the Negro, Panamanians, and Indians.

The Chocó subsist on rice, bananas, plantains, "waguppu" (Tule), corn, and yuca. They are expert fishermen, diving into deep pools and catching certain kinds of rock fish in their hands.[8]

Hammocks and stools.—Wafer found hammocks in general use, and tells how after the evening meal the men hung up their hammocks. This universal use of the hammock has changed into a practice of employing both the hammock and stool or wooden bench. Marsh relates how the grown men sit around the chief, who is reclining in a hammock, listening and occasionally repeating portions of the chief's song. These men occupy wooden benches; in an outer circle are stools occupied by women and children, the women pursuing their continual sewing by the light of torches. At such meetings the chief first admonishes the people to be good, not to lie or steal. He then relates the news.

The seats or stools collected by H. Pittier and by the Marsh-Darien expedition from among the Chocó of the Sambu River valley and the Tule of the San Blas coast are uniform in outline and in the manner in which the seat supports are attached. Children's seats are uniformly not more than 6 inches in height and are so carved as to resemble Chinese wooden pillow. One of these seats (Cat. No. 327576, U.S.N.M.), "kana" (Tule), is 25.5 cm. (10 in.) in length and 8.9 cm. (3.5 in.) high. It was carved with a machete from a solid block of hardwood. The seat is concave in the form of a semiellipse with an outward flare of the lateral edges at its center (pl. 4, No. 1). The supports are carved from the seat block at the middle sector of its lateral edges, flaring longitudinally at their base to the entire length of the seat. The surface is smooth and polished by use. A floral decorative design consisting of incised lines in parallel, converging at right angles and representing a tree, is placed at the middle surface of a support. Another adjoining floral design is more realistically carved. This seat is from the San Blas coast.

H. Pittier collected a similar seat (Cat. No. 272592, U.S.N.M.) from the Chocó of the Sambu River valley, south Darien, that is

[8] Smiths. Misc. Coll., vol. 77, No. 2, p. 80.

30.6 cm. (12 in.) in length, 14.8 cm. (5.8 in.) in seat width at the middle, and 6.4 cm. (2.5 in.) in height (pl. 4, No. 2). There is no surface decorative design and the lateral and support edges are square cut rather than rounded and tapering, as in the San Blas coast type.

A similar arrangement of seat surface form, but a departure from the technique of support attachment, is found in child's seat collected by the Marsh-Darien expedition on the San Blas coast (Cat. No. 327577, U.S.N.M.). This seat is 30 cm. (11.8 in.) in length, 16.6 cm. (6.5 in.) in width. The supports are placed at the lateral edges of the seat top and are so carved as to resemble a hollow arch. Probably a representation of a turtle with extended legs was intended (pl. 4, No. 3).

A seat, "kana" (Tule), with bird-head figure, carved in its entirety from a solid block of hardwood, is also used by the Tule (Cat. No. 327575, U.S.N.M.). The two side supports extending from the middle sector of the lateral edges of the seat have wedge-shaped projections at their base and are connected at one end by a brace that extends upward to the under surface of the seat. It is from this brace that the bird-head figure is projected. The seat is 30 cm. (11.8 in.) in length and 16.6 cm. (6.5 in.) wide (pl. 4, No. 4). This seat more nearly approaches the type found to the north of Panama carved from stone and copied by the Talamanca in seats of wood. The three seats without the bird-head carving, described first, are also found over a wide extent of tropical South America as far south as southern Brazil.

Children and their toys.—The mild-mannered disposition of the Chocó Indians may be noted in the treatment accorded by them to their wives and children. To strike a woman or child or to be rude toward them is unusual. So the child grows up happy, undisciplined, and boisterous. When a woman is delivered of a child another woman takes the child shortly after its birth in her arms and the mother upon her back, and takes both of them to the river and there washes them. The child for the first month was formerly tied upon a board swathed to the back. This was to make the child grow very straight. When the child was to be cleaned it was removed from the board and washed with unheated water. The mother suckled her child without unswathing it from the board. It was then laid back into its little hammock, which was kept open with short transversely placed sticks. At the present time a little hammock instead of a cradle board is used.

As the child grows up he is eager to enter upon the occupations of his parents, so that he early becomes adept in shooting with the blowgun and expert with bow and arrow. He generally accompanies

his father on hunting and fishing journeys as soon as he is able to do so and big enough to carry his own provisions. Children learn to shoot little birds and to catch fish by diving into the water and bringing out the fish with their hands. The little girls join in this sport, although usually they stay at home and learn to practice the domestic arts.

Many toys are found in the possession of the Chocó and Tule children. Some of these are really useful, such as the diminutive boat paddles, basketry containers, stiff leather sandals, "nagukka" (Tule), and small bows and arrows. Others are purely objects of play and have been shaped by the Indian artist and modeler to suit the imagination and fancy of the little Indian child.

A feather play bird (pl. 29, No. 4) is suspended from the roof beams and dangles back and forth before the delighted eyes of the Chocó Indian child; little marbles (Cat. No. 167665, U.S.N.M.) are made of vegetable ivory, and tops of palm wood, 17.8 cm. (7 in.) long, with mimosa seed disks (Cat. No. 272597, U.S.N.M.), are spun by the Chocó children, even as their parents spin for purposes of divination a top composed of a polished volumba seed disk perforated with a short and thin palmwood (*Guilielma speciosa*) shaft passing through its axis (Cat. No. 315042, U.S.N.M.). Small, crudely carved dolls fastened from balsa, together with a variety of animal, fish, reptile, and bird carvings from wood and pottery are the most numerous among the toys of the Tule and Cuna children and of the Chocó as well.

A number of pottery toy figurines collected by the Marsh-Darien expedition illustrate the skill of the Tule potter (pl. 13). Altogether there are 15 pottery objects representing the human figure, animal, and other life forms in a realistic manner. A sloth, or ant bear, "atsu mimmi toduwedi" (Tule), 17 cm. (6.7 in.) in length, with long nose, wide pendant ears, long recurved tail, and dragging feet, are features realistically modeled in terra cotta (Cat. No. 327306, U.S.N.M.).

A light brown colored pottery toy figurine of a tapir 13.7 cm. (5.4 in.) long, with a long pointed snout, short erect ears and tail, and the characteristic three-grooved incisions representing toes, is another example of the Tule potter's art as a modeler of life forms (Cat. No. 327407, U.S.N.M., pl. 13).

Other pottery toy figurines are those of an alligator 9.5 cm. (3.7 in.) in length, represented as walking with mouth opened and tail erect (Cat. No. 327308, U.S.N.M., pl. 13); pottery bird effigies (Cat. Nos. 327310 and 327316, U.S.N.M., pl. 13); toy seats and bowls of a few centimeters dimensions from the Cuna-Cariba tribe at Sasardi village, at the mouth of the Segurdi River (Cat. Nos. 327317–20,

U.S.N.M., pl. 14); small brown colored pottery cooking vessels and stoves, some with and others without handles (Cat. Nos. 327336–41, U.S.N.M.).

The toy pottery modelings of the human figure are more conventionalized (Cat. Nos. 327309–15, U.S.N.M., pl. 14), and display in an exaggerated form the crudities and niceties of design and modeling that are noted later in the detailed consideration of the potter's arts.

When a child is born the mother is usually attended by some of the older women of the tribe. If the child is a girl, as soon as she is two weeks old the mother pierces a small hole in its nose and ears, draws a thread through, and leaves it there for three or four days. Later a larger thread is drawn through and left. This operation is kept up until the hole becomes large enough for a tiny ring for the nose and ears. If this is the first girl, and the parents have plenty of coconuts, these rings are of gold; if not, they are of brass The little girl allows her hair to grow long. At the age of three she puts on a little dress.

She is always in the company of her mother. Children are not carried on the back of the mother as among the Chocó and mountain Cuna. This is due to the fact that travel is always by boat. The little girl child amuses herself by playing about the house, by playing with a small gourd rattle, or with little pet parakeets that are kept for that purpose. At the age of six or seven her parents plant coconut trees for her; at this time she also begins to seriously care for her beads and other necklaces and armlets and bracelets. The older women teach her to put on the leg bands. Hours will be spent in putting them on and off again.

At the age of puberty the little girl is placed in a partitioned-off corner of the house. A small or broken cayuca or large vessel is placed in the inclosure and filled with fresh water, and the girl is given a bath extending over four or five days. This is done to prevent sickness later in case she should get wet during the menstrual period. After coming out of the bath the girl is considered old enough to get married.

The boys are given less attention than the girls. They wear but little clothing and have but few amusements. Swimming, fishing, and paddling about in small cayucas are the favorite pastimes. Even the chasing of grasshoppers occupies the time of grown boys.

WEAPONS, HUNTING, AND FISHING

Ancient warfare and weapon types.—There are many accounts which tell of the former warfare that existed between the San Blas coast Tule and their nearest neighbors—the Mandinga and the Bayano River tribes. This condition, which led to frequent battles,

has happily passed and has been followed by confederacies, as alluded to in the sections on population. What formerly were weapons of intertribal warfare have degenerated into accessories of the hunt. Primitive armor and golden corselets, as seen by Barolome Hurtado in 1516 on the island of Caubaco, and the thick matted armor of cotton on the island of Cabo have long since disappeared. The blowgun with the tiny poisoned darts, though still made, is now employed mostly in sport. The iron-pointed lance has superseded the blowgun, and the iron-tipped arrow, together with the iron-head fish spear and harpoon head are in general use. A trade gun, quite often out of working order, frequently lends dignity if not efficiency to the hunter.

Boats and paddles.—Linked with a study of the weapons and fishing paraphernalia of the native fisherman and boatman is the local importance of water transport. As horses are unknown in Darien, water craft and their methods of propulsion assume prime significance. The Cuna and Chocó boatmen from the interior villages of the Tuyra, Bayano, Chucunaque, and other rivers, stand on the flattened, overhanging bow or stern of the dugout designed for this purpose, and propel the craft by long poles. As the current is swift, upstream work wherever possible is done at flood tide, for the tides of the Pacific affect Darien streams long distances inland. In coming down, the current is used sometimes in running rapids. Such a "pirogua" requires two boatmen to pole it along, who stand on the square-cut, flattened thwarts of the dugout. A native dugout schooner, "bongo," "ulo," carries its cargo of fruits, vegetables, livestock, etc., as far as Panama City and may be laden on its return trip with cases of nails, salt, bolts of cloth, and other goods bought in trade. The pirogua differs from the cayuca or dugout canoe in that it is truncated and has a platform for poling at both bow and stern.

Toy models of native dugouts made by the Chocó from balsa wood (Cat. No. 272600, U.S.N.M.), similar in proportions to their big dugouts, were collected by Dr. H. Pittier. The dimensions are 30 cm. (11.8 in.) in length, 6.4 cm. (2.5 in.) wide, and 3.1 cm. (1.2 in.) stern height. Models of "cayucas" made by the Tule (Cat. No. 327578, U.S.N.M.) are fashioned from a block of hard wood and are inaccurate in modeled proportions: 50.9 cm. (20 in.) in length, 19.6 cm. (7.7 in.) beam, with a stern height of 12.7 cm. (5 in.).

The boat paddles employed by the natives of Darien are merely paddles; although they are sometimes used as poles in extricating a dugout from a river shallow, they never serve as clubs. Furthermore, but little variey is developed in the shape of the handles and in types of paddle blades.

A child's boat paddle, "kammi" (Tule), 34.4 inches in length, is used by the San Blas coast children, who delight in assisting their parents in propelling the boat while on a fishing expedition. It is carved from a light straw-colored hard wood (Cat. No. 327619, U.S.N.M.). There is no median ridge on the flattened lateral surfaces of the blade. The distal end of the blade is diamond shaped with a sharply defined point. The lateral edges taper from the wide distal end to the beginning of the handle (pl. 5, No. 8), which is rounded in section and 38.9 cm. (15.3 in.) in length. The flattened handle grip at the proximal end projects more to one side laterally than to the other, fitting the hand and supplying leverage for the thumb. The Chocó paddles have a handle grip placed with equidistant lateral edges, thus lacking the thumb support (pl. 5, No. 8).

Another child's boat paddle, 33.4 inches in length (Cat. No. 327618, U.S.N.M.), carved by the San Blas coast Indians from a brown hard wood, is similar in form to the paddle just described. The diamond-shaped point at the distal end of blade is more blunt and the handle is proportionately shorter, but it is a true paddle with the characteristic broad distal end and the thumb support on the handle grip common to the San Blas paddles. It is used without a rowlock (pl. 5, No. 9).

A lanceolate-shaped boat paddle used by the Chocó (Cat. No. 327621, U.S.N.M.), was collected by the Marsh-Darien expedition. The paddle is carved with a machete from a light brown hard wood. The surface of the blade throughout its course is more highly polished than are the other Panama boat paddles in the Museum; the inequalities in the surface carving have been so obliterated and polished as to give it the appearance of having been tooled on a lathe (pl. 5, No. 10). The length is 57 inches, with its greatest width at the middle course of the blade. A median ridge extends from the acute diamond-pointed distal end to the hand grip at the proximal end. The surface of the blade is ovoid in section, chamfered from the median ridge to the thin lateral edges. The type of hand grip, the median ridge chamfered to each of the equidistant lateral edges, also the lanceolate-shaped blade, characterizes this paddle as the Chucunaque River and Chocó type, as contrasted with the spatulate type with wide distal end with blunt diamond-shaped point and hand grip with thumb support characteristic of the San Blas coast. The latter type (Cat. No. 327620, U.S.N.M.) is represented in the Museum collection by a paddle, "Kammi" (Tule), 57.7 inches long and a handle grip 4 inches wide (pl. 5, No. 11).

Several small paddles fashioned by the Chocó from balsa wood *Ochroma limonensis* (Cat. No. 327655, U.S.N.M.) are also used for ceremonial purposes.

In singling out certain characteristics of type and details of technique without correlating them with the use to which the object is to be put, a distorted interpretation of culture relationship may be arrived at. The crutch paddle of South America has been so singled out by Graebner and others, and a southeastern Asiatic influence intimated on the strength of the similarity of hand grip in southeastern Asiatic paddles. Not only must the object be considered in all the phases of its utilization, but in its relationship to all other objects employed in the culture area under consideration. The length of the paddle used undergoes a wide variation, reaching a length of 2½ meters in central Brazil among the Guato, where many other sizes are also in use by children, the length of the paddle being determined by the age and size of the child. When used by adults the length of the paddle is generally determined by the posture assumed, whether sitting or standing. Another factor determining the shape of the paddle is the type of boat used, also the condition of the stream navigated. If, as is the case on the Atrato River, there is much plant growth on the surface of the water, the Indian sitting or standing at the front of the boat must use the paddle at times as a knife to cut or to remove the impediment; the sharp point at the (distal) end serves as an extension to push against stones and other obstructions on a shallow bottom. To characterize those paddles that have no grip or crutchlike extension at the proximal end of the handle as a primitive type, and those possessing such grip or crutch as advanced or borrowed forms, is to ignore the fact that the former are used for different purposes and in a different manner than are the latter.

The San Blas Indians can go into the forest and secure all the materials necessary to construct a cayuca, including sails and rope. Such a boat is usually a dugout made of cedar wood and is made large enough to carry a load of more than 1,000 coconuts to the market at Colon. The keel is not very deep but extends the entire length of the cayuca, so as to enable the Indian sailor to hold it closer to the wind on a tack. The bow and stern are high. Little holes are made in the bottom of the boat in building, so as to determine the thickness of the bottom. These holes, except the hole at the bow, are plugged up when the boat is ready for use. In making a landing the boat is backed to the shore and to facilitate pulling it up the bank, the plug at the bow is removed, so that the rain water may run out. Another advantage in backing the boat to the shore when landing is that when ready to put out to sea the bow is always pointed seaward. Steering is done by means of an ordinary boat paddle.

William Markham says that as a rule the San Blas Indians do not sail directly with the wind, but rather on a tack, so as to enable the boat to roll over the waves, instead of plowing through the waves head on, which might swamp the boat.

The sails are made from the bark of a tree that the natives call "icoruca" (Tule). The ropes employed, including the long rope attached to the end of the boom, are made from a tree called "tuba ciba" (Tule). A small star is usually carved or painted on the bow.

Markham writes that the boats "cayuca" (Tule) seem as light as a feather and ride the water like a swan. Some of the boats have a pole reaching from the mast to a crotched stick placed at the bow. Over this a sail is spread for shelter in case of rain. Each boat is provided with a small iron or pottery stove for burning charcoal. A peculiarity of the San Blas sailors lies in their reluctance to spend the night on land in a strange city, such as Colon. This corresponds with the custom enforced in the case of strangers visiting the villages of the San Blas coast, who are never permitted to spend the night on land in San Blas territory.

William Markham describes a sea voyage from El Tigre Island to Monkey Island in such a manner as to arouse admiration for the skill of the Tule as sailors.

"He (the Tule fisherman) said we would start at midnight, when the breeze started. He woke me up at 1 o'clock in the morning and we placed part of my things in his big cayuca. Everything else had been made ready by Jake before he called me. The cayuca was anchored about 50 feet from shore in shallow water, it had all its sails set and when I flashed my light on it as it lay there in the darkness it was a pretty sight to look at.

"On getting aboard I found he had made my bed in the bottom of the cayuca. Pulling up the anchor and tightening the sails, we set out from shore. We were to the leeward of the island and got but very little breeze, not a motion of the boat, and everything was lovely, I thought. But when we got from behind the island, the boat went over on its keel and stayed there. We were now getting the full force of the breeze. I crawled out of my bed and perched my self on the upper edge of the boat. He was on the starboard tack and he kept telling me to get down in the bed and to go to sleep, that everything was all right. His wife lay curled upon a seat just in front of him sound asleep.

"It was one of the darkest nights I had ever experienced. Not a star in sight, not a guiding mark of any kind. He was pointing out the various small islands that we passed. He could not see them, but knew just where they were. We had no lights of any kind. There was no ballast in the boat and it seemed as light as a

feather. It seemed to bound from one wave to another like a cork. It was made of cedar and had a six-foot beam.

"We sailed on this tack until 3 o'clock in the morning. He then awoke his wife and she took the wheel or paddle used as a rudder. She brought the boat to the wind and Jake changed the sail. We went over on the other keel and when he again took the rudder his wife laid down again and dropped into a sound sleep. Just before we made these different tacks, I would ask him to guess the time and he came within three minutes of the actual time by my watch. At half past 5 in the morning I felt the bottom of the cayuca grinding the sand. He had hit the landing place on the island as well as he could have done in the day time. An 18-mile trip had been completed without the aid of compass, lights, or any help whatever, several tacks had been taken, the cayuka had been safely steered past several submerged reefs in total darkness, and a landing had been effected in the exact spot desired."

In fishing for lobsters, a long shafted spear is used. The fishing is undertaken just at sunrise before the lobsters crawl under the rocks. A like knowledge of the life habits of game fauna is manifested in the hunt for turtle. When the turtle comes out of the water, it removes leaves and driftwood from the surface of the ground by means of its flippers, digs a hole, deposits its eggs, and then puts the leaves and driftwood back again in such a manner as to prevent detection. The Indians are expert in locating the nests and remove the eggs which they eat.

The meat of the conch is removed from its shell by the application of a hot coal to the tip of the shell which heats the shell and compels the conch to come out. It is then seasoned and boiled in water.

Turtle nets are constructed from heavy native cord and reach dimensions of 50 feet in length and 10 feet in width. The net is anchored at the bottom and floated with buoys or floats placed along the upper margin of the net. A decoy turtle is fashioned out of cedar and attached to one of the buoy floats. During the mating season there are many turtle swimming about; the presence of the decoy attracts them toward the net in which they become entangled. The Tule Indian then ties the front flippers together over its back. As the turtle weighs several hundred pounds it would seem beyond the ability of one fisherman to place the turtle in the small cayuca that is used for turtle fishing. This, however, is not the case, as the Indian now stands on the edge of the boat, tips it until the water rushes in turtle and all. The boat is then righted, water is bailed out with a calabash bail, the sail is raised and the homeward journey is begun.

Green turtles are kept in a "turtle crawl" made by placing heavy stakes in the water near the shore where it is about three feet deep. The turtle is then released until bought up by the traders or until sold in Colon. An account is kept of the time when the turtle has come ashore to lay its eggs. If the turtle has not yet been captured, a notch is cut on a stick every day until the fourteenth day has gone by. The fisherman and his wife then go to the place where the turtle has its nest and on the fifteenth night when the turtle again comes ashore to lay eggs, it is caught by its flippers and the eggs are removed from the nest. A turtle calendar or notched stick is carried by the Tule by a cord hung about the neck, and as many of them have a turtle nest located the notched stick calendars are a common occurrence. Boundary lines on the small islands are nothing more than piles of sticks or stones and a turtle nest located on one individual's land is the property of the owner of the land. The individual's rights are scrupulously respected by the other landowners on the island.

A peculiar practice is the Tule method of catching rats. As the houses are roofed with heavy thatch a large number of rats make it their dwelling place. On rat-catching day a representative group of men assembles at the house to be cleaned of rats and with clubs and long sticks climb on the roof and beat the thatch; as the rats descend the women and childern assembled below kill them with clubs. The dead rats are then loaded in a boat and hauled out to sea and dumped overboard.

Metals and their treatment.—In recent years there have been many expeditions organized to search for gold in Darien. Such prospecting has invariably led to unsatisfactory results. Nowhere in Darien in recent times has gold been found in paying quantities, although copper deposits and manganese has been reported as existing in large quantities.

The old Indian gold mines of Darien have never been found to yield the golden metal that was so persistently sought by the Conquistadores. An English company is now carrying on mining operations at the site of the old Caña mine of early Spanish days. The mine is located at an altitude of 2,000 feet at the southeastern base of Mt. Pirre, a spur of mountains projecting northward from the Serrania del Darien. This mine was formerly reached by a paved road from Santa Marta de Real on the Tuyra River.

Unquestionably there was a large quantity of gold mined by the Indians of Darien before the coming of the Spanish. The chiefs and leading men are reported to have drunk from golden cups wrought in beautiful shapes and showing excellent workmanship. Peter Martyr gives an account of golden trumpets and bells in the

possession of the Atrato river tribes. The bells were used at ceremonies and festivals. The clapper for the bell was invariably fashioned from a fish bone. Breast plates of wrought gold and shields of copper were also observed.

In the days of the early Spanish explorers, the Indians of Darien knew how to wash gold and silver from the sands of the streams. Bancroft relates how Balboa on his march across the Isthmus found the people in possession of large quantities of gold, jewelry, and pearls. The streams, subsiding after a flood caused by heavy rains, brought gold from the river beds. They also gathered a considerable amount of surface gold washed down from the hills.

In the Province of Veraguas and in Darien, the workers in gold possessed crucibles for melting metals; also silversmith's implements. The natives understood the rolling and working of gold, from which many utilitarian objects, such as cups and jars and ornaments were made. The metal work of the natives has deteriorated with the decrease in their supply of gold and silver and because of the proximity of the trader and his ware. The natives exchanging gold dust for foodstuffs and other articles at Panama City to-day find that traders will not barter until they have first separated the pure gold by extracting the ferruginous metal with a magnet.

Early explorers of Panama found no other metals than gold or silver in use by the aborigines. Practically the same is true to-day. In hunting and fishing enterprises the native employs iron spear and harpoon points or foreshaft. Firearms have been introduced, and the machete or combination cutting implement and weapon is in general use. These objects of iron or of steel are never cast or forged locally, but are acquired in trade and in the case of arrow and harpoon points have undergone a process of reshaping to fit the demands of local use or of native pattern of decorative design; more often the metal object was originally intended for an entirely different use—any kind of iron rod becomes a spear foreshaft, and a common file becomes a harpoon head.

Knives and celts.—The machete is the principal cutting implement and weapon of the jungle and has a wide variety of application. The natives (Tule) call it "e'o norri." The machetes in the Museum collection from Darien (Cat. No. 327622, U.S.N.M.) have undergone no process of change in shape of cutting blade, handle, or in ornamentation. The Indians have simply taken the machete over as they receive it from the trader lavishing the individuality of their craftsmanship on the wooden scabbard. The heavy blade is about two feet long, narow near the grip, and widening toward the distal end, where is also the center of gravity.

In an area lacking in native ferruginous metals, but abounding in woods of many degrees of hardness, and in reeds, grasses, and

fibers, a dearth of metal objects is usually encountered. The Guaymie of the headwaters of the Rio San Felix west of the Canal Zone still chip stone celts with which to pick and to shape their mealing stones. Such celts are chipped and nearly always unpolished. Where stone celts and other nonmetallic objects are not serviceable in shaping implements and weapons, trade objects are employed. Steel files and steel hand saws are thus used by the Tule in cutting to proper dimension their household furniture. A more popular imported tool employed in chipping, cutting, and shaping hardwood is the machete.

The machete scabbard from the Rio Chico, south Darien (Cat. No. 327622, U.S.N.M.), is a typical example of the decorative art of the Chocó (pl. 19, No. 3). The object is fashioned from two slabs of hollowed balsa wood large enough to cover the blade of the machete to the hilt, 57.7 cm. (22.7 in.) in length. The lateral surfaces of the two wood sections are concave on their inner surface and convex without—both sections tapering at the distal end to a conical knob. Several strands of cotton cord encircle the two sections of the scabbard at the ends and middle and may be severed without the removal of blade from scabbard. The lateral surfaces are not flattened but ovoid in outline at the hilt. A geometric ornamental design in black and yellow alternates with the natural white color of the balsa wood. The black pigment is obtained from the jet caustic pigment of the *Genipa americana*, the coruto of the native tongue; it is laid on in fantastic openwork pattern consisting of black lines in the form of a diamond-shaped rectangle alternating with an hour-glass design with extended neck region. The yellow, a more brilliant coloring matter extracted from the pulp of the *Bixa orellana* and known locally as anoto, arnotto, or anatto, is laid on in closing wedges at each end and in four-leaved floral designs within each rectangle.

Blowguns and darts.—The employment of poisoned arrows and of blowgun darts is on the wane. The Tule chief, Igwa Nigdibippi, said in 1924 that his people did not use poisoned darts, but that the Chocó did. Mrs. E. Y. Bell, in the Smithsonian Report for 1909, writes that the San Blas Indians formerly poisoned their arrows by dipping them in the juice of the "Manzillano del playa," a plant growing near the sea. In Cullen's "Darien" (p. 67), it is said that "some woorali and poisoned arrows that I obtained from the Indians of the interior were procured by them from Chocó." In the "Darien Surveys," Selfridge writes (p. 136): "We inquired of all the Indians, both men and boys, at Caledonia Bay and at San Blas for the 'curari' or 'urari' poison * * *. They brought us what they represented to be the bona fide poison. It turned out to be nothing but the juice of the manzanillo del playa."

The darts used with the blowgun to-day are of two kinds, the short and the long darts, but otherwise similar.

The short darts, made from the midrib of a cokerite palm leaf (*Maximiliana regia*) 17.8 cm. (6.9 in.) in length (Cat. No. 327590, U.S.N.M.), (pl. 11, No. 8), are sharpened to a knitting-needle like thinness, having the greatest diameter in section about two inches back from the unnotched point and tapered toward the nock end, which is skillfully wrapped with tree cotton sufficient in quantity and of the proper consistency to fit the tube of the blowgun and to propel the dart when pressure is applied by a puff of air from the operator's mouth. The dart, smoothed with a bit of shell, is not always perfectly rounded in section.

While the North American Indian feathers the shafts of his arrows at the butt to insure directness of flight, the Indians of Darien accomplish the same result by locating the center of gravity in their darts and arrows near the head end of the shaftment or in a foreshaft of heavier wood than that of the posterior end of the shaft. The blowgun darts along with the various types of fish spears and arrows are heaviest in section near the head of the shaftment.

Another blowgun dart (Cat. No. 327589, U.S.N.M.), (pl. 11, No. 7), 49 cm. (19.3 in.) in length, has a shaft three times the length of the dart just described. Considerable skill based on long practice is required in properly wrapping the cotton about the posterior or nock end; when properly fitted to the bore of the blowgun a dart is effective at 100 yards.

In the interior and on the coast as well, hunting is of secondary importance to fishing, for which the dart is not available, as it can not penetrate under water. The blowguns are cylindrical tubes 167.5 cm. (66 in.) in length (Cat. No. 327605, U.S.N.M.; pl. 9, No. 4), composed of two cylindrical reeds each 1.7 cm. (.7 in.) in diameter, joined by a cylindrical band composed of a third section of similar reed, 2.1 cm. (.8 in.) in section and 25.4 cm. (9.9 in.) in length. The joining of the cylindrical section is so neatly adjusted as to offer no obstruction to the passage of the dart through the tube, which is of burnished evenness. The light yellow color and other descriptive details identify the stems as similar to those in use in the Guianas described by Roth (p. 145) in the Thirty-eighth Annual Report of the Bureau of American Ethnology: "The reed grows hollow and there is not the least appearance of a knot or joint throughout the whole extent."

The Darien blowguns and darts from the San Blas coast collected by the Marsh-Darien expedition are crude in construction when

compared with those described by Roth, inasmuch as there is no outer protective tube of palm-fiber basketry, no separate mouthpiece to fit the lips of operator; no sights are employed at any place on the outer surface of the tube. The reinforcement of cotton cord wrapping at each end seized with a black gummy substance constitutes the sole protective measure against splitting or breakage. The weapon, however, has the advantage of extreme lightness and the compactness obtained through its sectional construction.

The blowgun in its origin as a weapon was used only in those areas where reeds grew plentifully. Beginning with the eastern United States, where the Cherokee, Iroquois, and Muskogean tribes employed this weapon for killing birds, and where the Choctaw about New Orleans made a compound blowgun by fastening several reeds together, and proceeding to Mexico and Central America, where the weapon was in common use, it is found existing to-day among most of the tribes of tropical South America, who make a weapon similar to the type employed by the Darien tribes or construct one from two pieces of wood which are grooved and fitted together. Mason remarks that "from the inventor's point of view, the blowtube with the dart, driven to the mark by the elasticity of the breath, should be the antecedent and parent of the gun, pistol, and cannon. Historically the archer was the father of the cannoneer. It is doubtful whether the inventors of gunpowder ever saw an American or Malayan blowtube."

Bows.—The universal projecting device of North America was the bow for propelling arrows and barbed harpoons. These weapons are found in their simplest form in Darien in use by the native tribes. Wafer writes of them that "the men, when they are at home, trouble themselves little with any business; but that they may not be quite idle, they will often be making their cups and baskets, arrows and heads for them, lances, nets, and the like." (p. 158). A fish bow, "kingi," (Tule), (Cat. No. 327595, U.S.N.M.), (pl. 9, No. 3), from the coast Tule of Caledonia Bay, is carved from a section of black chonta palm wood and is 70 inches long. The lateral surfaces of the bow, both the inner surface toward the archer and the back, are flattened throughout their length and polished by use. From the grip or central section the arms taper toward the nock, where they are abruptly truncated, except for the projecting horns with their nock, 8.9 cm. (3.5 in.) in length, upon which the bowstring is attached. The entire bow is of one piece and, except for a slight convexity of the back surface, has no reinforcement such as the grooved pilastering practiced by the Guiana Indians or the sinew-backed bows of the Plains Indians. The bowstring, "kingi tuva," (Tule), is a heavy three-ply cotton cord, each ply consisting of 38 to 42 strands of native yarn spun from tree cotton. As the inner surface is flat and the

bow throughout its course is straight, the bowstring lies alongside. Its looped end is secured in a double-loop knot about the nock. No surplus bowstring extending beyond the loop is carried for bow reinforcement or as emergency supply. To string the bow it is pressed vertically on the ground and at the same time bent forward. While thus bent the right hand twists the string a few times to render it more taut and then slips the loop over the bow horn into the nock. The short projecting end of string is carefully knotted to prevent the unraveling of the cotton strands.

Another fish bow, 66 inches in length (Cat. No. 327596, U.S.N.M., pl. 9, No. 2), employed by the natives of the Caledonia Bay coast, was collected by the Marsh-Darien Expedition. The bow shows a high polish, secured by pulling the bow across a sharp surface of metal or stone and then smoothing it down with a stone or bit of shell. Particles of black beeswax used in polishing still adhere to the back surface. The bow is lighter and narrower in section than the one just described.

Several features not found in other bows from the San Blas coast are embodied in a similar fish bow from the same area now in the Museum collection (Cat. No. 327597, pl. 9, No. 1). The bowstring is made from the fibrous bast, or inner bark of a tree and is attached to the bow horns in a simple loop. This loop fits loosely in the rounded nock at the end of the bow. The simple loop is made by turning the end of the bowstring back, and with it touching the body of the string for a distance of several inches, wrapping the two with a fiber lacing of the same material, leaving an opening just large enough to slip over the horn. To secure additional firmness and to prevent slipping, the bowstring end is not placed longitudinally against the body of the string, but is wound twice around it in snake- or creeper-like fashion under the laced wrapping.

Sometimes shorter bows are made for children. These are more crudely made and quite often unpolished, so that the nodal elevations of the palm wood appear at a distance of four or five inches apart. The inner surface of the bow reveals a white, pithy core. On one of these children's bows the bowstring is a double cotton cord resembling the commercial fishing cord and attached to the horns of the bow with extemporized loops.

Arrows.—The arrows of the Darien tribes may be described as consisting of a head, foreshaft, shaft, and nock. Variation in the type of arrow constructed by the Chocó and the Tule is not great. Both tribes subsists primarily by fishing, so that fish arrows, harpoon, and turtle spears constitute essential weapons. The arrowhead is often made in the form of a trident with a compound head consisting of from five to seven barbed prongs, fashioned invariably

from the hard black grained chonta palm wood; a foreshaft of the same wood; a reed shaft (*Gynerium sagittatum*), with a cylindrical nock.

One of the trident fish arrows, "nase" (Tule), of the Tule (Cat. No. 327599–D, U.S.N.M., pl. 10, No. 1), is 44½ inches long. The shaft, an unjointed cylindrical reed with a pithy core, has no feathered shaftment and no seizing at the nock. Into the pithy interior of the shaft at its distal end is thrust a sharpened cylindrical shaft of chonta palm wood, "ila" (Tule); that is, the dark wood, to the depth of several inches. The protruding end, 43.2 cm. (17 in.) long, becomes the foreshaft. At the place of its insertion into the reed shaft the latter is seized, to prevent splitting, with a wrapping of strong three-ply cotton cord in simple roll 2.6 cm. (1 in.) wide. The seizing is continued an equal distance about the foreshaft to insure firmness. The ends of the seizing cord are tucked under several of the end coils of the wrapping.

Roth describes (p. 157) an interesting device in use by the Guiana Indians to tighten the seizing cord. "There is a special tool, the arrow tightener . . . by which pressure is effected. This is composed of a very strong kurana twine attached at its extremities to two stumpy turtle bones. Winding the central portion of the string a few times around the arrow shaft, pressure is exerted by holding one bone between the big toes and pulling the other in the right hand at the same time that the left hand keeps rolling the shaft uniformly backward and forward." A similar tool is invariably used by the natives of Darien in constructing the reed shaft until the wrapping has been placed and its ends tucked under the outer coils of the wrapping. The expansion of the reed shaft consequent upon its release leaves the seizing cord taut.

In regard to the foreshaft and the method of its attachment there is no essential variation in the Darien fish arrows now in the Museum (pl. 10, Nos. 1, 2, 3, 4, 5). Variation in arrow length depends upon the size of bow used and is quite marked (pl. 10, Nos. 1 and 5). There seems to be no definite method whereby the relative proportions of shaft, foreshaft, and trident arrow head lengths are determined. Some of the shafts have a protective seizing at the proximal end, others do not (pl. 10, No. 1, 4, 5). On some of the shafts the seizing cord is stained with black beeswax to strengthen and to preserve the cord; a decorative design in black and white is secured by alternatively waxing or staining a section of the seizing cord and in leaving the remainder in its natural color.

Compound arrowheads and harpoons.—The arrows in use by the Darien Indians may be classified as to component materials, whether of reeds, hardwood, or iron. Another classification is according to

the type of construction of the arrow head, which may be a simple one piece type or may be compound. A compound trident shaped arrowhead has usually five prongs (pl. 10, No. 2), of which the central prong is the prolonged foreshaft and to which the other four prongs are attached at a point 7.7 cm. (3 in.) above the point of insertion of the foreshaft into the reed shaft. Each of the four diverging radial prongs and the projected central foreshaft prong is barbed with one barb each just below its sharpened point. The other or proximal prong end is flattened so that it lies close against the side of the foreshaft with the prong diverging at an acute angle. A three-ply cotton cord is wrapped tightly around the flattened ends and the central foreshaft axis so as to form a sleeve of seizing about 5.1 cm. (2 in.) in extent. A wedge of pith is next forced into each of the divergent prong angles and the seizing continued with an interval of intervening space. The wrapping cord now takes on a complicated double crossed roll pattern, firmly knitting together each radiate prong of the arrowhead to the foreshaft and to the radiate prongs adjoining. A cement of gummy *Ceroxylon andicola* and black beeswax is then applied to the seizing. Variation is found in the number of barbs from no barbs at all (pl. 10, No. 2) to three or more single or double barbs (pl. 10, No. 3, Cat. No. 327599–C, U.S.N.M.) placed opposite one another. The composite arrowheads with seven instead of the usual five prongs (pl. 10, No. 1, Cat. No. 327599–E, U.S.N.M.) are more carefully seized with a cotton cord wrapping in intricate crossed pattern to secure them more firmly.

Like the compound or trident arrowheads of the Darien tribes, the simple wooden head is carved from chonta palm wood and is similarly inserted into the end of the shaft to a depth of from 5 to 8 centimeters (pl. 11, No. 5, Cat. No. 327600, U.S.N.M.). This simple arrowhead, "sigu," (Tule) is 42 cm. (16.5 in.) long, the usual length of the foreshaft in the compound arrowhead. The barbs occur in series of two and are placed bilaterally, while the barbs on the wooden arrowheads of the Guaymie of Costa Rica and western Panama are placed alternately opposite and are more numerous (pl. 11, No. 6.) A similar head from the Guiana tribes is described by Roth: "The arrow of the Arawak has a tapering wooden head, more or less oval in section, and jagged on either side into more or les definite barbs. It is employed for shooting big birds, a similar arrow is used by the Carib." (p. 161). But the cruder arrowhead of the Darien Indians with its less highly polished surface, and with parallel barbs clearly defined, is not mentioned by Roth as occurring in Guiana.

While most of the wooden arrowheads are compound and barbed, those made of iron are simple but varied as to fixation to shaft

and in the number and type of barbs. A typical simple and fixed iron arrowhead is usually attached to a hard chonta palm wood foreshaft which in turn is inserted into the pith core of a reed shaft (Cat. No. 327601–B, U.S.N.M., pl. 11, No. 1), 134 cm. (52.4 in.) in length. At its distal end a groove is cut into the foreshaft to a depth of 3 or more inches; into this hollowed groove the end of an iron rod is inserted; alongside the rod at the two open edges are laid splints of cane or of bamboo, which are exactly fitted to the length and the width of the groove; the now inclosed base of the iron rod arrowhead is seized with a wrapping of cotton cord in a double crossed roll and covered with *Ceroxylon andicola* gum and beeswax cement. The tip of the arrowhead is sharply pointed and unbarbed.

An example of a compound fixed iron arrowhead (Cat. No. 327601–F, U.S.N.M.) composed of 2 thin single barbed iron arrowhead prongs inserted into a palmwood foreshaft, together 35.8 cm. (14.1 in.) in length (pl. 11, No. 2), was collected at Caledonia village on Caledonia Bay by the Marsh-Darien Expedition, as were other long shafted, iron headed arrows designed for shooting turtles and large fish (pl. 11.)

A variety of turtle harpoon, "arvon suwara," (Tule) is composed of a triangular steel head pointed and barbed with a series of barbs at each of the three lateral edges (Cat. No. 327609–11, U.S.N.M., pl. 11, Nos. 3 and 4.) The 18.9 centimeter (7 in.) long harpoon head is attached to a wooden shaft nearly 13 feet long made of "irsuwala," (Tule), wood. A lead core encircling the base of the steel head has attached to it a heavy cord loop comprising 3 separate cord loops, each made from a heavy three-ply cord held together with cord seizing except for a loop spaced to slip over the shaft when the harpoon head is detached upon striking; the head is embedded in the fish or turtle and may be retrieved with a line attached to the loop where it is attached to the harpoon head base. Iron and steel employed in the manufacture of the harpoon heads is obtained by the Indians in trade, so that the triangular form is probably accidental. Another harpoon head 18.8 cm. (7.4 in.) in length has been painstakingly shaped from a common commercial hand file into a harpoon head with pointed apex; the head has one ornamental and 3 series of double barbs placed bilaterally (Cat. No. 327611, U.S.N.M., pl. 11, No. 4). In the beauty of ornamental design and in the harmony of proportions found in these iron and steel harpoon heads, a recurrence of ancient artistry in metal work may be noted. Painstakingly shaped with crude instruments, the chased ornamental design might well be the product of a more favored craftsman.

POTTERY

Classification of types.—A leading interest centering about the pottery of the native tribes of Darien lies in the search for structural and decorative similarity of detail to the ancient pottery of the Province of Chiriqui in western Panama, as found in the pottery burial offerings in the ancient graves of that area. The Cuna tribes of the days of the early Spanish explorers knew of the great achievements of the culture centers on the north and to the south, namely, of the Maya in Yucatan, the Doraskeans in Chiriqui, and of the Incas in Peru. There is but little evidence, however, traceable through the decorative design and the structure of their pottery to show that the Darien tribes had ever come into direct contact or had ever acquired a great degree of knowledge of the potter's art from any one of their more highly accomplished neighbors.

The following classification of Darien pottery now in the Museum collections will be concerning its use—whether domestic, ceremonial, or miscellaneous—and the manner of its construction.

The classes of pottery objects include stoves, cooking pots, bowls, water and chicha jars, effigy canteens, stove censers, and many small pottery figurines of birds, animals, and humans.

Materials.—The materal used in the construction of the classes named is a coarse reddish clay, when those objects are derived from the Caribbean coast, and a light gray colored clay when from the Sucubti River valley of the interior. The adhesive qualities of the light gray Cuna pottery is much inferior to the tenacious reddish or black marsh clays of the San Blas coast. This is partly due to the material or paste used, also their inferior methods of coiling and to firing in the open.

Some of the points to be considered in this description of Darien aboriginal pottery are: The constituent elements employed, the means of construction, the surface finish, the decorative design, and the outline form. The first class of pottery vessels to be considered are the stove and the cooking pot.

A cooking pot used by the Cuna of the upper reaches of the Chucunaque and of the Sucubti Rivers, also of the San Blas coast Tule, is referred to by the natives as "the two-handled cooking pot," or "tsiya nala," (Tule). One of these vessels, made by the Cunas Bravos of the Sucubti River (Cat. No. 327349, U.S.N.M., pl. 13, No. 1), is 16 cm. (6.3 in.) wide with its greatest diameter just below the neck constriction, and 11.5 cm. (4.5 in.) in height. The material used in its manufacture is a coarse, sandy, friable, gray-colored clay. Interspersed throughout the paste are particles of white sand, ashes, and broken potsherds ground fine and mixed as a temper with the clay. Although the workmanship of the Cunas Bravos pottery is

as crude as any pottery from tropical America, its makers knew that a pure clay paste on drying or firing would crack from unequal stress. The micaceous sand in the paste no doubt was added unintentionally just as it was found with the clay. One may speak of it as a natural temper.

Technique of pottery making.—The next step to consider is the actual construction of the vessel. The clay, already broken out of the ground in or near the river by the women with a thick, heavy, pointed stick, is cleaned of all dirt and foreign particles, and during this cleaning process is mashed with the hands. In this condition it may be left for a time before being worked up, but it becomes gradually harder. As the women are the potters, they not only select the proper kind of clay at certain places along the river that they know will yield a good muddy clay, "navsa," (Tule), but later when it has thoroughly dried take it up with the lump after lump, mixing it with water and rolling it with the outstretched palm of the hand into the shape desired.

A lump of clay that is to become the foot of the pottery vessel is taken and pressed between the hands into the form of an annular slab with flattened base and convex, tapered upper surface. About one-half the distance from the outer rim to the center of this disk its upper convex surface becomes everted and the coiling process, whereby the body of the vessel is shaped, is begun. By simple manipulation with the hands small vessels can be formed from lumps of clay, but larger vessels can not be modeled, but must be laid up with ropes of clay by the process of coiling. This process is the greatest aid to the securing of form in larger vessels, besides giving a fibrous structure to clay by arranging it in the lines of greatest tenactiy. In a manner similar to that described by W. E. Roth,[9] as practiced by the Guiana Caribs of the upper Manawarin River each coil in succession is placed around and inside of the everted edge at the constricted upper surface of the annular foot, both coil and edge being squeezed together at close intervals with the left thumb and forefinger on its passage round. If, as in usually the case, the coil happens to be longer than the circuit, it is pinched and pulled off. The vessel is thus built up, not in one continuous coil, but of several, each succeeding one adding to its lateral expansion and to its height. The adjacent coils become locked inasmuch as the upper level of each coil is lower on the inside than on the outside. As the vessel walls reach their maximum projection laterally, a certain amount of retouching, thinning, and smoothing occurs: the more or less irregularly sloping walls are pressed in here or pressed out there to obtain the necessary form, at the same time that the component coils must

[9] 38th Annual Report Bureau of American Ethnology, 1917, p. 131.

be pressed together here and there to obliterate the lines of junction, while their composite surfaces inside and out must me smoothed. This is effected by means of the open hand and a piece of calabash shell pressed alternately against the inner and outer surfaces. There is no evidence that a calabash mold is employed, although the contour of the Cuna and Tule ware would seem to indicate that the convex shell of a circular calabash was used in smoothing and shaping the inner surface. A resemblance to ancient Cherokee ware of the southeastern United States may be ascribed to the use of similar smoothing tools.

The additional coils that are now added are finished as were those making up the outward flare, except that the vessel instead of being widened is now narrowed. When the required height of the vessel is reached and the desired narrowing of the neck orifice attained, the upper edge is trimmed with a knife held horizontally. The trimmed edge is now everted, but the next coil is added to it on the outside. The neck coil itself and the imprints of the operator's fingers are visible upon its outer surface and on that of the immediately succeeding and final coil, which is also placed on the outside (pl. 13, No. 1). These two coils constitute the neck and margin of the vessel, but are not thinned and smoothed as were the previous ones. The top is trimmed off with a knife, its edges smoothed over and slightly everted. A piece of calabash shell exactly corresponding with the intended lip or flare of the vessel may be used instead of the knife and fitted to the edge of the vessel and passed around its circumference. A lug or looped handle, shaped from a single coil of clay, is luted to the outer surface of the pot by pressure of the fingers, with its one end coterminous with the upper marginal coil and the other joining the vessel at the point of its greatest lateral projection. Later, when the vessel is a little more dry, the various roughnesses of the surface are sliced off with a sharp knife or bit of shell and the vessel is then polished.

No ornamentation of incised lines, paint, flutings, luted figures, or frets and borders are found on Cuna pottery, variation in the number of neck coils probably being the only attempt at ornamental design.

Firing methods.—In firing, the same lack of care manifested in surface finishing is shown. Whether an excavation is made in the ground, the vessel inserted, a pyramid of dry wood placed on top, and then fired, or whether a fire is built on the surface of the ground and the vessel fired in the live coals and heat of the fire bed, the fact is apparent that many of the white spots in the walls of the vessel as well as the whitish surface color, are due to improper firing.

Stove-censers.—Two handled pottery vessel (pl. 13, No. 2), (Cat. No. 327352, U.S.N.M.), much used by the San Blas coast Tule as a

two-compartment stove and censer combined: that is, for domestic and ceremonial purposes as well, is 14.8 cm. (5.8 in.) in height and 13.9 cm. (5.5. in.) in width. The clay utilized is of a more tenacious quality than that used by the Cunas of the Sucubti valley. It is of a dark brown, and other similar stove censers are of a yellow terra cotta color, due partly to methods of firing, which causes the iron present in the clay to be burned to a red oxide. The mode of construction is partly by coiling, partly by modeling. The annular foot is shaped from one piece of clay that has been modeled by hand and smoothed with a wooden paddle or piece of calabash shell. Extending upward from the outer circular edge of the foot are seven short strips, each made from one flattened coil and knuckled with an outward flare at nearly right angles to its compensating incurve. The seven lateral supports are separated from one another by seven orifices of equal dimensions, so that a septuple base or stove compartment with a constricted top surface 5.3 cm. (2.1 in.) above the bottom piece is the result.

The top slab of the lower stove compartment serves also as the bottom piece for the compartment above. This part of the vessel is similar in form, size, and mode of construction to the Cuna two-handled cooking pot. The constricted neck orifice, although made by the process of coiling and topped by a flaring margin, is so carefully finished, tooled, and burnished as to obliterate on the surface all evidence of its mode of construction. Attached at the opposite sides of the vessel are two beautifully modeled handles luted on by finger pressure, but the surfaces of this vessel both inner and outer have been so smoothed as to obliterate all evidence of finger imprints and juncture seams.

The lid is composed of a circular slab 12.7 cm. (5 in.) in diameter with a concave under surface fitted to the marginal flare of the vessel and a convex upper surface surmounted with a rectangular handle made of three separate flattened coils.

Piercing the bottom of the upper compartment just outside the place of juncture of the seven lateral base supports and equidistant are nine draft holes with an average diameter of 1 centimeter. These draft holes are used in connection with the burning of the cacao bean incense, or when the upper compartment is employed as a brasier.

Similarly placed perforations, eight in number, are found on the four-handled stove-censer employed by the Tule. One of these in the National Museum (Cat. No. 327343, pl. 13, No. 3), is 13.5 cm. (5.3 in.) in height and 11.1 cm. (4.4 in.) in greatest diameter. The two additional handles are luted on at right angles to the pair usually found luted on at opposite sides and are primarily decorative in their nature. The supporting legs, which are at the same time

the lateral walls of the lower or stove compartment, are four in number, alternating with an equal number of cuneiform openings. An additional perforation is located at the center of the annular foot of the lower compartment, which might be of aid in securing additional draft when the entire base compartment is placed in the fire bed, or when the upper chamber is employed as a brasier and coconut husks or charcoal is placed within.

A stove-censer, "Tsiya nala" (Tule) (Cat. No. 327354, U.S.N.M., pl. 14, No. 1), of such small dimensions, 9.5 cm. (3.7 in.) in height and 8.9 cm. (3.5 in.) in width, as to be classed with the toy pottery objects, so abundant along the San Blas coast, is similar in form and technique to the censer-stoves previously described. The two handles luted on oppositely are not harmonious in design, as one of them is angular and the other ovoid in outline. Six circular draft perforations are located just outside the quadripodal base compartment. A variation to be noted is the lack of an annular slab or foot that supports the much constricted base of similar stove-censers.

A compartment stove 11.5 cm. (4.5 in.) wide and 10.2 cm. (4 in.) high, with an upper compartment shaped like an oblong shallow dish, with imperforate bottom joined to a lower compartment at the constricted place of juncture of the five rounded lateral supports, which converge at their bottom into an annular bottom plate or foot, is in the Museum collections from the San Blas coast (Cat. No. 327342; pl. 14, No. 3). The lower compartment of the stove-censer is the fire bed. Live coals are inserted through the open wedge-shaped panels, or the vessel may be inserted in a fire built up to the height of the lower compartment—the open spacing between the supports allowing the heat to reach the entire bottom surface of the upper compartment. When used as a censer a slow burning of objects, usually cacao beans, placed within produces an incense smoke.

Pitcher vases.—An example of an entirely different pottery design is a small pitcher vase 11.5 cm. (4.5 in.) high and 14 cm. (5.5 in.) wide at its greatest diameter (Cat. No. 327345, U.S.N.M.; pl. 14, No. 2), made from a clay that has been evenly fired to a red oxide. The paste used contains more friable and less tenacious clay and sand than is found in most of the Tule pottery vessels. The pitcher vase was built up by a combined process of modeling and coilwork; finger imprints are shown on the flaring outer rim of the annular foot, while the marks of a cutting implement are visible on the inner surface of the flaring upper margin which, save for a spout shaped like a bird bill, is identical in contour and size with the annular foot.

There is a symmetry in the proportions of this pitcher vase that seems to indicate a divergent culture influence that may be ascribed

to an ancient pottery form copied by the Tule potter. The same divergent pattern may be noted in the effigy water canteens to be described later.

Black ware.—A good example of black ware is a cooking pot of the San Blas coast Tule (Cat. No. 327346, U.S.N.M.; pl. 15, No. 1), 14.5 cm. (5.7 in.) high and 21.6 cm. (8.5) wide at its greatest diameter. Dr. Walter Hough, in an article on "The Ancient Central and South American Pottery in the Columbian Historical Exposition at Madrid in 1892," on page 341 says:

> The last step of the process rendering the clay anhydrous and durable is the firing. Modern aboriginal pottery is burned in the open air by setting up the dried ware, piling around it grass, leaves, or other inflammable material, preferably bark, and firing it to a red heat in clear coals. The ware is allowed to cool slowly in the ashes to prevent cracks.
>
> To secure black ware the objects are burned to a certain degree as above and the fire dampened or smothered with fresh fuel, sometimes resinous, producing a tarry smoke, which penerates the pores of the pottery. It was usually the object to produce black ware, but frequently the dark, common ware of the greater part of the United States and Africa seems to have been due to imperfect firing.

The black ware of the Darien tribes is nearly always associated with the manufacture and storing of chicha, and with cooking. It would seem that a resinous, tarry smoke from a smothered fire or the boiling over of the chicha are contributory to the blackening of the outer surface. The inner surface of most of the black ware is a dark brown.

The cooking vessel mentioned is made in the characteristic manner with an annular foot with flat bottom and convex upper surface tapering to a constriction as it merges into the lateral surface of the globular body of the vessel. The omission of a flaring margin is a departure from the usual practice of the Cuna and Tule potters. The surfaces, both inner and outer are smoothed and polished with a bit of calabash shell or smooth surfaced stone.

When a pottery vessel shows a uniform dark color on its outer surface, but a much lighter coloring on the inner, the presumption is that through long usage smoke accretions have penetrated the outer surface, as in this cooking pot, where a penetration of from one to two centimeters is shown in section. Where the dark coloration is irregular and merges into shades of brown, it is presumably an adventitious coloring produced by uneven firing.

A slip or wash with material similar to that of which the vessel itself is composed is used by the Darien tribes on most of their pottery vessels preliminary to a tooling or burnishing to render the surface less porous. The kind of temper employed, the quality of the clay, together with the amount of effort spent in securing a smooth, polished, and uniformly anhydrous surface are the indica-

tions whereby the work of the coast Tule may be differentiated from that of the interior Cuna tribes.

A two-handled pot, "tsiya nala" (Tule), 9 cm. (3.5 in.) in height and 10 cm. (3.9 in.) wide at the marginal flare, with annular foot, and luted handles of looped coils of clay paste, each of whose points of attachment are at the marginal flare and greatest median surface convexity (Cat. No. 327362, U.S.N.M.; pl. 15, No. 2), is characteristic of Tule and Cuna ware. A provision found otherwise only in the stove-censers consists of a series of four narrow oblong draft perforations immediately outside the place of juncture of the globose bowl and annular foot, with another larger circular perforation through the foot at the center. A coiled bast fiber handle from one handle loop to the other allows the hanging up of the vessel under the house roof as a censer or its being carried in the hand.

Gray ware.—The light gray pottery of the Mountain Cuna is uniformly more crudely made and of an inferior paste. This is illustrated by a cooking pot of the Cunas Bravos of the Sucubti village in the Sucubti River Valley (Cat. No. 327329, U.S.N.M.; pl. 15, No. 3), 12.8 cm. (5 in.) wide and 8.4 (3.3 in.) in height. This vessel differs essentially from the domestic pottery vessels of the Cuna in the absence of handles and in the truncated conical base. The characteristic visible coilwork at the constricted neck orifice with the finger imprints are clearly shown. Elsewhere the lines of juncture are obliterated and smoothed over.

A cooking pot from the vicinity of Caledonia Bay (Cat. No. 327330, U.S.N.M.; pl. 15, No. 4), is 9.5 cm. (3.7 in.) in height and 11.5 cm. (4.5 in) wide at the margin. The conical foot is shaped in the hand of the potter from one lump of clay; the walls and flaring margin above the constricted neck orifice are made of coiled strips. The marginal coil retains the finger imprints of the potter; it also shows the manner in which it has been built up on the outside of the coil situated just below. The cracked surface at this point shows how far the firing has penetrated by revealing the coarse granular texture of the unfired inner core as contrasted with the smoke blackened surface. The conical foot resembles the Algonkian jar of the Atlantic coast. Although this vessel resembles the Cuna ware of the interior, the general color effect of San Blas coast ware is red or terra cotta, the paste burning rather evenly. Burnishing is not practised on the common ware, but is found on water canteens and stove-censers. A slip is used whenever the ware is to be burnished, both on the inner and the outer surfaces.

Bowls.—The almost universal globose and hemispherical bowl which marks the effort of the primitive and early potter is of general use in Darien. One is agreeably struck with the variety of ideas and composition of these bowls. The imitation of natural

forms which culminates in the areas of the higher cultures begins to be practised in Darien, where calabash forms, shells, birds, reptiles, and other life forms are represented. The globose bowl, which is a gourd or calabash form, often has a conical base. Many of these vessels have pottery lugs or supports attached. A series of shallow bowls of varied design is mounted in part on flaring pedestals of various technique.

A two-handled bowl, "mette," (Tule), hemispherical in outline, 15.5 cm. (6.1 in.) in marginal diameter and 6.9 cm. (2.7 in.) high, (Cat. No. 327334, U.S.N.M.; pl. 15, No. 5), with a smoky black color on its outer and a chocolate brown inner surface, is modeled by the hand of the potter on a calabash shell from one lump of clay. A similarly shaped hemispherical two-handled bowl has a much higher polish and the use of a wash or slip is apparent (Cat. No. 327335, U.S.N.M.; pl. 15, No. 6).

A hemispherical bowl, 17 cm. (6.7 in.) in marginal diameter and 8.2 cm. (3.2 in.) in height, rests on a low annular foot and presents a decorative design consisting of an incised marginal pattern in the form of notched frets (Cat. No. 327332, U.S.N.M.: pl. 15, No. 7). The bowl is of a chocolate brown color and was shaped by modeling with a calabash shell, which also served as a polishing instrument.

A simple form of hemispherical bowl without handles or decorative design and embodying in pottery those utilitarian qualities of form and size that enhance the value of the calabash, is frequently modeled by the San Blas coast Tule from a single lump of clay, using a section of the oval shell of a calabash as a form. One of these simple hemispherical bowls, oval in contour, with vertical sides, and of a mottled brown color, is 17.5 cm. (6.9 in.) in langitudinal axis, 12.5 cm. (4.9 in.) in transverse diameter, and only 5.4 cm. (2.1 in.) in height (Cat. No. 327327, U.S.N.M.; pl. 15, No. 8).

There are several examples of globose bowls that rest upon bases variously formed. Every one of these bases or supports are of pottery and have been joined to the bottom of the bowl with sufficient care to obliterate the lines of juncture. As the bowl with foot is usually oblong in shape, the opportunity is taken by the native potter to depart from the characteristic foot design, which is annular in form, flat on its under surface, and on its upper surface convexly tapered to the line of juncture with the bottom of the bowl (Cat. No. 327321, U.S.N.M.; pl. 16, No. 1). The departure from this style of foot consists of four leg supports, each approximately 2 cm. in length and projecting obliquely from the bottom of the bowl, giving the appearance of some animal form with legs braced (Cat. No. 327333, U.S.N.M.; pl. 16, No. 2). This bowl, 18.4 cm. (7.2 in.) in length, with a breadth diameter of 17.4 cm. (6.8 in.) and a height of 6 cm. (2.4 in.), is unique in that the sides are upright and not

flaring. The four corners are squared, giving the bowl a rectangular appearance at the margin; this appearance is emphasized by a slight depression molded into the margin at each corner. The coloration of these shallow bowls is a dark chocolate brown.

Another peculiar pottery design is found in the form of an oblong shallow Tule bowl 23.4 cm. (9.2 in.) in length, 14.4 cm. (5.7 in.) in width, and 6.6 cm. (2.6 in.) in height including the foot support (Cat. No. 327322, U.S.N.M.; pl. 16, No. 3). The bowl rests upon a foot or base that is roughly identical in form and size. The bottom of the foot is not flattened and solid, but hollow with concave walls. The inner surface of the bowl, to the contrary, is not spherical but flattened into three concentric tiers of horizontal surfaces, of which the upper tier is the flaring margin, upon which, at each end, is a decorative design consisting of a series of incised geometric lines in zigzag pattern. The inner and outer surfaces are smoothly polished and fired to a chocolate brown.

Another form of the shallow globose hemispherical bowl is 17.4 cm. (6.8 in.) long, 12.4 cm. (4.8 in.) wide, and 6.6 cm. (2.6 in.) high, resting upon two transverse supports, each modeled from an elongated slab of clay and resembling the lateral seat supports of the Tule and Cuna (Cat. No. 327324, U.S.N.M.; pl. 16, No. 4). Another feature to be noted consists of the luting on of two bosses, one to each of the longitudinal surfaces at the center. These bosses are not decorative but utilitarian and are employed as lugs to which an extemporaneously arranged bast handle may be attached. Another shallow, oval, hemispherical bowl, 14.8 cm. (5.8 in.) in length, 9.9 cm. (3.9 in.) in width, and 4.5 cm. (1.8 in.) high, has a boss several centimeters in length luted on at one end and employed as a handle or grip (Cat. No. 327333, U.S.N.M.; pl. 16, No. 5).

A Tule bowl with dark brown surface from which many fragments have been chipped (Cat. No. 327325, U.S.N.M.; pl. 16, No. 6), indicates that the paste has been improperly pulverized and the tempering ingredients not thoroughly mixed. In this bowl and in other broken pottery vessels and fragments, the paste shows a temper consisting of a large number of white graules that are varices of *Murex* shell; in others, especially in the Cuna ware, similar white granules appear, but consist of ashes from climbing plants yielding silica. In most of the common ware the paste is quite coarse, containing particles of unpulverized clay or broken bits of pottery as large as one centimeter in diameter.

In a water jar, designed to keep the water aerated and cool, a porous ware is desirable. In most canteens, however, and chicha storage jars from Darien, no approach toward the securing of a

vernis or glaze seems to have been made, although pottery vessels of that description have a higher polish, a more uniformly applied slip, and show evidence of more care in firing than do the vessels of common ware.

Effigy canteens and vases.—A bird figure canteen, "kwiou." (Tule), fired to a dark brown color that has blotches of a darker staining from chicha, is one of the most interesting pottery objects from Darien (Cat. No. 327367, U.S.N.M.; pl. 14, No. 4). This effigy canteen is 20.4 cm. (8 in.) in longitudinal, and 14 cm. (5.5 in.) in transverse diameter. The general outline is that of a bird figure, with longitudinal body axis, tail part, wing fillets, breast part, circular neck constriction, and bird beak realistically represented. In similar effigy canteens and jars the figure itself constitutes an essential part of the vessel, which is a step far in advance of the applied ornamentation of incised lines and geometric designs. In this vessel the oblong bird body terminates in a tail piece at one lateral end with a rounded breast shaped shallow front at the other lateral projection. The rounded neck orifice is an extension several centimeters long attached one-third the length of the figure from its frontal end. A flattened projection of the flaring neck margin represents the bird beak. Wings are indicated by semicircular fillets in low relief one centimeter high and 6.4 cm. (2.5 in.) in length, at the sides and top of the figure. Considerable artistic ability and care is manifested in its production. The paste shows a complete pulverization of the paste and a thorough mixing of the tempering ingredients. The application of the ornamental tail, beak, and wing fillets is such as to make them homogeneous parts of the figure.

A human effigy vase, "kwidu," (Tule), for storing chicha, 40.2 cm. (9.5 in.) high, 22.9 cm. (9 in.) in diameter is made of black ware, heavily stained with chicha and uniformly blackened from smoke, (Cat. No. 327368, U.S.N.M.; pl. 14, No. 5). The general form of the vase is spherical with a constricted, tubular neck orifice elongated to one-third the total height of the vessel.

A combination of coiling with modeling by the potter's hand aided with a calabash shell and a knife was the method employed in its production. The human facial features stand out in low relief filleted on the surface of the neck piece, as are also the arm representations on the walls of the body of the vessel, an ornamentation technique reminiscent of ancient Chibcha ware from Colombia.

An example of a black ware vase with symmetry of form unequalled in the collection is found in a Tule vessel (Cat. No. 327369, U.S.N.M.; pl. 14, No. 6), 17.3 cm. (6.8 in.) in height and 16.5 cm. (6.5 in.) in greatest breadth diameter. The vase is globose and unornamented except for an encircling band filleted in low relief

at the point of emergence of the tubular neck piece duplicated in the flaring margin of identical proportions.

WOOD CARVING

Significance of the wood-carver's art in Darien.—The wood-carver's art is well developed in southeastern Panama. The Chocó Indians prefer to employ the light, soft, pulpy balsa wood (*Ochroma limonensis*), while the Cuna tribes of the upper river valleys, and the Tule of the Caribbean coast usually employ varieties of mahogany, such as the red colored "snakewood," and the semi-hard woods. The development of an ornamental motive and technique sometimes determines the medium or agency whereby they may be applied. The origin of the ornamental design itself, however, may be explained when the associations and ideas underlying the choice of a particular design or medium of artistic expression are appreciated. The aborigines of Darien possess a mental horizon that peoples the environment with innumerable spirits, mostly of an evil and malicious nature. Such conditions demand recourse to an ever-ready antidote powerful enough to ward off the evil effects of the spirits' presence. Conventionalized amulets and charms consisting of any portable agency or object associated with some known or imaginary qualities are efficacious. Sometimes, as in Darien, a magical talent may be shaped more easily from wood than from stone or some other material. In this way originates the wood-carver's art among the local aboriginal tribes. Heraldic or totemic designs are found in the appliqué work on clothing, but similar animal representations and modelings of life forms, when carved in wood, are primarily a phase of primitive medicine and are connected with magical practices in which the carved figure acts as a proxy for the medicine.

A second motive of the wood carver is to represent the insignia of command as shared by the chiefs, leles or medicine men, and other head men. A third group of wood carvings is related to the activities of children, and consists of a miscellaneous group of children's toys. When an art has passed its incipient stages a development results along activity lines that were not instrumental in shaping its early growth. The child imitates the activities of the adult and employs toys representative of those activities. As a final development one may expect to find, and does find, application of a technique that originated and reached its previous development in wood carvings, employed in the decorative design on pottery and other materials, so that it becomes possible to identify as typical of the areas, that is, southeastern Panama, a unity in artistic production: "First, with reference to the method of realization, as plastic or

flat; second, with reference to derivation; third, with reference to the plan of manifestation, as geometric or nongeometric; and fourth, with reference to association of ideas, as significant and nonsignificant."

Human figures and animal wood carvings.—The wood carvings of the Darien tribes are primarily of animals, birds, reptiles, and of the human figure; rarely of floral design and plant forms.

The human figure carvings are of two types; one, clearly traceable to European influence, even in such minor details as a green necktie; the other, to native models of costume and tradition and representing both men and women.

The San Blas Coast Tule or Towali employ for various purposes a wooden cane or staff on which a figure is carved, less as a support staff or walking stick than as a staff of command or insignium of office and authority. It is probably reminiscent of the war club, which seems to survive in no other form among the Darien tribes. Another utilization of the cane is as a doctor's staff. Without his staff surmounted with a carving of a male human figure, the primitive Tule healer is not adequately equipped to ply his vocation. Fetishes in animal form insure success in all undertakings; thus the Chocó gods are those having to do with the hunt, with crops, household, children, dance, fertility, weather, sickness, marriage, and health. Among the Tule each carved fetish has its distinct functions in treating disease, aiding at childbirth and in bringing good luck generally. Again, the Tule village or tribal policeman carries his staff of authority with an animal or bird figure carving at its head. The staff is carved usually from a semihardwood, though the red hardwood known as snakewood is similarly used; it is undecorated and unpainted throughout its course except at the handle head. There is a strange blending on the human figure head carvings of primitive garb, facial features, and ornamentation along with the most striking European costume. Why should a tribal group as hostile as are the Tule to encroachments on their territory by foreigners of any stamp model their magician or medicine man's staff head in the exact image of a European garbed in a tailored coat with pocket flaps and a button hole in the coat lapel?

In the third number of the sixth volume of Indian Notes and Monographs (p. 89), A. Skinner mentions a similar wood carving of the Bribri of Costa Rica in which the human figure is appareled and featured as a native. Skinner calls this staff a "cacique-stick."

> These are long, cane-like staves, made of a dark, hard, heavy, reddish-brown wood called "cacique." As a rule they are entirely plain, but * * * a type now said to be obsolete has the figure of a man rudely carved on the

handle. The canes are highly regarded, because of certain astringent properties said to be contained in the wood, and they are sometimes scraped and the scrapings drunk with water as a curative. It is supposed to stop bleeding, and is also valued for intestinal ailments. Formerly they may have been the property only of the headmen.

In Tule, the carved head of the medicine man's staff, "kava turgana" (Tule), always resembles a man dressed as a modern European.

It is "shurama" (Tule), the god of health, whom the doctor holds in his hand or has mounted on a staff. Shurama tells the lele (doctor) what to do to effect a cure of the sick patient.

The coat of the god image is painted usually a black or green, with a green visored cap topped with a knob at the center of the crown. The shirt, necktie, collar, buttons, and waistcoat are painted a lighter pink, green, blue, or white. In some cases the figure holds in his right hand a staff with a serpent carving in low relief extending from one end of this miniature staff to the other (Cat. No. 327462, U.S.N.M.), Details in the carving sometimes found on these figured staffs are undoubtedly of earlier origin than those just mentioned as they are found on wood carvings other than canes and on which no traceable acculturated design may be found. All the facial features represented are in two planes, intersecting at a diagonal and terminating in an exaggerated nasal projection. Stone pebbles or metal pellets are inserted into holes sunk into the facial plane to represent eyes; zigzag lines are incised on the narrow hat brim. The high-crowned hat, anterior flexing of the knees, and the employment of only three parallel incisions to indicate all of the fingers of the hand—all these are primitive in design and native.

Wood carvings of male and female figurines are numerous in the collection. One of these (Cat. No. 327482, U.S.N.M., pl. 18, No. 1), employed by the Tule, is mounted on a handle carved from the same block of black chonta palm wood. The figurine is 11.5 cm. (4.5 in.) in length and together with handle is 22.4 cm. (8.8 in.) in length. It is held in the hand of the medicine man while he recites incantations to heal the sick. The flexing of the arms over the chest with finger tips touching as in supplication is, however, not imitative of the characteristic Christian attitude of prayer. The explanation lies along different lines. The primitive artist had to solve the problem of either placing the arms extended vertically at the sides of the torso or of flexing the arms over or about the chest. Any other position would be extremely unrealistic and typical of a conventionalized art that is not native to Darien or to a primitive art. In the Zeitschrift für Ethnologie,[10] K. Th. Preuss

[10] Vol. 46, No. 1, p. 107.

describes stone figures with similar arm position that he excavated near S. Agustin, Colombia. Such figures he interprets as images of the Chibchan earth and moon goddess—which the underground position of religious sites and the frequent earth burial of their gods along with other sacred artifacts would tend to confirm. As a similar flexing of the arms occurs frequently, along with other Chibchan art motives employed by the Tule, the relationship is apparent.

A wood carving, similar in form, material, and size, but with the figurine at one end of the carving and limited to a representation of the head and bust, was collected near Bogota, Colombia, by Maurice A. Rollot (Cat. No. 328191, U.S.N.M., pl. 18, No. 2).

A small wooden figurine 10.9 cm. (4.3 in.) in length (Cat. No. 327480, U.S.N.M., pl. 18, No. 3, and many of the other smaller Tule figurines in the collection are held in the lele's hand while he recites a magical incantation. The figurine is garbed in European clothing with coat and waistcoat represented by carving out sections of the wood block in low terraces. In similar figurines the perspective is enhanced by painting the exposed waistcoat portions in one color and the coat in another. Pocket flaps are represented by horizontal incisions. A necktie stands out in bold relief. The more native design appears in such detail as the flexed knees, the four finger hand, and the hat crown, 1.3 cm. (0.5 in.) high, encircled with horizontal red, green, and yellow stripes. A carving in low relief extending from the hat brim to the shoulders represents the hair. While the nasal projection remains disproportionately long, namely, 2 cm. (0.8 in.), the introduction of a third and front facial plane distinct from the two lateral or diagonal planes is a development in the Tule wood-carver's art.

A figurine from the San Blas coast 10.5 cm. (4.1 in,) in length (Cat. No. 327481, U.S.N.M., pl. 18, No. 4), is similar to the one just described. The double hat brim and funnel-shaped crown are ornamented with parallel vertical incisions. Eyes are blue glass beads sunk into the wood; other details are similar to the previously described figurine except that the latter wears two waistcoats in addition to a coat and voluminous necktie.

A somewhat larger carving, 21.4 cm. (8.4 in.) in length, (Cat. No. 327492, U.S.N.M., pl. 18, No. 5), resembles in material and in most details of carving the two smaller figurines previously described. The object is painted a light blue, with two bands of purple extending across the flank of the nostrils. The necktie and shirt buttons are represented with daubs of green paint. The head is represented by a tubular section of the wooden block with just one facial feature brought into high relief—the nose. The hat crown is flat and the brim is ornamented about the margin with a fretwork of vertically notched incisions.

A figurine from the village of Caledonia, on Caledonia Bay of the San Blas coast, carved from a block of hardwood 27.5 cm. (10.8 in.) in length, represents the native medicine man (lele) himself. The face, legs, and shirt front are unpainted, while the remainder of the carving is covered with a commercial green paint. The carving represents a native in aboriginal attire. The mat of hair reaching to the shoulders is indicated by a panel in low relief edged with small vertical incisions.

Another Tule hardwood figurine, 29.3 cm. (11.5 in.) in length, and mounted on a small flat pedestal carved from the same block of wood, represents a chief holding a staff of command in his right hand. The staff is painted yellow and resembles a war club with a bulbous head tapering to a smaller circular handle or grip. The staff extends the full length of the torso and the chief is represented as grasping it at the center. This may be due to the artist's lack of resource, resulting in a crowding of the design (Cat. No. 327486, U.S.N.M., pl. 18, No. 7). The front of the torso is painted yellow while the rest of the figurine is in black except the face, which is painted red. An ornamental design of crudely incised parallel horizontal lines appears on front and rear of the hat crown, on upper bulbous portion of the staff, and on the lower torso front.

Female figurines are never represented as wearing European clothes. The variety of design is less in extent than in the carvings representing the male human figure.

A female messenger, "mimi-shur-walla" (Tule), a carving 40.2 cm. (15.8 in.) in length painted in black and red, collected by Dr. O. W. Barrett and now in the National Museum collections, was used by the medicine man of "King Colman" of the San Blas coast Tule to collect information. This is the most elaborate of the female carvings in wood from the San Blas coast.

An unpainted female figurine from Caledonia village, carved from a block of hardwood, 13.5 cm. (5.3 in.) in length, was probably used as a toy. The figurine wears a hat similar to that of some of the male pottery and wooden figurines, consisting of a double hat brim with flat, quadrangular crown (Cat. No. 327479, U.S.N.M., pl. 18, No. 8). A novel detail is the carving in low relief of three bands encircling each lower arm from elbow to wrist, representing the ornamental armbands of beads worn by the Tule girls and women.

Another unpainted wooden figurine from the San Blas coast is carved from cedar wood and is 16.8 cm. (6.6 in.) long. The figure represents a Tule woman garbed in characteristic attire with mantle thrown over the head and dropping to the waist at the back and with knee length skirt. An ornamental design consisting of diagonally crossed incised parallel lines covers the surface of the mantle and skirt. A fretwork of notched incisions decorates the lower skirt

margin, probably representing fringes. The posture of the hands flexed over the lower front of torso, likewise the decorative design on the skirt are identical in posture and pattern with the ancient stone carvings from Colombia as figured and described by Preuss in the Zeitschrift für Ethnologie (p. 108, 1914).

Another larger unpainted female figurine, 18.6 cm. (7.3 in.) in length, is represented as a native woman from Caledonia village, Caledonia Bay, garbed in a mantle that extends to the knees (Cat. No. 327476, U.S.N.M., pl. 18, No. 10). In this figurine and the female carving previously described the disproportionate length of nose may be observed when compared with the length of the leg carving—both details are of equal length.

A more conventionalized hardwood carving, 26.2 cm. (10.3 in.) in length, with regard to bodily features and attire, in which arms and hands merge in the same tapered carving projected at an acute angle to the main block. The torso, legs, and pedal extremities are undifferentiated. A facial plane with the nose featured in high relief and a bulbous elevation above the forehead portion break the monotony of outline (Cat. No. 327484, U.S.N.M., pl. 18, No. 11). These female human figure carvings are capable of curing disease when held in the lele's hand.

The carving of an ornamental design on the handle of walking sticks or staffs is the general practice among the Darien tribes. A considerable amount of ceremonial and other significant tribal lore is embodied in the design. The staffs with reptilian and animal ornamental carvings (pl. 20) are carried by policemen, chiefs, and headmen generally as a symbol of their authority. In writing of the Bribri of Costa Rica in Indian Notes,[11] Skinner describes one of these staffs similarly used by the Bribri. "A stick once owned by Ramon's father, the old 'king,' was in the custody of Señor Alejo Jiminez, governor of Talamanca, who lived at Saporio. It was taken by the Bribri from a neighboring tribe, probably the Tiribi, in war, many years ago, and the Indians are very anxious lest it should pass out of their hands, since they say, 'it cost us blood.' This staff was seen by Gabb, who states: 'It is a staff of hard black palm wood, over four feet long. The top is carved in the shape of an animal, not unlike a bear sitting on his haunches. But there are no bears in this country, and it must have been intended for some other animal.'"

A similar carved staff, "tsuwarivgana" (Tule), used by the Tule village policeman of the San Blas coast, 83.5 cm. (32.5 in.) in length, has a 5 cm. long representation carved on the head of the staff of a squirrel resting on his haunches and eating a nut which it is holding in its forepaws. The figurehead or handle of the staff

[11] Vol. 6, p. 90.

is painted a chrome yellow (Cat. No. 327469, U.S.N.M., pl. 20, No. 1).

Bird figure carvings.—A bird figure painted green topping an unusually light colored soft wood staff, 92 cm. (35.7 in.) in length is employed by the Tule in a manner similar to that just described (Cat. No. 327471, U.S.N.M., pl. 20, No. 2). Another policeman's staff, of dark semihardwood, 96 cm. (37.5 in.) in length is elaborately carved. Three animal figures resembling dogs, but probably representing some other animal, are carved at the head of the staff, two of them in a recumbent position on a double grooved platform and at the side of a column or extension of the body of the staff which supports a duplicate platform several centimeters higher up. On this platform rests the third animal figure, likewise in a recumbent position. This figure is painted black; the figures on the lower platform are painted one black and the other yellow. The lower platform is also painted chrome yellow, while the upper is in green, with the intervening columnar surface in green and black. A coiled band of green encircles the staff from the handle carving downward, a distance of 21 cm. This painted coiled band represents a snake (Cat. No. 327468, U.S.N.M., pl. 20, No. 3).

Another "tsuwarivgana," (Tule), with an animal figurine at the head, probably a jaguar representation was intended if one is to judge by the black, crescent-shaped painted blotches covering its surface. Then, again, to read into Tule culture the idea of a watchdog associated with the police or guardian of order is to imply an acculturation which probably has not transpired (Cat. No. 327470, U.S.N.M., pl. 20, No. 4). The animal carving is painted a creamy white, the pedestal on which the jaguar figure reclines, a dark green at the sides and blue on the top surface. A floral design resembling a whorl of four leaves, or, again, a flying bird with outstretched wings, is carved in low relief on the lateral surfaces of the pedestal. Similar whorls occur frequently in the painted decorative patterns of the Chocó as well, but not in the form of wood carvings.

The combination of bird and human figure carvings on one staff head is unique (Cat. No. 327464, U.S.N.M., pl. 20, No. 5). A medicine man's staff or dance wand, "kava turgana" (Tule), carved from one block of palm wood, is 106.5 cm. (41 in.) in length. Embodied in the carved handle are the symbols of the doctor as represented by the male human figurine, and of command, as represented by a bird figure perched on top of the human figurine's head. The human figurine is a carving in typical Tule style and represents a man 12.5 cm. (4.9 in.) in length, holding in his right hand an undecorated staff. The staff is of equal diameter in section throughout its length. The European garb of the figurine is painted white except the coat and hat brim, which are in black. A strand of small red

beads wound about the neck and crossed over the upper chest and under the armpits resembles the beaded attire of the male Chocó.

A bird figure representing probably a parrot is carved from the same block of wood and stands 6.5 cm. high, perched on top of the human figurine's head. The color scheme is in green and black with horizontal neck and breast bands.

The armadillo, "tede," (Tule) is a small animal found in Darien and throughout tropical America having the body and head covered with an armor of small bony plates, like a coat of mail. The meat is edible and much appreciated by the natives. It consequently supplies a theme for the native artist, especially so as the dermal plates are easily represented by transverse parallel fillets brought into low relief by intervening incisions in the wood. One of these armadillo wood carvings (Cat. No. 327624, U.S.N.M., pl. 21, No. 5) is made from *Ochroma limonensis*, or balsa wood, and was collected by the Marsh-Darien Expedition from the San Blas coast Tule; it is 45.6 cm. (17.9 in.) in length, head to tip of tail, 10.2 cm. (4 in.) high, and 13 cm. (5.1 in.) wide. The incising of parallel grooves transversely across the back of the body and tail is the artist's method of indicating the characteristic dermal plates. No corresponding longitudinal incisions, marking in relief the lines of the separate plates, are employed. The entire back and the tail piece are painted a grayish black, the belly portion red.

The Chocó artist also employs the wood of *Ochroma limonensis* in his wood carvings of the armadillo. On the Tule armadillo carvings the dermal plates over the entire back appear in high relief; the Chocó artist achieves the same result by painting in red and black the carved fillets placed transversely across the back (Cat. No. 327624).

One of the larger animals inhabiting the Isthmus is the jaguar. A model of this animal carved from a block of light wood, 61 cm. (29 in.) long, by the Tule of the San Blas coast is now in the National Museum collections. A flat unpainted pedestal crudely carved with a machete from the same block of wood extends the length of the figure. A realistically mottled appearance of the skin surface of the jaguar is secured by applying a series of dots in black and yellow paint. This color scheme is typically Chocóan and the object might easily pass as such. Trade trinkets of gilded tin sunk into the wood represents the jaguar's eyes (Cat. No. 327623, U.S.N.M., pl. 21, No. 6).

Bird figure carvings are numerous, but hardly represent the highest skill of the Chocó or Tule wood carver's are. Many of these carvings are mounted on pedestals shaped from the same wood block of which a bird figure carving forms a part. The carved

image of a bird, probably a parrot, with wings and back painted black, but with breast colored a mottled red and black and bordered with zigzag bands of red, stands 35.6 cm. (14 in.) high. The bird beak is hook-shaped and is represented as agape. The eyes of glass beads sunk into the wood on the lateral surfaces of the head are surrounded each by a narrow elliptic segment of white painted surface. The wing feathers are indicated by vertical incisions at the tip, forming fillets representing feathers (Cat. No. 327501, U.S.N.M., pl. 21, No. 1).

Another bird figure carving, presumably a kite, similar to *Ictinia plumbea*, carved by the Chocó from a block of wood 42.7 cm. (16.8 in.) in height, of which 22.9 cm. (9 in.) is taken up by the bird figure and the balance by the circular wood pedestal. The latter is unpainted, while the breast, feet, and inner wing surfaces are in red. The wings appear ruffled, somewhat after the fashion of those of the ungainly vulture. Small lead pellets representing eyes are sunk into the lateral surface of the knob-like head (Cat. No. 327502, U.S.N.M., pl. 21, No. 2).

Reptile carvings.—Many other wood carvings from balsa wood and other harder cedars and hardwoods are in the Museum collections from Darien. Although the representations vary from those of native chiefs, headmen, doctors, and various female figures to animal and bird carvings, many are images of reptiles, comprising snakes, lizards, alligators, and frogs.

A peculiar human figure carving that shows negroid facial features comes from the Caribbean coast near the southeastern boundary of the Tule Indian territory beyond Caledonia Bay. The figure is shaped from a slab of hardwood, 76.3 cm. (30 in.) in length and stained with a brown paint. A miniature hat, too small to cover the head, decorates the top of the figure. The articulated arm and leg parts are socketed to the torso with iron nails. Male sex organs and gluteal muscles are similarly attached. The figure was probably made by the Cimaroons of southeastern Panama (Cat. No. 327497, U.S.N.M.).

The numerous reptilian carvings of the Chocó are made entirely from balsa wood, while the saurian images of the Tule are from a variety of hardwood. Some of these are very interesting and realistic. Mention will be made of a few of these used by the Chocó in connection with their magical healing practices. An alligator carving (Cat. No. 327625, U.S.N.M.) shaped from a single block of balsa wood and reaching a length of 113 cm. (44.4 in.), a width of 14.7 cm. (5.8 in.), and a height of 11 cm. (4.3 in.) is painted black except on the belly, on which feet are carved in low relief. The porous nature of the soft wood has allowed the paint to

be partially absorbed, so that the surface appears to be a grayish black, while a blue triangle appears at the top of the head. The two longitudinal fillets extending along the back of the saurian image have been divided into a series of sections by transversely incised grooves representing dermal plates. Three of the series appear on the tail piece. The tail and head are rounded in section; the closed mouth exposes the lateral projection of the teeth. This alveolar projection of the alligator's teeth, together with the more elongated and rounded head and tail sections, distinguish this carving as representing a different species of saurian from another species (Cat. No. 327626, U.S.N.M.), represented as having a shorter and broader head and tail and without alveolar projection of the teeth. In the latter carving the teeth are represented by small wooden pegs driven vertically into the lateral edges of the jaw surfaces. Three longitudinal fillets, transversely grooved to indicate dermal plates, cover the back of the figure. Feet are represented by small upright pegs of balsa wood inserted into the body of the carving. Eyes are yellow glass beads sunk into the wood.

An alligator carving made by the Cuna at Caledonia Bay is shaped from a slab of hardwood 30.6 cm (12 in.) long (Cat. No. 327498, U.S.N.M.). A series of grooved incisions on the upper jaw of the object indicates dermal plates. The mouth is represented as open, characteristic of the alligator carvings of the Cuna and of the San Blas coast peoples. The open mouth together with an erect tail represent a more aggressive figure than the reptile carvings of the Chocó artists. The employment of paints and dyes such as the anatto dye (*Bixa orellana*) is preferred by the Chocó, while the Tule employ incisions and fillets in low relief to obtain the detail of features. The collection of wood carvings obtained by Maurice A. Rollot in central Colombia shows a technique similar to that of the Tule and the employment of similar materials.

Two images of serpents mounted on wooden poles, used by the Chocó in connection with the "medicine lodge" to be described later, are interesting examples of carving in relief (Cat. No. 327653–4, U.S.N.M., pl. 21, Nos. 3–4). The unpainted poles appear to be distinct from the coiled serpent, but are really the core of the same blocks of balsa wood, respectively 4, and 4½ feet long. The painted decorative design simulating the mottled surface of the skin of the snakes is sometimes a solid black with unpainted circular surfaces in the natural white or straw-color of the wood (pl. 21, No. 3), and again is a mottled and stippled green (pl. 21, No. 4). In the latter figure the snake is represented as swallowing a frog.

Dr. Reginald G. Harris notes[12] the importance that sculpture in wood plays in the daily life of the Tule Indians. Every household has a box of twenty or more spirit wood carvings that are supposed to be the habitation of the good spirits. Under favorable conditions the indwelling spirits will inform the doctor how to cure illness or how to relieve a fever patient.

> When a member of the family is ill the box of wood carvings "sooar meme" (Tule) is placed on the ground beneath the head end of the hammock containing the patient, and the medicine man is summoned. Seated on the floor at the foot of the hammock, in front of an earthenware jar containing smoldering embers, he chants the medicine song to the sooar meme. In addition to the small household sooar meme, there are large, human-sized figures which seem to be closely linked with the well-being of the whole village.

Closely related to the sculptor's art among the Tule Indians are the arts of picture painting and picture writing. Pictures are made with colored crayons obtained from traders and are expressions of the artist's untrained imagination, resulting in peculiar combinations in design, color, and composition of animal life found in the environment of the artist. Pictographic writing deals with songs, experiences of daily life in hunting, fishing, and in jungle adventure. Accounts of the symbolic ceremonies connected with various festivals such as the harvest festival and weddings are thus recorded. The pictographs are more conventionalized in the technical "books" of the lele than in the poetically employed descriptive narratives. The writer begins at the lower right hand corner of the page and writes toward the left. He begins the second line at the left and writes toward the right. The third line from the bottom is again begun at the right. The scribes are considered wise men and are respected not only for their ability to write but for their knowledge of the tribal lore and ceremonial practices.

MEDICINE AND MAGIC

Prevalent diseases and their treatment.—Any discussion of the medicinal practices of the Darien tribes and of the materials employed by them in effecting a cure involves a study of their associated vocal and instrumental music, various magical practices and devices, their wood carving, and other arts. There is, to be sure, a fund of knowledge possessed by the aborigines that might be termed scientific and which relates mostly to the healing value of plants, but applies also to such practices as the use of cooling baths for fever patients. Emphasis is placed on the need for quiet surroundings for those stricken with illness. Many plants and trees are of value, the leaves, roots, and bark being utilized. If the vegetable or plant has natural curative properties the task is easy, but an additional

[12] World's Work, June, 1925, p. 217.

safeguard lies in the formulas or songs that are used simultaneously in which the doctor (lele) says outright that the curative agent employed must be effective, whether such agent be the bark of a tree or the carved god image, "Shurama." The practice of eating and drinking in limited quantities during illness is followed. Cooling white and green "fever stones" are dropped into a medicated bath prepared in a water-filled canoe. The delirious fever patient is allowed to lie in this bath until the fever subsides. Sometimes kettles filled with hot water and various kinds of herbs are placed under the patient's hammock. The ascending fumes represent a spirit and effect a cure.

When an Indian wishes to become a lele, he goes to the forest, where he fasts for a number of days. The Teguala Cuna believes that if a bird should alight upon the novice during his vigil it is an omen signifying his magical powers—he may now become a lele or medical practitioner. The lele is also a sorcerer, inasmuch as he can prevent illness and the activities of the evil spirits, as well as make good medicine and cure disease. The Tule believes in the presence of a multitude of good and bad spirits. It becomes the duty of the magician "lele" to gain the good will of the "niya" or evil spirits.

Mr. Verrill, as related in Indian Notes, October, 1924 (p. 199), was presented with two sets of medicine paraphernalia, each contained in a basket. "These outfits, so sacred to the Indians that no outsider must ever see them, are supposed to be susceptible of curing all ills. The baskets contain a large variety of objects—upward of a hundred in each. The skulls of small animals and birds forming part of the paraphernalia are worn smooth by repeated rubbing on the bodies of patients." This statement is made regarding the Chocó, who also carve large wooden household gods as much as six feet in height. These god images are punished by the Chocó when sickness or ill luck is present in the hut in which the images are placed.

The Tule doctor prepares his remedies in various ways and applies them either externally or administers them internally. There are many medicinal plants known to the native. Cacao, ordinarily a beverage, is good medicine to the Indian. The guaco (*Mikani*) neutralizes the venom of snake bites, while the healing qualities of the leche maria, "maria balm," are well known. Copaiba balsam, cabima ipecacuanha, sarsaparilla, colo nut, tulu, laoes, elemi, vanilla, croton, locust gum, balata, and other plants are employed in the treatment of such diseases as intermittent malaria, dysentery, and various infections due to insect pests, as the screw worm which lodges in the skin and bores through causing lesions that rapidly lead to serious results.

Jiggers (*Pulex penetrans*) infest the dust about the village and burrow under the skin at the toe nails causing a great deal of suffering among men and animals. Dried leaves that have been stored for future use; roots that have been boiled and then squeezed or mashed; exudations and the sap of various trees; bark that has been peeled from trees and boiled or soaked and the resultant liquid drained; all these are means whereby a remedy more or less efficacious is derived.

Conjurers and magic.—An effective magical agent that is of a symbolic nature is to pour water over pan's pipes and then compel the patient to drink the water so that his breath may become unobstructed, like a current of air passing through the reeds. Various kinds of songs are sung by the lele for the sick patient and also while on a herb gathering expedition. Dancing may also prove an effective magical aid.

The conjurer formerly played an important rôle in the life of the San Blas coast tribes, as vividly described by Wafer[13] in 1699 in the following passage:

> We presently inquired of these Indians, when they expected any ships. They told us they knew not, but would inquire; and therefore they sent for one of their conjurers, who immediately went to work to raise the Devil, to inquire of him at what time a ship would arrive here. We were in the house with them, and they first began to work with making a partition with hammocks, that the conjurers might be by themselves. They continued at the same time at their exercise, and we could hear them make most hideous yellings and shrieks, imitating the voices of all their kind of birds and beasts. With their own noise they joined that of several stones struck together, and of Conch-shells, and of a sorry sort of drums made of hollow bamboos, which they beat upon; making a jarring noise also with strings fastened to the larger bones of beasts, and every now and then they would make a dreadful exclamation and clattering all of a sudden, would as suddenly make a pause and a profound silence. But finding that after a considerable time no answer was made them, they concluded that was because we were in the house, and so turned us out, and went to work again. . . . Then they fell once more to their conjuring, and after a little time, they came out with their answer, but all in a muck-sweat, so that they first went down to the river and washed themselves and then came and delivered the oracle to us.

In their journey up the Chucunaque River after leaving Yavisa, as related by R. O. Marsh in World's Work, 1925 (p. 487), the members of the Marsh-Darien expedition were subjected to continual surveillance.

> Every night our ears were filled with weird forest cries from upstream and below—whistlings that we mistook for bird-calls until we observed that they came in mathematical combinations which clearly proved their human origin and that they were signals between unseen observers. In the morning, we would find their footprints on the river banks, and we would also find

[13] A New Voyage and Description of the Indians of America, p. 60.

wild turkey feathers stuck in patterns in the mud, as witchcraft magic to hinder our progress.

Charms and fetishes.—A number of stone celts, "niyakkan" (Tule), employed by the Tule as fetishes protecting them against the bad spirits are in the National Museum collections from southeastern Panama. The Tule Indians insist that these stone celts fell from the sky. The oldest inhabitants do not recall ever having seen any made like them. One of these stone celts (Cat. No. 327582, U.S.N.M.) is broadened at the blade edge and has lateral edges tapering toward the flattened blunt end of the blade. It is ovoid in section with rounded lateral edges. The celt is 8.9 cm. (3.5 in.) in length with a surface polished through long handling and use. The stone is a light gray non-vesiculated basalt, finely grained and heavy. This celt differs somewhat from the celts found in the ancient graves of Chiriqui province west of the Canal Zone. Dr. W. H. Holmes describes these[14] as having a broader blade edge.

Another stone celt (Cat. No. 327581, U.S.N.M.), has a wide body 11.5 cm. (4.5 in.) long, of uniform thickness in section above the blade edge, and with slightly tapered lateral edges at blade edge and at the base. The stone is a fine grained, slightly vesiculated dark basalt, and highly polished.

Still another stone celt chipped from a slab of gray basalt is 14.5 cm. (5.7 in.) in length and has an oblate section. This celt is the largest in the collections from Darien (Cat. No. 327580, U.S.N.M.).

The nonemployment of the celts as implements is apparent from their highly polished surfaces and smooth cutting edges. The smaller celts are almost tubular in section with rounded hemispherical head and sharp, evenly edged blades (Cat. No. 327585, U.S.N.M.). They are compact dark volcanic tufa that resembles fine-grained slate.

Spirit images, medicine lodge, and spirit houses.—The Chocó employ in a ceremonial way in connection with harvest festivals, in the treatment of the sick, and, as a burial offering a lodge, "ukkurwala" (Tule), constructed from carved and mortised sections of balsa wood (*Ochroma limonensis*). One of these structures, termed a "medicine lodge" by Baer, is in the United States National Museum (Cat. No. 327592, pl. 22); it measures 9 feet in length, 6 feet in height, and 3 feet in width. The various joists, sills, beams, flooring, and all of the parts are mortised. Nails, or support pegs, shaped from the black palm wood (palma chonta), are thrust by hand pressure into the soft wood, thus binding securely together the more than 100 distinct component parts. The lodge, thatched with palm leaf, together with a large number of carved and painted balsa wood

[14] Ancient Act of the Province of Chiriqui.

figures or images of human, animal, reptilian, and bird forms, embraces the ceremonial material from a burial heap on the Rio Chico, a tributary of the lower Chucunaque, collected by the Marsh-Darien expedition. John L. Baer, the Smithsonian representative on this expedition, relates that Chief Avelino, a medicine man, used similar material in ceremony witnessed by members of the expedition February 20, 1924. The Chocó doctor, who installs this structure in the immediate vicinity of a sick patient for the purpose of effecting a cure, surrounds the lodge with 100 or more carved images, each aiding in its own way in effecting a cure. He recites a ritual and receives pay from the relatives of the patient for his efforts. According to Mr. Baer, a similar lodge also marked a burial heap. Members of the expedition wished to purchase a similar lodge on another occasion, but the mother of the patient, a sick child, objected, fearing the child's death would ensue following the removal of the lodge.

The structure is rectangular with two floors and bowed roof of palm leaf. It rests on two long balsa wood alligators realistically carved and painted. To the side beams of the lodge are attached slat images representing gods and around it are placed a disarranged group of carvings representing gods that tell the lele what to do, snakes, lizards, frogs, birds, armadillo, and other animals, and varieties of fish (pl. 22, No. 1.). Carved birds are suspended from the bowed roof by means of a palm wood peg inserted into the back of the bird figure, which swings at the end of a fiber thong and helps to "make medicine." Wooden figure carvings employed by the Tule in their healing practices have been previously described.

The decorative design lies partly in the outline form of the wood carvings, partly in the painted figures on the surfaces of the slat god images, and partly in the realistic animal forms. A central motive consists of a series of geometric lines in black, grouped in concentric rectangles, wedges, circles, and semicircles, filled in with closing blocks of solid color in black, yellow, or red (pl. 37).

The black color dye or paint is obtained from the caustic pigment of the fruit of the lana plant (*Genipa americana*), while the yellows and reds are extracted from *Bixa orellana*, that is, from the oil and red pulp surrounding the seeds of the anatto tree.

Mr. Marsh relates another usage of a similar one-floored structure during the annual harvest festival which takes place in the spring. The structure is mounted on carved alligator supports, contains magic symbols of the tribal spirit, and resembles a Chinese palanquin. It is removed from its resting place under the roof and is then occupied by the tribal chief, who invokes the great spirit to come and sit beside him while he as high priest gives the annual revelation regarding the coming harvest and the health

and general welfare of the tribe. The employment of mortised beams and joinery in the Chocóan spirit house is unique among the tribes of Central America. The Tule do not have similar structures. No record of the existence of similar spiritualistic devices or aids in primitive medicine exists regarding the Cuna of the interior of Darien.

Spirit images are usually made from cedar wood. Those used in case of sickness by the San Blas Tule are called "soowamimi" and represent everything from an alligator to a bumble bee. The so-called cacique sticks are among the lesser spirits. The practices that have been built up regarding the treatment of the sick and regarding religion are so complicated that it is often necessary for the individual to consult the chief regarding the efficacy of certain spirits and their images. If all remedies fail it is because the great spirit has sent for the sick person.

Dreams have a significance not to be overlooked, for if the Tule Indian dreams that a moist breeze is blowing from the north or from the east, some important news is coming to him. If he dreams that he is losing a tooth, a member of his family will die.

Wafer's reference to the Indian custom observed by him of swearing by the tooth is not substantiated in modern Tule practice.

Burial practices.—Pinart says that during the mortal illness of a Cuna Indian, the lele is called for. This personage proceeds to fumigate the patient from head to foot with fumes from the cacao bean, peppers, and other materials, meanwhile muttering a doleful monotonous sacred incantation. Relatives then recite the good deeds of the sick person. Immediately upon his death a small clearing is made in the plantation formerly belonging to the defunct; in this clearing is erected a small hut of leaves at the center of which a hole is dug some 2 meters square. Two uprights are erected to which are attached a hammock bearing the body of the deceased. All of his personal belongings are then placed in the hammock at his sides. An arch of palm leaves is then constructed at the sides and above the corpse in such a manner as to hermetically seal the burial. The widow of the deceased visits the burial hut daily for a year to clean and sweep out the hut and to carry nourishment and chica to the departed. A strange practice lies in the taboo connected with the name of a dead person. To even allude to his name to a friend or relative constitutes a grave offense.

The present practice among the San Blas Tule is burial by interment. The body is wrapped in a cloth and buried to a depth of five or six feet. Songs are chanted by the lele during the ceremony. Burial houses, "uwannega" (Tule), are constructed in the cemeteries, which are located along the river courses far from the settlements. Interment is with the head placed to the east and

with the body placed on its back, so that on resurrection the body will face the east.

The house of the Darien chief Comagre was considered the most magnificient that the Spaniards had yet seen in the New World. In one of the rooms were arranged along the walls the embalmed ancestors of the chief. They consisted of the dried skin and bones constituting a form of mummification effected by drying the body on a cane hurdle over a slow fire fed by herbs and aromatic grasses and wood.

The question of whether the Indians of Darien practiced embalming of their dead has been discussed without much evidence at hand. It is probably true that as related in old Spanish accounts the dead chiefs or leading personalities of a tribe were embalmed in the manner described. The practice was probably never in general use. Burial customs of the Tule to-day are a form of interment. The following account of this practice is given by Markham: "Upon the death of man, a trench is dug 6 feet deep, 2 feet wide, and 8 feet long. A peg or stout pole is placed at each end and he is placed in his hammock just as as he died. A blanket is placed over him and he is swung between the stakes in this trench. If he is a musician his instruments are buried with him, and sometimes a small cayuca. This is to show the Great Spirit that he has been a great canoe man.

"In ancient times all of the valuables, in fact, everything he owned except his big cayuca, was buried with him, and this was disposed of for little or nothing in order to get it out of sight of his family. The Indians say they wish to forget their dead as soon as possible. They do not wish to see a thing that belongs to a dead Indian. The bows, arrows, and spears are buried with the dead to assure him a livelihood when he gets to the Great Spirit. The musician with his flutes of reed continues to play after reaching the Great Spirit. After placing his belongings in his hammock with a blanket placed over him the ropes are adjusted so that he lays in a natural position. Then the dirt is placed over and around him and a little mound is erected over the entire length of the grave; on this is placed a calabash filled with water for him to drink. Of late years there is nothing of any value buried with the dead. Burial grounds are always located near rivers or small streams."

A roof is constructed over the burial mound similar to the roofs of the family houses, except that the long spike wood from the sago palm is utilized. Walls and gable ends are lacking on the burial huts—there is merely a roof.

Among the Tule, the land of the hereafter is the abode of either the good or of the bad spirit. The home of the good spirit is a country well stocked with green turtle and big fish that swim

slowly through the water, so that they may be easily caught. Large coconuts are exceedingly plentiful and the trees need not be replanted. In the forests of the land of the good spirit there grow all kinds of fruit trees that require no cultivation; there is an abundant supply of fat wild pigs easy to kill; also of deer and of wild turkey. There are no snakes in good spirit land. There are no strangers in the land of the good spirit. The occupants are mostly San Blas Indians who have gone there because the good spirit has called them there away from the attacks of the bad spirit who causes all sickness. The location of the heaven of the San Blas is at the top of Mount Taracuna, one of the highest mountains of the continental axis, the range of the Serrania del Darien. It was also at this place that the spirit Olokuppilele created the Tule Indians. It is at the base of this mountain and in the vicinity of the Serrania, west of the mouth of the Atrato River, that the Tule say their ancestors lived. To this place and up in the sky the good people go when they die. The spirit builds his own bridge along the way.

BASKETRY

In a broad sense there are a great number of loomless handicrafts in flexile materials practiced by the Chocó, Cuna, and Tule Indian tribes of southeastern Panama. True basketry there "multiplies its functions and becomes walls, floors, and roofs, the minister of industries and decorative arts where it is no longer receptacle nor vehicle." In a well watered country with a luxurious growth of forest palms, vines and creepers, and epiphytic plants, it would be indeed strange were the natives of Darien not adept in the arts of basketry.

Basketry may there be classed as a domestic art, but not as the exclusive task of women. Unlike the potter's art which is given over entirely to women, weaving and basketry are practiced by men and women. During the rainy season material that had previously been gathered is worked up into its finished form, such as ropes, hammocks, etc. The so-called "Panama" hats of commerce, although sold in the shops of Panama and Colon, are not of local origin. The best Panama hats come from Monte Cristi, in Ecuador. The technique of the Ecuadorian hat maker is superior to that of the native Panamanian.

The material from which the true Panama hats are made is obtained from the leaves of a palm-like plant growing in Central and South America and known as jipijapa (*Carludovica palmata*). The leaves are plaited into many useful objects other than the famous Panama hats. The leaves are cut while young, the stiff

parallel veins removed, after which they are split into shreds and immersed in boiling water for a time and then bleached in the sun. The weaving or plaiting of the hats is done entirely under water in order to make the splints more pliable and resilient.

Basketry technique.—Of the various methods of basketry production, namely, twilled, checker, wicker, coiled, twined, diaper, and imbricated, those most commonly employed in Darien are the twilled, wicker, and diaper weaves. In the latter method a series of radial splints form the foundation or warp over which and under which the lighter basket splints or filaments forming the weft or active part of basket-work are passed.

Twilled basketry, in which all elements are active and pass under and over different numbers of two or more strands and not always the same strands, is probably more commonly employed by the Chocó and Tule than is wicker ware, and reaches a refinement of surface decorative design that shows a pattern by the crossings of the filaments. Sometimes this design is obtained by crossing black and straw colored splints; again, just as beautiful results are obtained by crossing elements one of which shows the natural straw color of the outer surface of the element and the other exposing the white split inner surface. Both types of design are common. To secure the black color for one group of elements the Chocó employ caruto, the black, caustic pigment of *Genipa americana*, which supplies a jet black dye.

The twilled baskets from the Chocó, Cuna, and Tule are made of split cane either in the natural color or dyed. The union of textile effects and the three colors; white, from the split inner surface, straw color, or the natural outer surface, and, third, black, are most pleasing; the motive being ellipses and rhombs made by the use of small squares and rectangles. The upper portion of the basketry usually shows how a twill effect may be produced on the surface by the lights and shades of the natural uncolored material crossing with the dyed filaments.

Materials.—The many cylindrical baskets in the collection are of twilled work from the dried stems of little arrowroot. Other materials commonly employed are: Maranta, or arrowroot; Ficus (wild fig) bark; pita; a basket tying material vine called "bejuco hierro" (iron withe, also used in tying the poles of native huts); the royal palm (*Attalea gomphococca*), the long leaves of which are used for thatching; the split petiole and leaf of the tacca palm; long palm leaves for thatching, from which also peeled strips, grommets, and variously shaped extemporaneous loops are made. Roofs are also thatched with the horizontally laid fronds of the cokerite palm.

In writing about basket making Wafer[15] says:

> The girls also twist cotton-yarn for fringes, and prepare canes, reeds, or palmetto-leaves, as the boys also do, for basket-making. But the making up the baskets is the men's work, who first dye the materials of several curious lively colors, and then mix and weave them very prettily. They weave little baskets like cups also very neat; with the twigs wrought so very fine and close, as to hold any liquor, without any more ado, having no lacquer or varnish. And they as ordinarily drink out of these woven cups, as out of their calabashes, which they paint very curiously.

This form of close weave basket is no longer made by any of the Darien Indian tribes.

Carrying baskets.—An oblong carrying basket, "pirkakka" (Tule), with hand bail, "'l ttuba," (Tule), from the San Blas coast, stands 10.9 cm. (4.3 in.) high and is 21.6 cm. (8.5 in.) in length (Cat. No. 327574, U.S.N.M., pl. 23, No. 1). Oblong in form, it is designed for carrying a cake or bar of prepared cacao, "siyagwa kwamakkaledi," (Tule), (pl. 23, No. 2). The material employed in this basket is the split leaf of the tacca palm. The combination of diaper and twillwork in crossing filaments of natural straw color and others dyed in the jet black pigment of the *Genipa americana* produces a surface design variously spaced, of alternating rows of black and white diamond shaped figures. Encircling the center is a series of T-shaped figures in black. The bottom surface section of the basket has a lineal zigzag design of white elements filled in with closing wedges of solid black color.

The marginal portion of the basket is of different weave from the lateral surfaces and bottom, and is built up of an openwork hexagonal design surmounted by a marginal stake built up of several thicknesses of split palm petiole and twined about with the diagonally placed elements of which the hexagonal work is made up. The bail is built up in a manner similar to the rim of the basket. Some of these oblong hand baskets, "pirkakka" (Tule), have a flaring margin with constricted sides which flare out again just above the base. The cake of cacao just fits inside the basket.

Fire fans.—A basketry fan, "pigbi," (Tule) is made of "nagwar" (Tule), the split petiole of a tacca palm. Those in the collection average 39.2 cm. (15.4 in.) in length by 20.3 cm. (7.9 in.) in width. A similar fan is used by the Chocó as a fire fan. It is shaped in breastbone pattern in twilled and diaper weave forming a design in natural straw color, which is contrasted with the under split side of the crossed element. The elements terminate at the center of the fan, where they are joined and gathered into a breastbone-like handle, which, throughout its prehensile projection, is wrapped

[15] A New Voyage and Description of the Isthmus of America, p. 153.

with a crossed roll of close weave lacing, giving to the handle a smooth surface finish (Cat. No. 327536, U.S.N.M., pl. 24, No. 1).

A similar basketry fan from the San Blas coast (Cat. No. 327536. U.S.N.M., pl. 24, No. 3), called "pigbi" by the Tule Indians, is made from the split palm petiole of the "nagwar" palm. The breastbone handle is wrapped in a composite cross roll with filaments similar to the elements making up the body of the fan. The appearance of the wrapped prehensile portion of the handle is quite pleasing.

The basketry fan of the Chocó is not always similar to those of the Tule just described. One that has a different type of handle was collected by H. Pittier among the Chocó Indians of the Sambu Valley, South Darien (Cat. No. 272588, U.S.N.M., pl. 24, No. 2). It is 38 cm. (14.8 in.) in length, and is 18.8 cm. (7.4 in.) wide at the base. It is made from the split petiole of the tacca palm and fashioned in twilled diaper weave. The decorative designs in natural straw color form banded squares surrounding blocks of white, with the split side of the filament showing. The handle of the fan is the distinctive part and is a continuation of the blade, the lateral edges of which are bent over and finished in a tubular form, 5 cm. in diameter, with the basketry elements terminating and closing the proximal ends of the handle where they are bent inward.

Telescoping baskets and hourglass decorative design.—Twilled telescoping baskets, "kakku" (Tule), with decorative surface design resembling an hourglass, are plaited in two similar halves, one slightly larger than the other, so that the former when inverted will act as the cover for the latter. They thus together constitute a small pack basket carried and much prized by the women. The proper way is for each half to be made of identical pattern, but sometimes the basket maker will make the base of the lower complement wholly in the twilled or "herringbone" weave.

It is to be observed, writes W. E. Roth,[16] that upon the number of the hourglass patterns will depend the length as compared with the breadth of the finished article. With a single pattern the base will be a square, with a multiple one it will be more or less oblong. When once these figures are completed, the free ends of the projecting strands are plaited throughout in the ordinary twilled pattern of one under and over three, so as to form the foundation, exhibiting a pattern of concentric rectangular frames—the well-known "herringbone" type, which in the larger baskets may be broken up and subdivided. The base completed, a start is made with any one of its corners, where the projecting strands of the two contiguous edges

[16] 38th Annual Report of the Bureau of American Ethnology, 1917, p. 347.

are folded sharply over and plaited again in the twilled style, one under and over three, so as to lock one another and to build up the sides, which begin with two or more rows of such herringbone frames (pl. 23, No. 5).

Once the corners have been turned, little difficulty is experienced in the plaiting of the sides according to the pattern desired. In order to trim the free edges of the sides when completed, the two layers of strands are (lapped) plaitwise, respectively, outward and inward upon themselves and the projecting ends cut.

Where one hourglass only is plaited, the resulting foundation, to be symmetrical, must be a square, and the completed basket derived from it more or less round, giving rise to the more or less projecting corners where the rectangular base plaiting is changed to the cylindrical lateral basketry walls.

Roth,[17] referring to the ornamental design obtained in this basketry technique met with among Arawak, warrau, and Carib stocks of Guiana, writes:

> The following objects are to be found illustrated on the side panels of these stained hourglass pattern pegalls, baskets, satchels, etc. Taking plants, there is the wild nutmeg (*Myristica*), the darli tree of the Arawak and Warrau, indicated by its main and secondary branches, which certainly possess a characteristic appearance in between the other forest trees. This coupled with the fact that its fruit is edible and its sap utilized as a mouth wash and as a cure for "yaws' may perhaps account for the frequency of the pattern. Then we find a centipede, butterflies, and a certain edible periwinkle, shown by its sinuous tracks on the mud flats in single, double, treble, or multiple rows. Next comes a scorpion, a water beetle, and the edible *Calandra* grub, fish, reptiles, turtles, frogs, and snakes. Snakes are represented by at least three different methods: By a more or less accurate figure of the body generally, by a pictograph indicating the sinuous nature of the creature's movements, or its concentric arrangement when coiled at rest; and by an imitation of the body surface markings, as in the case of the boa constrictor, etc.

Although the patterns achieved by the basket maker of southeastern Panama in a similar manner are numerous, the intent to represent pictographically a multitude of life forms is probably lacking. The modeling of pattern forms is there highly conventionalized and the basket maker learns to imitate certain patterns, the original significance of which, as life form designs, he may or may not be cognizant.

Range of hourglass basketry technique.—For purposes of comparison the small telescoping baskets made by the Chitimacha Indians of Southern Louisiana may be considered (pl. 23, No. 3). The baskets are beautifully woven in three colors, the natural straw, black, and a reddish brown. A twilled diaper weave is worked into patterns which make difficult the distinction between them and

[17] 38th Annual Report of the Bureau of American Ethnology, 1917, p. 354.

the telescoping baskets of the Darien Indians (pl. 23, No. 4). They introduce a third color, the reddish brown, where the Panamanian tribes employ but two; the difference in the basketry elements employed is another aid in distinguishing between the two areas. A decorative design in three colors requires the use of more filaments and results in double lateral surfaces, so that the Chitimacha ware assumes a more intricate technique and takes on the appearance of a more finished piece of work.

The Tule term applied to the small telescoping baskets is "kakku." Their basket is quite small, 12.2 cm. (4.8 in.) in length with a width of 7.7 cm. (3 in.) (Cat. No. 327541, U.S.N.M., pl. 23, No. 4). The employment of a twill weave in natural straw color and in black develops a decorative motive similar to that on the surface of the telescoping baskets of the Guiana Indians of tropical South America and of the Chitimacha Indians to the north. Tule women use this little basket as a trinket container; it is known among the Tule as the "woman's basket."

A large basket, cylindrical in shape, from the San Blas coast is constructed in the herringbone or twill weave, with diaper twill base, and herringbone weave on lateral walls in black and straw color. The base is rectangular; walls cylindrical with no corresponding telescoping cover; designs on side walls appear in broken hourglass patterns; margin is double with the cut ends of filaments terminating just below the first encircling black band (Cat. No. 327,550, U.S.N.M., pl. 23, No. 5).

A basket tray made by the Nambikuaras Indians of Rondonio Province, southern Brazil, collected by the Museo National, Rio de Janeiro, and now in the National Museum (Cat. No. 324,545, U.S.N.M., pl. 23, No. 6), shows a similarity in technique and decorative pattern to the basketry work previously mentioned from Panama, Guiana, and Louisiana. That this harmony in technique, decorative design, pattern, and color scheme is the result of borrowing seems hardly plausible in the light of the known facts that similar color schemes, technique, and pattern in basketry work are found in Madagascar and Malaysia. In this light it also seems unconvincing to associate each one of the many patterns with the portrayal of some form of plant and animal life. The Tule Indians who visited the National Museum in December, 1924, had no knowledge of such a realistic scheme. Undoubtedly baskets of the various sizes and forms are not "made properly" unless they conform to certain pattern and tribal traditions, which are closely followed by the basket makers. The similarity of this hourglass type of basket in the various area referred to is too close and the universality of the design is too apparent, that is, the technique is too easily hit

upon by any basket making tribe to allow for any ingenious deductions as to intended realism on the one hand or unconscious borrowing on the other.

Other basketry types.—An entirely different form of basket from those previously mentioned is a pear-shaped basket from the San Blas coast, "karba tukka" (Tule), 16.6 cm. (6.5 in.) in height and 19 cm. (7.5 in.) in width at greatest diameter (Cat. No. 327,569, U.S.N.M., pl. 23, No. 7). The shape of the basket resembles the Tule pottery cooking vessel with elongated base; a combination of basketry technique is employed, involving simple cross or checkerboard weave, in the narrow base. From this beginning, after turning the corner, the splints radiate at right angles and are deflected upward so as to form the stakes or outline framework of the pear-shaped basket and to serve as the warp or passive element over which and under which the weft or horizontal filaments are passed, to again become the active element at the upper margin, where they are gathered in series of two strands each into a tightly wrapped bundle or rim one centimeter in diameter. Additional stakes are inserted part way up the conical slope of the lower half of the walls so that the checkerboard technique of under one over one is retained. The greatest diameter is a point one third the distance from the margin to the base of the basket. The margin, which is only two-thirds the greatest diameter, is composed of vertical filaments wrapped together with additional filaments in diagonally crossed openwork roll. Alternate employment of the split side of filaments in white color with the outer surface in natural color—the one horizontally and the other vertically placed—produces an ornamental effect. Use of natural outer and split surfaces alternating in the horizontal and vertical filaments produces ornamental effect. The greatest diameter is near the top. The marginal rim is constructed to two-thirds the size of the greatest diameter. This rim is made up of a coil composed of the vertical filaments wrapped together with additional filaments in crossed openwork diagonal roll. A Tule basket with handle, "karba tukka" (Tule), 14 cm. (5.5 in.) in height and 11.5 cm. (4.5 in.) top diameter, made from a very tough fiber called "sarki" (Tule), is constructed with a wicker base. that is, with radiate sticks employed as the foundation warp or stiffener for the lateral weft filaments. On the side walls of the basket are inserted additional vertical filaments enough to change the technique into a simple checkerboard weave. The top marginal diameter is somewhat less than that at the base. Six horizontal strands dyed black, in series of two strands each, encircle the walls of the basket horizontally. The warp strands are tucked into a tightly wrapped marginal roll that serves as a protective rim and

support for the handle, which is made of similar material and is composed of a bundle of filaments covered with simple roll wrapping (Cat. No. 327,571, U.S.N.M., pl. 23, No. 8).

A basket from the San Blas coast, 10.2 cm. (4 in.) high and 14 cm. (5.5 in.) in diameter at margin, is made from a very tough fiber called "sarki" (Tule). The wickerwork base is constricted; on the side of the basket is a simple cross or checkerboard weave of over one under one. One side of the basket projects 2 inches above the termination of the other lateral half and serves as handle or scoop. Diameter at the base is greater than at the margin. The decorative design introduced in the basket previously mentioned is present here as is also the mode of forming the rolled margin there described (Cat. No. 327570, U.S.N.M., pl. 23, No. 9). A basket vase from the San Blas coast is 18.9 cm. (7.4 in.) in height and 8.5 cm. (3.3 in.) in diameter, shaped in the form of a bottle with flaring body and margin, and with constricted neck orifice. The elements or basketry filaments are coarse vines woven in wicker design. The margin is 5.4 cm. (2.1 in.) in diameter (Cat. No. 327587, U.S.N.M., pl. 23, No. 10).

A similar basketry design, but widened, in the form of a pack basket and fitted to the back, is found in the basket collected by Mrs. H. C. Curl in the Chucunaque River district. The foundation is composed of 15 splints forming the sides and 17 radial and added splints forming the ends; the margin is composed of a rod wound with filaments strenghtened with a rod on the inner surface of the basket 1 inch below the margin. The same vine material employed in the basket previously described, "bejuco hierro," or iron withe, is the material utilized in its construction (Cat. No. 253651, U.S.N.M., pl. 23, No. 12).

A variety of other baskets collected by Pittier, Marsh, and others from the territory occupied by the Chocó, Cuna, and Tule in southeastern Panama are now in the National Museum. Among these are carrying baskets, cylindrical containers, pack baskets, and a large telescoping basketry trunk. Both the Chocó and the Tule Indians make a large cylindrical basket 43.3 cm. (17 in.) in diameter and 50.9 cm. (20 in.) high, in hexagonal openwork twill weave of strips of split vine, or lianas. Another basket, standing 45.8 cm. (18 in.) high, of hexagonal openwork weave, but constructed of broad splints of split stems of the little arrowroot, is used by the Tule as a bird cage or fish basket. The native name is "sikkivi'u" (Tule) (Cat. No. 327543, U.S.N.M.). The open work meshes are constricted toward the neck orifice where the filaments, after forming a neck orifice 1 centimeter in height, are tucked under on three sides of the now circular orifice, but are continued in close herring-

bone weave from the fourth side, thus building a flap or lid to fit over the neck orifice approximately 20.3 cm. (8 in.) long. The filament ends are then bent back and tucked under. A striking resemblance may be noted between this basket and a basket of similar dimensions, also constructed in hexagonal openwork weave, employed by the Nambikuaras Indians of southern Brazil. Both baskets appear to be constructed from the same material, and are reddish brown in color.

The telescoping baskets previously described are of various dimensions, ranging from a small 3-inch pouch used by the Chocó hunters to keep matches and fire caps dry (Cat. No. 272586, U.S. N.M.), to a large basketry trunk, "kakku tummadi" (Tule), several feet in dimension (Cat. No. 327566, U.S.N.M.), such as was constructed by the Chocó in 1924 for Mr. Baer, of the Marsh-Darien expedition.

A large carrying basket, "mudede" (Tule), made in twilled weave from the split stems of marantella is cylindrical in shape with rectangular base and one lateral surface flattened to fit the back. There are two grommets attached for suspension. The basket stands 43.2 cm. (17 in.) high and has a marginal diameter of 50.9 cm. (20 in.). Decorative design is attained through alternating of brown colored natural and the white split surfaces of the splints (Cat. No. 327565, U.S.N.M.).

A basketry mat collected by Pittier from the Chocó in the Sambu Valley is made in twilled or "herringbone" weave and shows the same variety of color and is made from the same material. The mat is 53.4 cm. (21 in.) wide and 67.9 cm. (26.7 in.) long (Cat. No. 272589, U.S.N.M.).

BODILY ORNAMENTATION AND CLOTHING.

Deformation of body.—In early accounts concerning the natives of southeastern Panama no reference is made to the practice of bodily deformation. Ornamentation of the person by the Indian tribes of Darien probably never took the form of artificial mutilation of any part of the body; bodily deformation as was the practice with the early Caribs and other tropical American tribes seems to have been unknown. Wafer in writing about the Darien Indians speaks of their high forehead, white, even teeth, thin lips, and moderately large mouth. Their cheeks and chin were well proportioned, and in general they impressed Wafer as being handsome. If Wafer in 1699 did not observe artificial deformation of any kind practiced by the Darien Indians, he probably chose to disregard certain practices that continue to the present time.

The nose-rings and earrings worn by the Chocó, Cuna, and Tule women involve a mild form of mutilation of the lower septum of the nose and of the ear lobes. Among the Tule the nose-rings are attached even to suckling baby girls, are allowed to remain throughout life, and are not removed at death. Then, the practice was observed by Marsh and Markham among the Tule, of binding the lower legs and to a lesser extent the arms with tight ligatures of beaded bands and with bracelets in the manner of the tribes of Guiana and Brazil, so that the flesh with the muscles underneath becomes dessicated and shrunken. In the broad intervals between these bands the muscles bulge abnormally. The Chocó similarly use for this purpose strands of white beads sewn closely together on a piece of strong canvas. This broad cuff encircles the arm at the wrist, another narrower band encircles the arm just below the elbow, while the legs are encased each in three tight bands bound together by three vertical strings. Marsh describes the Tule custom thus:

> The girls when little children have their lower legs tightly wrapped with colored cords or thongs, extending from just above the ankles to the base of the calf—then there is a skip of two or three inches, then another tight wrapping a half inch wide, then another skip of about an inch, and a third narrow tight wrapping just below the knee.

These thong wrappings are put on tight when the girl child is quite young; they have different colors interspersed at different spacings of the cord, so that the finished wrappings depict some fixed design or pattern and are kept at the same degree of tightness as the girl grows to womanhood. The tightly wrapped leg bands promote thickness of legs considered beautiful by the San Blas women. The result is a hideously deformed lower leg, with the wrapped portions of extreme smallness and the flesh of the unwrapped portion bulging and often overlapping the wrappings. Likewise the arms are wrapped at the wrists and just below the elbows, but these arm-wrappings are neither so tight nor so disfiguring as those on the legs.

In western Panama, in the Provinces of Chiriqui and Veraguas, the Indian hill tribes still file the teeth to needle like points. It is more a process of chipping than of filing: a dull knife is placed against the back of the tooth while the front is tapped with a stone until the desired chipping of the tooth is completed.

Hairdress and body painting.—As to the mode of ornamentation obtained by hairdressing and hair cutting among the Darien tribes of the interior Wafer (p. 132) observes:

> Both sexes have straight, long, black hair, lank, coarse, and strong, which they wear usually down to the middle of the back, or lower, hanging loose at its full length; only the women tie it together with a string just behind

the head, below which it flows loose as the men's. Both men and women pride themselves much in the length of the hair of the head; and they frequently part it with their fingers, to keep it disentangled: or comb it out with a sort of comb they make of Macaw-wood. This comb is made of several small sticks, about 5 to 6 inches long, and tapering to a point at each end. But they are forced to use their fingers to fetch the lice out of their heads. They take great delight in combing their hair, and will do it for one hour together. All other hair, except that of their eyebrows and eyelids, they eradicate: for though the men have beards if they would let them grow, yet they always have them rooted out, and the woman are the operators for all this work, using two little sticks for that purpose, between which they pinch the hair, and pluck it up. But the men upon some occasions cut off the hair even of their heads, it being a custom they have to do so by way of triumph, and as a distinguishing mark of honor to him who has killed a Spaniard or other enemy. He also then paints himself black (which is not usual upon any other occasion).

At present the Chocó permit their hair to grow to their shoulders. They part it in the middle, while the women comb part of their hair over their forehead in bangs a few inches in length. They paint their bodies with blue, scarlet, and white paint. Both men and women paint themselves according to the fashion of the day and apply the ornamental daubings to hands, feet, face, and body. On feast days they choose an elaborate pattern in red and black. The black color is derived from *Genipa americana*, the reds and yellows from *Bixa orellana*. The "caruto" or jet black pigment of *Genipa americana* is laid on in fantastic openwork pattern. The bright red of the *Bixa* is more sparingly applied to the face and forehead in stripes and dashes or dots (pl. 12, No. 2). Certain peculiarities in patterns as well as exact repetitions of these by distinct tribes, lead to the belief that they had formerly a significance as totemic clan or tribal emblems. The groundwork almost always consists of two lines starting obliquely downward from between the eyes so as to form an inverted V. Face painting is, however, rapidly disappearing.

The Chucunaque and Bayano River tribes are known to practice the painting of the body a jet black before embarking on a hunting or fishing expedition.

The Cuna of the central uplands paint themselves in black, scarlet, yellow, or blue colors with a contrasting white or other color over the eyes and nose.

The women are the painters, and take a great delight in it. They temper their colors with some kind of oil, and keep them in calabashes for use, and ordinarily lay them on the surface of the skin with pencils of wood, gnawed at the end to the softness of a brush. So laid on, they will last some weeks, and are renewed when the colors fade or the designs begin to disappear. The San Blas women

paint their legs to match the color of their dress and apply the paint in stripes or in the form of birds, animals, and men.

Finer figures, especially by their greater artists, are imprinted deeper. The first make a rough draft of the figure they design with the brush and paint; then they prick the skin with a sharp thorn till the blood gushes out; then they rub the place with their hands, first dipped in the color they design, and the picture so made becomes indelible.

The men formerly, when they went to war, painted their faces all over with red, and the shoulders, breast, and the rest of the bodies, here with black and there with yellow, or any other color at pleasure, in large spots, all of which they would wash off at night in the river.

Rings and pendants.—Nose-rings are worn by women and girls only (pl. 17); the Chocó prefer them of silver, while the Tule wear brass or gold rings. One of the brass nose-rings, collected by William Markham from the Tule of the San Blas coast, is an oval brass ring, "olasu" (Tule), 3.2 cm. (1.3 in.) in diameter. (Cat. No. 326811, U.S.N.M., pl. 28, No. 2), with one small segment removed from its circumference, leaving the unjoined ends separated by a space of a few millimeters. There are two grooved incisions encircling the circumference near the open sector. The material of which this ring is made was probably obtained in trade, as the tribes of Darien did not formerly work metals other than gold and silver, and do not at the present time make metal alloys such as brass. The brass derived in trade was probably cut to length and shaped by the Tule prior to polishing and grooving. Such rings of gold or of brass as worn also by the Cuna women. The wearing of nose-rings is not limited to adults, as girls often quite young wear them. The lower septum of the nose is pierced with a small awl, and the ring inserted with the open end suspended downward. The ring is never removed after it is placed in the nose.

Formerly men, too, wore nose ornaments. Wafer describes these as plates usually of silver, but also of gold, suspended from the pierced nasal septum. The size and shape of these plates was such as to cover the mouth from end to end; the gold plates were shaped like a segment from a circle, or like a half-moon. On hunting expeditions a smaller plate was employed that was less burdensome.

Ear pendants are sometimes worn by men (pl. 12, No. 3) but such ornaments are to-day almost exclusively the possession of women and girls. The chief and some few of his leading councilors formerly wore great heart-shaped disks or gold plates fastened to earrings by means of suspended plates several inches long. The

heavy gold ornaments wore holes in the ear lobe and often actually split the lobe into halves. Earrings of men and women are sometimes provided with the engraved figures of turtles, roosters, or other objects.

A large gold earring 6.7 cm. (2.6 in.) in diameter and of the thinness of paper was collected by Markham among the Tule and presented to the National Museum (pl. 28, No. 3, Cat. No. 326808, U.S.N.M.). The earring is of solid gold, hammered and polished to a smooth, even surface. The metal is well wrought, showing but little trace of vesiculation. The method of attaching the ornament to the ear lobe is by means of a circular loop of gold wire closely wrapped with fine fibrous cord. The wire loop is flattened at each end into a surface broad enough for its attachment to the gold disk earring near its outer circumference by means of small gold rivets. An ornamental design in the form of the letter T has been formed near the circumference of the disk just under the loop by punching out adjoining segments of the disk. Journeymen goldbeaters come to the San Blas coast and make such earrings for the natives by beating down American gold money "fish hawk money" preferred by the Tule for its lustre.

The Chocó Indians of southeastern Panama are related culturally to the adjoining Chocó tribes of the Cauca River valley of northern Colombia. The ear pendants carried by the Colombian Chocó are long wooden tubular ear-plugs. A pair of these, carved from a wood block and covered at one end with silver disks is in the National Museum (Cat. No. 326750, U.S.N.M., pl. 28, No. 1). The ear-plug is 8.7 cm. (3.4 in.) long and about one centimeter in diameter throughout its course except at one end where it enlarges to a bulbous knob 4.8 cm. (1.8 in.) in diameter, convexly ovoid on its outer surface and tapering like a funnel on its inner surface, which is prolonged into the tubular plug piercing the ear lobe. A silver disk of thin rolled silver is mounted over the outer surface of the bulbous end of the plug by means of cutting short segments from the circumference of the silver disk and then bending these triangular fillets over the lateral edge of the wooden bulb. Ear-plugs such as these are worn by both men and women.

Clothing.—It is probable that the employment of ornamentation and of clothing among the Indians of southeastern Panama proceeded synchronously; the first protective garments being those shielding the loin region, while among the first ceremonial garments were those articles worn during the dance. Heraldic ornamental designs; distinctive tribal designations painted on the body or on bark cloth; amulets, charms, and fetish carvings carried suspended from the neck; ornaments suspended from the neck, shoulders and elswhere about the body to lend individual distinction to the bearer;

also the example of cultural practice enforced by tribal tradition—all these factors, probably others as well, have been causal in developing the peculiar ornamental and protective bodily coverings and suspended appendages employed by the Indian tribes of Darien.

Wafer writes about the apparel of the interior tribes as he found them in the late seventeenth century:

> The men go ordinarily quite naked, without so much as a clout about them, which few other Indians are without. But these have only a small vessel of gold or silver, if they are able, or at least a piece of plantain-leaf, conicle like a candle snuffer. They forceably bear back the penis within its own tegument, close to the pubes; and they keep it there with this funnel tied hard upon it, with a string coming from it, and going about their waists.

Such use of a penis cap was clearly a protective measure associated, according to the same and other writers, with a sense of modesty or shame regarding exposure. Another peculiar combination of the moral factor and the associated protective function of apparel may be witnessed to-day among the Guaymies inhabiting the region west and north of the Canal Zone. In the mountains and valleys several thousand Guaymies live scattered on the plains and in the forest. These were early brought under the influence of Catholic missions, but have gone back to ancient ways. The long flowing gown of the women, tight at the neck, represents a feeling of shame, but they still wear the primitive bark skirt underneath it. When rain approaches, women strip off their long robe, wrap their clothes in a large Heliconia leaf and place the parcel on their heads. Men do the same on the hunt. They hang their blue trousers to a limb and wrap the shirt around their loins.

R. O. Marsh describes the garb of a male Indian encountered at Yavisa on the lower Chucunaque that features the ornamental factor of bodily covering rather than its protective functions. The Indian is described as wearing about his head a circlet one inch or more broad; about his body, profuse strings of white and gaily colored beads placed in symmetrical design over the right shoulder and under the left arm, and repeating the arrangement over the left shoulder and under the right arm, forming a broad band four to five inches wide crossing over his upper chest; lower down on his chest were two parallel bead bands each two inches wide, reaching down to the waist muscles on his side and crossing in front on his lower chest region, exposing a strip of flesh between; around his abdomen and hips like a low hung belt, was another band of bead strings six inches wide, running underneath the small shield-like breech cloth. On his wrists were apparently solid silver bands three inches wide; four or more tassels of beads about a foot long and suspended from the upper chest bands hung vertically down at

his front. His arms, stomach, flanks, and legs were bare. The contrast was all the more striking, as this individual Indian was white skinned.

On the Caribbean or north slope of the Isthmus, the Tule men wear anything or nothing, from a simple breech cloth to loose cotton shirts and trousers, with the shirt tails not tucked in. Men dress somewhat according to the position they occupy in the tribe; this applies even more to the garb of women, who also dress according to the traditional demands of the occasion at hand.

The customary female attire consists of a piece of cotton cloth wrapped about the hips and extending from the waist, where it is fastened by tucking in one end, to a few inches above the knees. For more ceremonial purposes a short-sleeved chemise "mola" (Tule) is worn, which is embroidered with complicated designs of appliqué work at the front and back. The ensemble of a woman's attire is called "matalete" (Tule).

The Sucubti River Cuna men and the Mountain Cuna of the Pucro, Paya, and Capeti valleys are garbed in blue trousers which they obtain in trade; the Mountain Cuna women wear a single red or blue cloth blouse reaching to the knees, and under this blouse is a skirt consisting of a seamless roll of calico. For ceremonial occasions the chiefs have featherwork hats on a basketry foundation.

The ornamental objects worn by the Chocó far outnumber the articles of apparel worn for bodily protection. Their arms, legs, and neck are weighted down on festive occasions with silver ornaments and necklaces of shells, teeth, seeds, and variously colored glass beads. Neck and loins are encircled with many strings of beads. From the beaded headbands are suspended bunches of aromatic roots and bark.

Bark cloths.—The men ordinarily wear scarlet or blue breechclouts and the women a loin cloth or short skirt. The breech clout is usually of calico cotton cloth, though formerly it consisted of the beaten blast of the ficus palm and several other varieties of plants. The clout is about one foot broad and several feet long; it is passed between the legs in front and back of the body over a string tied around the waist, and is allowed to hang down in front of the body like a small apron (pl. 12, No. 3). On special occasions the string is replaced by a broad band of white beads; strands of beads then also ornament the neck and chest; broad silver cuffs are placed on the wrists. The Chocó men dispense with the use of a hat; a headband is worn instead, sometimes adorned with a red flower.

The Chocó woman's dress is ordinarily quite simple like that of the Tule woman's garb. A piece of cotton calico cloth several feet long is wrapped around the hips, forming a skirt extending a little below the knees. Little girls are given one of these skirts, "paruna,"

at or before puberty; at the same time the little boy is given his first breech clout or "antia," (pl. 12).

Wafer describes the methods employed in weaving, as follows:

> Girls draw strings out of bark, and beat silk-grass, for thread cordage, and nets. They pick the cotton also, and spin it for their mothers' weaving. For weaving, the women make a roller of wood, about 3 foot long, turning easily about between two posts. About this they place strings of cotton, of 3 or 4 yards long at most, but oftener less, according to the use the cloth is to be put to, whether for a hammock, or to tie about their waists, or for gowns, or for blankets to cover them in their hammocks, as they lie in them in their houses; which are all the uses they have for cloth; and they never weave a piece of cotton with a design to cut it, but of a size that shall just serve for the particular use. The threads thus coming from the roller are the warp; and for the woof they twist cotton yarn about a small piece of Macaw-wood, notched at each end; and taking up every other thread of the warp with the fingers of one hand, they put the woof through with the other hand, and receive it out on the other side. And to make the threads of the woof lie close in the cloth, they strike them at every turn with a long and thin piece of Macaw-wood like a ruler, which lies across between the threads of the warp for that purpose.

Pieces of bark cloth were formerly much utilized by the Darien Indians as clothing and for various other purposes, such as mats, bedding, breech clouts, and women's short skirts. Its use has largely been superseded by cheap calico cotton prints secured in trade or by cotton cloth made on native looms from the native tree cotton.

A bark-cloth fiber mat (Cat. No. 327458, U.S.N.M., pl. 19), "ikkor," (Tule), "damagua," (Chocó), from the palm tree of the same name is made by the Chocó of south Darien from the bast or inner bark of a palm tree and used by them to sleep on and as floor coverings. The dimensions of the mat are 178 cm. (68.5 in.) in length by 91 cm. (35.4 in.) in width. It is decorated on one side only, the other is a dull white color. The decorative design embodies the characteristic Chocó patterns. One-half of the decorated surface consists of parallel lines dyed in black color crossing with another series of similar parallel lines at diagonals, so as to form diamond-shaped open spaces of the natural straw color, some of which, in series of two blocks each, have been filled in with smaller diamond-shaped blocks of black dye.

The other half of the decorated surface is equally divided into two sectors separated by means of heavy lines in black. It is filled with two series of semicircular figures, each figure composed of three concentric black semicircular lines. The inner semicircular figure of the series next to and terminated by the heavy black lines defining this section is filled with a smaller circle of solid black color.

The remaining fourth of the decorated surface represents a third motive of Chocó art, that of a series of parallel zigzag black lines filled in with solid blocks of black color. The zigzag lines meet

along the center of the panel and form diamond-shaped figures filled in with solid blocks of black color. A superimposed series of parallel rectangular lines and black dots lends variety to the motive.

Another bark fiber mat (Cat. No. 327459, U.S.N.M., pl. 19), from the same tree as the preceding specimen, is 168 cm. (66 in.) long by 61.5 cm. (24.2 in.) wide. Here one finds repeated the characteristic Chocó art design. The carrying out of the motive is somewhat different insomuch as the decorated surface is divided by heavy transverse black lines into four distinct sectors of which the two end sectors employ the semicircle, and the two middle sectors the bisected parallelogram or triangles of solid black color. These are bordered by series of three parallel black lines that inscribe each of the figures. The end sectors are decorated with designs of semicircular black lines. The Chocó Indians of the Atrato River Valley use this type of bark mat as floor coverings and bedding. Negroes have adopted its use for the same purpose and claim that it keeps them dry and warm.

A bark cloth finishing tool is used by the Guaymie Indians of East Chiriqui, western Panama, in the preparation of bark cloth. The final beating and smoothing of the bark cloth is attained by means of this instrument. The handle is of wood and 20.5 cm. (8 in.) long. The working part is a heavy ribbed shell perforated at the apex where it is secured to the roughly constructed wooden handle (Cat. No. 272604, U.S.N.M., pl. 27, No. 8).

A piece of bast fiber several feet long, collected by Markham from the Tule of the San Blas coast (Cat. No. 326823, U.S.N.M., pl. 27, No. 3), consists of the bast of the "tuvsiva" (Tule) castilla tree (*Castilla* species), and is much employed in making looped hammocks, bark cloth, and breech clouts, which are still made from this material by the Chocó Indians of El Chocó, or that part of Colombia drained by the Atrato and San Juan Rivers.

A vine much employed in tying and raffia work by the San Blas coast tribes is an epiphyte, a climbing mountain vine (Cat. No. 253704, U.S.N.M., pl. 27, No. 1). H. Pittier describes another way in which the bark of this plant is used. The complete bark from a branch is pounded, resulting in a tube ornamented with brown, rude, nondescript designs. It is used as a clout by the Guaymie women, who pass it between the legs and confine it by a string tied around the hips.

Weaving implements.—All of the native Panamanian tribes understand the use of the loom and the spindle. The Talamanca of Costa Rica, the Cuna, and the Tule as well, all employ similar devices and weaving implements. This applies particularly to their weaving

heddles and to the spindle. With regard to the spindle Dr. Walter Hough writes in the Proceedings of the United States National Museum,[18] as follows:

> A spindle is a device for twisting fiber. Human fingers formed the first spindle, and there are now tribes living in British Columbia, Aslaska, and other parts of the world where excellent yarn and thread are produced with no instrument whatever.
>
> The class of implements called spindles begins with a simple pointed rod which acts also as a bobbin. It is the first device for covering rectilinear into continuous circular motion. The stick is rolled on the thigh with the palm of the hand, and the twisted fiber is then wound upon this simple shaft. There were added the spindle whorl, the hook at the top of the spindle to enable the operator to walk about.

A Costa Rican spindle of this description collected by Pittier in 1920, now in the National Museum (Cat. No. 315135, pl. 27, No. 2), fashioned from a piece of red snakewood 29.3 cm. (11.5 in.) long, has a whorl carved from the tagua, or ivory nut. A ball of tree cotton is attached to the thread already spun and wrapped on the spindle. The spindle ends are similar and taper to a needle-like point.

Another spindle from the Tule collected by Pittier (Cat. No. 272597, U.S.N.M., pl. 27, No. 4) is provided with a disk whorl fashioned from a Mimosa seed.

A characteristic San Blas coast spindle, "pirpi," (Tule), is fashioned from a piece of the hard black chonta palm wood 74 cm. (29.1 in.) long. The whorl is a tortoise shell disk 6.7 cm. in diameter and is fitted over a bulbous proximal end section 6.9 cm. long, and has a roughly shaped unpolished surface (Cat. No. 327456, U.S.N.M., pl. 27 No. 6).

A more carefully finished spindle (Cat. No. 327457, U.S.N.M., pl. 27, No. 7), is carved from a piece of brown hardwood 65.5 cm. (25.7 in.) in length. The whorl is carved from the same block of wood and is placed 7.5 cm. above the spindle end. Its convex surfaces form an elliptic disk with sharply defined outer margin. The tapered distal end of the spindle is tipped with two annular flaring surfaces, immediately in front of each of which is an annular grooved incision.

A weaving paddle, "nakku," (Tule), made from a block of wood carved from the "koippir" tree (Tule), a heavy dark brown, hardwood, 46.2 cm. (18.2 in.) in length by 15.4 cm. (6.1 in.) wide is used by the Mountain Cuna, "Cunas Bravos," in smoothing the weft or beating down the woof. The paddles of the Mountain Cuna, like their pottery, are more crudely constructed than are those of the San Blas coast tribes (Cat. No. 327514, U.S.N.M.).

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[18] Vol. 60, p. 30.

A weaving paddle (Cat. No. 327512, U.S.N.M.), 59.9 cm. (23.6 in.) in length and 12.1 cm. (4.8 in.) wide, carved by the San Blas Indians and used by them in beating down the woof, has a more polished surface and the workmanship is less crude than that of the Cuna. It has a geometric ornamental design incised on the handle surface. Another weaving paddle, made by the San Blas coast Tule, 49.7 cm. (19.5 in.) long by 12.1 cm. (4.7 in.) wide, has a diamond-shaped handle knob or guard and a lanceolate blade (Cat. No. 327513, U.S.N.M.).

Figured headbands.—One of the simplest examples of native loom work, likewise one on which the Darien Indian lavishes his best artistic efforts in geometric figured design, is the headband. It is known to the Tule as "kurkiu mora." A headband is woven by the Mountain Cuna from cotton fiber into a close mesh band 42 cm. long, including the fringed border at each end. The headband has a multi-colored design of red, white, black, green, and pink.

The coast Tule weave a similar headband to be worn on gala occasions with the fringes at the back of the head. The band is placed around the forehead and temporal regions. The ornamental design is the snake pattern described by Roth (Cat. No. 327415, U.S.N.M., pl. 29, No. 1). Another headband, worn by the Mountain Cuna for ornamental purposes on festive occasions, is similar to the one previously described. Woven from cotton yarn to a length of 40.3 cm. with a decorative pictograph woven in colors indicating the sinuous movement of the snake; dots are pictographic representations of the body surface markings of the snake (Cat. No. 327416, U.S.N.M., pl. 29, No. 2). A frame for making headbands is called "kas urgo" (Tule).

Appliqué embroidery.—A woman's chemise "mola" from the Tule Indians of the San Blas coast, collected by William Markham, is made in three pieces. The garment is composed of a colored striped cotton yoke with the short side panels barely reaching to the hips. These panels are covered with variously colored strips of appliqué work in red, blue, and other colors sewn together on a base of cotton cloth and representing conventionalized pictographs, the design for which has been borrowed from the Cuna of the interior. A cross at the center is probably a squid reaching out its tentacles, while four objects lying between the tentacles or arms of the squid represent fishes. The Cuna of the interior were formerly supposed to have a system of pictographic writing expressed in appliqué work, the design of which was copied by the Tule. The ideographic significance of the characters, fish, and animal figures, however, remained unknown to them. The entire panel represents a turtle (Cat. No. 326819A, U.S.N.M., pl. 25, No. 1).

A similar woman's garment, "mola," from the San Blas coast has two entirely dissimilar panels on the sides of the garment. There are three centrally placed appliqué pictographs on each panel that clearly represent fishes, probably sturgeon, with a whale in the center of each panel. The border of each panel shows a sinuous snake design. There are many other characters surrounding the border of the panels, but they are highly conventionalized pictographs and are unintelligible to the uninitiated (Cat. No. 326819C, U.S.N.M., pl. 25, No. 2).

Another woman's chemise, "mola" (Tule), from the San Blas coast, collected by William Markham, is a splendid example of appliqué work built upon a base lining of common figured print cotton cloth. The shoulder areas have each a small design in appliqué representing snails. The panel of appliqué work beginning just below the yoke has a large number of smaller pictograms representing various animals, reptiles, and fish, the whole blocked off into eight lesser panels, each having one large central pictographic design and a large number of small marginal designs. Figures of snakes, lizards, and alligators divide the eight panels from one another (Cat. No. 326819B, U.S.N.M., pl. 26, No. 1).

A mola from the island of Cidra, Gulf of San Blas, was collected by Mrs. W. H. Bell, in which a cotton print of red stripes serves as a lining for the appliqué panel work in "crazy-quilt" pattern. This is a more highly conventionalized design with various layers of cut and inset appliqué work than are some of the garments previously described. In outline dimensions it is 66 cm. (26 in.) in length and 71.2 cm (28 in.) wide, pl. 26, No. 2). (See Mrs. E. Y. Bell, in the Republic of Panama and Its People,[19] for additional examples of appliqué pictographs).

Masks.—The Tule Indians have no masks such as are employed by the tribes of the interior of western Panama in Veraguas. One of these masks from the Province of Veraguas is used on certain religious holidays. It is supposed to represent the "little devils," and is in the form of a cap. An Indian puts the cap on his head and, imitating the attacks of a wild bull, rushes toward the spectators, who with frantic yells, get out of his way, saying, "You will never catch me, little devil." On the occasions when the "little devils" make their appearance, songs are improvised, criticizing those persons and things that in the opinion of the people deserve to be criticized.

There are horns attached to the mask or cap that are from the native deer; a jaw and snout of the "jabali," or peccary, is also attached (Cat. No. 248566, U.S.N.M.). Although the San Blas

[19]Annual Report of the Smithsonian Institution for 1909, pls. 9 and 10.

coast Indians do not employ masks, their word for devil and for mask is the same, "mia."

Markham tell of the methods employed in making hammocks and in weaving. "I sat down by an old lady weaving a hammock. I asked how the hammock was made. She was delighted to show me. Her age must have been perhaps 70 years. All during her demonstration she kept up a lively conversation. The hammocks are made from the inner bark of a tree; the best fiber is pulled off, cut, and split into small threads of the desired size. It is then dried and is quite strong. The fiber selected is sometimes cotton which the natives have grown. The cotton has a pink color in its natural state. In spinning, it is first taken by one woman who forms the strand into a cord perhaps a half inch in diameter. It is then passed on to the next woman who gives it a twist and passes it on to the next, and so on down a line of perhaps 20 women until it becomes as small as required, about the size of ordinary wrapping cord. The woman weaver can make a hammock in 1 day of 10 hours."

The loom on which the hammock is woven consists of nothing more than a frame of poles bound together with vines. Such looms are community property and several are present in every village for making hammocks and the head-bands worn by the young men. Baer saw a Cuna man of Sucubti, who was an albino, and his sister weaving a hammock in a manner similar to that described by Markham.

Necklaces and pendants.—In their esteem for objects of personal adornment the Chocó and Tule Indians are alike. They differ, however, in the method employed to display their love of finery. The Tule woman pierces the lower nasal septum and wears a gold or brass nose-ring; the Chocó men and women pierce the lobe of the ear and insert wooden plugs covered with silver plate. Both tribes are alike in their employment of multiple strands of necklaces, encircling bands, and pendants. With the Chocó, ornamental strings of beadwork also take the place of the ornamental appliqué mola, or woman's garment, of the Tule in the decoration of the body, so that the Chocó men and women do not find the same need for ornamental clothing as do the Tule. The latter is content with necklaces, but the Chocó employs multiple strings of beads about the otherwise naked body as well. A little Chocó child may have no other clothing or ornamental object about it except a few necklaces of beads or teeth; a Tule child, similarly naked, is the proud possessor of a nose-ring together with a necklace or two.

A necklace, "nug nuppi" (Tule), from the San Blas coast, composed of a large number of pinion-like aromatic seeds, was identified by Paul C. Standley as common allspice (*Pimenta officinalis*)

(Cat. No. 327425, U.S.N.M., pl. 28, No. 5). The seeds are strung on a cotton cord in a series composed of alternately one seed followed by three glass beads sufficient to build up a double strand over 2 feet in length. The two strands are tied together at intervals in variously formed loops of different lengths, so as to lend the appearance of several additional strands. When worn by the Tule woman, one or more of the looped strands may be thrown over the neck, the remainder forming an intricate network of pendent strands.

Another seed necklace of allspice and variously colored glass beads strung in series of alternately three glass beads and one seed is in the National Museum from the San Blas coast (Cat. No. 327424, U.S.N.M., pl. 28, No. 4). The portion of the necklace passing around the neck is composed of only one strand of glass beads; multiple strands of the seeds and glass beads arranged in loops of various lengths form a network of pendent strands reaching down over the chest. Additional strands are tied on to the main strands at various intervals. A short carved section of a root of the "pagla 'ukku" tree (Tule) is attached to the necklace as a pendant. Necklaces are worn among the Tule almost exclusively by the women and girls, but by the Chocó men as well as women.

Another highly aromatic seed-necklace in the collection belonging to the same family (Myrtle), and representing probably a species of *Eugenia*, is known to the Tule as "piseva." The seed is larger and has the odor of cloves or cinnamon.

Bracelets and arm bands of glass beads, teeth of animals, fish, and long bones of turtle, are commonly worn by girls and adult women. A bracelet from the San Blas coast is made from small amber-colored glass beads strung on a cotton cord alternately with peccary (jabali) (*Dicotyles labiatus*) teeth, and also those of the domestic pig. A pendant composed of a broken section of the tusk of some unidentified animal has three incised encircling bands with the remainder of the yellow surface highly polished. A pendent double loop of cord has at its end a carved section of a root of the "pagla 'ukku" tree. The teeth are attached to the bracelet cord by a hole drilled near the small end of the tooth (Cat. No. 327453, U.S.N.M., pl. 32, No. 1).

A similar bracelet from the San Blas coast is made up of a number of small multicolored-glass beads and animal teeth strung on a cotton cord (Cat. No. 327451, U.S.N.M., pl. 32, No. 2). The glass beads are white in color and longitudinally striated in various colors. The attached teeth are suspended by means of a hole drilled near the small end of the tooth. The teeth are not of uniform length; the longest is the penis bone of a carnivore; others are the curved tusks

of the domestic pig and the peccary (*Dicotyles labiatus*). Other similar bracelets in the Museum collection are composed almost entirely of peccary tusks.

A necklace from the San Blas coast in which the teeth of the trigger-fish (*Balistes*), are employed, is characteristic of the Tule in the manner of their attachment (Cat. No. 327439, U.S.N.M., pl. 32, No. 3). The pendent section of the necklace comprises a series of alternately two glass beads followed by one tooth. As centrally placed pendants to the necklace there are attached several teeth from the blade of the saw fish (*Pristis pectinatus*).

Unique arrangement of the small vertebrae of the ray-fish, "madunwa" (Tule), in the form of a necklace in which each vertebra is strung longitudinally on a cotton cord alternately with clusters of glass beads, each cluster being composed of three small beads, one red, one blue, and one green. The vertebrae are nearly 1 cm. in transverse diameter, somewhat larger than the glass beads (Cat. No. 327448, U.S.N.M., pl. 32, No. 4).

Small necklaces from the San Blas coast are composed of small, uncolored, transparent and amber glass beads throughout their length (Cat. No. 327444, U.S.N.M., pl. 30, No. 1). A series of pendants attached after every second bead averages 1½ inches in length. The pendants are composed of the front leg-bones of the turtle, "jawoka" (Tule), and the split dermal plate, "abu 'arrati" (Tule), of turtle.

A similar necklace with pendants is composed of small amber glass beads, and one large blue glass bead, strung on a cotton necklace cord (Cat. No. 327434, U.S.N.M., pl. 30, No. 2). Throughout its central pendent sector and attached to the necklace cord at intervals, with five or six beads intervening, are pendants of short strings to which are attached small split sections of the dermal plate of turtle by a small hole drilled near the thin end of each plate.

A pendant necklace comprising a long string of small red and dark blue glass beads with pendants of carved sections from the root of the "pagla ukka" (Tule), tree probably has fetishistic significance, as roots of this tree have reputed medicinal qualities, and the root pendants are carved images representing the human figure, various animals, reptiles, and fish (Cat. No. 327449, U.S.N.M., pl. 30, No. 3).

Monkey teeth are employed in another necklace as pendants, alternating with series of from two to four blue grass beads (Cat. No. 327431, U.S.N.M., pl. 31, No. 1).

Teeth of several varieties of monkey, teeth of a small deer, and of the agouti, a rodent (*Dasyprocta agouti*), are suspended in the characteristic manner of the Tule on another necklace at intervals

between clusters of small colored glass beads (Cat. No. 327430, U.S.N.M., pl. 31, No. 2).

Another necklace is composed of small green glass beads strung on a necklace cord of native cotton that has been dyed purple. This necklace has suspended from it throughout one-half its course pendants consisting of sections of the mandible of the spider crab (*mithrax*), "suga" (Tule), at intervals, with seven beads between each pendant. The sections of mandible are from 1 cm. to 1.5 cm. in length (pl. 31, No. 3).

A necklace of marginella shells, "tegla" (Tule), in which the shells, each 1.5 cm. in length, are suspended on short strands of uncolored, transparent, small glass beads, seven to nine in number, from a necklace cord on which are strung small transparent glass beads (Cat. No. 327441, U.S.N.M.). A small incision is made transversely across the smaller end of each shell and the suspension cord passed through (pl. 31, No. 4).

Featherwork and headdresses.—The employment of an ornamental and ceremonial feather headdress, "kantur kurgina," (Tule), is characteristic of the Cuna and Tule, but not of the Chocó tribes. Among the Tule the wearing of a feather headdress is limited to the ruling headmen, the chief musicians and dance leaders, and to the lele. One of these headdresses (Cat. No. 327414, U.S.N.M., pl. 29, No. 3), is in the National Museum collection. The framework of the headdress consists of a circular band 11.5 cm. (4.5 in.) high, woven of small splints from the petiole of the tacca palm in diagonal twill weave. Two parallel series of concentric bands of split cane, each bound together with raffia, encircle the frame. Between these two series of concentric basketry bands and projecting outward almost at right angles to the frame, is an encircling row of yellow parrot feathers, "tuli," (Tule). Each of these feathers is split open from the thick base end of the quill a distance of about one inch upward from the base; one of the split sections of the quill is cut off; the other is bent back so as to form a loop through which is passed a looped cord encircling the headdress frame. The loop composed of the split quill end is now covered with a cord wrapping. This process is repeated for each of the yellow parrot feathers, making up a feather corona firmly attached to the frame and held in a horizontal position between the two encircling parallel series of concentric cane splints. Each feather in the encircling corona is now pierced at its middle section and a lacing cord is passed through the holes, binding each feather in the corona firmly together. Immediately overlaying the corona is another circlet of much shorter brown breast feathers of the "sigli" (wild turkey) attached at their quill ends to a closely woven cotton band fitting the vertical walls of the

frame. The feather quill ends are inserted into this band and form its warp. Both the corona of long yellow feathers and the circlet of shorter brown breast feathers form an incomplete circle with the undecorated sector at the back, a characteristic noted also on the feather headdresses of the Guiana Indians. The two concentric rings of cane strips firmly enclose the two encircling bands of feathers between them.

Four pompons terminating in red macaw (Ara species) tail feathers, "nalu," (Tule), each about 50 cm. (19.6 in.) in length, are inserted into the lateral walls of the basketry framework at points equidistant around the circumference. The base of the pompon is a sharpened spike of black Cleonta palm wood, the sharpened end of which is thrust vertically into the basketry framework; the end of the palmwood spike is sharpened and stuck into the base of the quill end of the macaw feather plume.

A section of hollow reed is placed over the middle section of the palmwood spike where it is held in position by a notched projection in the lateral surface of the spike. To this reed sleeve are attached several small feathers of many colors by means of a pitched cord wrapped in simple roll. Two sections of hollow bamboo, each about 60 cm. (23.6 in.) in length and with the nodular septum removed, are employed as containers for the pompons when removed from the headdress and stored for safekeeping.

Another example of the featherwork of the Panama Indian is a plumed play bird made by the Chocó of the Sambu River valley, south Darien (Cat. No. 272596, U.S.N.M., pl. 29, No. 4). This children's plaything was collected by H. Pittier. It represents a combination of the wood carver's art and featherwork in artistic design. Fashioned from the soft balsa wood (*Ochroma limonensis*), the carved bird figure represents probably a duck. Twelve holes are drilled into the wooden figure at the sides and on the tail piece. Into these holes are inserted long, brown tail feathers of the turkey, "sigli," also the yellow feathers of the "tule" bird; four feathers project horizontally from each side of the bird figure and four from the tail piece. The body of the bird figure is decorated with a characteristically Chocóan ornamental pattern in black and white paint. Blocks of black color with circular outline appear on front and rear breast; a black band encircles the neck and extends up to the under surface of the throat. Black hour-glass patterns on the back alternate with paralleling stripes of white. A narrow strip of white runs along the upper surface of the beak and another bands of white encircles the upper part of the neck. The natural wood color supplies a third element in the design. Not considering the extended tail feather plumes, the bird figure reaches a length of 46.5 cm. (18.3 in.). The play bird is suspended from a roof beam

by a fiber cord attached to a spike of Cleonta palm wood driven into the back of the effigy. A chance current of air suffices to blow the play bird to and fro to the delight of the little Chocó children.

While the Cuna and Tule employ a feather headdress, the Chocó Indian makes an ornamental headdress of basketry material and balsa wood. It is a characteristic feature of the dance costume and is worn principally by the women. One of these basketry headdresses (Cat. No. 327650, U. S. N. M., pl. 23, No. 11), is typical of Chocóan ornamental design, constituent materials employed, and craftsmanship. It typifies the highest art and best efforts of the Chocóan basket maker. The headdress is composed of a basketry framework 11.5 cm. (4.5 in.) high and is large enough in diameter to fit the crown of the head. The material employed are strips of the split leaf of the tacca palm. Some of the strips are dyed a jet black, others appear in natural color. A combination of twill and diaper weave is employed to bring into relief the decorative design on both inner and outer surfaces of the frame. The design consists of centrally placed adjoining squares in natural white color surrounded by alternate bands of black and white. Each square is filled in with blocks of solid black color with an hourglass design in white at the center. Inside the basketry framework near the upper margin are several reinforcing bands of basketry splints in herringbone weave. Between the reinforcing basketry bands and the outer framework are inserted 12 upright slats of balsa wood resembling a crown; they are held securely in position by two cord lacings. The slats are decorated in black and yellow colors in characteristic Chocóan design of parallel black lines in rectangular form enclosing blocks of solid yellow. Each slat is larger in section near the top than at its base, where it is inserted into the basketry framework, so that the series has an outward flare toward the top. The evenly serrated upper slat ends are decorated on their outer surface each with two parallel concentric black lines.

MUSIC

Tribal differences in types of musical instruments.—Both vocal and instrumental music are known to the Indian tribes of southeastern Panama. The songs and incantations are either of a special nature, such as are employed in effecting a headache cure, or in making medicinal herbs effective, and are known only to those, such as the lele or doctor, who have received special musical instruction; or they are folk songs consisting of chants intoned, as for instance, while fishing for turtle or lobster. Songs are also sung during the planting of crops, at the dance, and on other festive and social occasions. Instrumental music is produced on a variety of percussion and wind-blown instruments operated usually by specially

trained musicians. Instrumental music is, again, either special, such as is employed during the great crises of sickness and death, when it is produced by the doctor, or it is social and ceremonial, accompanying the planting and harvesting of crops, festivals, dances, and weddings.

The musical instruments of the Chocó differ from those employed by the San Blas coast Indians in that instruments of percussion, such as the shell drum, are in general use among the former, while on the San Blas coast the drum does not occur. The Tule, however, employ a variety of wind-blown instruments, such as the direct or end-blown flute, and the pan's pipes that are not found among the Chocó of the Pacific slope. Musical instruments common to both ethnic stocks are the calabash rattle, the tubular wood rattle, conch shell, and tubular reed cornet.

Calabash rattles.—The native musical rattle is made from a calabash or coconut shell. Although not limited in its range to southeastern Panama, occurring throughout tropical America, it is employed by the Panamanian native tribes to a greater extent than any other musical instrument of percussion. Roth mentions the "shak-shak," that is, shake-shake rattle of the Creoles, negroes, and civilized Indians of Guiana, throughout the whole extent of which it occurs, as being credited by legend and otherwise to have been introduced by the Arawak. The instrument is often known as a "maraka" or "maracca" because of the "maracca" or canna seeds inserted in the shell to produce the rattling noise or musical vibrations.

A calabash rattle, "nasisi" (Tule), (Cat. No. 327385–6, U.S.N.M., pl. 8, No. 1), is used by the Tule Indians of the San Blas coast to accompany their songs and dances. A round wooden handle 34.2 cm. (13.4 in.) long is inserted into a circular opening cut from the stem end of a spherical calabash (*Crescentia cujete*), 14.3 cm. (5.6 in.) in diameter. The handle is rounded in section and tapered somewhat toward the distal end, which is thrust entirely through the calabash, emerging through a small hole cut just opposite the stem end; into the axis so formed the tapered distal end of the handle is securely fitted.

Either canna seeds, "maracca" (Arawak)—a term also used by the Chocó—or small stone pebbles are first placed inside the shell. The rattles having the seeds are smaller and are known as women's rattles, while those with stone pebbles are the larger, man's rattle. The instrument is shaken in cadence with the song or chant of the Indian; the seeds strike the inner walls of the thin shell and the central handle axis, producing a sound very similar to that made by rubbing together pieces of sandpaper. The instrument is wielded

by the right hand of the operator within an arc just wide enough to secure the desired tone and phrasing, which is composed of a crescendo followed by a diminuendo.

An ornamental geometric surface design consisting of a network of interlacing tangent and concentric circular incised lines decorates the surface of the calabash shell. Incised words and phrases in Spanish, together with the date, November 21, 1914, are also incised or scratched on the surface.

Another calabash rattle (Cat. No. 327382–4, U.S.N.M., pl. 8, Nos. 2, 3), is made by the Tule in a more characteristically native fashion than the previously described rattle. A globular calabash 9 cm. (3.5 in.) in diameter, from which the pulpy contents have been removed through a circular incision of the shell at the stem end 2 cm. in diameter, is partially filled with a quantity of canna seeds. The incised opening is closed with one end of a handle 18.8 cm. (7.4 in.) in length, consisting of a long leg bone of some animal; the handle is covered with cotton cord heavily wrapped in double crossed roll.

Four narrow elliptic slots are cut through the shell of the calabash quite near to the place of insertion of the handle and surrounding it at right angles to one another; through these slots are passed back and forth lacing ends of the cord wrapping firmly securing the bone handle. A layer of black cement composed of a gummy substance similar to black beeswax covers the wrapping. The gummy cement acts as a preservative and holds the cord in place. The gum of the *Ceroxylon andicola* is mixed with beeswax and powdered charcoal. In a similar manner the thread for wrapping the composite arrowheads and hardwood foreshafts is waxed. The proximal end of the handle is pierced by a small drilled hole through which is passed a two-ply cord. This is long enough to pass over the hand so that the instrument may be suspended from the hollow of the wrist and carried.

The calabash shell is more commonly employed by the Darien tribes as a rattle than are the shells of the gourd or coconut; the gourd is often unsuitable in shape and size, being also more fragile, while the coconut is less resonant. A shell rattle made from a coconut from which the meat has been removed is frequently employed by the natives of the San Blas coast in their dances. The shell is almond shaped and 6.9 cm. (2.7 in.) in sectional diameter. To it is attached in characteristic Tule fashion, as previously described, a wooden handle of black chonta palm wood beautifully wrapped with cord and waxed (Cat. No. 327387, U.S.N.M., pl. 8, No. 4). At the proximal end of the handle is a small wooden peg inserted as a place to attach a cord for suspension.

H. Pittier collected similar calabash rattles in the Sambu River valley, south Darien, where they were used by the Chocó to keep time

in their dances (Cat. No. 272591, U.S.N.M.). Similar calabash rattles were also collected by Brother Ariste Joseph at Fomeque, Colombia (Cat. No. 315024, U.S.N.M.).

Instead of shaking the rattle, the dancers among the Tule sometimes clap their hands together during the dance to obtain a rhythmic effect, while the Chocó have recourse to the drum. The distinction loses its significance when consideration is given to the variety of tonal and rhythmic phrasing obtained by the former in the manipulation of the musical rattle.

The small wooden rattle used by the Tule women as a baby pacifier is unique. The rattle is composed of a slender hollowed wooden cylinder 6.4 cm. (2.5 in.) in length and curved in boomerang fashion; to it is attached a wooden handle 6 cm. (2.4 in.) in length. The cavity of the rattle contains a few small canna seeds which have been inserted through the orifice now closed by the handle end. A pitched wrapping cord in crossed roll lacing fastens the handle to the rattle.

Drums.—An upright shell drum, "pila" (Tule), employed by the Chocó in accompaniment to their dances, was collected by the Marsh-Darien Expedition in the valley of the Rio Negro, south Darien. The instrument is made of the light balsa wood and stands 57.9 cm. (22.8 in.) in height; it is mounted on a pedestal base carved from the same block of wood, 27.4 cm. (10.4 in.) in diameter. The single drum head, 33.1 cm. (13 in.) in diameter, is made of peccary *(Dicotyles labiatus)* skin; the thin shell and bottom of the drum are carved from the same hollowed block of soft balsa wood.

The general outline of the drum is that of an irregular hourglass with the greatest constriction located at the bottom of the drum proper and just above the flaring pedestal support. (Cat. No. 327413, U.S.N.M., pl. 7, No. 1.)

The drumhead is held taut by a harness of two-ply rope cord which encircles the outer pendent edges of the peccary skin drumhead. A series of incisions pierce the outer pendent circumference of the skin, which for purposes of reinforcement has been lapped over so as to form a double layer. Through these incisions is passed the end of the rope-cord harness and then downward and around an anchor rope of tough fibrous vines encircling the shell, after which it is again drawn up through another incision in the overhanging skin. This process is continued until the circuit of the drum shell is completed. A wooden unweighted drumstick or beater is attached to the loose end of the rope harness.

The anchor rope of vines is placed about one-third the distance down the side of the drum shell and is held in position by a series of wooden wedges inserted under it from the top. From time to

time, as the drum head requires tightening, these wedges are tapped downward between the constricted side walls of the drum and the anchor rope. This mechanism is perfectly adapted to its purpose. No modern mechanical device can secure greater efficiency than is derived from this primitive conception.

The African voodoo wooden drum, as represented by those sent to the National Museum by Dr. W. L. Abbott, from Haiti, is similar in shape to the Chocó drum except that instead of being provided with a solid wooden pedestal base, the constricted bottom end is stuck into the ground as a support. The similarity between the Chocó and the voodoo drum of Haiti is strikingly indicated by the hollow funnel-shaped drum shell walls.

The single goatskin drumhead of the voodoo drum is pegged on; it is sometimes reinforced with rope winding around the neck of the shell. The employment, then, of the peg instead of the wedge, and the lack of the wooden pedestal base, distinguish the African voodoo drum from the Chocóan.

Columbus found shell drums in the possession of the Indian natives. Again, later, during the middle of the seventeenth century, the Caribs of the Antilles are recorded as making a drum from a hollow tree with a skin stretched over one end only. "In the early part of last century, among the Arawak of the Corentyn, St. Clair recorded a drum made of part of a hollow tree, with a skin tied over it at one end. The existence of such "one-sided" drums is indisputable and their relationship to the hollow cylinders with skin-covered end a closed one." [20]

Sapper narrates [21] how the aborigines of Costa Rica are accustomed at their dances to accompany their songs with a long, narrow hand drum covered only at one end with iguana (*Iguana tuberculata*) skin. A similar hand-drum is employed by the Chocó Indians of the Sambu River valley, in south Darien, where such a drum was collected by H. Pittier (Cat. No. 272595, U.S.N.M., pl. 7, No. 2). The drum, however, has two skin drumheads and a wooden shell resembling a doubly truncated cone or a small cask with tapered ends. The shell length is 25.7 cm. (10.1 in.) and the sectional diameter 14 cm. (5.5 in.).

The two skin heads are stretched smoothly over the ends of the shell, extending toward the middle from 2 to 2.5 inches, and are each held firmly in position by a three-ply lacing corn that passes like a shoe lace completely around the pendent rim of the drum head and extends from one to another of two parallel rows of holes drilled through the hollowed shell of the drum. Attached to this lacing and extending downward from each head toward the head opposite is a

[20] 38th Annual Report of the Bureau of American Ethnology, 1917, p. 466.
[21] Petermann's Mitteilungen, vol. 47, 1901, p. 39.

network of lacing resembling a looped fish net from 1 to 2.5 inches wide, terminating in a band of coarse fiber. From these bands a lacing passes back and forth at intervals of one-eighth to one-half inch apart. This lacing may be drawn taut at will, thus maintaining the desired rigidity of the two drum heads. A loop handle of coarse cord wound with a long strip of striped white and red cloth is fastened at its ends to the lacing bands encircling the drum shell. A drum stick is not employed with this drum, but is beaten with the fingers. This Chocó hand drum differs from the Carib two head shell drum (Cat. No. 291634, U.S.N.M.), on which the skin drum heads are secured to the wooden shell by two hoops cross-lashed with cord.

Tubular rattles.—A tubular rattle, "niglawala," (Tule), 84 cm. (32.7 in.) in length (Cat. No. 327460, U.S.N.M., pl. 6, No. 1), is employed by the San Blas coast Tule to keep time to their dances. As it is not long enough to strike one end on the ground, it is grasped in the hand and shaken up and down by the operator. The wood employed in its construction is a section of balsa wood carved from the pithy central core of *Ochroma limonensis*. Small stone pebbles are inserted and the lower end is stopped with wads of pitch; the upper end by a small wooden stopper which also transfixes an animal figure top piece. This animal carving is 5.2 cm. tall and 8 cm. long, representing possibly a tapir. It is painted in black, brown, and yellow, and stands on a platform with serrated lateral edges. The surface of the tubular rattle is painted in horizontal bands of yellow, blue, black, and red.

The similarity of this rattle to a tubular rattle (Cat. No. 315024, U.S.N.M.) collected by Brother Ariste Joseph at Fomeque, Colombia, where it is used by the Chocó, is noteworthy. This Chocó tubular rattle is 49 cm. (19.3 in.) long and 6 cm. (2.4 in.) in diameter. A section of hardwood that has been hollowed by burning is employed in its construction. A large number of stone pebbles are inserted and the ends of the cylinder blocked with disks of calabash shell or tin. Thirteen tiers of four pegs each are inserted in holes drilled through the lateral walls, so that the pegs cross at right angles to one another throughout the length of the cylinder. A prolonged sound is obtained by simply inverting the instrument and permitting the pebbles to run down over thin bars. It is used in the dances of the Chocó.

Roth mentions a similar instrument in use throughout the Guianas.

> Hollow cylinders, upward of 3 feet long, made of trumpet wood (*Cecropia*), bamboo, etc., are used for striking the ground to keep time for the dancing. I have seen them used by Wapishana, Makusi, Patamona, and Arokuna. . . . These dance sticks seems to have reached their highest development of workmanship and ornamentation throughout the area drained by the upper

Rio Negro, where the cylinder is not necessarily of the same diameter throughout, and may or may not be provided with a distinct handle. (p. 465)

The Chocó tubular rattle is provided with a loop cord handle attached to the ends of the rattle.

Trumpets.—A reed cornet, "kammu," (Tule). (Cat. No. 327392, U.S.N.M., pl. 6, No. 3), is used by the Tule of the San Blas coast. The instrument is fashioned from a hollow tube of bamboo 64.5 cm. (25.4 in.) long with a diameter of 3.6 cm. (1.4 in.). This reed cornet differs from the tubular reed cornet employed by the Guiana tribes in several particulars. The basal end is open, there are four finger holes burned through the lateral surface near the basal end; the front or operating end is closed with a black paste cement of the gum of *Ceroxylon andicola* and black beeswax and is reinforced by a series of cord wrappings embedded in the paste. There is a short mouthpiece of bone inserted into and embedded in the paste cement stopper at an acute angle diagonal to the longitudinal axis of the flute.

On comparing the reed cornet of the San Blas coast Tule with one from Dutch Guiana such as is employed by the Taruna (Cat. No. 278597, U.S.N.M., pl. 6, No. 4), a similarity of types becomes at once apparent. The Guiana cornet is a tubular section of 37 cm. (14.5 in.) in length with a sectional diameter of 3 cm. (1.2 in.). The instrument is open at the basal end an cut off at a diagonal to the longitudinal axis of the instrument. At the operating end of the instrument the central portion of the nodular septum is removed and a short section of hollow bone, the mouthpiece, is inserted. The juncture is sealed around the edges with a black cement paste. There is a hole burned through the surface of the instrument 3.3 cm. (1.5 in.) below the mouthpiece end. This is not a finger hole, but produces a vibration of the impinging air current and the consequent musical tone.

A peculiar variant of the reed cornet is the trumpet made from a young shoot of the guarumo (*Cecropia arachnoidea*), or "trumpet tree." The wood is light as cork and easily worked. One of these trumpets from Bocas del Toro province in western Panama was collected by Frank E. Reed (Cat. No. 253703, U.S.N.M.). The instrument measures 56.5 inches in length and not more than four inches in sectional diameter throughout its course. There are no finger holes and the basal end is open. A small wooden tube mouthpiece is fitted into the orifice at the top end of the trumpet. The similarity of this trumpet from western Panama to the bamboo cornet employed by the Tule is obscured by the difference in the materials used in its construction. It is, with the exception of the absence of finger holes, essentially the same instrument. The similarity of the Guiana and Tule reed cornets in method of construction is quite

striking. There are, however, no finger holes in the Guiana instrument. The instrument consequently, like the Bocas del Toro trumpet, has only one note.

Mead refers to a similar instrument having been employed by the Inca's army at the siege of Cuzco. The instrument is still used by a number of tribes in the Amazon region. Herrera narrates that Orellana on his voyage down the Amazon in 1541 was pursued by 130 canoes containing 8,000 Indians, and that the noise of their drums, cornets, and shouting thoroughly frightened his men.

Wind blown pipes.—Pan's pipes are common to the Peruvian uplands of South America and to the forested lowlands of the tropical eastern and northern slopes. Kroeber thinks that the pipes originated in the one of the two areas possessing the superior culture, that is, the Andean, and penetrated to the tropical lowlands later. Syrinxes of several pipes graduated in length form the decorative design on ancient Peruvian terra cotta vessels.

The pan's pipes of southeastern Panama known as "kammu purwi" to the Tule, are composed of several closed pipes arranged in series of graduated lengths. The pipes are bound together with cotton cord lashings looped around each pipe which are bound together in series of four and three. This arrangement of dividing the syrinx into parts is for the convenience of the operator, enabling him to suspend the two series of pipes from his neck by means of a connecting suspension cord.

The pan's pipes from the San Blas coast are played by two musicians in turns. Each player is equipped with a syrinx of seven pipes divided into two series of four and three pipes each (pl. 8, No. 5). Each operator arranges his pipes in a double row with two pipes overlapping. This arrangement of the pipes makes the arc of operation smaller and facilitates the increase of tempo. The two players alternate in producing the tones—first a higher and then a lower tone in rapid succession. The quality of the tone of the pipes resembles that of a steam calliope and is far removed from that of the pipe organ, which represents the final development in the graduated series of pan's pipes. The proximal end of each pipe is cut off squarely and the orifice serves as the mouthpiece, against the lateral edge of which the impinging air current from the mouth of the operator is directed. The vibrations thus set in motion produce the musical tones which vary with the length of each pipe. The pipes are fashioned from a variety of reed that has been hollowed and thoroughly freed from its pulpy contents. The pipes in the National Museum from the Tule are graduated in length from 46 cm. (18 in.) down to one-fourth that length, the lower tones being produced on the longer pipes and the higher tones on the

shorter ones. The bore averages the same for each series of pipes, although occasionally a syrinx is found that is graduated in length and sectional diameter as well. The basal end of each pipe is cut off diagonally to the longitudinal axis of the pipe and just below the closing nodular septum (Cat. No. 327402, U.S.N.M., pl. 8, No. 5). A protective simple roll wrapping surrounds the pipe, extending several inches downward from the open proximal end. The white cotton cord wrapping is dyed with alternate stripes of jet black pigment from the juice of the lana fruit (*Genipa caruto*), introducing an ornamental design in black and white.

Another similar series of pan's pipes from the Tule is unwrapped (Cat. No. 327399, U.S.N.M., pl. 8, No. 7). The pipes in this syrinx are graduated in length from 32.6 cm. (12.8 in.) down to approximately one-third that length. The pipes are not overblown to produce octaves, but produce a tone, monotonous in rhythm with but little tonal variation.

In Darien no double sets of pan's pipes are found with one set open at the basal end and the other set closed, such as were constructed by the ancient Peruvians, who placed open and closed pipes of equal dimensions opposite one another to produce octaves—the open pipes having the higher pitch.

Flutes.—The Tule flutes and pan's pipes are direct or end blown. They are constructed of pottery, of cane reeds, and of bone. One of the reed flutes from the San Blas coast is made of a section of reed from which the pith has been removed and the tube cleansed in running water to remove all shred. The flute, "kammu," (Tule), is 62.6 cm. (24.6 in.) long and 1.9 cm. (.7 in.) in diameter (Cat. No. 327395, U.S.N.M., pl. 6, No. 2). Two finger holes 3 cm. apart are burned through the surface of the reed near the closed basal end, from which the septum has not been removed. The nodular septum has been removed from the unstopped operating end, which is wrapped with cord to prevent splitting. The open end of the flute is inserted into the mouth of the operator, who operates the instrument from one side of his mouth with the aid of his tongue as a stopper, against which the air current impinges and produces the vibration necessary for sound production. The instrument has three notes and produces tones resembling those of a saxophone.

The pottery flute appears to be the more ancient form and it has practically given way to the flute fashioned from the wing bone (ulna) of the pelican, and the skull bones of the armadillo. There is a variety in the number of notes, some flutes producing two notes, some three, and others four notes. No true whistle is found in southeastern Panama, that is, if one defines a whistle as a one-toned instrument.

A bone flute, 16.1 cm. (6.3 in.) in length (Cat. No. 327390, U.S.N.M., pl. 7, No. 3), is made by the Tule Indians from the skull of an armadillo, "tede," (Tule), and the ulna, or long wing bone, of the pelican. The two bones are joined end to end and at the place of juncture are tied together with cord lacing and covered over with a black gummy paste resembling black beeswax. The mouthpiece is an orifice incised at the top of the skull. The basal portion of the flute for a distance of 4.7 cm. is not covered with cement paste, except at the basal orifice of the long bone, which has been been partially closed with cement, leaving a small finger hole. The flute thus becomes a two-note instrument; the lower tone is produced with vent closed, and the higher tone when the finger is removed from vent. The zygomatic arches at the sides of the armadillo skull have attached to them a string of yellow and white beads for suspension.

Another similar two-note bone flute, made by the Tule from the skull of an armadillo and the long wing bone of a pelican (Cat. No. 327389, U.S.N.M., pl. 7, No. 4), is in the Museum collections. The length of the flute is 15.6 cm. (6.1 in) and the diameter near the mouthpiece orifice is 4 cm. (1.6 in.).

A peculiarly shaped pottery flute similar in shape and size to the head of the bone flutes previously described, but lacking their extended length, was collected by the Marsh-Darien expedition from the San Blas coast (Cat. No. 327375, U.S.N.M., pl. 7, No. 5.). The flute is 7.2 cm. (2.8 in.) in length and 5.3 cm. (2.1 in.) in sectional diameter. The similarity of the headpiece of this pottery flute to the bone flutes (pl. 7.) in form, size, and in the placing of vents is so striking as to lead to the conclusion that conscious imitation existed on the part of the maker of either the pottery or the bone instrument. The pottery flute of southeastern Panama is fashioned after the type of pottery flute found in the ancient Doraskean graves of Chiriqui, in western Panama, described by Dr. W. H. Holmes in the Sixth Annual Report of the Bureau of American Ethnology, as follows:

> Our collection contains several dozen three-note whistles or pipes (flutes). Most of these represent animal forms which are treated in a more or less realistic way, but with a decided tendency toward the grotesque. Nearly all are of small size, the largest, an alligator form, having a length of about eight inches. In the animal figures the air chamber is within the body, but does not conform closely to the exterior shape. The mouthpiece and orifices are variously placed to suit the fancy of the modeler, but the construction and the powers are pretty uniform throughout. There are two finger holes, placed in some cases at equal and in others at unequal distances from the mouthpiece, but they are always of equal size and produce identical notes. The capacity is therefore three notes. The lower is produced when all the orifices are open, the higher when all are closed, and the middle when one hole—no matter which—is closed. (P. 164.)

The pottery three note flute collected by the Marsh-Darien expedition from the San Blas coast Tule (Cat. No. 327375, U.S.N.M., pl. 7, No. 5) is clearly of the same type as the Doraskean pottery flutes described by Doctor Holmes and was probably made by the same people. Although collected on the San Blas coast, the instrument is superior in the paste and slip employed, in firing, and design, to the pottery ware of the living Darien tribes. It appears that the crude Tule two-note armadillo head bone flute is a borrowed design modeled after this ancient Chiriqui pottery instrument of the same design. The Tule pottery flute has two laterally placed lutings, each in the form of a loop for attachment of suspension cord. The mouthpiece orifice is placed at the top margin. One of the finger holes is situated on the lateral surface in line with one midway between the mouthpiece orifice and the basal end (pl. 7, No. 5); a second finger hole is placed at the center of the much constricted basal end, so that the capacity is three notes, and the fingering is similar to the Chiriqui flute. A transversely placed diaphragm divides the flute into two equal compartments. It has been impossible to determine the function of this centrally placed diaphragm, as the "whistle" mouthpiece orifice supplies the necessary surface edge to set the impinging air current vibrating.

Although the similarity in form of the armadillo head bone flute of Darien and of the pottery flute is such as to lead to the supposition that the latter is a life modeling in pottery of the armadillo, it is, instead, probably patterned after a shell drum. Doctor Holmes describes a similar instrument as follows:

> There are a number of shapes copied from other musical instruments or from objects of art, such as vases. A very interesting specimen, modeled in imitation of a drum, has not only the general shape of that instrument, but the skin head, with its bands and cords of attachment, is truthfully represented (p. 165).

The resemblance to a drum noted in the pottery flute (whistle) from Chiriqui figured and described by Doctor Holmes is no more striking than is a similar resemblance to a drum to be noted in the pottery flute from the San Blas coast. The conclusion must follow that although the Tule do not use a drum, their ancestors or the tribe formerly occupying their coastal slope were familiar with the drum and modeled pottery flutes in similar design. The Tule of to-day constructs a bone flute resembling the ancient pottery flute, although all knowledge on his part of the former use of the drum has vanished. The fact that a tribe has flutes and no drums is not proof that their earliest instrument was not the drum. There are well-known cases of the "dropping out" of musical instruments. In Guatemala the marimba has become a national instrument. Prof.

O. T. Mason, referring to this instrument, says: "In one case we have a musical instrument imported by negro slaves given to the Indians with its native African name and abandoned by the negroes themselves."

A five note bone flute, "kala," (Tule), is made by the Tule from the wing bone (ulna) of a pelican, "korki," (Tule), (Cat. No. 427398, U.S.N.M., pl. 33). The instrument is 20.5 cm. (8.1 in.) in length and consists of nothing more than a hollowed long bone into which have been burned four finger holes placed equidistant along the flat top surface of the bone at its basal end, which is closed with cement. The flute is end blown, as are all of the Tule flutes. The orifice at the operating end is partially stopped with a black cement resembling beeswax, leaving only a small opening for the air current from the mouth of the operator. A rectangular incision is cut into the flat lateral surface side in line with the finger holes, one centimeter from the orifice at the mouthpiece or operating end. The air current from the operator's mouth impinges on its edges and sets into motion the sound vibrations.

A conventional ornamental design consisting of transversely crossed diagonal lines is incised into the lateral surface of the bone in line with the four finger holes or vents.

Necklaces composed of 16 bone flute pendants strung on a beaded cord suspended about the neck are numerous along the Caribbean slope in southeastern Panama. In method of construction, ornamentation of lateral walls, and mode of operation the flutes, "kala" (Tule), are identical with the bone flute just described. The pendent flutes (Cat. No. 327396, U.S.N.M., pl. 33) are suspended from the cord necklace at their head or operating end. A hole is drilled through the bone in transverse diameter, and a cord is drawn through the partially stopped orifice, being embedded in the cement stopper. This process is continued until each of the 16 bone flutes has been strung on the necklace as pendants.

Vocal music.—Musicians among the Tule are ordinarily men. This is especially true in regard to vocal music. The singers of songs are usually trained professional men who enjoy a certain prestige because of their training in the traditional tribal songs. Women may play on the pipes for their own amusement and possess special musical rattles, but on social occasions the flutes and the pan's pipes are played by the young men. The more special and ceremonial use of music, especially vocal music, is intimately bound up with religion, magic, the healing arts, and many of the food-getting and social activities. A musical hand rattle is employed to accompany the songs sung to insure success in the growing of crops and at the harvest, but it is too noisy to employ in curing a fever.

Miss Densmore, who has made a study of Tule Indian music, is of the opinion that recognized standards of music are shown by the statement made to her by Chief Igwa Nigdibippi, who said certain persons were "good singers," while others "could not sing." The songs have a compass of three to six tones, though the melody is usually within a compass of five tones. Each song concludes with a prolonged tone.

Miss Densmore has succeeded in recording several songs as sung by the chief. Two are given here, cited in the Smithsonian Miscellaneous Collections,[22] as follows:

SONG FOR RELIEVING HEADACHE

I bring sweet-smelling flowers and put them in water,
I dip a cloth in the water and put it around your head.
Then I bring a comb, part your hair smoothly and make it pretty.
Everyone comes to see you get better,
And I tell you that you will never be cold again.
Go to sleep and dream of many animals, mountain lions and sea lions.
You will talk with them and understand what they say.
When you wake you will be a doctor, like me.

SONG OF A DYING MAN TO HIS WIFE

The fever returns. I drink the medicine and throw it on my body,
The fever grows worse. I am going to die,
My breath grows difficult, my face is pale;
The medicine does not help me. I am going to die.
Talk to my two children about me, after I am gone.
I leave the coconut farm for my children.
After I die you will go to the coconut farm and take the children with you.
There you will think of me.
If people go to our coconut farm and cut the trees
You must track them and find who did it.
I am leaving the plantain farm.
There will be plenty of property for the children.
I leave the small fruits, the mangoes, the bananas, and other fruits,
Think of me when you gather them.

The careful observer, Wafer, narrates at length his observations regarding the songs, dances, instruments, and ceremonies associated with the music of the natives of the interior.

The women have dancings and merriments by themselves, when their husbands' pastimes are over; for they never feast nor play together with the men. But they will drink by themselves till they are fuddled.

They hum also when they dance, which they do many times, 30 or 40 in a ring, men only together. They stretch out their hands, laying them on one another's shoulders. Then they move gently sideways round in the same circle, and shake all the joints of their bodies with a wriggling antic gesture, as they move along the ring.

They pipe and drum often, even at working times; but their dancing they use chiefly when they get together to make merry.

[22] Vol. 77, No. 2, p. 119.

Among the Chocó Indians it is the women who perform the harvest and other ceremonial dances. They sing an accompaniment the while they dance in single file around some centrally placed ceremonial object, such as a decorated wooden lodge on which are painted a number of spirit images (pl. 34). Each woman places her right hand on the woman immediately in front of her, forming an unbroken encircling chain.

SUMMARY

Tribal boundaries.—There are two distinct aboriginal ethnic stocks occupying southeastern Panama—the Chocó and the Cuna or Tule. The former inhabit the southern or Pacific slope of the isthmian divide, while the Cuna and the related Tule share the mountainous interior, the northern or Caribbean slope, and the island-studded San Blas coast. The Tule are separated from the linguistically related Indian tribes dwelling to the west and north, the Coiba, Talamanca, and Guaymie, by the beaten path of the old "Gold Road" and the Canal Zone. The Chocó are likewise hemmed in on the southwest by the Pacific; consequently the only remaining corridors of migration and culture diffusion are the great northward flowing rivers of South America, such as the Rio Atrato, the San Juan, and the islands of the Caribbean Sea. Geographical factors, then, indicate that the origin and former habitat of the two aboriginal ethnic stocks of Darien must have been in South America, although the mountainous interior of southeastern Panama together with stretches of low-lying jungle land tended to separate the migration routes of entry and to prevent the commingling of the two stocks. The Chocó Indians of the southern or Pacific slope, and the Tule of the northern or Caribbean slope of Darien, differ markedly in language, physical characters, and culture traits.

The Cuna and related Tule are shorter in stature, have a broader head, and, according to Doctor Hrdlička, resemble in detail of physical characteristics the Maya of Yucatan and the ancient Peruvians.

Comparison of culture traits.—Linguistically the Cuna Tribes, including the Tule, are related to the Chibcha of Colombia rather than to the Quechua-speaking Peruvians. Possessing a marginal and less intense culture than that of the ancient high culture centers, they show an increasingly large number of those traits and arts that reach their highest development in the Chibchan culture area centering about Bogota, Colombia. The Tule with the related Cuna are an Andean people. They occupy permanent multiple family houses of cane and thatch with wattled walls of upright

sticks, but have no stone work or buildings. They possess agricultural traditions, both men and women sharing the labor in the fields, where they raise maize, cassava (yuca), plantains, and yams; they trade with neighboring tribes in hammocks, which they weave, and in gold; and with the Panamanian coast towns in coconuts, turtle shell, ivory nuts, and bananas. No domestic animals for draft and transport; dyeing limited, but wearing of sandals and loom weaving of cloth from native grown cotton generally practiced; realistic wood carving of life forms; conventionalized art design on textiles in appliqué work, formerly totemic; art designs in close twill weave, but also openwork basketry; former organization of matrilinear clans with hereditary property rights passing through the female line; tribal and clan confederacies, compact and highly organized. No copper, but a rudimentary culture in silver and gold; no metal alloys or iron casting; tobacco smoking in form of pipes and cigars, but no coca chewing; chicha brewed from maize, palm fruit, and yuca; fishing rather than hunting an auxiliary to agriculture; multiple trident fish arrows; blowgun superseded by iron arrowhead and spear; a partially developed caste system, although individual merit recognized in popular election of chiefs; barricaded community council houses; women potters; monogamous marriages; no evidences of books or calendars; numerical system and mnemonic pictographic writing developed; no sacrifices to sun or moon goddess, but large number of bad and good spirits recognized and modeled in art images; sorcerers and healers intimately associated with conventional art designs; wood carvings of mythical spirit healers in European garb; diffusion of concept of white messianic teacher and of a flood myth general.

The historical factor, that is, the coming of the white man and the consequent closing to the Tule of all ethnic relations with the western Panamanian tribes, is comparatively recent. That in pre-Columbian times the influence of Maya culture was strong is apparent from a tabulation of culture traits similar to those of the Maya, which survive after centuries of cultural infiltration from the tropical lowlands of South America. The area occupied by the Cuna and Tule is gradually shrinking before the devastating inroads on the population of epidemics and the encroachment by Negroes and white Panamanians from the east and west.

The Chocó Indians are taller in stature than the Cuna, and have a correspondingly higher head index: they are not subject to partial hereditary albinism, which is common among the Tule of the Caribbean slope. Their facial features and physical characters generally resemble those of the Indians of the South American Guiana tribes.

The linguistic stock to which the Chocó belong is distinct but similar to the Chibchan stock language in Colombia. Culturally, the Chocó possess a number of traits strikingly typical of the Venezuelan and Guiana Carib and Arawak.

Fishing rather than hoe culture prevails; forest-grown foods, such as yuca (*Manihot esculenta*), yams, and plantains are grown; cane and thatch houses built, but walls are not wattled; one family rather than multiple dwellings, as among the Tule; polygamous marriages; hereditary property rights through male descent; no loom work, but scanty clothing of bark cloth; preference for silver rather than gold ornaments; no tattooing, but bodily painting general. Decorative arts find expression in conventionalized wood carvings of household and other spirit or god images; life form patterns conventionalized in basketry design; dyeing in black caruto pigment from juice of lana fruit, and in red anatto (*Bixa orellana*), on bark cloth, matting, basketry, and wood carving; bodily ornamentation with multiple strands of beads, seeds, and teeth; no nose rings worn, but earplugs and silver pendants; basketry headdress and coronets worn by women in dance. Musical instruments of percussion, such as shell drum, but no pan's pipes or wind-blown instruments similar to the Tule. No compact tribal organization or village settlements; population less dense than on San Blas coast; less pride in purity of tribal blood, resulting in less hostile contact and wars with surrounding peoples, but leading to hybridization with advancing Negro elements instead.

Ethnic relationships to Central and South American cultures.— Summarizing in a general way the material culture of aboriginal southeastern Panama as contrasted with that of northern Central America some generalizations may be made. Wherever the culture traits of the Chocó differ from those of the Tule and Cuna it is the latter stock rather than the former that represents a marginal culture related to that of the Maya on the north and of the Andean peoples on the south. Most of the traits possessed by both the Caribbean slope tribes, Cuna and Tule, and by the Chocó of the southern isthmian slope are typical of the South American lowland forest culture of the Caribs and Arawaks. The stone arrowheads and feathered shafts of northern Central America are supplanted by arrows with heavy foreshafts. Former employment of poisoned blowgun darts to stun game general; travel and transport entirely by boat; much hexagonal weave openwork and lapped-edge basketry; loomwork, but also beaten bark breech clouts and aprons; pottery coarse and crude; calabash sieves and drinking vessels; vocal rather than instrumental music; polygamy; purification of menstruating women; traces of the couvade, divination, and use of the bull roarer; but absence of masks, books, calendars, temples, kings, coca chewing,

priesthood, and other traits characterize aboriginal southeastern Panama as distinct from northern Central America and from the Andean culture area as well, although possessing many traits marginal to them.

BIBLIOGRAPHY

ALLEN, GRACE. Reaction of Eight San Blas Indians to Performance Tests. American Journal of Physical Anthropology, vol. 9, No. 1, 1926.

ACOSTA, JOAQUIN. Compendio historico del descubrimiento y colonizacion de la Nueva Granada en el siglo decimo sexto. Paris, 1848.—The writer stresses the fact that after nearly 350 years of contact with the whites and negroes the Indians of the Gulf of Darien have preserved their independence, language, and culture.

BANCROFT, H. H. History of Central America, vol. 1, 1501–1530. San Francisco, 1883.—A good summary of the history of the early Spanish exploitation of southeastern Panama.

————. The Native Races: vol. 1, Wild Tribes; vol. 4, Antiquities. New York, 1874–75.—A fairly extensive compilation of the early writings and observations by the Spanish and others.

BARRETT, JOHN. Facts about Panama. Monthly Bulletin of the Bureau of American Republics, February, 1904.

————. Monthly Bulletin of the Bureau of American Republics, July, 1904.—A historical sketch of the Isthmus of Panama.

BORLAND, FRANCIS. The History of Darien, giving a short description of that country and an account of the attempts of the Scotch nation to settle a colony there. Glasgow, 1779.—The Scotch settlement was located at Caledonia Bay, on the southeastern or Caribbean shore.

BELL, ELEANOR YORKE. The Republic of Panama and its People, with Special Reference to the Indians. Annual Report, Smithsonian Institution, Washington, 1909.—A brief study of the country according to provinces.

BULLARD, ARTHUR. Panama: The Canal, the Country and the People. New York, 1914.—An extensive popular account of the resources, geography, history, and customs of the natives of the Republic of Panama.

BURR, W. H. Republic of Panama. The National Geographic Magazine, vol. 15, No. 2, February, 1904.—A brief summary of the geographic conditions prevailing on the Isthmus.

COLLINS, FREDERICK. The Isthmus of Darien and the Valley of the Atrato Considered with Reference to the Practicability of an Interoceanic Ship-Canal. Journal American Geographical Society, vol. 5, 1874.

CHAMBERLAIN, ALEXANDER F. Linguistic Stocks of South American Indians with Distribution Map. American Anthropologist, N. S., vol. 15, No. 2, 1913.—Should be consulted in connection with the work of Thomas and Swanton on the aboriginal languages of Central America and Mexico.

GISBORNE, LIONEL. The Isthmus of Darien in 1852. London, 1853.—The writer attempted to cross the isthmus from Caledonia Bay to the Gulf of San Miguel on the Pacific coast. There is a good description of the San Blas and Mandinga Indian Tribes, including a discussion of their physical characteristics. Albinos were observed among the coast Sasardi. Large numbers of mixed bloods were observed at the villages of Chepigano, Yavisa, and others. The marshy region in the vicinity of the Savannah River was found to be impenetrable.

GOLDMAN, EDWARD A. Mammals of Panama. Washington, 1920.—The standard work on the animal life of the Isthmus of Panama.

HEYE, GEORGE G. Notes on Darien Ethnography. Indian Notes, 1924, vol. 1, No. 4, pages 199–200.—Based on a collection of objects from various tribes in southeastern Panama.

HARRIS, REGINALD G. The San Blas Indians. American Journal of Physical Anthropology, vol. 9, No. 1, 1926.

———— The White Indians of the San Blas and Darien. Science, vol. 61, No. 1583. May, 1925.

———— The Scientific Importance of the White Indians. World's Work, 1925, vol. 49, pages 211–217.

HILL, ROBERT T. The Geological History of the Isthmus of Panama and Portions of Costa Rica. Bulletin of Museum of Comparative Zoology, Harvard College, vol. 28, No. 5, Cambridge, 1903.

HOLMES, W. H. Ancient Art of the Province of Chiriqui. Sixth Annual Report of the Bureau of American Ethnology, Washington, 1888.—An exhaustive study of the ceramic and metallurgical arts that reached such a high degree of development in the province of Chiriqui in northwestern Panama in pre-Columbian times.

HRDLIČKA, ALES. The Indians of Panama and Their Physical Relation to the Mayas. American Journal of Physical Anthropology. Vol. 9, No. 1, 1926.

———— Contribution to the Study of the "White Indians." American Journal of Physical Anthropology. Vol. 9, No. 1. 1926.

JOHANSEN, HOLGER. Panama Canal Zone. A handbook of the principal trees and shrubs of the Ancon and Balboa districts, Panama Canal Zone; divided into sections according to location of plants. Washington, 1925.

JOYCE, THOMAS A. Central American and West Indian Archaeology. London, 1916.—An excellent compilation from source material.

MARKHAM, WILLIAM. Unpublished manuscript in the Tioga Point Museum, Athens, Pennsylvania.—Contains an excellent account of the San Blas or Tule Indians of the Caribbean coast. 1924.

MARSH, RICHARD O. Blond Indians of the Darien Jungle. World's Work, 1925, vol. 49, No. 3, pages 483–497; also an article entitled "The Mystery of the White Indians," World's Work, vol. 49, No. 4, pages 633–645.—Based on information gained by the writer while in charge of expeditions that explored the interior of Darien and the San Blas coast in 1923, 1924, and 1925.

———— Unpublished manuscript and diary treating of the San Blas uprising in 1925, together with observations on their ethnology. On file in the Division of Documents of the United States National Museum.

MARTYR, PETER. De Orbe Novo. Translated from the Latin by Francis August MacNutt. New York, 1912. Vol. 1, page 220.

PINART, A. L. Les Indiens de l'état de Panama. Revue d'ethnographie. Mars–Avril, 1887. Paris, 1887.

———— Vocabulario Castellano-Dorasque, etc. Paris, 1890.

———— Vocabulario Castellano-Cuna, etc. Paris, 1890.

———— Vocabulario Castellano-Chocoe. Paris, 1897.

———— Vocabulario Castellano-Guaymie. Paris, 1892.

———— Colleccion de Linguistica y etnografia Americanos. Vol. 4. San Francisco, 1882.

PITTIER, HENRI. Little Known Parts of Panama. National Geographic Magazine, vol. 23, pages 627–652. Washington, 1912.

PRINCE, J. DYNELEY. Prolegomena to the Study of the San Blas Language of Panama. American Anthropologist, N. S., vol. 14, pages 109–126, 1912.

———— A Text in the Indian Language of Panama-Darien. American Anthropologist, N. S., vol. 15, No. 2, 1913.

PRINCE, J. DYNELEY. Grammar and Glossary of the Tula Language of Panama. American Anthropologist, vol. 15, No. 3 (n. s.), 1913.

PUBLICACIONES del "Boletin" de la Real Sociedad Geografica. Excursion a la Costa de San Blas, en Panama. Madrid, 1916.

RESTREPO, ERNESTO. Estoudios sobre los aborigines de Columbia. Bogota, 1892. Contains observations on the tribes of the Isthmian interior, especially of the Guaymie and Paya Tribes. The writer did not penetrate to the Caribbean coast of Darien.

ROTH, WALTER E. An Introductory Study of the Arts, Crafts, and Customs of the Guiana Indians. 38th Annual Report Bureau of American Ethnology, 1917.

SAPPER, KARL. Beitraege zur Ethnographie des suedlichen Mittelamerika. Petermanns Mitteilungen, vol. 47, page 25, 1901.

SELFRIDGE, T. O. Reports of Explorations, Surveys, etc. Government Printing Office, Washington, D. C., 1874. Contains extensive notes on the Sasardi, Sucubti, and Paya Indians of Darien and of the Chepo district.

———— Smithsonian Miscellaneous Collections, vol. 77, No. 2, pages 77–83; 112–127. Contains selected notes and observations relating to the ethnology of the Chocó, Cuna, and Tule Tribes; also a study of Tule music by Miss Densmore.

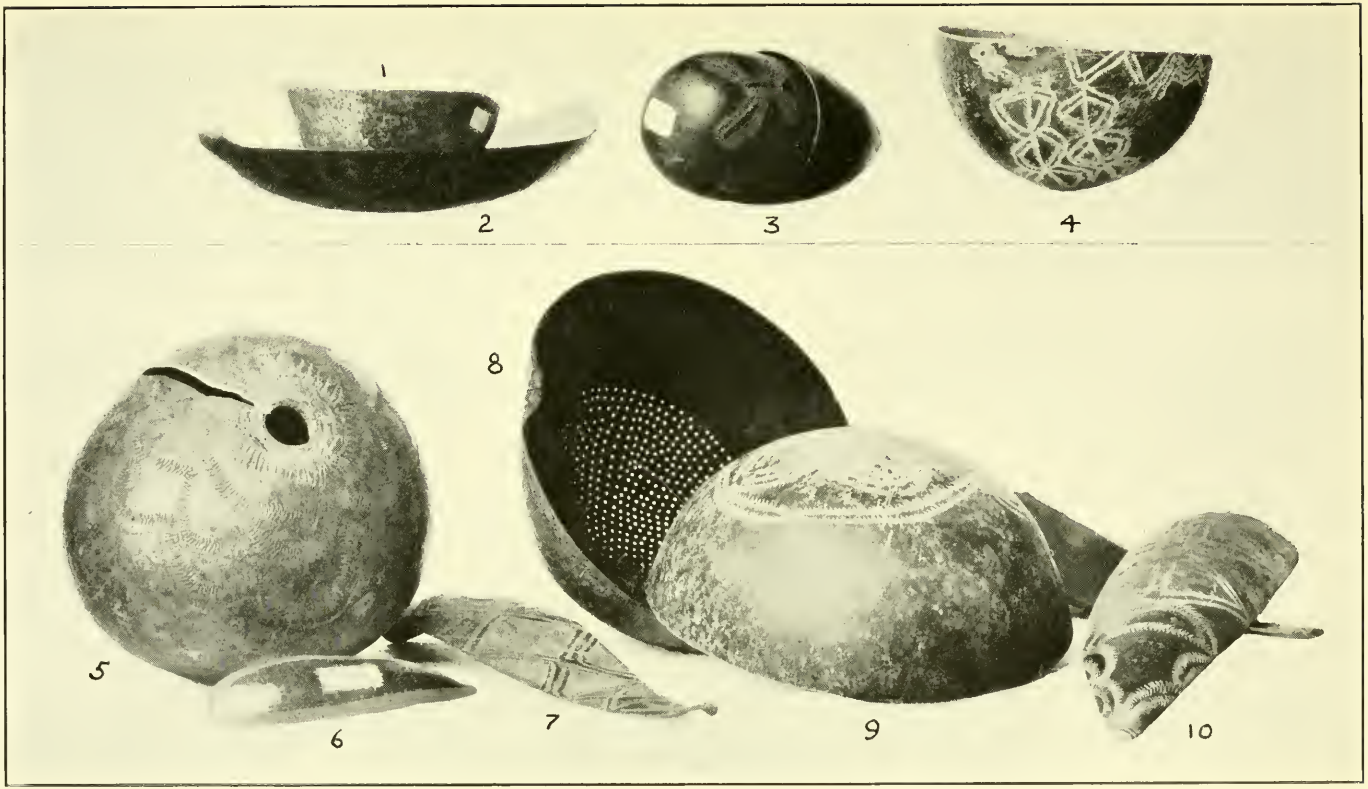
STEESE, J. G. San Blas Indians Leaving Their Isolation. Bulletin of the American Geographic Society, vol. 47, page 773. New York, 1915.

THOMAS and SWANTON. Indian Languages of Mexico and Central America, 1911. Bulletin 44, Bureau of American Ethnology. The best published work on the languages of Central America. The monograph should be consulted in connection with Chamberlain's distribution map of the linguistic stocks of the South American Indians.

VERRILL, A. HYATT. Panama, Past and Present. New York, 1921. A rather comprehensive popular account of the history, resources, geography, plant and animal life, and of the various peoples of Panama.

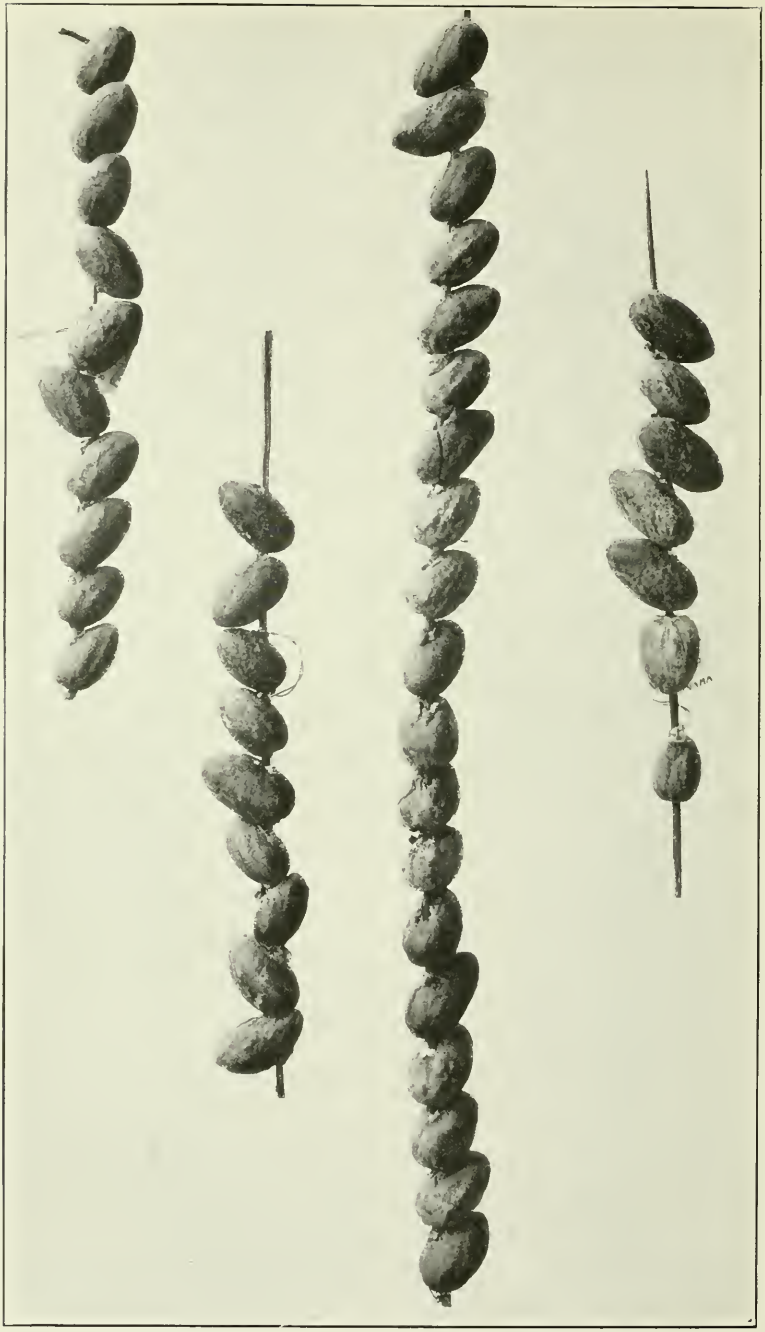
WAFER, LIONEL. A New Voyage and Description of the Isthmus of America. Reprinted from the original London edition of 1699 by George P. Winship. Cleveland, 1903. The author was a keen observer of local flora and fauna and of the daily life and social organization of the aboriginal Indian tribes among whom he lived as hostage for two years. The best early account concerning the tribes of the interior, near the headwaters of the Savannah River and of the "Samballoes" (San Blas) coast Indians.

———— Zeitschrift fuer Ethnologie. 1873, page 311. Valuable for the discussion relative to village sites, population, family names, and kinship terms of the San Blas coast Indians.



DECORATED CALABASH DISHES AND UTENSILS. DARIEN INDIAN TRIBES

FOR EXPLANATION OF PLATE SEE PAGE 35

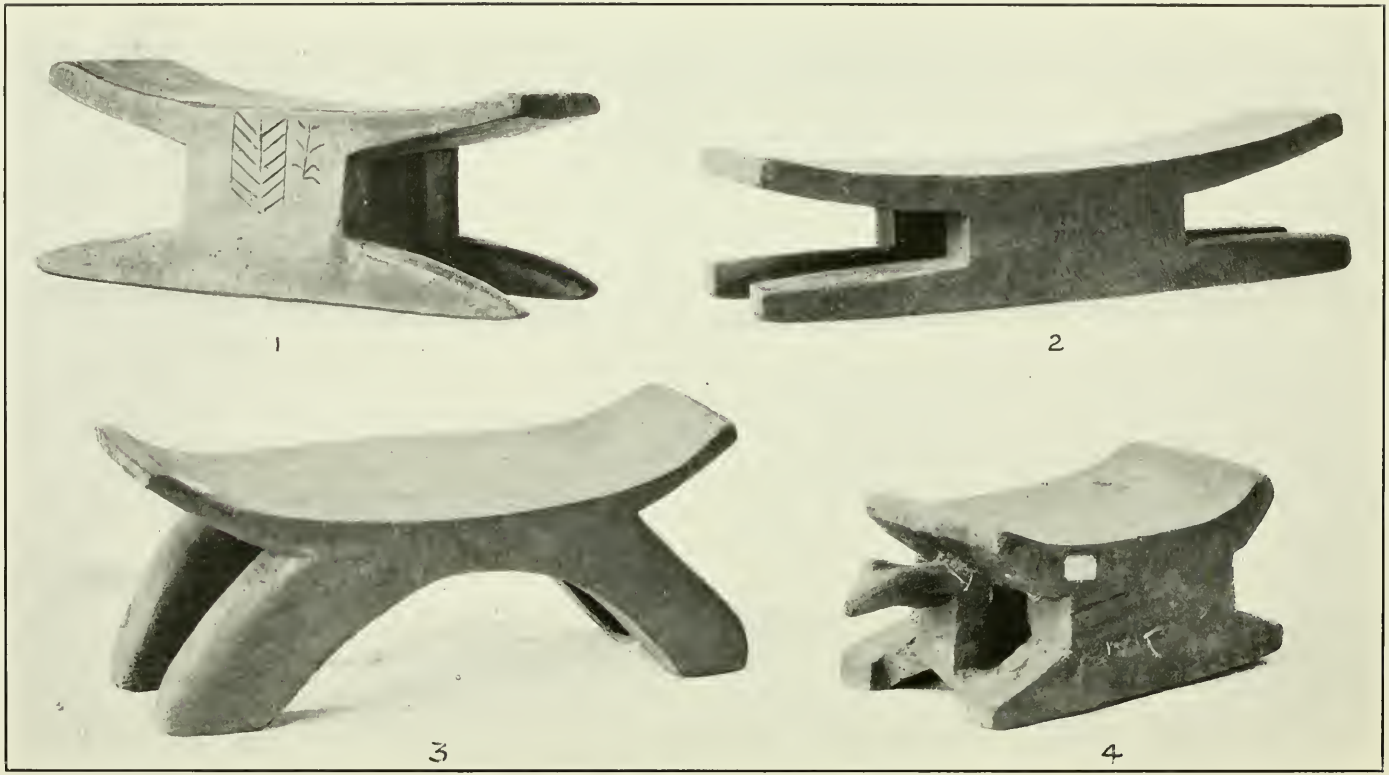


CANDLENUT ILLUMINATING TORCHES. TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 33

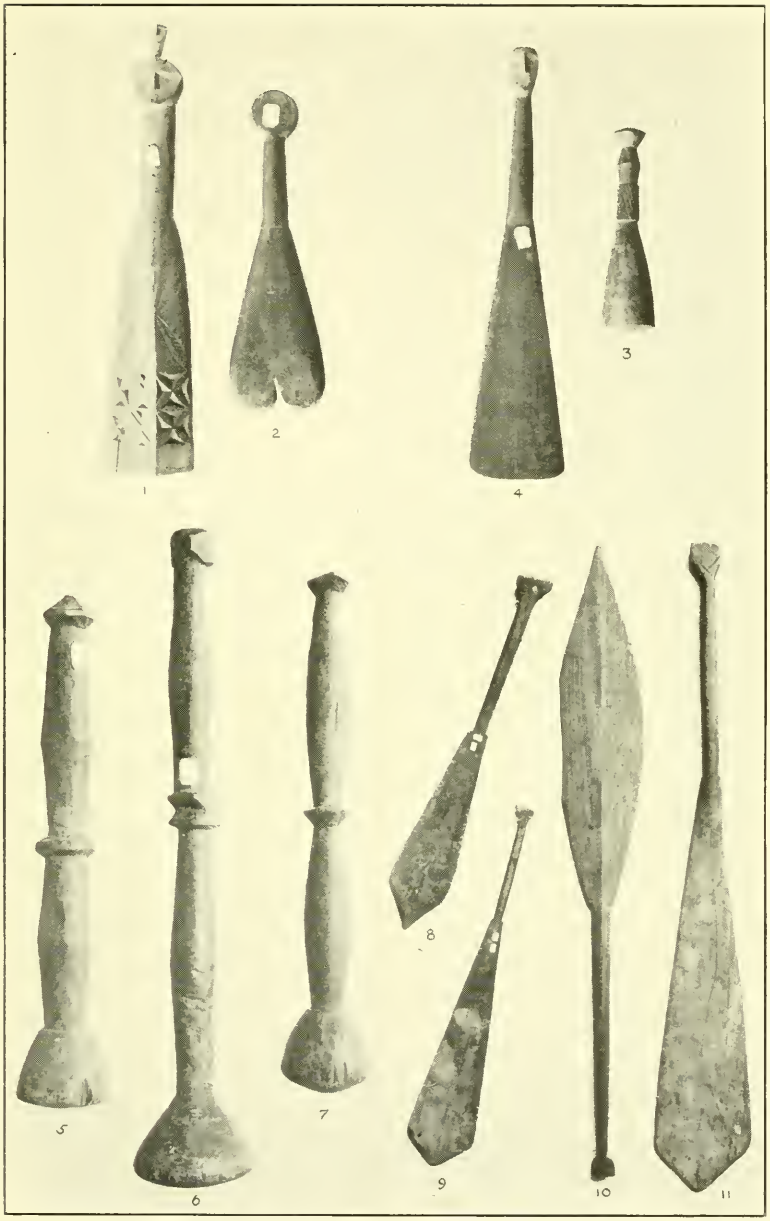
CUNA, TULE, AND CHOCÓ DWELLING GROUPS

FOR EXPLANATION OF PLATE SEE PAGE 32



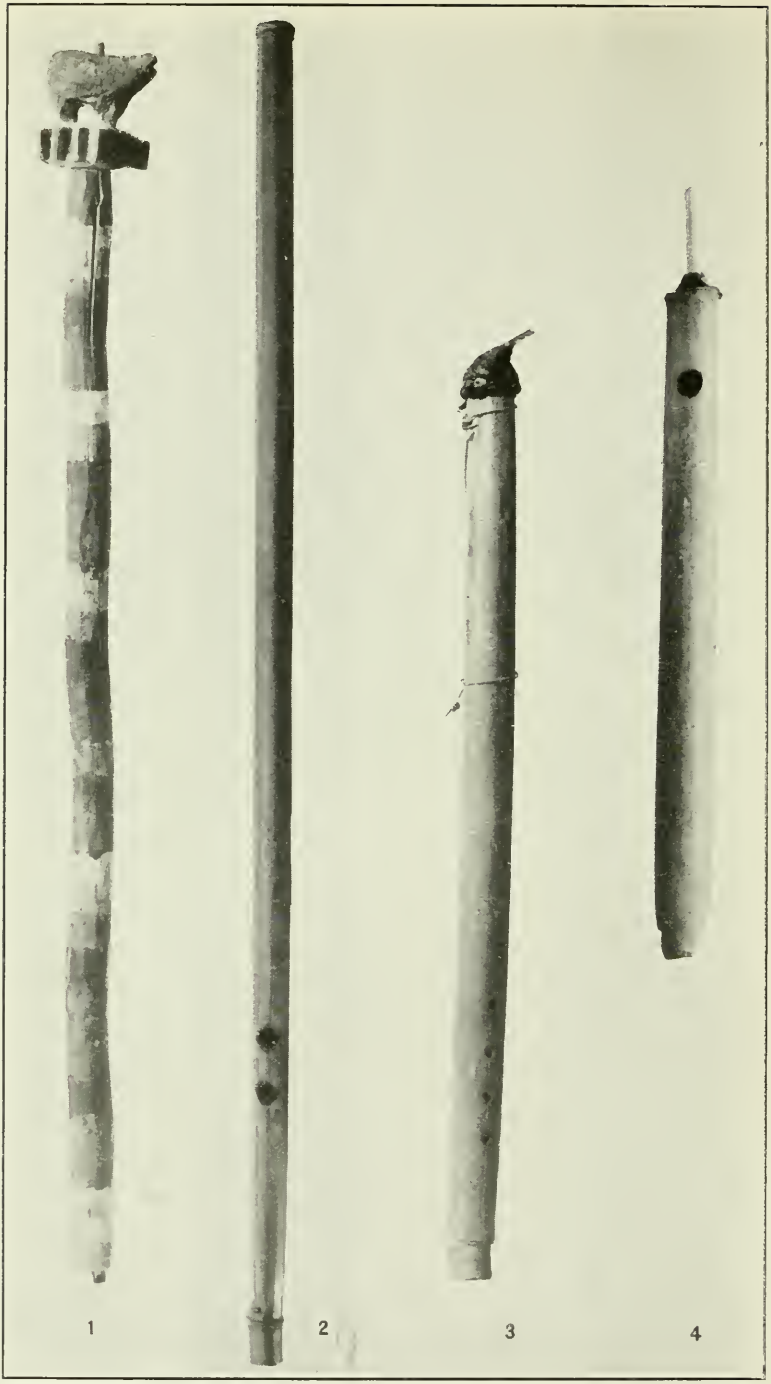
STOOLS. CHOCÓ AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 45



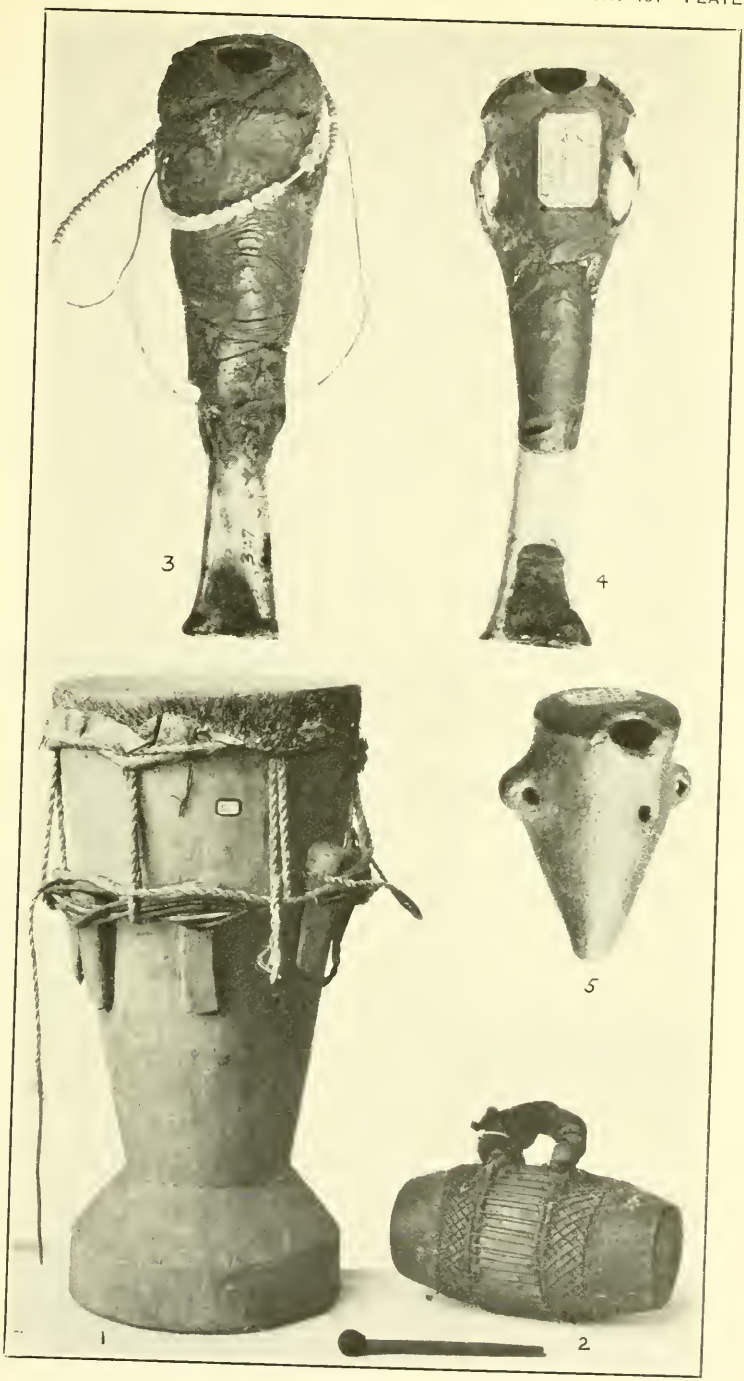
BEATERS, STAMPERS, PESTLES, AND PADDLES OF WOOD. PANAMA INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 39



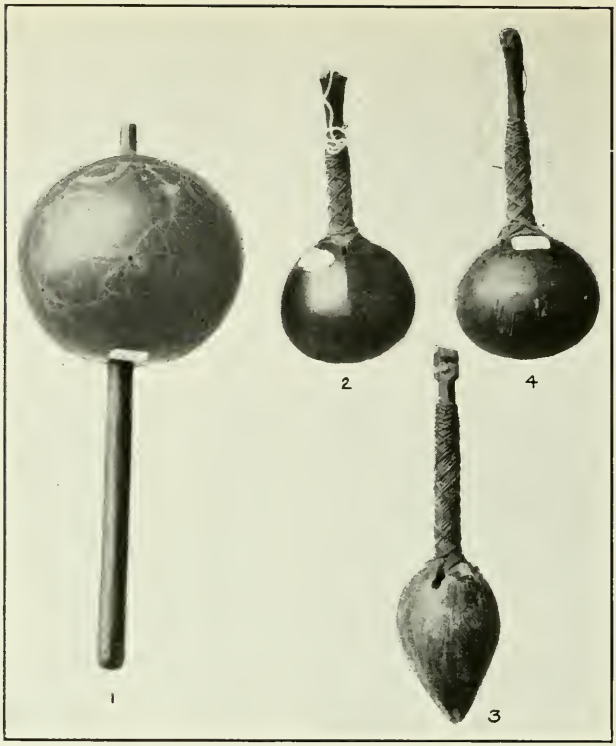
TUBULAR MUSICAL RATTLE, REED FLUTE, AND CORNETS. CHOCÓ AND TULE INDIANS

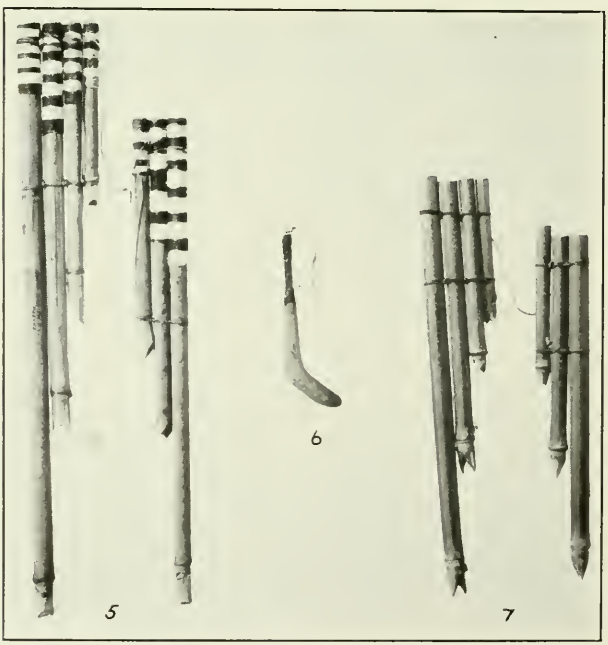
FOR EXPLANATION OF PLATE SEE PAGE 120



BONE AND POTTERY FLUTES; UPRIGHT AND TUBULAR DRUMS.
CHOCÓ AND TULE INDIANS

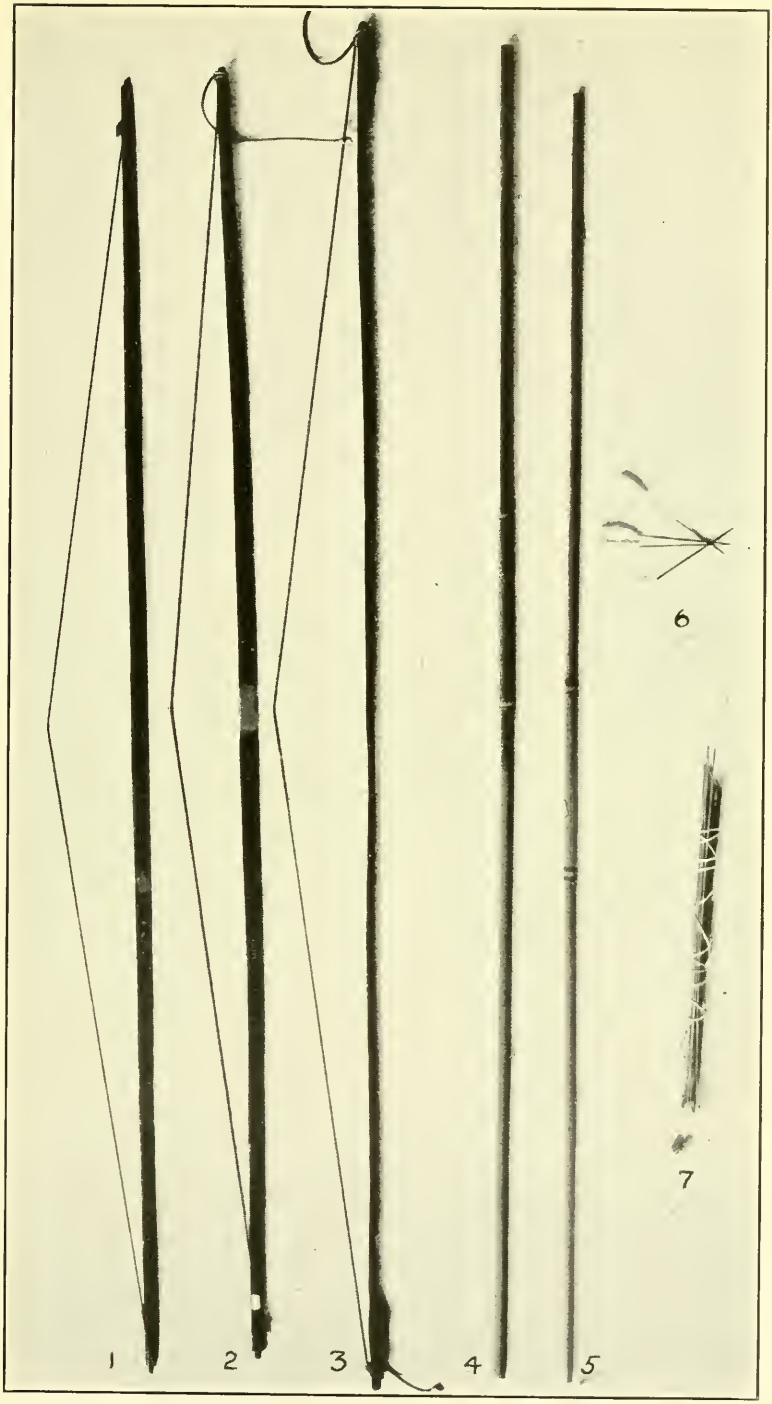
FOR EXPLANATION OF PLATE SEE PAGE 124





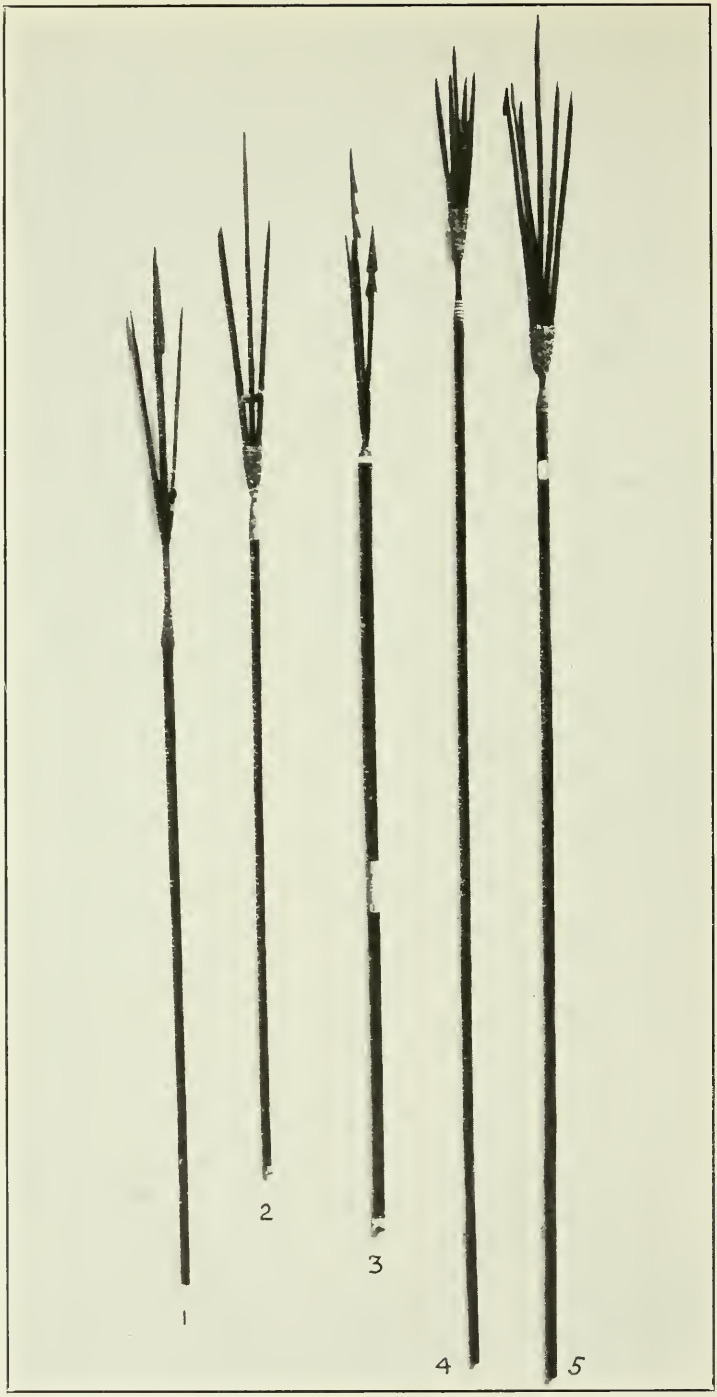
CALABASH, WOOD, AND COCONUT HAND RATTLES; PAN'S PIPES. CHOCÓ AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 122



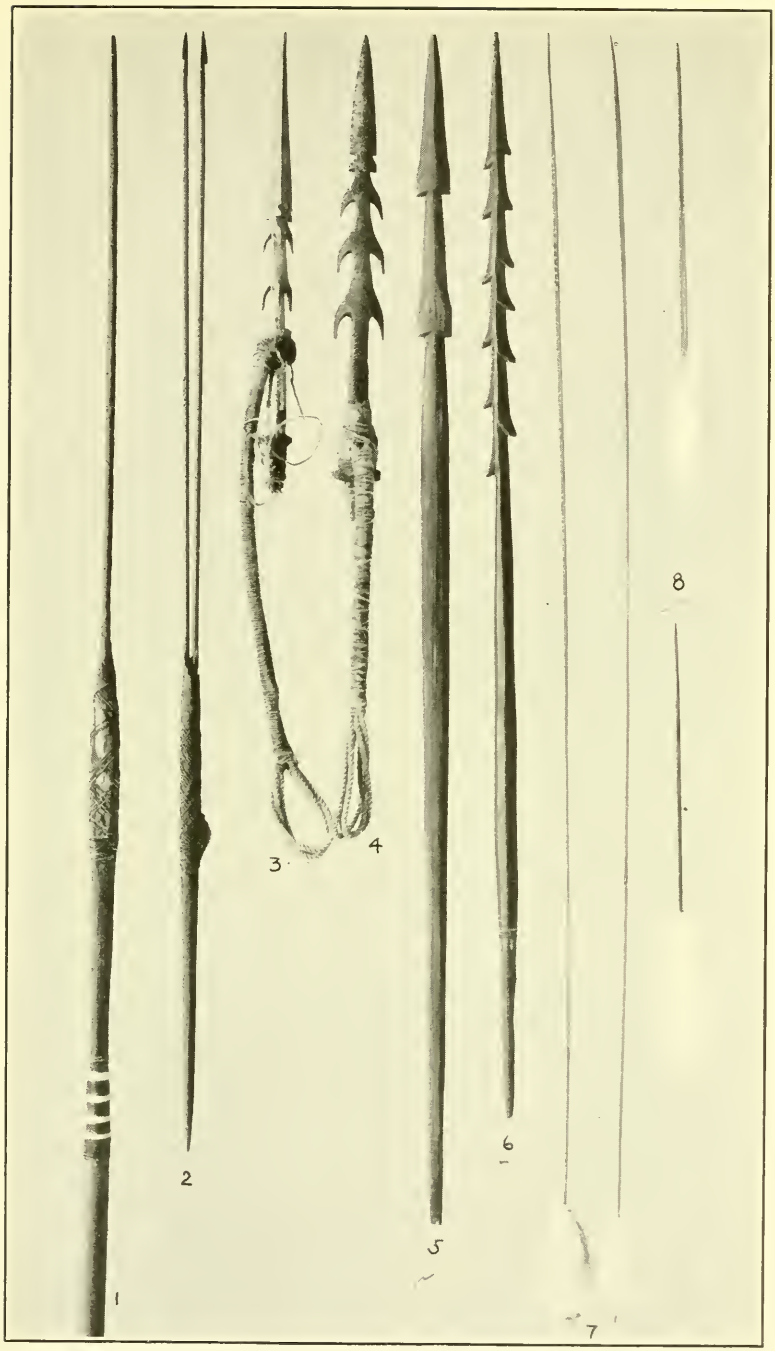
PALMWOOD BOWS; BLOWGUNS AND DARTS. CUNA AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 58



COMPOSITE HEAD FISH ARROWS. SAN BLAS TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 60



HARPOONS, SPEAR, AND ARROWHEADS; BLOWGUN DARTS. TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 57

CHOCÓ INDIAN TYPES, RIO CHICO, CENTRAL DARIEN

FOR EXPLANATION OF PLATE SEE PAGE 100

POTTERY COOKING VESSELS; POTTERY TOY ANIMAL FIGURINES. CUNA AND TULE INDIANS

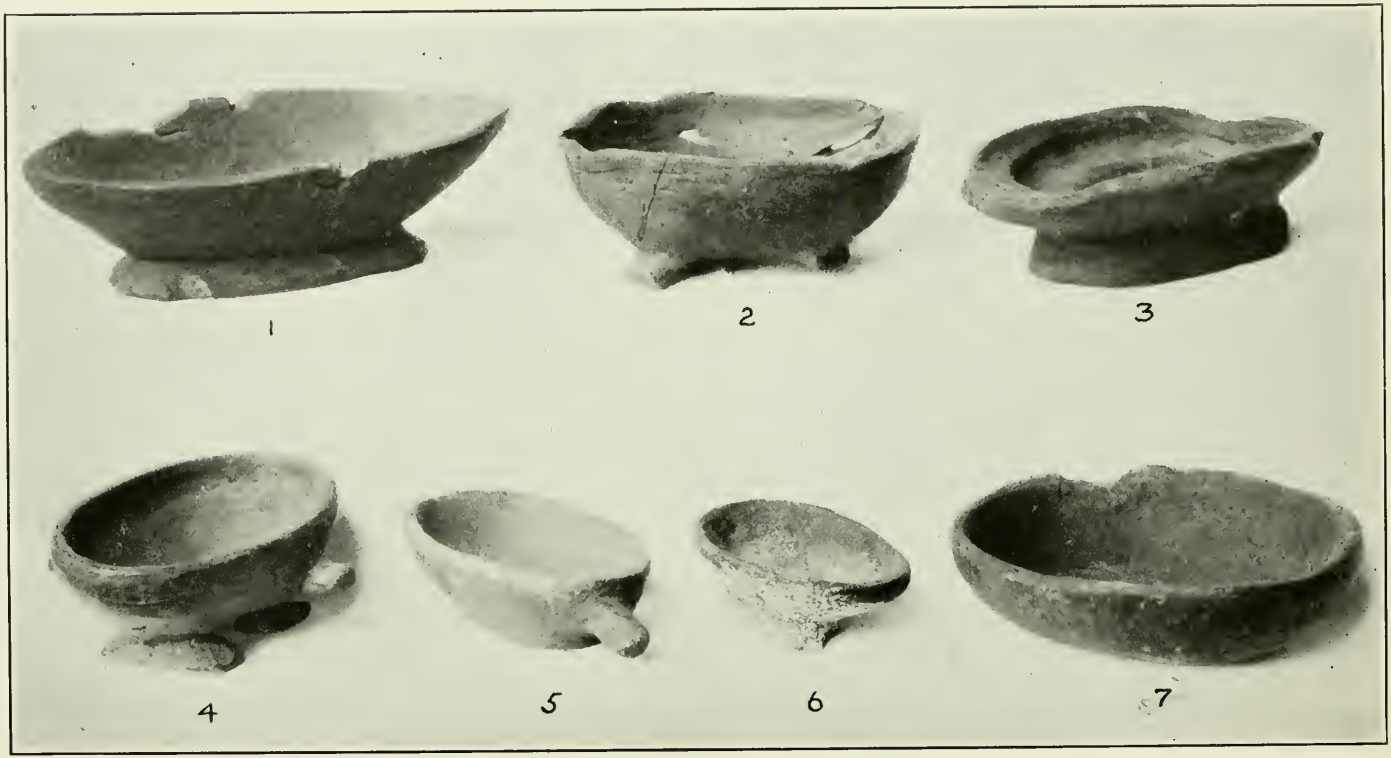
FOR EXPLANATION OF PLATE SEE PAGE 47

STOVE-CENSERS; PITCHER VASE; EFFIGY CANTEENS; POTTERY TOY HUMAN FIGURINES. CUNA AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 67

POTTERY VASES AND BOWLS. TULE AND CUNA INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 68



TYPES OF SHALLOW POTTERY BOWLS. CUNA AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 68

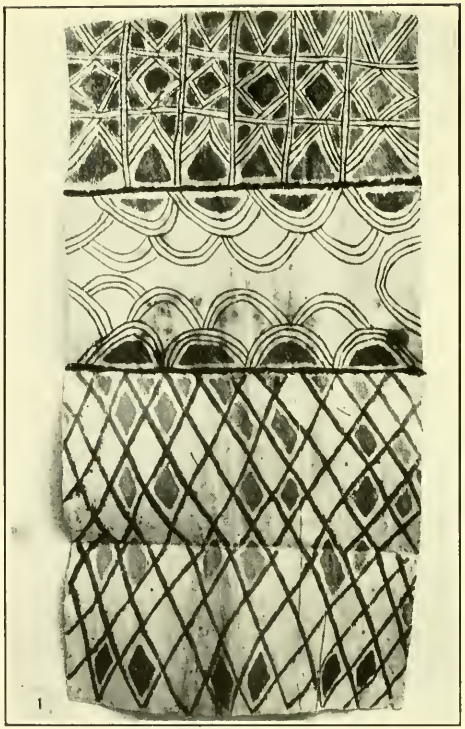
CUNA GIRL, SUCUBDI VILLAGE, CENTRAL DARIEN

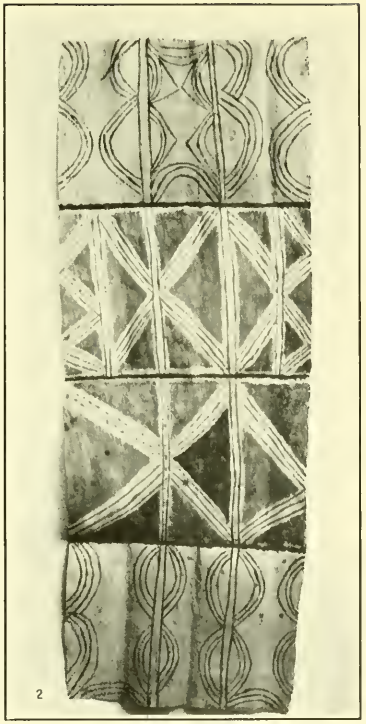
TULE GIRLS, ALIGANDE, SAN BLAS COAST

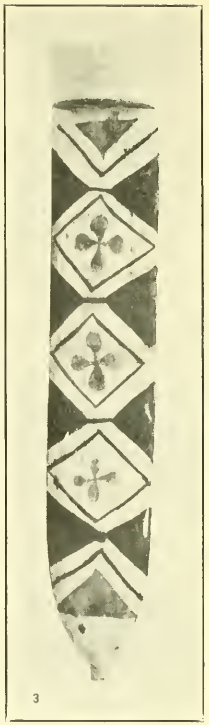
FOR EXPLANATION OF PLATE SEE PAGE 21

HUMAN EFFIGY WOOD CARVINGS REPRESENTING SPIRITS AND SPIRIT HEALERS. CHOCÓ, CUNA, AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 75

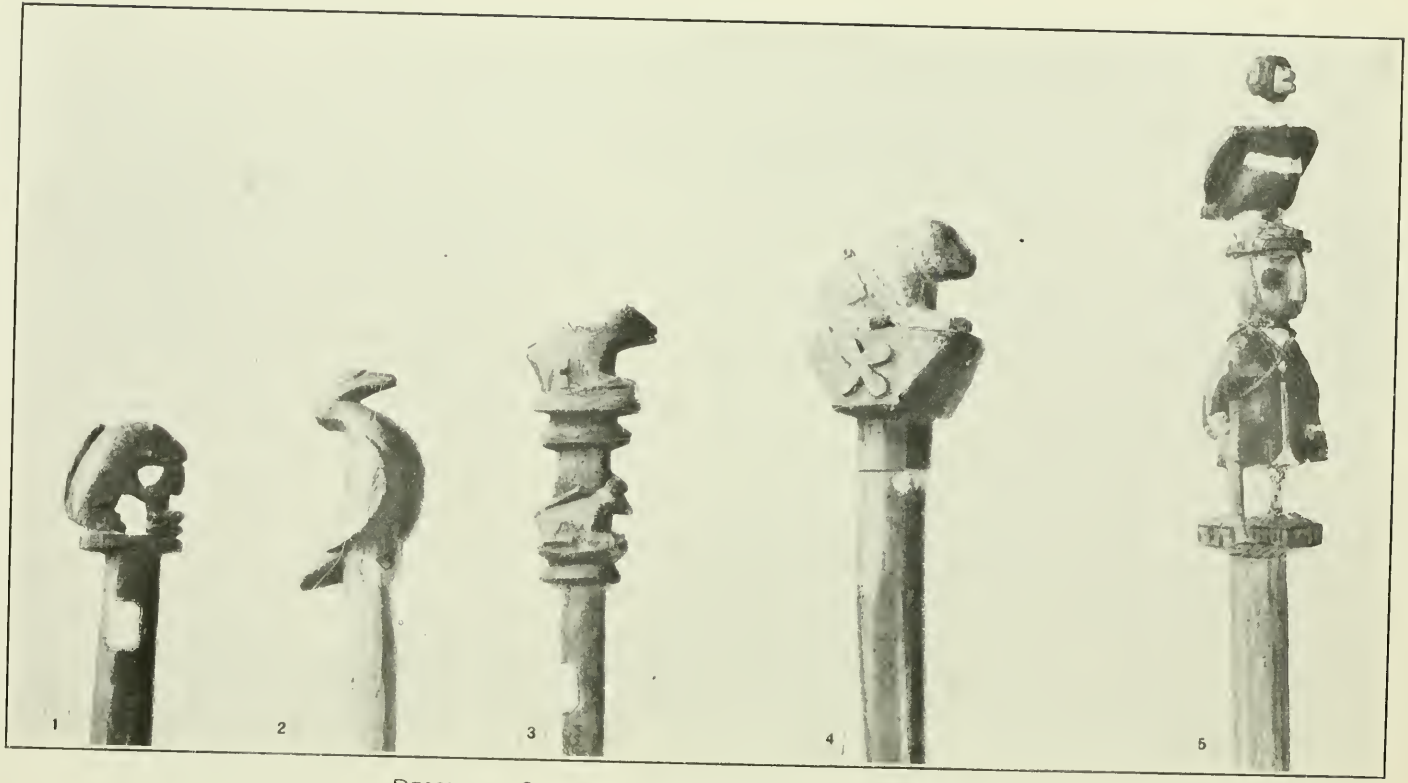






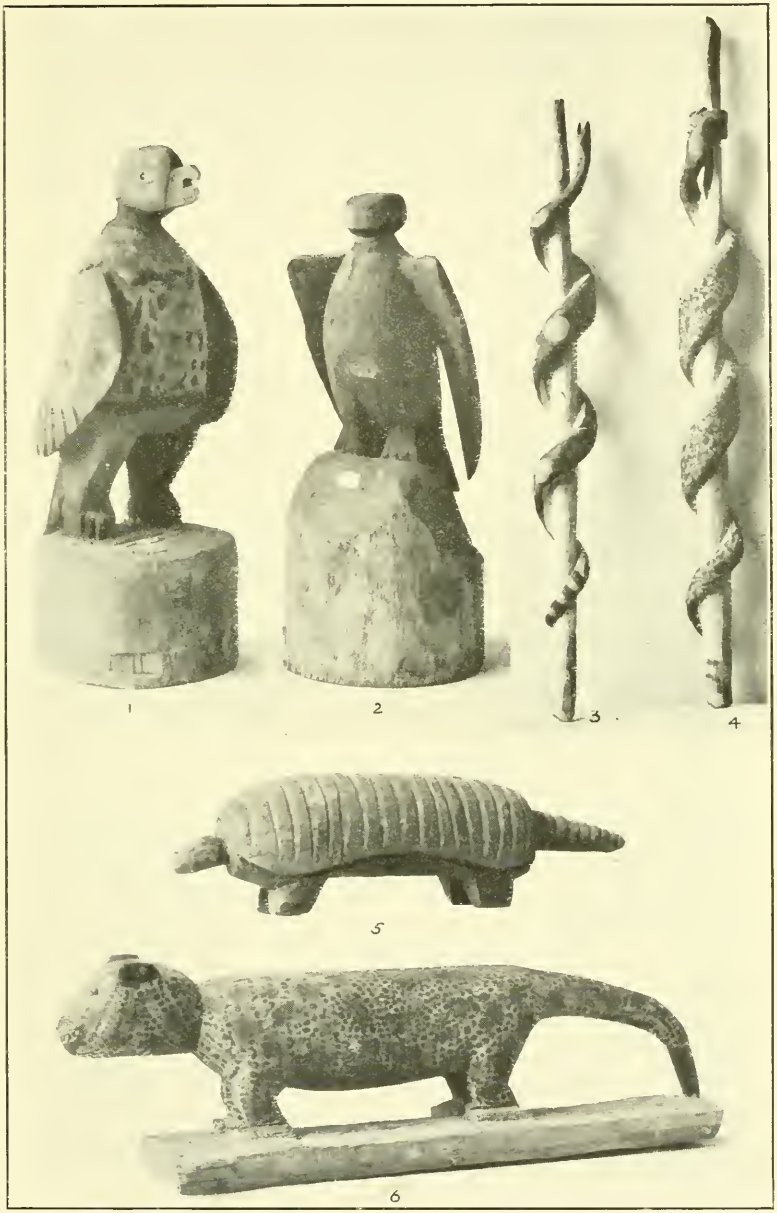
BARK CLOTH MATS; MACHETE SHEATH. DARIEN INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 105



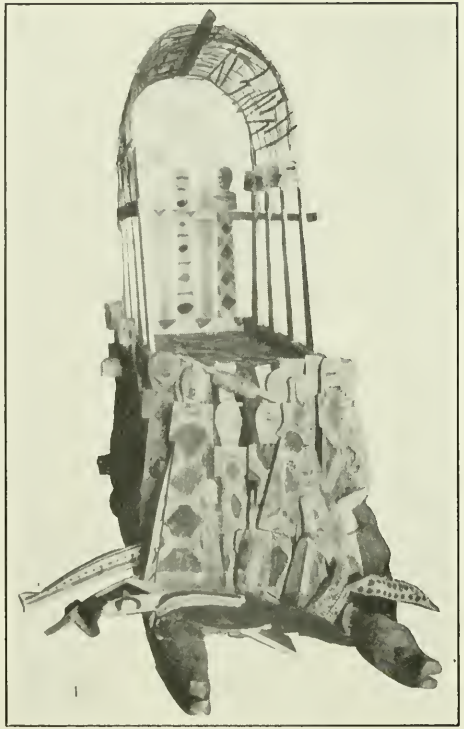
DECORATED CANE-HEAD WOOD CARVINGS. TULE INDIANS

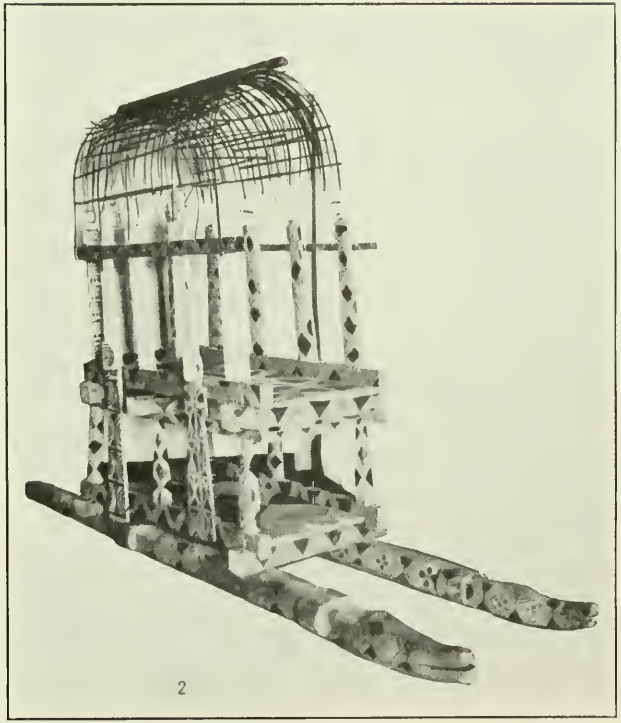
FOR EXPLANATION OF PLATE SEE PAGE 79



BIRD, REPTILE, AND ANIMAL FIGURE WOOD CARVINGS. CUNA AND CHOCÓ INDIANS

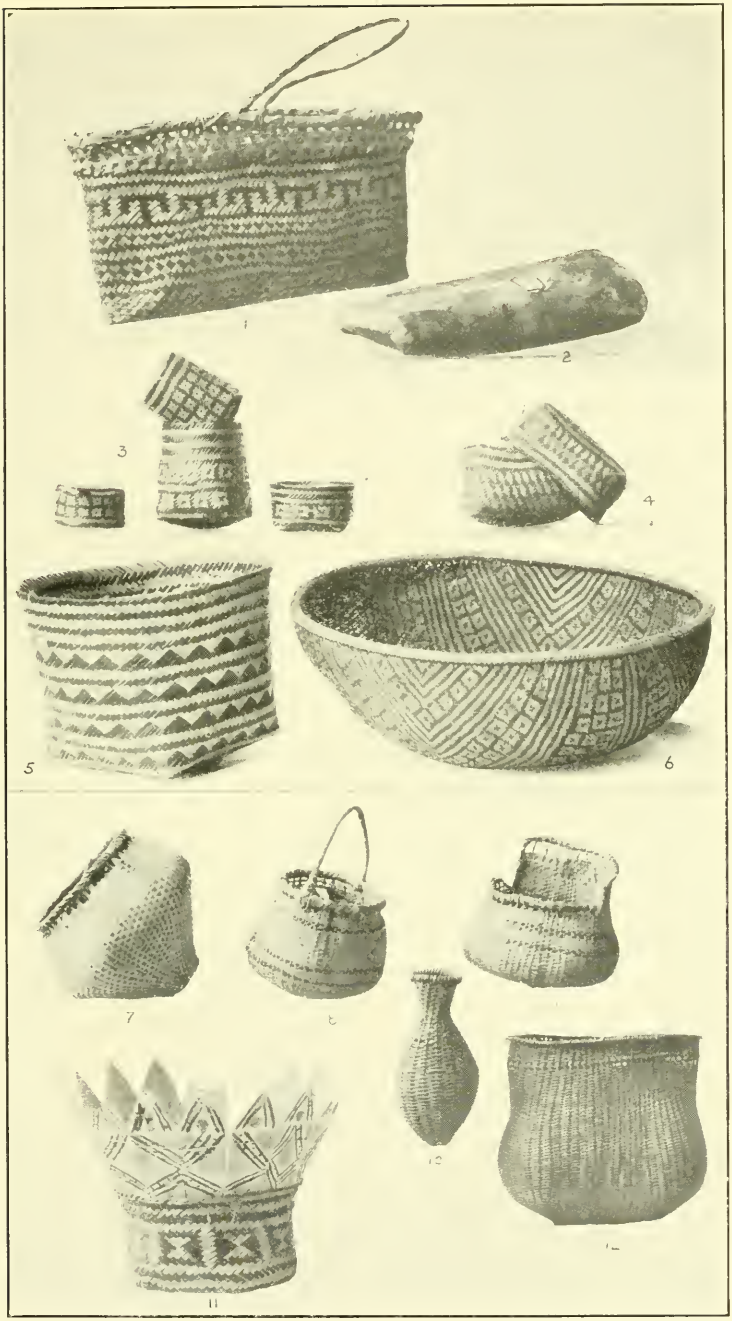
FOR EXPLANATION OF PLATE SEE PAGE 80





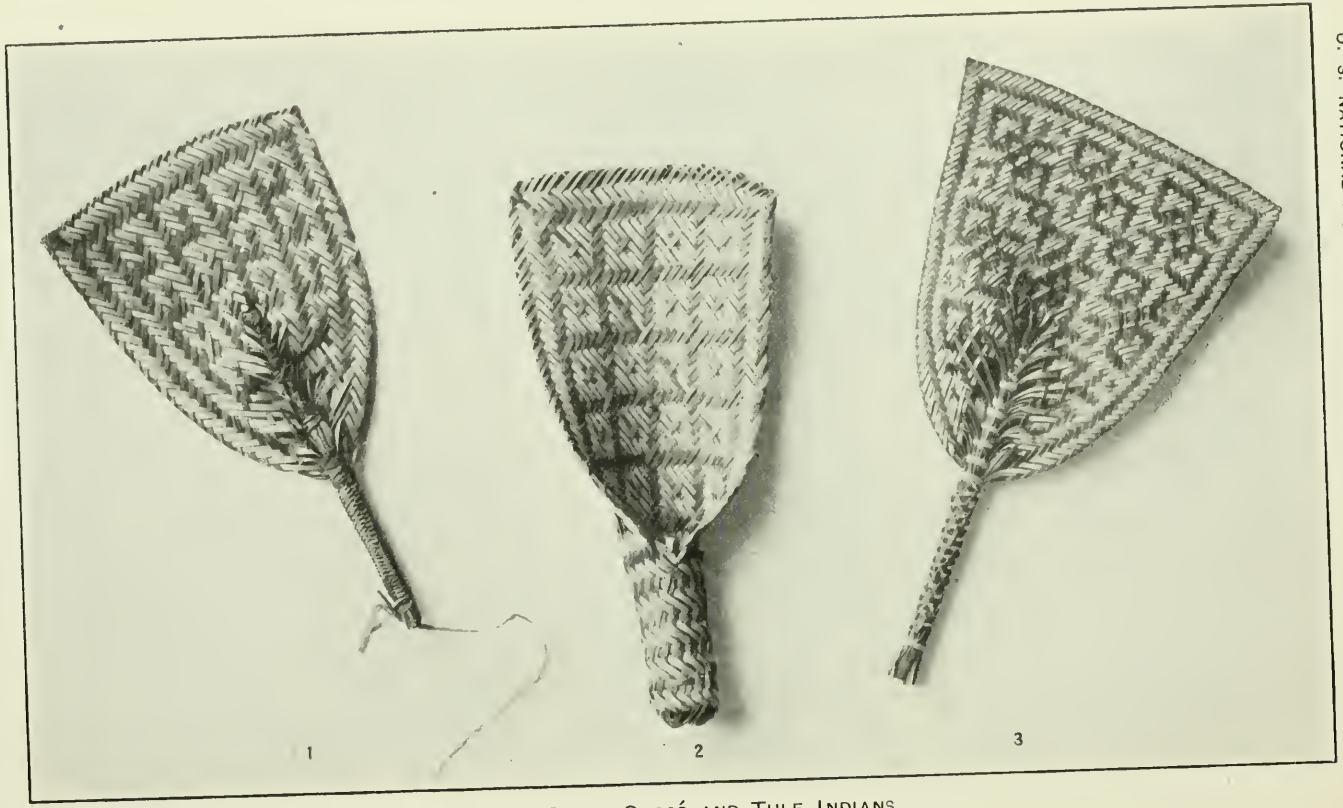
MEDICINAL LODGE AND SPIRIT HOUSE. CHOCÓ INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 86



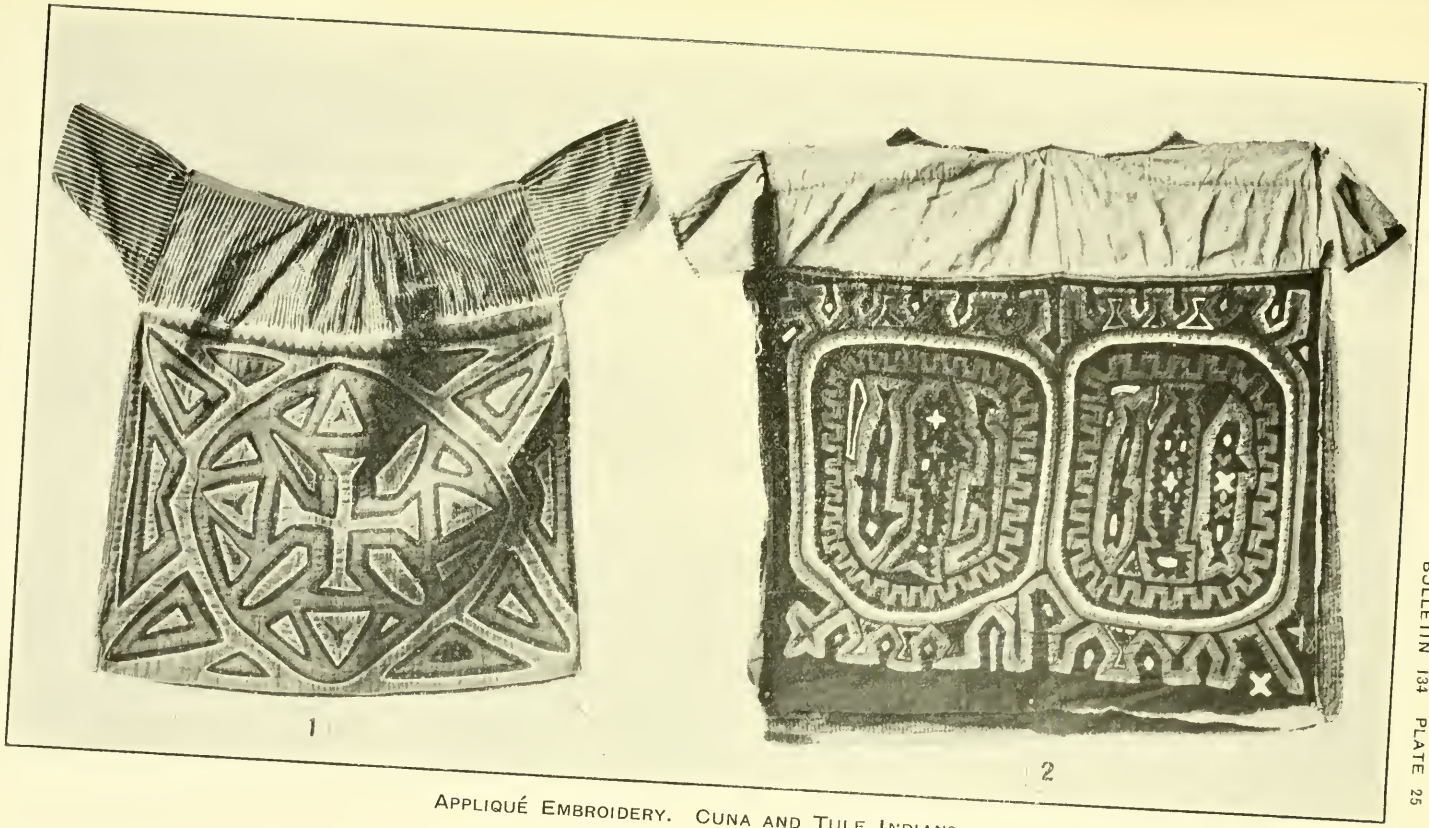
BASKETS AND BASKETRY OBJECTS. CHOCÓ AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 92



FIRE FANS. CHOCÓ AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 93



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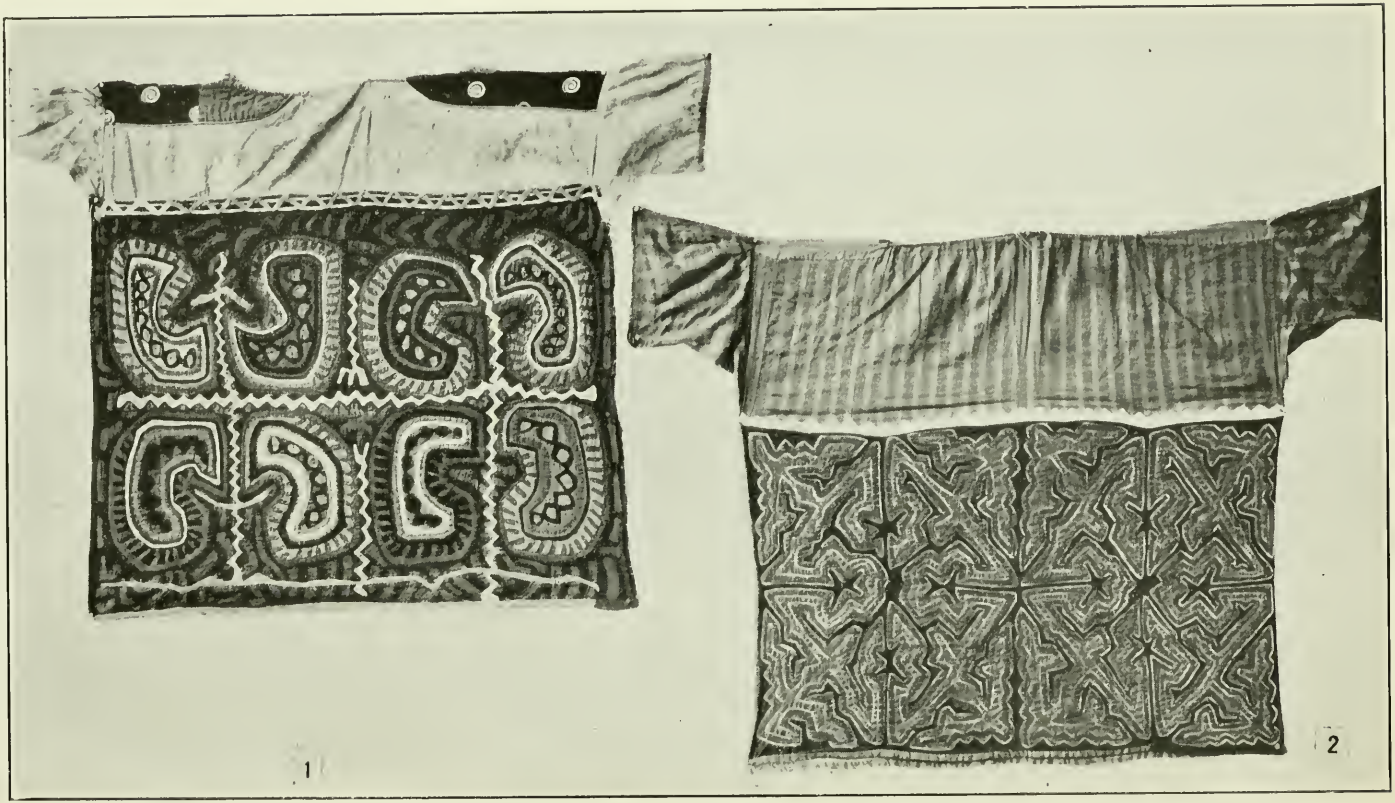
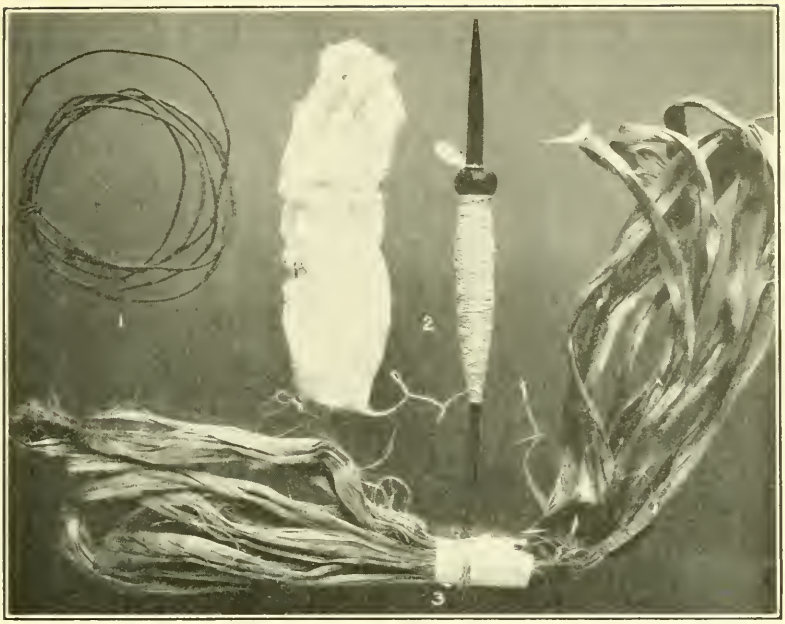
APPLIQUÉ EMBROIDERY. CUNA AND TULE INDIANS

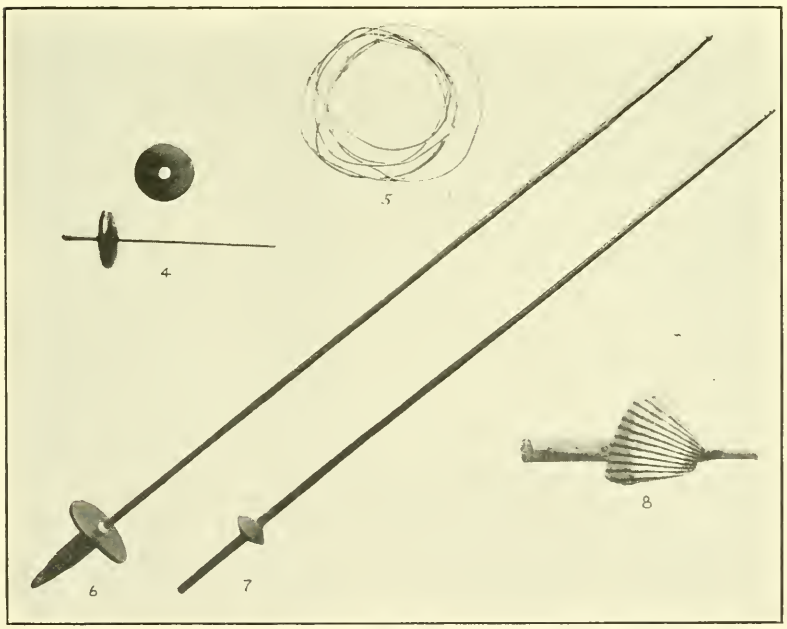
FOR EXPLANATION OF PLATE SEE PAGE 108



APPLIQUÉ PHOTOGRAPHIC EMBROIDERY. TULE INDIANS

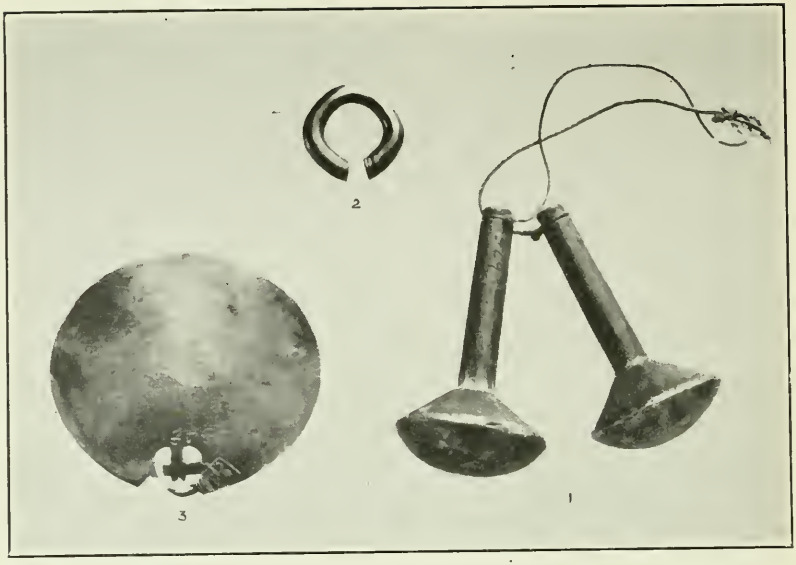
FOR EXPLANATION OF PLATE SEE PAGE 109

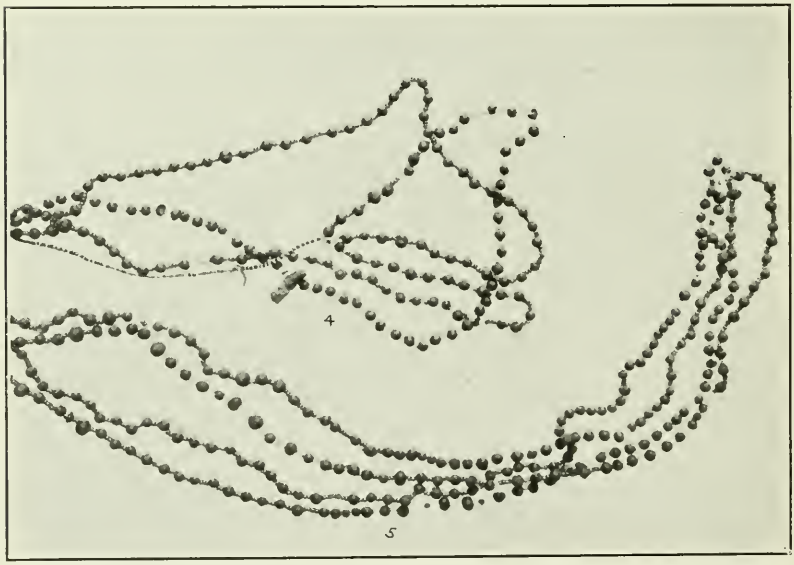




WEAVING MATERIALS AND IMPLEMENTS. INDIAN TRIBES OF PANAMA

FOR EXPLANATION OF PLATE SEE PAGE 107

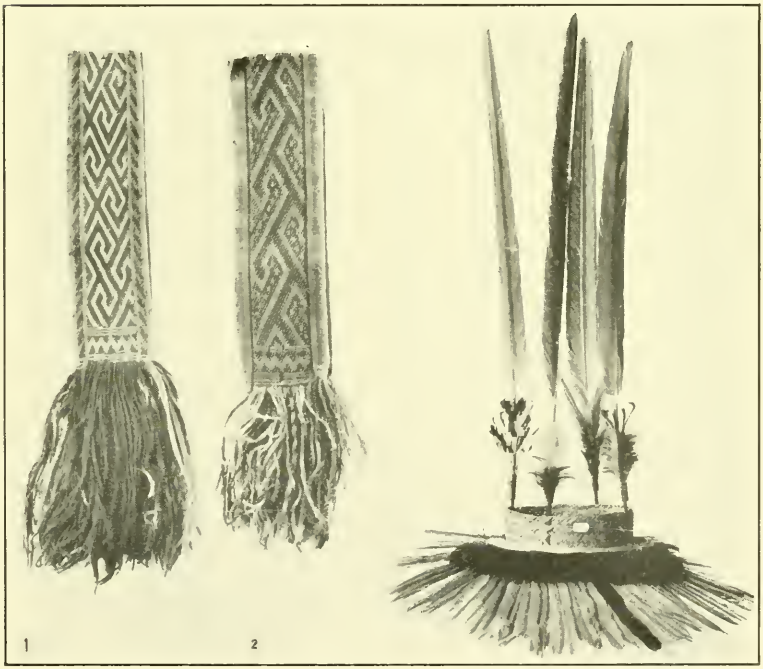




NOSE AND EAR RINGS; NECKLACES. CHOCÓ, TULE, AND CUNA INDIANS

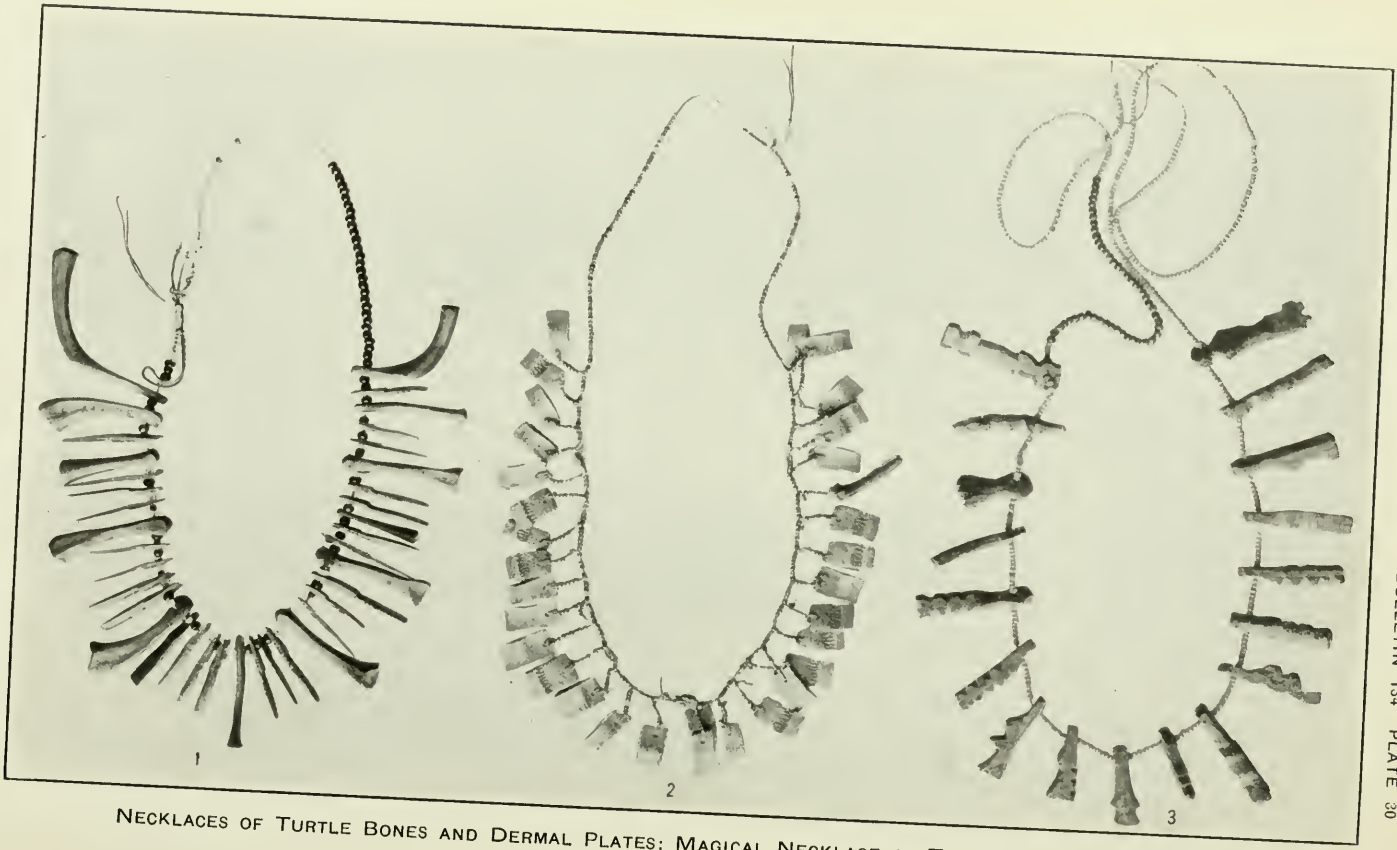
FOR EXPLANATION OF PLATE SEE PAGE 101

FEATHERWORK PLAYBIRD



WOVEN HEADBANDS; HEADDRESS OF FEATHERS. CHOCÓ AND TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 113

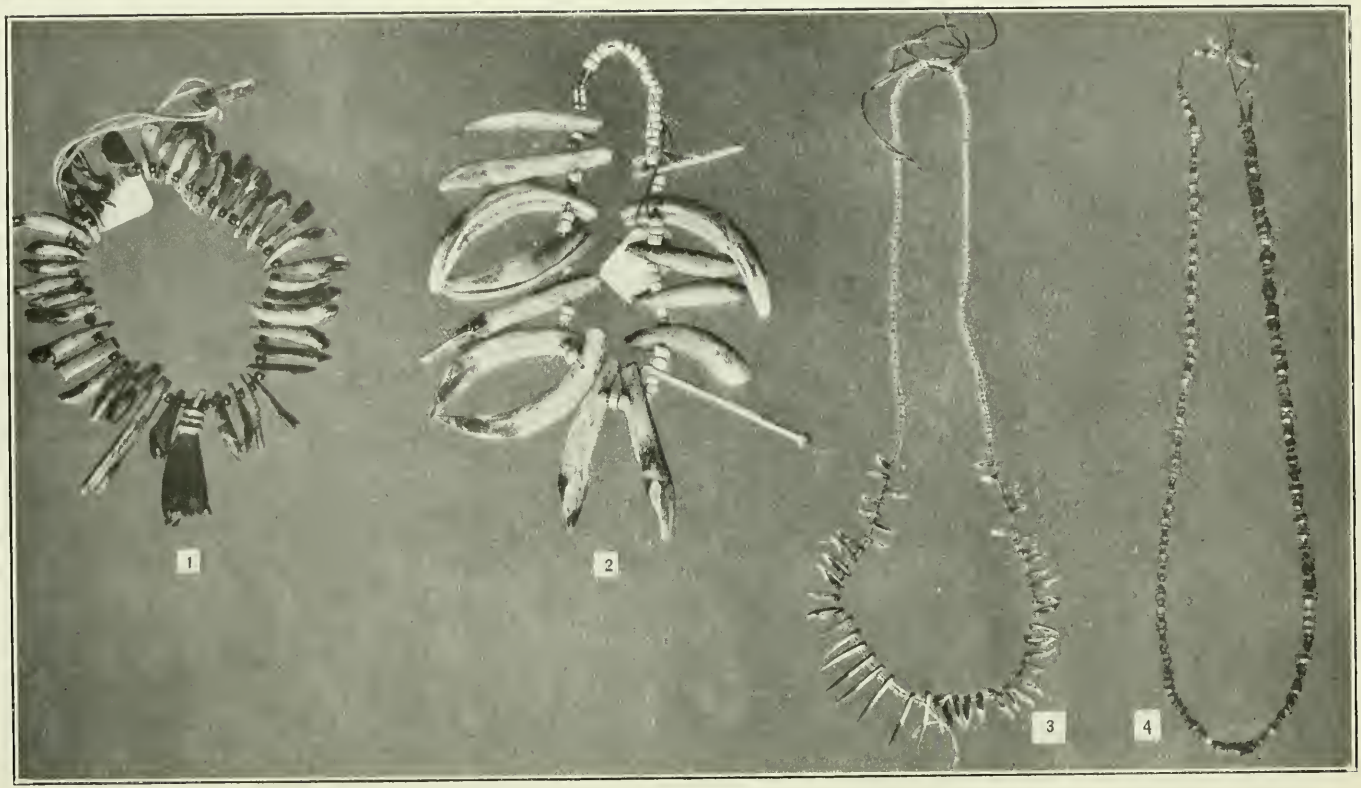


NECKLACES OF TURTLE BONES AND DERMAL PLATES; MAGICAL NECKLACE OF TREE ROOTS. TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 112

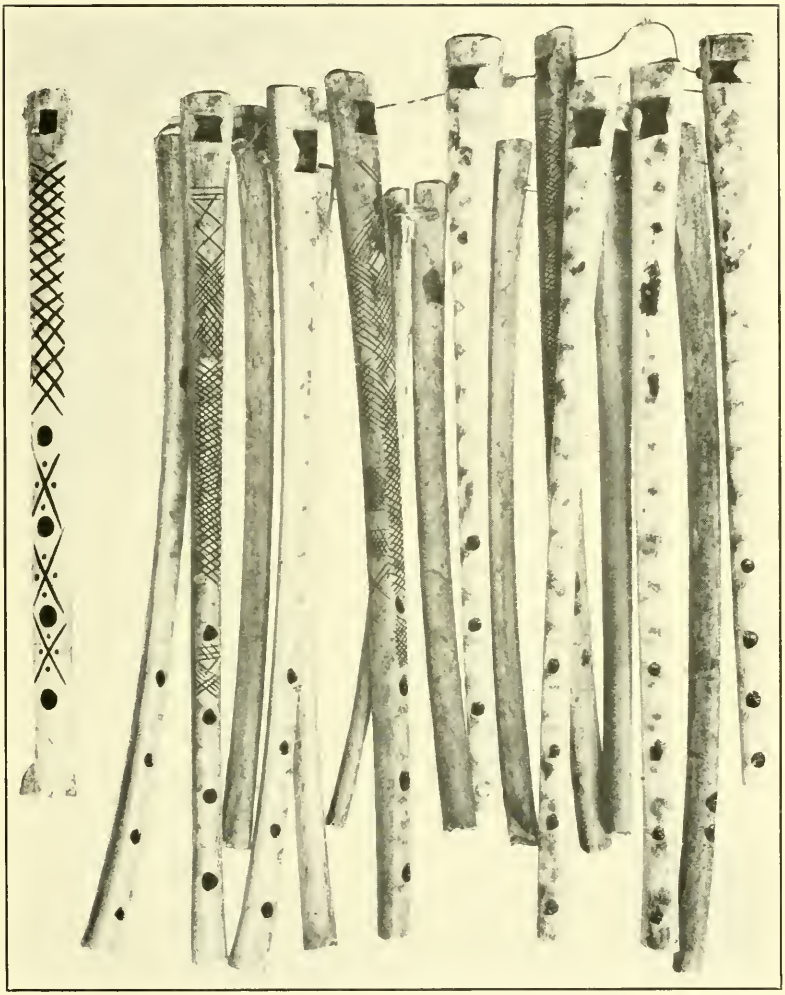
NECKLACES OF MONKEY TEETH, MANDIBLE OF CRAB, AND MARGINELLA SHELLS

FOR EXPLANATION OF PLATE SEE PAGE 112



BRACELETS AND NECKLACES OF BEADS, TEETH, AND SMALL VERTEBRAE

FOR EXPLANATION OF PLATE SEE PAGE 111



BONE FLUTES. TULE INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 126

CHOCÓ INDIANS DANCING AT HARVEST FESTIVAL CEREMONIES

FOR EXPLANATION OF PLATE SEE PAGE 128

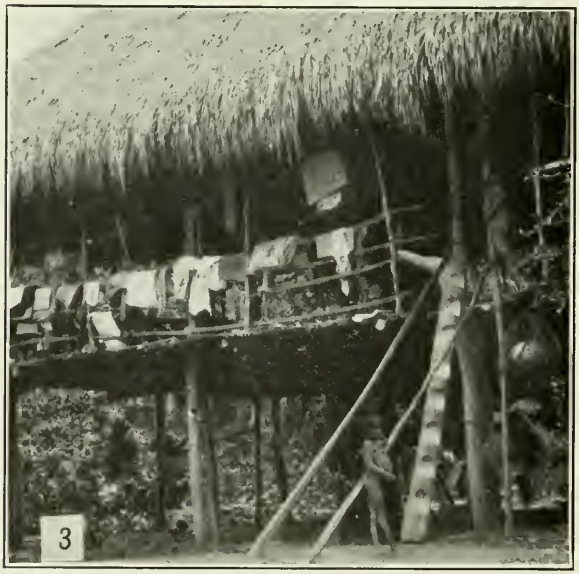
TULE GIRL MAKING BASKET

CHOCÓ WOMAN THRESHING RICE PADDY

TYPES OF CUNA MEN, SUCUBTI VILLAGE

TULE INDIAN VILLAGE, SAN BLAS COAST

SMALL TULE INDIAN HOUSE



FRONT ENTRANCE TO CHOCÓ INDIAN HOUSE

FOR EXPLANATION OF PLATE SEE PAGE 30

DECORATED CEREMONIAL WOOD CARVINGS. CHOCÓ INDIANS

FOR EXPLANATION OF PLATE SEE PAGE 87

INDEX

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