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THE WARIHIO INDIANS OF SONORA-CHIHUAHUA:
AN ETHNOGRAPHIC SURVEY

By HOWARD SCOTT GENTRY

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PREFACE

With the publication of Gentry's Warihio ethnography, attention is directed to what has been one of the many obscure areas in north-western Mexican ethnology. Information on the Warihio has been limited almost exclusively to brief mention of the tribe in relation to surrounding peoples. The present report, based on first-hand contact with the Warihio, should prove useful in placing the group in proper ethnological context.

Existing literature on the Warihio falls into two main categories: historical sources based on documents of the colonial period and references to the group which have appeared in a few anthropological publications since rediscovery of the tribe in the early 1930's. Historical sources include both the accounts of the original Spanish chroniclers and the secondary works of such contemporary scholars as Almada (1937), Bannon (1939), Dunne (1948), Decorme (1941), Ocaranza (1942), and Sauer (1934, 1935). Except for Sauer's ethnohistorical studies, which remain the definitive works on tribal distributions in the area, the historical works touch upon the Warihio only incidentally as neighbors of, and participants in, the missions of the Chínipas region. Of the half dozen anthropological sources which refer to these Indians, only Kroeber (1934), Passin (1944 a, b), and Sauer (1934, 1935) have made brief attempts at examination and interpretation of Warihio data.

Spanish colonial sources, especially Perez de Ribas, have outlined the tribal picture in the area at contact and have illustrated the impacts of the conquest on these peoples, events which led to at least the partial missionization of the Warihio. Spanish exploring expeditions at the end of the 16th century found the barranca regions on the upper Mayo and Fuerte Rivers inhabited by various small entities of Indians, most of whom were apparently linguistically and culturally affiliated with the Cáhita peoples of the Sonora-Sinaloa coastal lowlands or with Tarahumare-like groups in the Sierra Madre to the east. Sauer (1934) and Bannon (1939), using colonial sources, have sorted out these groups—one of which was the Warihio (termed Varohio, Hio, or Hia by early Spanish writers). The tribal groups living on the western edge of the mountains and the adjoining lowlands were the Conicari, Tepahue, and Macoyahui, all of whom were

probably Cáhítans (Sauer, 1934). The mountain tribes inhabiting the barrancas were the Chínipas on a north branch of the Fuerte River, the Guazapar and Témori to the east next to the Tarahumare, and the Warihio to the north of the Chínipas area. Below Chínipas on the Fuerte drainage were the Huíte of unknown linguistic affiliation and the Zoe, whom Sauer places tentatively with the Cahitans. As other writers have pointed out, many questions are unsettled in regard to these groups and little can be said about them with certainty. It would appear that the Chínipas carried on more intensive agriculture than the others and had a higher culture generally (Bannon, 1939; Sauer, 1934). To the north were the Pima Bajo and to the east the Tarahumare, occupying much the same area as today. The Chínipas, Guazapar, Témori, Huíte, and Zoe disappeared in the colonial period through miscegenation or consolidation with other Indian groups, while the Cáhita-like peoples have evidently become Mayo.

The Warihio of contact times seem to have occupied the same general territory as they inhabit today—the upper barrancas of the Mayo and the upper Chínipas branch of the Fuerte and adjacent mountains. It is clear from colonial reports that the group was considered a distinct people separate from both the Chínipas and the Tarahumare, although some sources speak of mixture with the latter (Bannon, 1939; Decorme, 1941). The exact relationship of the Warihio with the small neighboring tribes is obscure because no linguistic material is known from the extinct groups. Sauer (1934) and Kroeber (1934) have tentatively placed the Warihio, Guazapar, Chínipas, and Témori in a common language grouping, but their conclusions are based on historical similarities rather than linguistic data.

Mission activity in this region began in the 1620's when Jesuits from the Spanish outpost at Toro in Sinaloa moved into the Chínipas valley and established churches. Priests from Chínipas formed a mission for the Hios (i.e., Warihios) in 1627 at a spot some 4 leagues up the river from Chínipas (Bannon, 1939). In 1632 a combined attack of the Warihio, Témori, and Guazapar destroyed the missions and drove the Spanish from the Chínipas area. Most of the Chínipas accompanied the Spaniards to the Sinaloa missions and were relocated there. The Spanish returned in 1670 to find that the Tarahumare had moved into much of this country. This time priests gained a firm hold on the region, and the reduction of the Indians was rapidly accomplished. A mission was established among the Warihio at Guadalupe about 20 miles to the north of Chínipas, and about three hundred Indians settled there. A second Warihio mission was founded at Loreto, with a visita at Santa Ana (Bannon, 1939; Decorme, 1941).

Evidently, portions of the Warihio remained under mission influence

until near the close of the colonial period. A list of church operations in 1784 reveals missions still present at the locations of Guadalupe, Loreto, and Santa Ana with several hundred Indians still listed as residents of these places (Ocaranza, 1937).

There is no other known report of the group until they were located by Sauer and Kroeber about 1930. Presumably they had been shielded from acculturation to some extent by their isolated location. However, approaches to the area from the east are not so difficult as those on the rugged western slopes, and it can be speculated that contacts with Chihuahua were common. Considerable mining activity took place in the general area during the 19th century, with the extensive mines at Ocampo only a day to the north. In addition, an American company was working mercury holdings in the heart of the Warihio country at Arechuyvo, Chihuahua, in the 1890's with a number of Indians drawn into the operation.

The importance of the tribe to the ethnology of northern Mexico lies in its geographical location which places the group in a possible intermediate position between the larger Cáhita and Tarahumare divisions—a situation with implications for the reconstruction of Uto-Aztecan cultural history. Most contemporary discussion of these Indians has been concerned with this question, with writers disagreeing as to whether a distinct people is represented here or merely a subgroup of the Tarahumare. The former view is expressed by Beals, Tax, and Redfield (1943) and Kroeber (1934), while Almada (1937), Dunne (1941), Passin (1944, a), and Sauer (1934) are inclined to stress Tarahumare similarities. Kroeber, who collected and analyzed Warihio word lists, points out that the language is most similar to Tarahumare but is not merely a dialect of this group as some have proposed. On the grounds of the Warihio consonant scheme and the accentuation of syllables, he states that the language "seems more archaic than Tarahumare, rather than derived from it: perhaps it is a surviving proto-Cáhita-Tarahumare" (Kroeber, 1934, p. 13).

Passin, laboring under the handicap of an incomplete list of terms, attempted to fit Warihio kinship terminology into an analysis of Uto-Aztecan systems, placing it tentatively nearest to Tarahumare in the general Cáhita-Opata-Tarahumare division in contrast to Pima-Tepehuan and Cora groups (Passin, 1944 b). Passin (1944 a) further observes that it is his impression after having visited both groups that the Warihio are but a localized and more acculturated division of the Tarahumare, speaking a language which differs no more from Tarahumare than varieties of Tarahumare differ from each other.

Other published references to the Warihio are apparently limited to mention of the group in a few contemporary Mexican sources in

connection with geographical works or census reports. Modern Spanish sources spell the word as Uarijio or Guarihio in place of the Varohio of colonial writers.

In addition, workers from the Summer Institute of Linguistics have collected Warihio material in the vicinity of Arechiuvyo, Chihuahua, within the last few years. Some of this material, together with a word list collected by Jean B. Johnson at San Bernardo, Sonora, in 1939, is available in the Department of Anthropology, University of Arizona, Tucson.

It is to be hoped that Gentry's material will interest other workers in this group. A fieldworker today would find the area somewhat more accessible (by charter air service) and the Warihio more acculturated than at the time of Gentry's visit a quarter of a century ago, but he would find them still secretive and retiring and in most cases still living within the culture patterns of the Sierra Madre Indians.

April 17, 1961.

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THE WARIHIO INDIANS OF SONORA-CHI- HUAHUA: AN ETHNOGRAPHIC SURVEY

BY HOWARD SCOTT GENTRY

INTRODUCTION

The data on which this report is based were collected after the rediscovery of the Warihio Indians in 1930 by Dr. Carl Sauer and Dr. A. L. Kroeber, of the University of California, and their subsequent suggestion to me that I gather information concerning this little-known tribe. I collected the notes as opportunity afforded in the course of my general biological fieldwork in the Rio Mayo country of northwestern Mexico. This is a report of three field trips made during the period from October 1934 to October 1936.

The information as it stands perhaps introduces more problems than it solves. Any ethnographic study of northern Mexico is partly a problem of sifting Spanish elements from the aboriginal. Added to this, in the field under discussion, is the influence of neighboring Cáhitan tribes, making a complex general problem, which this paper only incidentally outlines.

This is a report of direct observations and of what I heard and learned. It is therefore partly hearsay, so, to reduce errors to a minimum, I have checked one source with another, a method which with time and patience leads to verity. I have not been aggressive in obtaining information, but rather as a questioning listener I have recorded it as it came or appeared, believing that by such slow absorption I would snare more of truth and less of falsehood. Usually, only that part of hearsay will be entered which has verified itself by being spoken from two or more informants, but there is still a part which must depend for its right of place solely upon my judgment as established by general familiarity with the field. Finally, it might be well to remember that there may be a difference in what a man sees and hears, and what others read in the writing thereof.

INFORMANTS AND ACKNOWLEDGMENTS

Chief among the informants are the following:

Bartolo Hernandez, Mexican.—“Mayordomo” of the isolated valley of Guasaremos. For about 15 years he was a resident there with the

scattered Warihio as his nearest neighbors and as his laborers on the land. Before that he came from Jalisco soldiering with Obregon and Pancho Villa. Now his sons play Warihio music on Warihio violins and they all dance on occasions with the Indians. He keeps an ordered place, is a willing and intelligent informant, generally reliable but in inference fallacious.

Carlota Argüelles, Mexican.—Spinster of an old Mexican family owning land from San Bernardo north into the Guajaráy country. For many years she has lived in San Bernardo. In her youth her father kept ranches among the Warihio, some thirty-odd years ago. Hence her knowledge is more of recollection and of a time when the Indians were more abundant. I have found small grounds to doubt her assertions. [Now dead.]

Juan Argüelles, Mexican.—Of the same old family as Carlota and one-time "presidente" of San Bernardo. He, too, lived his childhood among the Warihio and Macoyahui from Chorijoa north along the Guajaráy. He has a flair for knowledge, a love of history, and talks much of early days and of the times of his fathers and ancestors; some of his talks are interesting historically. He appears sometimes to confuse the Mayo, Macoyahui, and Warihio tribes, so one cannot always know of which he is speaking. A prolific informant whose words need some sifting. [Now dead.]

Emiliano Bourbon, Mexican and Indian.—A man of simple slow wit, part sagacious, part unconscious. As a boy he was reared by his Warihio mother. Later he moved to San Bernardo, where he has dwelt since with a Mayo wife and more recently with a Warihio wife, who reprimanded him for teaching me dirty words. He is one of the best native linguists of the Rio Mayo country, claiming a knowledge of Tarahumare, Warihio, Mayo, and Spanish. He knows a great store of native plant and animal lore. In general his volunteered information is acceptable, but, if pressed, his pride in his linguistic and botanical knowledge may induce him to invent. On the whole he proved to be one of the richest and most interesting personalities, locally respected for his knowledge of plants.

Licha Acuña.—Her mother was a Warihio, her father a Mexican. She is now married to a Warihio and lives in Carimechi. A laughing, approachable person who liked to tell a tale, she provided words, stories, opinions, pottery, basket weaving, and entré to her husband's retiring Warihio family.

Esteban Suja, Warihio.—Husband of Licha Acuña in Carimechi. A small shy Warihio man, who spoke little and truthfully, and who twice led me up a mountain for plants. He is clever at woodwork and made possible notes thereof, not without difficulties, however.

When I first saw his violin, I asked him who made it. He replied, "Oh, the people around here make them." I asked where? "In Conejos, in San Luis, any place around here." Several days later his wife told me that he had made it.

Lusiano Guireña, Warihio.—Resident in Guasaremos; about 40 years of age with five children. He held a *tuwuri* ceremony in Guasaremos while we were there and accompanied me as "arriero" on pack trips into the sierras. He provided words, general information, verification, and myths. A reliable informant. [Now dead.]

Cosme Valdez, Warihio.—A chief or "selyeme," living near Guasaremos. He conducts the ceremonial "tuwuris" in that neighborhood. He contributed a part of general information, ceremonial ritual, terminology, and some information on medicinal plants.

Juan Campa, Warihio.—An old blind fellow formerly of Chorijsa but now living with Emiliano Bourbon in San Bernardo. He is a sincere and conscientious informant speaking three tongues, Spanish, Warihio, and Mayo. He sings Mayo and Warihio songs. He is very willing to talk, but is sometimes hard to understand for the babble of age. Some of his tales are highly significant as folklore. [Also deceased since these notes were written].

In addition, there have been those innumerable informants whom any explorer will meet who passes a year of knowledge-hunting in any outland. These people, together with the above-listed informants, hospitably facilitated the travels of my wife and me in Mexico and won our sincere appreciation. He who gives food and shelter to the strange outsider is indeed a person of high virtue; of this type were our Mexican neighbors.

My thanks go also to several people who helped to make this inquiry possible: Mr. Paul C. Standley, of the Field Museum in Chicago (now that city's Museum of Natural History), identified a large number of collected plants; Drs. Carl Sauer and A. L. Kroeber, of the University of California, lent their interest and stimulation to the project; Mrs. Rhoda Adamson, of Los Angeles, contributed film and camera, thus making many of the accompanying photographs possible; Dr. Edward H. Spicer, of the University of Arizona, has lately advised in rearranging the manuscript for publication; Marie Gentry, my wife, assisted with the manuscript and faithfully accompanied me on the extended journeys into the comfortless wilderness.

NOMINAL NOTE

Synonyms of Warihio:

Varohio; Carl Sauer (1934) does not explain his selection, probably taken from a historical Spanish source.

Varohio; A. L. Kroeber (1934) apparently follows Sauer and Beals in usage, but records it also as Huarahia and as Huraijia or Guarihia. "Ma'kura we" is an orthographic spelling of local idiom for a different (?) people, recognized under Spanish spelling as Macoyahui. The present-day Indians are careless in expressing their tribal affinities to outsiders. Inhabitants of the lower towns have lost nearly all tribal consciousness. A Warihio may assent to being a Mayo or a Tarahumare.

Varohio; Ralph Beals (1932 a) apparently follows early ethnographers from Perez de Ribas (1645) on.

Warihio is so rendered in these notes as consistent with the general orthography used in recording the language and as it has been heard pronounced hundreds of times by them to whom the word is a habit, the natives, thus further corroborating Brand and Kroeber. The terminal vowel may be pronounced *o* or *a* (*ú*), especially as a gender agreement due to Spanish influence or gender designation. Since the *o* is more generally spoken it is given preference as a general term. An old Warihio in Platonita gave a different appellation for his people, but it was forgotten before a notebook was reached. An attempt to etymologize the word is interesting. Wari alone means basket. Hio suggests Hios, which means in either a specific or a general sense a certain group of people about the Rio Mayo. Basket People is a plausible but uncertain interpretation.

The following key to pronunciation shows the orthography used in writing the Warihio words recorded in this report :

a as in <i>ah, father, odd</i>	au as in <i>out, now</i>
e as in <i>get, bell, says</i>	u as in <i>true, food, rule</i>
e as in <i>grey, pay, wait, fame</i>	ñ as in <i>but, under, son, other</i>
h as the English aspirant	g as in <i>go, gather, egg</i>
i as in <i>police, greet, meat</i>	s as in <i>so, toss, pencil, miss</i>
i as in <i>hit, tin, miss, cyst</i>	ch as in <i>chin, church, chew</i>
oi as in <i>boy, oil, oyster</i>	c as in <i>tack, cold, break, kite</i>
o as in <i>oat blow, note</i>	

d is pronounced about as in English, though it has been influenced by the softer Spanish d.

r and l are inconstant elements, one becoming the other in a change of localities or of inflection, or the two combined in the extreme of Spanish lingual r tendency, until the sound is neither l nor r but a perfect combination, as in "pero." This in turn tends to slide over to the soft Spanish d, as in "chirowi."

' The apostrophe following vowels indicates an aspirating elongation often accompanied by accentuation and tonal variation. Due to Spanish influence there is a tendency to drop the aspirant, as though to make the word easier to the questioner.

PEOPLES OF THE RIO MAYO AND WARIHIO
DISTRIBUTION

The peoples of the Rio Mayo are a mixed lot. The dominant heritage is American Indian with an occidental infusion from Spaniards and to a less extent from Germans, Englishmen, Frenchmen, and Italians. A dilution with Asiatic blood from Chinese, Japanese, and Hindus appears to have come more recently. A few Negroes and even a few Arabs were observed. Crossbreeds and individuals crossed between combinations of races can be seen, especially about Navojoa, attesting to the lack of racial distinction in mating. Besides the composite Mexicans, whose tribal or racial identities have been lost, there are three Indian tribes now known to inhabit the Rio Mayo country.

Mayos range all over the lower country up to Conicari at least, and northward to near Cedros and Tesopaco. They were the first Sonoran tribe to ally themselves with the Spaniards and assisted the conquistadores materially in vanquishing the surrounding tribes. Numerically they still form a large part of the population but are rapidly being assimilated into the Mexican towns, and their indigenous culture has largely retreated before the modern Mexican one.

The Warihio inhabit the barrancas from Conicari eastward to the basin of the upper Rio Mayo and the adjacent mountain slopes. Their tribal integrity is perhaps stronger than the Mayo, due apparently to their isolation in the barrancas, where the aggressive Mexican culture has scarcely entered.

The Tarahumare live in the high mountains and barrancas of southwestern Chihuahua, bordering the Warihio on the eastward. They were observed to be living in scattered houses of pine planks and logs in Sierra Cajurichi. Though unreported from the area, they probably also inhabit the Upper Mayo Plateau, at least in diluted form. Around Memelichi they appeared to be living on the same existence pattern as their Mexican neighbors and were reported to intermarry with them.

These three tribes are stratified ecologically. The Mayo are Thorn Forest people, the Warihio Short-tree Forest, and the Tarahumare largely Pine Forest.¹ It is rare that tribes and environments are so closely correlated. That they were so oriented stimulates inquiry to determine just how partially or completely cultures may be wedded to habitats. In the aboriginal setting 500 years ago the Warihio were apparently purely hunters and gatherers, judging from the information reported below. The Tarahumare were largely so, but with some

¹ The vegetation of the Rio Mayo has been worked out in some detail in "Rio Mayo Plants" (Gentry, 1942 a).

agriculture, and the Mayo were a more settled people, truly agricultural, but still drawing profusely upon the raw resources of the native wild plants and animals of the coastal Thorn Forest. While the Tarahumare descend or live annually in the barrancas and the Mayo have access to them by journey, the aggregate of their contact with the barranca habitat would remain essentially less than with the Warihios. The knowledge and utilization of the barranca plants would obviously be most available to and best understood by the Warihios. Many of the lowland species also overlap there with the highland, so that one would expect them with the richer flora to have more numerous plant resources to draw upon, and this in part may have retarded their disposition to accept the neighboring "milpa" culture. The wild plants utilized by the Warihio are listed in the following pages, and while their number is considerable, especially of substantial food plants, the list probably by no means includes all that they used.

The Warihio are still given to short local migrations, as was evidenced by groups in the great stony land of the Arroyo Guajaráy. Families visited in 1934 at Conejos and another group at Rancheria in 1933 were reported to have left those localities (the Conejos fishing group going over to the Rio Mayo) 3 or 4 years later. The exact reasons for their movements were not ascertained, but it might well have been because of depleted wild food supplies. Such local migrations are typical of the hunting and gathering tribes.

The adaptation of the milpa culture to the barrancas is laborious and difficult. Except for small patches of alluvium marginal to the river and its arroyo tributaries, all planting must be done on steep, usually rocky slopes, which first must be cleared of the heterogeneous deciduous Short-tree Forest. The slope is commonly 30 to 60 degrees from the horizontal and the milpa must be transient, for with a few plantings the fertility of the soil is largely exhausted and new tilted milpas must be cleared. This arduous procedure may have slowed the adoption of the milpa by the Warihio.

The striking difference of the precipitous Warihio terrain to that of the Mayo plain and valleys could not but result in certain physical differences between the two peoples, both of whom still retain the walking habit. Compared with the rather slender Mayo, the Warihio are short, with the lifting muscles of the thighs powerfully developed. The Warihio travel up and down the great canyon slopes with relative ease. Some, as Lusiano, had traveled as arrieros over stretches of the level trails of the plains to Navojoa and complained of the tiresomeness of walking there. Walking up and down hill allows respective muscles to rest alternately, while upon the level the same muscles

must continue without surcease hour after hour. Likewise, the Tarahumare are fleet and tireless in the mountains, but are reputed to tire quickly upon what is to them the hot, monotonous coastal plain.

The full impact of these three habitats upon the respective tribes remains to be determined. Such cultures as the Warihio do not live far beyond the immediate raw resources, and the whole relationship can remain certainly a fertile field for further investigation.

Extinct peoples are listed by Carl Sauer (1934), the exact identities and relationships of which remain obscure. Their names may represent people from a particular area, or clans, or even tribes, all, however, belonging to the Cáhitan group of the Uto-Aztecan language family (as are the above-listed tribes). They were the Baciroans in the vicinity of what is now Alamos, the Macoyahuis about Macoyahui, the Conicarís about the junction of the Rio Cedros and the Rio Mayo (these are all in the Mayo range), and the Tepahue of the northern Rio Cedros. These last may still be represented by a group of families encountered a few miles south of Tesopaco, who said they were not Mayos nor Mexicans proper, that they did not know just who they were, that their progenitors had spoken a tongue of their own, but that not one among them any longer knew any part of it. Puebloans of Tesopaco referred to them as "coyotes" and treated them rudely generally. They live only several miles above the settlement of Tepahue.

Fossil man has been evidenced by the remarkable discovery of human remains in the Quarternary lime beds at Chinobampo. They were found in a natural deposition suggesting water-laid bone in a deposit of argillaceous lime, under such conditions as to preclude the possibility of recent burial, in an advanced state of mineralization quite comparable to the Pleistocene mammalia associated in the same deposit. The fossil skull was that of an American Mongoloid, indicating that man has inhabited the Rio Mayo at least intermittently since the periods characterized by such animals as the extinct horses, mammoth, camel, glyptodon, large carnivores, and others of the American Pleistocene.

It was not possible for the writer to visit all the Warihio localities, so the most authentic reports available were accepted (table 1).

Distribution.—The Warihio people inhabit the valleys and barrancas of the Rio Mayo country from Macoyahui in Sonora to La Trompa in Chihuahua, about latitude 28° N., and the upper Chínipas Basin in Chihuahua to the south. Their present related neighbors are the Mayo on the west, who within the last half century are carrying intercourse inland to the Arroyo Guajaráy tributary, while on the east in the high sierras, the Tarahumare tribe abides. Until a few years ago

TABLE 1.—*Census of Warihio localities with the number of houses or families resident in each*

Localities	Number of houses or families	Localities	Number of houses or families
San Bernardo*	8	Mesquite*	2
Chorijoa*	2	Platonita*	5
Guajaray*	3	Saguacoa*	3
Todos Santos*	1	Guisieco*	3
Conejos*	5	Babfcoara	3
Rancheria	3 ?	Tesoruco	2
Baniri	**1	Tiruta (a word for blanket)	3
Setajaqui	4	Ensinal	1
Wataturi	2	Mocorichi	8
Tepara*	2	Saus	1
Aquinavo*	3	Jecopaco	15
Cuchuweri*	1	Gachavachi	4
Yuromo*	2	Arechuybo	15
Wokobaqui*	1	Salivo	6
Carimechi*	5	Sierra Canelo*	3
San Luis Barbarocos*	5	Loreto*	18
Barbarocos	3	Santa Ana	15
Sierra Garcia	8 ?	San Augustin	8
Sierra Escura (Obscura ?)	12 ?	Macoyahui	6 ?
La Trompa	12	Conicari	4 ?
Bachoco (from Mayo meaning bad water)	3	Sejaqui	17 ?
Guasaremos*	2	Total	230

*Localities visited by author.

**Large family of Hilario Corpo with a Mayo wife.

the Macoyahui are reported to have been present on the south, in the vicinity of Macoyahui and Los Tanques in Sonora, but they are reported to have moved into Chihuahua near Tubares, fleeing the strife of revolution. Throughout the Warihio country there is an infiltration of Spanish-speaking Mexicans, mostly casually occupied in growing maize and cattle in the general Mexican pattern, but whose rude culture is touched with Warihio elements. Further details of Warihio habitation can be found on map 1.

No Warihio towns have been observed, unless the compact cluster of little farms in Loreto be defined as such (pl. 29, *a*). Each house or brace of houses sits with the owner's milpa of corn and beans. The 20 or so houses are scattered along 2 or 3 miles. Centrally located are seven or eight houses of Mexicans and a school, forming a settlement. The Warihios are solitary people, undesirous of even their neighbors' company except in the social vehicle, the tuwuri rituals. Related families commonly live in the same locality, each with a house from a hundred yards to a league apart. These localities, or rancherias, are named with a Spanish or Cahitan origin. Yet in some cases Warihios have collected together in Mexican towns, as in San Bernardo, where they have been broken to the gregarious Mexican existence.

Observations in the field corroborate Sauer's figure (1934, p. 8), of six individuals to the family, which here used will give a total of 1,398 Warihio persons recorded in the foregoing list.



MAP 1.—Map of known Warihio localities.

This does not include localities probably existing, but which were neither visited nor reliably reported, the majority of which lie still north of Archuybo and La Trompa. To judge from the general reports and slight mixture of Tarahumare in the northern localities, an addition of some two or three hundred should be allowed.

Tentatively we may conclude as existing a population of about 1,600 Warihio inhabiting an area of a little over 2,000 square miles—1.5 Warihio per square mile. Except for two localities, Santa Ana and San Augustin, this does not include the area nor the Warihio of the

Rio Chínipas country, whose present numbers are unknown. The two exceptions are sufficient to show that the Warihio are still in habitation in the Rio Chínipas country, though it is very doubtful if their number would swell the total to Sauer's estimated 7,000 total Warihio population (Sauer, 1934, pp. 5, 24).

There are in addition in this area about an equal number (conjectural) of Mexicans, but the majority are marginal to the area with only an occasional isolated "ranchero" living in the Warihio's precipitous ranges. Doubtless these, with Mayo as intruders, have greatly reduced the Warihio area and disseminated the population in the last century. European pandemic diseases carried by the early Spaniards have from time to time ravaged the Indian populations (Sauer, 1935, p. 11). Throughout the country it is a common saying that before the year of the cholera (185-) there were many more people than now. Numerous ruins, in the form of low crumbling walls of stone, corroborate these reports further (pl. 29, b).

HABITAT

The land of the Warihio consists of barrancas, arroyos, canyons, steep stony slopes, and cliffs that darken streams or rim the old volcanic mountain tops. It is an enormous succession of diverse terrain shut into a wilderness secrecy, whose every regional door is an arduous "camino." The complex dissection is indicated in map 2.

ARROYOS

The arroyos, which are but canyons opening to wider channels in the foothills, are numerous and variable. At bottom they are a broad white glimmering bed of gravel and river rock with a small stream meandering through. The water flow, particularly in the dry seasons, may be hidden for distances under the gravel, yet he who travels the arroyo trails seldom need thirst for more than a few hours, since the limpid water of rock-tank pool or gravel spring is widespread. In the rainy season the arroyos carry high crests of floodwaters. Along the sides are margins of alluvial soil supporting thorny moundlike thickets and trees. In the hot dry seasons the arroyos are green oases in an otherwise naked vegetation seared under a great drying sun. For when the roots of the hillside plants in thin gravel soil are drained dry, the arroyo phreatophytes still have their roots deep in the underground flow of the arroyo. Some of the common members of this plant group are: the wicked-thorned gumbro (*Celtis iguanea*); chirowi (*Acacia cymbispina*); vinorama (*Acacia farnesiana*), the perfume flowered tree; palo fierro (*Pithecellobium undulatum*); garabato (*Pisonia capitata*); papache (*Randia echinocarpa*); bata-

yaqui (*Montanoa rosei*); batamote (*Baccharis glutinosa*); jeco (*Hymenoclea monogyra*); and cacachila (*Karwinskia humboldtiana*).

Many small mammals run in the thickets: mice (*Peromyscus* and *Perognathus*); woods rats (*Neotoma*); rock squirrels (*Spermophilus*). Foxes (*Urocyon cinereoargenteus*); cholugos (*Nasua narica*); and raccoons (*Procyon lotor*) feed often upon the gumbro berries. Seen along the arroyos are tracks of bobcats (*Lynx*) and, less often, of pumas (*Felis oregonensis*) and jaguars (*Felis hernandesii*). Many tropical birds such as chachalacas (*Ortalis vetula vetula*), "coas," and parrots frequent the forest, while hosts of others, such as doves, quails, sparrows, towhees, and flycatchers, are active in the thickets and their margins.

Many trees, some of which are used for their food products by the natives, grow also along the arroyos, either as solitary individuals or as the beginning of the vast Short-tree Forest spreading everywhere over the hills. Among the arroyo trees are: guasima (*Guazuma ulmifolia*); guamuchitl (*Pithecelobium dulce*); palo colorado (*Caesalpinia platyloba*); pochote (*Ceiba acuminata*); tescalama (*Ficus petiolaris*); and garabato (*Pisonia capitata*). Arroyo Guajaráy is a notable stream of rapids and pools carrying a good supply of water. It winds about in a gravel bed bordered by dark volcanic cliffs one hundred to one thousand feet high. Great blue herons patrol the watercourse like winged superintendents. An eagle's nest was observed in a wild fig tree high on a chocolate-colored cliff, its roots fastened to the rocks like tentacled clamps. Fish of seven or eight species live in the water and are preyed upon by eagles, kingfishers, herons, mergansers, and Warihios.

CANYON FEATURES

The canyons, as origins of streams, dip deeply into the towering mountainsides. Certain useful plants are found therein which do not commonly grow in the lower sunnier arroyos: chuna (*Ficus cotinifolia*); bebelama (*Vitex mollis*); lechuguilla (*Agave* spp.); arellane (*Psidium sartorianum*); and the tall bamboo grass (*Arundinaria longifolia*). The lesser canyons do not rise into the sierras but issue as tributaries from the lower hills, while the greater ones rise into the high mountains through the oak belt into the pines, high beyond the highest Warihio hut.

HILLS

The hills at the lower level first are formed like "sombros" resting on gradual slopes; such may be observed about San Bernardo and Chorijoa. But immediately they begin to link themselves together and become endless series of ridges flanking their mother sierras, so

numerous and complex in ancient erosion formation, that a traveler scarcely knows just where he is hidden or from which direction the tortuous trail has brought him. They are covered uniformly with the subtropical Short-tree Forest, whose tilted leagues in "las aguas" are seas of steaming green. Here grow in abundance the pochote (*Ceiba acuminata*); amapas (*Tabebuia palmeri* and *T. chrysantha*), red and yellow flowered respectively; palo joso (*Conzattia sericea*); torotes (*Bursera* spp.); mauuta (*Lysiloma divaricatum*); palo santo (*Ipomoea arborescens*); vara prieta (*Brongniartia alamosana*); the bearded cactus (*Cephalocereus leucocephalus*); and the giant cactus (*Pachycereus pecten-aboriginum*), the bristly fruits of which have been used as combs. Upon the trees are epiphytes of orchids (*Laelia autumnalis*), and the bromeliad hichiconi (*Tillandsia recurvata*).

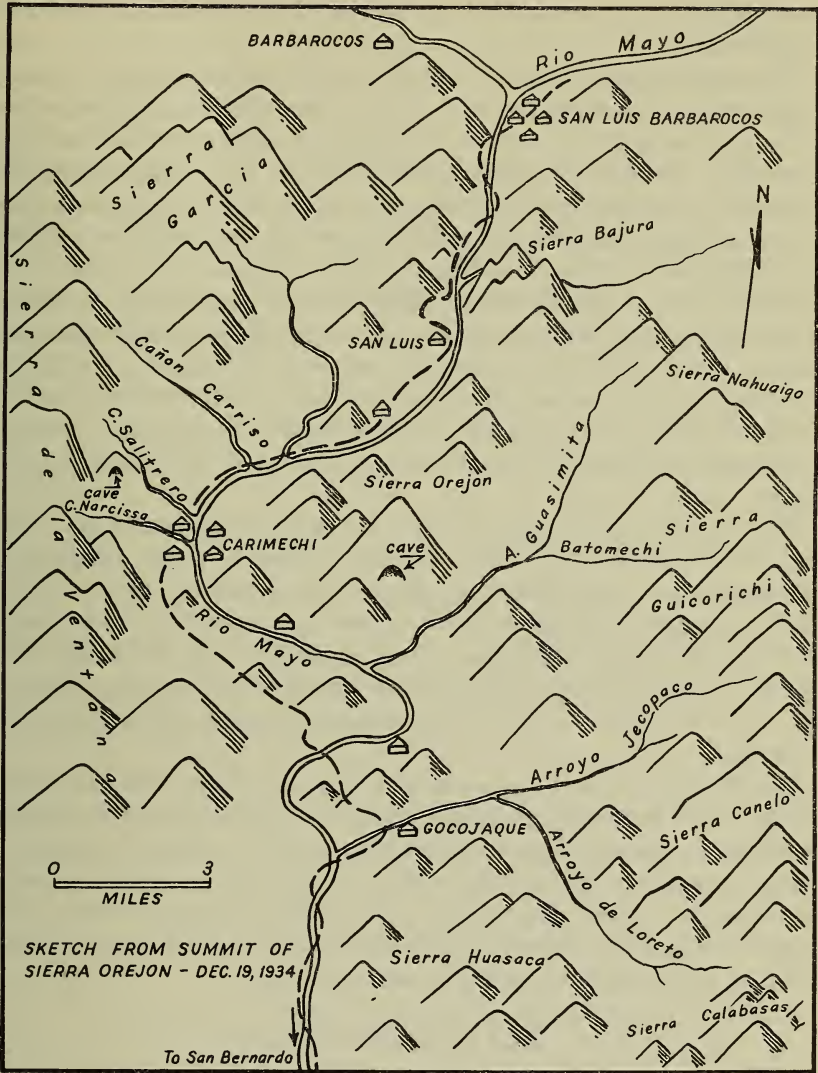
CLIFFS

Throughout the country are cliffs, either as rim fragments of old high volcanic strata footed by steep talus slopes, or as arroyo or canyon sides cut down by water and weather fraction. Even upon such vertical terrain grow plants useful to the woodland Warihio, such as, amole (*Agave vilmoriniana*), Sapuche, and palmillo, all of which are discussed later. In them, also the wild bees and birds find refuge. In the base of these cliffs there sometimes occur caverns and caves, some of which show evidence of earlier primitive occupation. These are discussed later.

SIERRA FEATURES

Above or backing the Sonoran subtropical slopes are the sierras of the Sonora-Chihuahua border area, the Sierra Madre Occidental. Midway there is a belt of Oak Woodland consisting of scattered oaks and other trees with an intervening cover of rather harsh grasses. It, too, may be steeply sloping or with summit benches and mesas, over which rancheria trails may lead. Its soils are generally unsuitable for tillage. Besides the many species of oaks there are palms (*Sabal wresana* and *Erythea aculeata*); palmitas (*Nolina matapensis*); and algarroba (*Acacia pennatula*); and many varieties of lechuguilla (*Agave* spp.). Nearly all of them are put to some use by the Warihio. Generally it is pleasant, open country of equable temperatures and comparable to our Upper Sonoran Life Zone or Oak Woodland of southeastern Arizona.

Still higher, usually fragmentarily outlined by broken cliffs of volcanic origin, lies the pine zone. This is composed of two mountain ranges subsidiary and angling out southeastward from the main Sierra Madre axis. One range flanks the Rio Mayo on the west as Sierra



MAP 2.—Map sketched from summit of Sierra Orejon.

Garcia and Sierra de la Ventana, while the other borders the Rio Mayo on the east and south in a series of sierras with respective names of Canelo, Charuco (or Calabasas), and Saguariho.

The temperature of the region is seasonably equable. Normal daily temperatures range between 60° and 90° F.; extremes do not exceed 30° in coldness or 100° in heat. The daily fluctuation is higher in the dry seasons, when the clear sunny days at noon are warm and

the late fall or spring nights are chilly, after the manner of variation in deserts.

The average yearly rainfall is between 20 and 25 inches, an amount estimated by measurement of a year's precipitation and comparison with neighboring localities where Mexican weather station figures are available. Most of it falls in two seasons; the winter rains, "las equipatas," and the summer rains, "las aguas." Normally these summer rains start the latter part of June and last until into the first part of September. Often rain follows daily rain, each coming at about the same hour in the afternoon. There may be summer dry periods of a week or two duration, when the faces of people will turn earnestly toward the high billowing thunderheads over the sierras, hoping for the cooling rain to come and release the heavy heat growing stronger day by dry day. It is the great growing season for all plants, wild and cultivated, so that all life turns as on a pivot to the thunder of "las aguas."

The dry seasons are two: that of the spring—March, April, May, and June, and that of the fall—October, November, and possibly half of December. The spring drought is more severe and as it advances the sun grows week by week in intensity; the soil shrinks, cracks, and dust puffs up under foot. Leaves wither and fall until many plants stand like naked supplicators with mute uplifted arms. Nearly all life is at this time half hidden under protective masks against the drought.

The Warihio area is like a wedge with its apex south where the Rio Mayo issues from its mountain hold. The apex, too, is its natural gateway, sometimes closed with the heavy rains falling in winter or summer swelling the Rio Mayo and its side arroyos beyond passing. In this tight natural geographic unit the Warihio has survived. Out of the warm rains and sun that beat upon him and his earth he draws his food and sustains in part his ancient culture.

PLANTS UTILIZED

CULTIVATED PLANTS

By cultivated plants are meant those planted and tended in fields or cleared areas.

The Warihio word for maize and milpa is the same, "sumu." It is planted with the first summer rains along the river terraces or upon the hillsides, sometimes so steep that the planter's hoe falls level with his head or shoulders as he faces up the slope. Several varieties are grown. Those of the highlands are long-growing, later-maturing, and with short stalk; those of the lower elevations, quicker

maturing and taller. They reflect, respectively, the more enduring soil moisture of the cooler "tierra templada," and the hotter, quicker drying soils of the "tierra caliente." These two broad types of corn are general to the highlands and lowlands of western Mexico. The Warihios also have a variety for popping.

Their basic pattern of corn use is that employed generally in Mexico. The dried grain is used for tortillas, after the seed coat is removed by lime-soaking and subsequent grinding by hand on a legless metate. The tortilla is cooked on a large shallow earthen dish. Green or fresh corn is eagerly and hungrily eaten, but among orthodox Warihios, not until the proper harvest ceremony has been held. The fresh corn is eaten after roasting over hot coals or boiling in ollas. This last may be eaten off the cob or made into "tamales de elote." These are prepared by first shearing the corn off the cob, grinding on the metate, then rolling it into corn husks, which are then dropped into boiling water. The cornstalks are used for animal fodder. The corn whey or lime solution in which corn has been soaked is frequently fed to the starving dogs or pigs.

Maize is the staple crop yet many do not plant enough to carry them through the year from one harvest to the next, and they rely on a little from their neighbors, or on work from the "rancheros," or on gatherings of wild plants. It is not uncommon for late spring or early summer to be famine months.

From maize in Loreto is made a fermented drink, called "tesguino." The grain is put in moist earth under palm leaves and germinated. The sprouts are then dried, ground, cooked, and brewed in ollas for several days with the addition of a little wheat, which they regard as a kind of catalyzer. Tesguino drinking is common among the Tarahumare, but I find no mention of it among the lowland or western Warihio who drink instead another fermentation, "batari," made from Agave.

"Cal" or lime for preparing tortillas is made from natural deposits of limestone, two kinds of which are reported, "cal de agua" and "cal de piedra." The Warihios generally use the former which is softer and found in great quantities in certain localities, as at Sahuacoa. The soft lime rock after mining is burned by heaping it with a pile of cow chips. When the mound has burned down the lime is lifted out of the ashes in soft white chunks and is ready to use for making tortillas. Licha Acuña of Carimechi reported that she makes lime from rocks found along the Mayo riverbed. She puts the rocks in water and boils them for 2 days. This makes the solution for preparing corn for tortillas.

While many of the Mexicans plant their corn in the dry soil before the summer rains begin, the Warihios are reluctant to do so. They say they are afraid of an early drought drying the young plants before the rains are well established. This may be an excuse or rationalization to cover a religious reason, or it may be pure procrastination, but appears rather to be a prudent policy based on sound experience. Planting is preferably initiated with a ceremony conducted by the selyeme, and since this is done according to individual plantings there would be certain delays of one milpa after another.

Juan Campa stated that earlier the Warihio did not have maize but only weywi (*Amaranthus hybridus*), and sauwi (*Panicum sonorum*) as cultivates. The first maize to come was "mais amarillo." Bacasewa, a very old man interviewed in Conejos who did not speak Spanish, also stated that his people did not have maize in the past. However, it was not possible to tell from his remarks whether it was

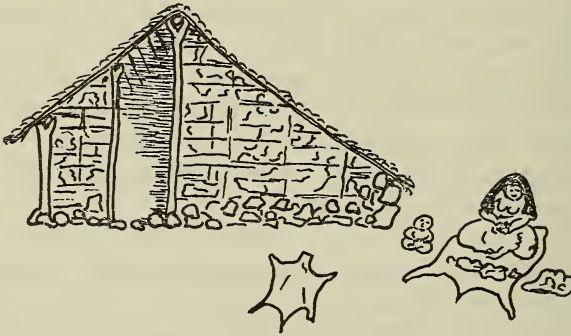


FIGURE 11.—House of Bacasewa in Conejos.

temporary lack over a period of years or whether he specifically referred to a time before the Warihio had learned to cultivate maize. Emiliano Bourbon made indirect allusion to the early lack of maize among the Warihio, when he explained the use of the wild plant guayabillo (*Salpianthus macrodontus*) for tortillas, "before they had maize." When asked if the older Warihios did not have maize, he replied that they did not and it was a thing of memory in the older men, who are now dead. This opinion was repeated or indirectly alluded to several times during travels and inquiries by several or many informants. In the words of Licha Acuña: "The antiguos (Warihios) lived in nakedness, foraging upon the natural wild food, without names, like animals." Licha lived among the most secreted Warihios and her statement neatly and quickly classified them. A Mexican rancher reported that a few wild Warihios still live (1934) in the sierras near Gocojaqui. They have neither milpas nor cattle,

but live by foraging upon the natural wild foods. Their houses are low brush shelters into which they stoop to enter. They go without clothes, are very timid, and do not permit the intercourse of "Yoris," i.e., strangers.

Their isolated position, their unsocial habits, the precipitous rocky terrain are negative conditions making the adoption of maize culture in their barrancas difficult. The long list of wild food plants known to them and which they still annually employ to some extent, the survival of the local migration habit, and many of their material culture traits, as hunting and fishing, are all positive indicators of a simple hunting and gathering culture. About the only question is when the change was made from the latter stage toward that of the more sedentary agricultural habit.

It is the author's opinion that it started with the Jesuits, the effects of whom are discernible in the Warihio in many different ways, as with their ceremonies, the cross, and the Mission in San Luis Barbarocos in the very heart of Warihio land. The shift began then and has with interruptions been continuing to the present, when maize culture with its attendant squash and beans, as well as the encroaching Mexican "ranchero," has finally become universal among them. Their common indolent attention to their milpa and inability to plant enough to carry them from one year's harvest to another attest a general immaturity at the game. After the Jesuits left, in 1767, we could expect some retrogression to older habits, when many of the family groups were still without plantings, and this transitional state continued well into the memory of such old men as Juan Campa and Bacasewa. Contemporaneous through this transitional period were groups, largely defined according to their geographical situation, who did not have milpas and groups who did. The former existed as families or isolated bands withdrawn to the broken fastnesses of obscure barranca canyons, where tillable land was non-existent and where the vast unbroken virgin forest prevailed with all its crude resources of food and sheltering caves. Ever recurrent allusions to these bands were encountered. Juan Argüelles stated. 1934:

The Warihios lived some years ago in two large caves near the top of Sierra Dos Cuates, just west of Arroyo Guajaráy. They carried water up from little wells in the canyon far below the caves, a mile or two. They wore only breech-clouts and practiced no agriculture whatever, but lived off the wild plants and animals in the forest. In one cave far around on the west side of the mountain there is running water. This also the Indians used. They were very timid and kept much to themselves.

Several other such caves were visited by the author, in a few of which Warihios were still living. Near the origin of Canyon Sapopa, high

on the north end of Sierra La Chuna, is a large cavern with a spring nearby. Emiliano and the author found much dust on the floor, fragmentary gray rock, old sherds different from the local San Bernardo pottery, charred sticks, goat dung, and, from the cave, traces of an old trail. Emiliano declared that no one had lived there within his memory and that it was an abode of the "antiguos." All these evidences establish these conservative Warihio bands as an actuality only a decade or two gone by. The conservatives of current times are mentioned repeatedly below. Today it is the groups along the Arroyo Guajaráy and upper Mayo River that show the most coherent "antiguo" culture.

With the more recent appearance of the modern Mexican *ranchero* in the *barrancas*, maize culture has again come more surely home to the lethargic Indian. In conclusion, we can therefore assume that the Warihio were without maize before the coming of the Jesuits, and that since then they have been going through a transitional stage to the cultivation of maize and all it implies in the way of material and social implications carried by the aggressive foreign Mexicans.

Squash (*Cucurbita pepo*) (*halauel* or *ha'la'we*), is planted in the milpas and about the houses in primitive gardens. It is the first of their cultivated foods to appear with the summer rains in late summer and with it they start their rejoicing *tuwuri* ceremonies. The young tender fruits are eaten at this time. The fruits do not mature until fall, when they are all picked and stored, if any are left. From the seeds is made the food "pipian" by grinding and boiling. It is common through Mexico. Noted in the high sierra of Canelo was a milpa of beans around whose margin was a zone of squash vines. Lusiano explained that in the cold sierra the squash would grow well only in the ash beds where brush had been burned. The soil apparently lacked sufficient potash.

Beans (*Phaseolus vulgaris*) (*muni*), of two or more varieties, are planted in little plots of their own. One variety is called by the native Mexicans "frijol serowi" (*serowi tegusi*) and another "frijol yorimuni." "Muni" and "yori" both stem from the Mayo tongue, the former meaning beans, the latter meaning outsider and is used freely in current Sonoran idiom. This suggests that this variety is a recent adoption into local agriculture.² Beans do best in the pine-lands, although they are also planted throughout the oak belt. They fail or do poorly in the lowland forest of the warm moist *barrancas*, perhaps because proper varieties are not available to the inhabitants.

Watermelons (*Citrullus vulgaris*) are occasionally planted, principally along the alluvial margins of the Rio Mayo. They are set out in small basins dug into the sandy soils and watered by hand, so far as the culture was observed among the native Mexicans. Neighboring Warihios were reported to cultivate them also in the same way. Only one variety was noted, small and white-seeded. They are frequently plucked and eaten before they are ripe, so voracious is the native taste for fresh fruit in the early summer. The Warihio call them "ha'lu."

² A recent collection of seed has been identified as *Vigna sinensis* Endle., the Asian cowpea.

Sugarcane (*sorghum* sp.) (ta sauwi) of a tall thin-stemmed variety is grown by the Warihio on shady moist slopes, usually along canyons. That grown by the Mexicans has a thicker stem of a reddish-purple color and with a higher sugar content. A millet type of *Sorghum* 5 to 6 meters tall was observed at one house. The seeds are ground and eaten as "pinole."

Chiles (*Capsicum annuum*) are often grown in the little garden plot near the house, much as the Mexicans of the region do.

Green onions (*Allium cepa*) are started from seed, often in little raised beds constructed of poles and elevated 1 meter or more above ground, where they are safer from the pilfering of domestic animals. (See "Elevated Structures," p. 112, and pl. 33, b).

Tobacco (*Nicotiana tabacum*) (wi'pa') is cultivated in small enclosures of sticks or poles near the house or in a general garden plot. This is usually done by only one or two members of a community. Only one variety of tobacco was observed, presumably that one which the Mexicans call "macuche" or "maquiche."

Cotton (*Gossypium* sp.) is reported by informants to have been cultivated by the Warihios in the form of two varieties. A few plants were set out near the house or in a staked garden pen. Single or several shrubs by houses in the barrancas were observed by the author, who unfortunately failed to procure samples. One variety is reported to have a relatively short fiber, being brownish in color.

The other variety is said to have a reddish flower and a white fiber 3 inches or more in length, the fibers not extending when the boll has opened but being flexed inward. When the fiber is plucked from the boll the seeds drop free. The seeds were eaten. The fiber was formerly used by the Warihios for weaving blankets and perhaps clothing. The Mexicans used it for making wicks for candles and lamps and as tow for tinder. Many of the barranca people still regularly employ flint and steel for lighting cigarettes or making fire.

Only six green bolls of this long-stapled cotton are said to be required to weigh one kilogram. Recently, Emiliano Bourbon was despatched to procure samples of this cotton. However, the plants which he knew growing as escapes along the Rio Mayo, had recently been washed away. He and others at San Bernardo state that this long-fibered cotton can still be found infrequently as escapes in the forest or about the houses of some of the barranca peoples. I also have reports of a similar long-stapled cotton from the Barranca de Cobre in southwestern Chihuahua, where it is reported cultivated by the Tarahumare. Since this cotton does not appear to be known from any other part of the world, it would appear to be indigenous to our area.

Amaranth (weywi), a variety of *Amaranthus hybridus*, is planted about the house or in the milpa along with maize. It requires considerable water. The flowering spike often turns a deep reddish purple and may bend downward with its heavy load of bracts and seeds. The fine seeds are eaten either whole or ground into flour and drunk with water or milk as "pinole." Sugar also be added. It is widely distributed in the Warihio range but nowhere extensively cultivated. They say it is too much work to care for in terms of return, that maize is easier, but it readily lends itself to small gardens near the house. Both Indians and barranca Mexicans are fond of it. It would have fitted better into the "antiguo" culture than maize of the laborious milpa, and hence may be an earlier cultivate of the Warihio. Weywi should not be confused with the common wild amaranth (*Amaranthus palmeri*), native to the

barrancas and an ubiquitous weed in the milpas. The former is known to the Mexicans as "bledo," the latter as "quelite."

Sauwi (*Panicum sonorum*) is planted in the milpas or in small gardens and like weywi is valued as a pinole or prepared and eaten in the same way. While generally known to both the Warihio and the barrancan Mexicans, it appears to be quite scarce and its culture is being lost. I found it only upon one occasion, tended in the small milpa of an old couple in Sahuacoa, near Guasaremos. They had in all only a few dozen plants, but sold me a few entire plants for samples. The plants were about 1 meter tall with large panicles of seeds just beginning to mature in late September. Like the corn, they had germinated in June with the first of the summer rains and would therefore require some 90 days to mature. Edward Palmer also collected this grass near Lerdo, Sonora, in 1889, and reported it cultivated by the Papago Indians of that locality (specimens on file in the U.S. National Herbarium). Other collection records of his are from southwestern Chihuahua in 1885, and from Culiacan, Sinaloa, in 1891. It is related to the Old World millet (*Panicum miliacium*), and it may be among the earliest of the New World cultivates. From this standpoint it merits close study. With weywi and conivari it may have preceded maize in the Warihio culture.

Conivari (*Hyptis suaveolens*) is a salvacious plant, known also to the Mexicans as "cham," similar to "chia" (*Salvia chia*), and used in much the same way. The seeds uncooked and unground are mixed with water and drunk. Specimens were taken from the milpa of an old couple near Guasaremos, who said they had planted it and that a few of the other Warihios also did. I also find specimens of it among my collections from the cave in Sierra La Chuna, mentioned above, and from the Mesa Colorado of the Upper Mayo Plateau. They regard the seeds not only as good food but curative for fevers and sluggish bowels. The seeds when mixed with a little saliva are inserted in the eye to remove objects. A hydrophyllic jell forms softly and thickly around the seeds when they are wet.

Job's tears (*Coix lacrymajobi*) is a grass of particular note; it is cultivated solely for its ornamental seeds, used for beads and rosaries. It is known by the Warihio as "pataka." With the large, hard, bluish-gray seeds they make beads and string along with a cross carved out of brasil wood (*Haematozylon brasiletto*) making a rosary. It is used to decorate the tuwuri cross. The grass is planted and grows without attention in moist places, reproducing by suckers or rhizomes. One plant is said to produce an abundance of seeds. They hang in a drooping spike on stems 4 or 5 feet long. Old Nicolas (Warihio) planted some along an arroyo below his house, but a flood later carried it away. It is reported that a large patch grew in the orchard of El Limon until a few years ago, when the cattle ate it out. It is said still to grow in Sativo, which is near Arechuybo, lying below upon the western side of the Sierra Guicorichi.

This list might suffice for an agricultural people. Yet their practice of agriculture is carried on in a shiftless and naive manner. Witness the pigweeds taking the selyeme's milpa, and the going forth in the spring with the pinch of hunger to forage upon the wild plants.

Except weywi, sauwi, and conivari their cultivates can be recognized as borrowing from their various modern neighbors, who, since the coming of the Jesuits, have been slowly dissolving the original Warihio subsistence pattern. When their cultivations do not suffice they

return readily enough to a more ancient food supply, the wild native plants which grow everywhere about them. The following lists, while they do not exhaust their hunting and gathering resources, are sufficient to show that they still are in some degree wild food gatherers, and that not long ago they were largely or perhaps entirely such.

WILD PLANTS

ROOT AND HERBAGE FOODS

Camote (chichiwo', chichi camote) (*Dioscorea cymosula* Hemsl. ex. Char.).—Climbing vines with annual stems without tendrils and large cordate leaves with the main veins all converging apically and enduring only through the summer and fall. There is a perennial fibrous root crown subtended by long vertical tubers 1 to 2 inches in diameter, which grow downward for 2 to 3 feet annually, the old tuber drying up as the new one forms. The tubers have a soft white fecula. They were and still are eaten either boiled or roasted, especially in the spring months when crop foods were scarce. It appears to have been a principal food of the Warihio. In addition to the cultivated and introduced yam of the Old World, *Dioscorea alata*, there are several species of wild edible yams from southern Sonora to South America, which were known to and regularly used by the inhabitants. They are still found in the markets of the Mexican towns, from Nayarit south and eastward, being dug by the country folk from wild plants and transported to market. In Jalisco and Michoacan they are commonly known as "camote del cerro" or "gualacamote." In Chiapas a native Indian dialect names the edible type "yumi." There are perhaps a hundred species of wild yams in Mexico and Central America, some of which are poisonous. However, all the edible species appear to belong to one group, characterized by annual, vertical, long tubers with soft white fecula, below a perennial crown with adventitious roots.

Cebollin (*Allium scaposum* Benth.).—Wild onion. This species was collected in Canelo and reported to be eaten locally. A sweeter one was reported by Lusiano to grow on the western slope of Cerro Guicorichi. Summer.

Chaqual (palasewa) (*Tigridia pringlei* Wats.).—This is a very showy plant, producing three or four flowers consecutively on a long scapose stem in September. It is common to the moister canyons at elevations between 2,000 and 4,500 feet. The bulb is roasted and eaten.

Chichiquelite (manilochi) (*Solanum gracile* Otto).—A perennial herb of the canyons. The leaves are eaten as greens and Emiliano reported the fruit as edible, but the closely related and similar appearing plant, *Solanum nigrum*, is reputed elsewhere to have poisonous fruit. It and other closely related species occur in the barrancas of the Warihios and all appear to be used indiscriminately as greens.

Chócola, the plant (capia', the root) (*Jarilla chócola* Standley).—A leafy, turgid, summer herb perennial from a cluster of tubers, growing in the shade of the warm canyon forests. The roots are baked in hot ashes, peeled, and eaten. They have a strong vegetal taste, rather bitter and woody, but those tried by the author may have been underdone. The late Dr. Carl Alsberg of the Food Research Institute at Stanford University, generously rendered an analysis of the tubers, which showed them to be unusually high in starch, approaching that of the potato. The fruit is eaten raw. It is a light white,

pudding-like mass of slightly acidic flavor suggestive of lemon with a score or more of seeds embedded in the pulp. It ripens in October and remains scattered upon the ground during the winter for long after the plant itself has disappeared, the tender skin being surprisingly preservative. Fruits of a related species are sometimes seen in the markets of Nayarit and Jalisco. So far as known they come only from wild plants. The plants could well be considered for introduction into agriculture.

Guayabillo (*Salpianthus macrodontus* Standley).—Perennial spreading bush with large fleshy roots 1 to 3 inches in diameter and 3 or 4 feet long. It is reported to have been one of the chief sources of food before they had maize. The root was beaten up, dried, then ground to fine powder like flour. Mixed with a little water it was made into tortillas. It is not eaten now (pl. 3, b).

Jicama (kamoli') (*Exogonium bracteatum* (Cav.) Choisy).—A long vine running up on trees and shrubs. It flowers in winter when leafless, making a showy display with bright reddish bracts enclosing the small tubular flowers. It has a large tuberous root, said to be as sweet as a yam. It is baked in hot ashes or eaten raw.

Laurel (*Litsea glaucescens* HBK.).—A low stiffly branched shrublet of the mountains in the pine elevations. The leaves are used as a tea and as a condiment for seasoning meats. Some purchased from a Warihio boy while in Carimechi were found excellent for flavoring pork, quite comparable in quality to that employed by us in the north.

Lechuguilla (sapari) (*Agave bovicornuta* Gentry).—This is one of the larger, broad-leaved agaves used for making the distilled liquor, "mescal." However, it is regarded as inferior to other species. Nearly all distilling is done by Mexicans at present, but the Warihio frequently drink mescal. As with other species, the pit-baked head is eaten. It is native to the Oak and Pine Forest belts.

Lechuguilla ceniza (totosali) (*Agave shrevei* Gentry).—This is a smaller species with light-gray leaves common to the more open rocky slopes of pine lands. It is reputed to be a sweet species for eating and employed in making mescal.

Mescal (*Agave yaquiiana* Trelease).—The central stalk or head and the white basal part of the leaves are used to make batari, mescal, and "dulce." The flowering stalk when it is still young and tender is cut into sections and baked in the coals for eating, as is done with all species of *Agave* in the area. Likewise the flower buds are consumed after being boiled in ollas, like squash. This species is characteristic through the lowland forests on open rocky slopes and along rocky arroyos.

In addition to the vegetablelike character of the flowers and the flowering stalk of the several species of *Agave*, the pit-baked heads are an important source of sugar in the Warihio diet, as it has been for many of the Amerindians (cf. Castetter, Bell, and Grove, 1938). All of them used by the Warihio are prepared in the same manner. The baking pit, "maya," is dug into the ground and may be large or small. A large one is 5 or 6 feet in diameter by 4 or 5 feet in depth and lined with unmortared stones. It is provided with wood, some of which is green for making better coals, with a layer of stones on top of the wood. This is burned down and the agave heads, "cabezas," are laid upon the hot stones and coals and completely covered over with green palm leaves. Earth is put upon the leaves so that little or no heat or steam escapes. Thus the agave heads are pressure steam-cooked for about 2 days.

The pits I observed of the Indians were much smaller and unlined with stones and were used in conjunction with tuwuri. Doubtless some ceremony

attends the cooking of agaves for such occasions, but I failed to obtain notes.

When taken out of the "maya" the heads are ready to eat, the center pulp being a sweet nourishment with a molasses-like flavor. The leaf butts or bases are also sweet but are stringy with fiber. They are therefore chewed and sucked upon and the quids rejected. It is an important though irregular food of the Warihio and was probably more important in premaize times. If the stranger eats it in quantity, it acts upon him as a purgative.

From this cooked agave the Warihios brew "batari." The chopped pieces are put into large ollas of water, and as a catalyzer the root of a vine (*nawo*) (*Phaseolus caracalla* L.) is put in, which they say causes the water to "boil." After a day or so the bubbling stops and the batari is ripe for drinking. The older the brew becomes after this point, the weaker it grows and they speak of it depreciatively as "pasado." If plenty is drunk, inebriation ensues. The drink has a sour astringent flavor.

Eight or ten species of *Agave* grow in Warihio country throughout all elevations. Some are better flavored and sweeter than others. Among the most favored are "jaiboli" (*temechi'*) of the Guajaráy country, "masahuari" near Jecopaco de las Flores, and "chahuiqui" (*chawiki'*) of Sierra Guicorichi rocky summits. None of these three species have botanic names. The Mexicans of the region generally call agaves "mescales," but in many cases have adopted the Indian names for certain species or varieties. No instance of agave cultivation was noted among the Warihio. However, the Mayos frequently collect wild species and cultivate them near their houses. One such instance was observed in the village of Chijucu, near Navojao. A "lechuguilla ceniza" (*Agave* sp.), there was reported brought from the wild near Los Escolares above Tepahue by the Rio Cedros, because of its superior eating qualities. Another species native to Isla Lechuguilla, a sand-spit island off the northwest coast of Sinaloa, is reported to have been introduced to the mainland in recent times by the Mayo Indians.

Mostasa (*wachelai*) (*Dryopetalon runcinatum laxiflorum* Rollins).—A cruciferous winter herb maturing in early spring. The leaves are cooked as greens and the seeds mixed with water are taken for medicinal purposes. The seeds are also mixed with animal fat and applied as an unguent.

Orégano (*mapá'*) (*Hedeoma floribunda* Standley; *Hedeoma patens* Jones; *Monarda austromontana* Epling).—These three plants belonging to the *Salvia* family are all used for seasoning foods under the Spanish name, orégano. *Mapa'* is the Warihio name for the two similar appearing species of *Hedeoma*, which they also decoct for treating stomach trouble. Another orégano (*Lippia palmeri*) in the *Verbena* family grows upon the more arid mesas of the lowlands. It is used in the same way by the lowland people, and in the author's opinion is quite equal to or better than the orégano seasoning of northern kitchens.

Pochote (*wacapi*) (*Ceiba acuminata* (Wats.) Rose).—One of the kapok trees. Young plants form a large, elongate, spindle-shaped corm, soft, juicy, and white. It is baked in the coals and eaten. The dark-brown seeds have a nut-like flavor, ripen in winter, and are reported to be eaten. They are rich in oil.

Palma (*ta'ku*) (*Erythea aculeata* Brge.).—The soft white vascular tissue in the center of young growing palms is eaten anytime, either raw or roasted in the coals. The larger palm (*Sabal uresana*), which also grows in the region, is also so employed.

Quelite mahso (*Amaranthus palmeri* Watson).—This is a common pigweed of the summer, found along most any cleared or open land, and a pest in the milpas.

The young green leaves and tips are cooked as greens. Other related species, as well as several other herbs, may be used as pot herbs and generally are called "quelites."

Saiya (*saiya*) (*Amoreuxia palmatifida* Moc. and Sesse).—Low erect summer herb with a showy orange flower perennial from tuberous roots. The roots are eaten roasted or boiled, preferably roasted. The young tender green fruits are eaten raw and have a piquant, condimentlike, distinctive, and pleasant flavor. I have eaten them in salads with much satisfaction. At Comondu in Baja California the Saiya is still esteemed as a food by the Comondu people. The roots are employed in soup, or baked, or dried and ground into flour for tortillas. The young pods are eaten green and the seeds are employed as coffee. The plant merits introduction into northern gardens. Several species have been described from Sinaloa.

San Pual (*Tagetes jaliscana* Greenman).—Annual summer herb of the pine country brewed as a tea. Anisilla, *Tagetes filifolia* Lag., is also so employed. It has a licorice flavor.

Socoyol (*Oxalis albicans* HBK.).—A small, decumbent herb with bright yellow flowers common to the moist meadows of the mountaintops. The leaves are eaten as a relish or salad.

(Tai-é' choli) (*Agave* sp.).—This is one of the smallest of the Agaves, the rosette of leaves being not over 5 or 6 inches broad and resembling *Agave parviflora* Torr. The numerous leaves are filiferous, 2 to 3 inches long, and with white brushlike marks above. It is sometimes eaten because of its sweetness after pit-baking as with other species. The flowering stalk is narrow, straight, and light, and was reported by Emiliano and others as formerly used as the shaft for arrows.

Yerbanís (*Tagetes lucida* Cav.).—A composite herb of the meadows of the high pine country that makes a refreshing, aromatic tea. It has a wide use among the Mexicans, Tarahumare, and Wariho, and is occasionally found in the markets. It is also used as a medicine to relieve headaches and stomach-aches.

SEED FOODS

Aguaro, peritos (tancócohi') (*Martynia annua* L.).—This is a common wayside summer annual, which may form dense colonies up to 1 m. tall. The nutritious seeds with a high content of oil are eaten whole or ground into a paste. The dry fruits are burned and the ashes rubbed over the limbs for paralysis or "calambre." *M. fragrans* Lindl. is also used for the same purposes. The large tuberous roots of *M. altheaefolia* Benth. are reported to have been dug up in the dry season by the Mexican rancheros and fed to their cattle when pasture was scarce.

Algarroba (yepówicha) (*Acacia pennatula* (Sch. and Cham.) Benth.).—The seeds (or seed pods?) are reported eaten formerly and still are in times of famine. Winter. They were roasted and ground on the metate.

Algodon (*Gossypium* sp.).—The seeds of cultivated or escaped plants are reported to have been eaten (see p. 87).

Biznaga (teiwe') (*Ferocactus* spp.).—The raw seeds are eaten whole or ground and eaten as "pinole," "atole," or for making tortillas. One species is a common cactus throughout the Rio Mayo hills of lower elevations and produces an abundance of seed in late summer. Another is *Ferocactus alamosanus* Brit. and Rose, which grows upon the rock cliffs in the pine and oak forests of the higher mountains.

Chirowi, huinola (sinala) (*Acacia cymbispina* Sprague and Riley).—One of the most abundant trees of the Thorn Forest of the lower elevations. The seeds are roasted, ground, and eaten in the form of atole, that is, as a gruel with water or milk, or the seeds are ground and made into tortillas. From Alamos south through Sinaloa this tree is known as "huinolo" or "huinola." The Mayo people around San Bernardo know it generally as "chirowi." The roots are decocted for stomach complaints.

Encino (hachuca) (*Quercus arizonica* Sargent).—The sweet acorns are eaten raw. The leeching and cooking culture employed by the Coahuila Indians of California and other northern tribes is apparently unknown to the Warihios. Another oak called "cusi," *Quercus albocincta* Trel., also has relatively sweet acorns which are eaten out of the hand. The acorn is known as "bellota."

Guasima (see also under Fruits). The seeds were employed as coffee.

Hecho (chiki) (*Pachycereus pecten-aboriginum* (Engelm.) B. and R.).—A giant cactus common to Thorn Forest and characteristic of the Short-tree Forest of the barrancas. The seeds are boiled to separate them from the pulp of the fruit, ground and boiled again, to produce a thick, nourishing, oily paste. The pulp of the inner rind is cooked into a jelly or jam known as "miel de hecho." The bristles, together with the pericarp, are employed as combs or brushes for the hair, whence the botanic name.

Jeco (wasiki) (*Prunus zingii* Standley).—A large leafy tree of the canyons with a dry hard fruit, which falls upon ripening. The hard hulls are scraped or worked off and the remainder is ground up on the metate and cooked into atole or ground and made into tortillas. May, June, and July. It is reported much used formerly and is still used to some extent.

Jojolino (*Crotalaria* spp.).—The seeds are ground and eaten as pinole. This name appears to be a corruption of "ajonjoli," the sesame of the Old World, *Sesamum indicum*.

Mauta (ma'a') (*Lysiloma divaricatum* (Jacq.) McB.).—A dominant forest tree. The seeds are roasted, ground, and made into atole, which is any ground seed mixed with milk or water. Fall.

Mesquite (hupala') (*Prosopis juliflora* (Swartz) DC.).—The meat of the seed pods, known as "péchita," was prepared by boiling in water. It is reported to have a sweet taste. The water in which the "péchita" was cooked was drunk. The seeds after being roasted were ground and eaten as atole.

Palo colorado (welahi') (*Caesalpinia platyloba* Watson).—The seeds were roasted, ground, and eaten as atole. November and December.

Palo fierro (*Pithecellobium undulatum* (B. and R.) Gentry).—A low spreading tree similar in habit to mesquite. The seeds were roasted, ground, and eaten as atole, or ground and made into tortillas. Fall.

Tabachin (tapakachi) (*Caesalpinia pulcherrima* (L.) DC.).—Seeds are eaten raw when young and tender. The muleteers grab the pods hanging by the trail side, open the pods, and nibble the seeds as they walk. The seeds are as sweet and tender as peas after the seed coats have been removed. August and September.

Tepeguaje (machawi) (*Lysiloma watsoni* Rose).—The seeds are roasted, ground, and made into atole. Fall. It is a tree of hard, strong, durable wood, the bark of which is chewed for ailing teeth and gums and to tighten the teeth. Common to the barrancas and to the savanillas of the foothill valleys to the south.

Wacoporo (*Parkinsonia aculeata* L.).—Like tavachin the seeds are eaten raw when green and tender. Spring. It is one of the common Palo verde trees, thought to have been introduced from the Old World.

FRUITS

Arellane (chokey) (*Psidium sartorianum* (Berg.) Ndzu).—A slender evergreen tree of the canyon bottoms bearing a small fruit, lemon yellow when ripe. It is eaten raw. The Mexicans make a sweet jam of it. The Warihios mash and mix the fruits with "panoche," the crude sugar of cane. Winter. The wood is employed for posts.

Bebelama (*Sassafridium macrophyllum* Rose).—Tree of the barranca canyons. The rather bitter fruit is eaten raw. Fall.

Chalate (wowuli) (*Ficus radulina* Watson).—This is the tallest of the wild figs and has the largest, best-flavored fruits. These are eaten fresh or dried. Burros and other animals are also fond of them. The tree grows along the barranca arroyos where ground water is always available.

Chapote (*Casimiroa edulis* Llave and Lex.).—A tall solitary tree of the more open canyon slopes bearing an edible fruit as large as a small apple, almost filled with three or four large hard seeds. The sweet granulate pulp is eaten fresh.

Chiltepín (kokoli) (*Capsicum baccatum* L.).—Small slender shrub with round red berries widely used as a red pepper seasoning; very hot but with an excellent flavor. They are also exported to the United States and can be found in the markets of Tucson and Los Angeles.

Choyitas (we' churi) (*Mammillaria* spp.).—The small crimson or red fruits are eaten raw. Birds and children are especially fond of them.

Chuna (chuna'), nacopuli (*Ficus cotinifolia* HBK.).—This is the most common wild Mexican fig, abundant along many of the arroyos in Thorn Forest and Short-tree Forest. The fruits are eaten fresh or dried although they have little to recommend them. *Ficus padifolia*, known as "chuna" or "nacopuli," has similar small fruits, but appears limited to the moister barranca canyons.

Guamuchil (makuchuni) (*Pithecellobium dulce* (Roxb.) Benth.).—A large tree spontaneous along the alluvial rocky margins of the river and the arroyos. The pulpy, rather acidulous aril surrounding the seeds is a favorite spring food of the Mexicans and Indians. Women and children journey along the streamways seeking the trees with sweeter pods and these trips in guamuchil season appear to give them pleasant times. As in pitaya season, which comes shortly after, they go equipped with baskets and long poles affixed with a hooking prong, thong-bound at the end. The children climb the trees securing the higher pods that cannot be reached from the ground. What they do not eat on the spot, they carry home in baskets to dry in the sun. Children have been known to gorge and sicken themselves. Among the Mexicans, trees on private property, although not planted, are regarded as owned and may be allocated to pickers on terms by the owner.

Guasima (ahiya') (*Guazuma ulmifolia* Lam.).—A spreading leafy tree common along the arroyos of the Thorn Forest and Short-tree Forest canyons. The young fruit is eaten raw when in the formative stage. The mature seeds with the fruit are ground for making tortillas, atole, and pinole. The seeds after separating from the fruit are also employed as coffee. The soft, pliant, white wood is much used in making chairs, handles, balls for the kicking race game, and general construction. Altogether it is one of the most useful trees.

Gumbro, bainora (susutu) (*Celtis iguanea* (Jacq.) Sarg.).—The orange ripe berries are casually eaten. November through winter. They are also much eaten by foxes and birds.

Jeco (wasiki) (*Prunus capuli* Cav.; *Prunus gentryi* Standley).—These are small trees growing along arroyos and meadow margins in the higher mountains. The fruits are eaten fresh or dried. The wood is used for tool handles.

(Mahóy piwála) (*Matelea tristiflora* (Standl.) Woodson).—Summer vine of the milkweed family growing in the shade of the Short-tree Forest. The young tender fruits are eaten raw or roasted. Late summer or fall.

Manzanilla (*Arctostaphylos pungens* HBK.).—The berries are eaten fresh or dried by Warihio and Tarahumare.

Melon de coyote (ha'lu) (*Cucumis anguria* L.).—This is a small ground vine infrequent in the Rio Mayo country. The young fruits are eaten by the Warihio. The selyeme of the Guasaremos area also recommended the roots decocted as a remedy for stomach and bowel ailments. The plant has a very wide scattered distribution, being found in both the Old and New Worlds. In North America it has been reported or collected from a few distant localities on both Atlantic and Pacific coasts. It may have been introduced by early Amerindians.

Papache (hosocola) (*Randia echinocarpa* Moc. and Sesse).—This is a sprawling shrub with thick stiff branches common along arroyos and valleys in lower elevations. The grotesque excrescentious fruits are gathered as they begin to ripen in early winter and are brought into the house. If left to ripen on the shrubs the birds and mammals soon despoil them. When ripe the hard pericarp is filled within by a black puddinglike sweet mass with numerous seeds. The black pulp is eaten raw and children of both Mexicans and Warihios are very fond of it.

Papache borracho (*Randia obcordata* Watson).—A slender thorny shrub with stiff spur branchlets common in the Thorn Forest. The small fruits, an inch or so in diameter, have a pulp similar to the larger-fruited papache and are occasionally eaten by children. However, it is reported to make them bilious and sick, whence the name "borracho," meaning drunk.

Pitaya dulce (meweri, mewe) (*Lemaireocereus thurberi* (Engelm.) B. and R.).—This is the Organ Pipe cactus so dear to the palate of the Sonoran Indians and Mexican rancheros. Of all the wild fruits this is undoubtedly the best flavored and most refreshing. It ripens in late May and June during the hottest weather; hence the gatherers rise in the very early morning and vie with one another for the choicest trees and fruits. Long hooking poles of oate (*Arundinaria longifolia*) are carried for reaching the fruits which are knocked to the ground. What are not eaten on the spot are carried home in baskets, to be eaten later, or dried, or cooked into jam. When ripe the fruits are usually bright or purplish red and the areoles of spines are easily knocked off with a bit of brush. A yellow-fruited variety has also been reported.

Pitaya barbona (matagachi) (*Cephalocereus alensis* (Weber) B. and R.).—This is a smaller type of tree cactus than pitaya, with smaller fruits ripening later in July and August. It occurs in the Short-tree Forest on rocky slopes and although eaten by the Warihios and Mexicans is not so sought after. The term "barbon" comes from the white beard which grows on the fruiting branches.

Sapuche (*Randia laevigata* Standley).—A small, localized, irregularly spreading tree or shrub along the lower borders of the Oak Forest. It bears a pear-shaped fruit, ripening in November. The Warihios gather them as they do papache and eat them raw. A related species, Sapuche de la Sierra (*Randia*

mollifolia Standley), has a similarly shaped edible fruit, but is even more localized. It was first found about some caves on Sierra Saguaribo above Ocurahue, which had been inhabited in times past.

Sahuiliqui, datil (sawiliki) (*Yucca grandiflora* Gentry).—This is a tree Yucca with large fleshy fruits. This species and related ones occur in scattered colonies on rocky slopes of middle and higher altitudes of Sonora and Chihuahua. The large ripe fruits are a prime source of sugar through the hinterland for both the Warihio and the Mexican rancheros and the flower petals are cooked like fresh squash. The sweet fruits are eaten raw or roasted, but the seeds are rejected by the rancheros. The Warihios report that the young tender fruits may also be eaten raw or roasted and the seeds ground and eaten. However, the seeds are known to contain high percentages of bitter sapogenins, so if the Warihios consumed them, it may have been a famine food. The seeds of the related *Yucca arizonica* McKelvey contain up to 30 percent of oil and more than 10 percent of protein and are doubtless nutritious. Yucca flowers have been reported to be high in vitamins.

Talayote (pasagi) (*Vincetoxicum caudatum* (Gray) Standley).—Low, decumbent, perennial, milky herb. The young fruits are eaten raw or roasted.

Tempisque (*Sideroxylon angustifolium* Standley).—Tree of the foothill arroyos and valleys. Fruit eaten raw. The Mexicans make a sweet jam from the fruit. July.

Tescalama (wehtoli) (*Ficus petiolaris* HBK).—Large tree scattered upon cliffs. The bright yellowish trunk and white roots roping down rocks and cliffs make it a conspicuous cliffdweller. The fruits are eaten fresh or dried, but are of poor quality.

Tomatillo (pasagi) (*Saraca jaltomata* Schlecht).—A low, heavy, herbaceous bush in moist soils of the higher elevations. The fruits are reported eaten. Summer.

Tonchi (*Marsdenia edulis* Watson).—A large leafy vine of the Short-tree Forest. The young tender fruits are eaten raw. Summer.

Tuna (tuná') (*Opuntia* spp.).—Prickly pear. Only the *Platyopuntia* species were reported as edible. Several wild species are acceptable and a few orchards of domesticated varieties are found in the mountain highlands, as at Canelo. The fruit is collected, peeled, boiled in large ollas, then ground, seeds and all, on the metate and eaten. It is also eaten raw. Summer.

Uvalama (huhuwalli) (*Vitex mollis* HBK.).—Tree of the canyons and foothill valleys, especially in the savanillas. The fruit is eaten raw or mashed up with sugar. Summer. It is rather bitter. Occasionally one sees the fruits for sale in the lower markets.

CONSTRUCTION AND FUEL

Amapa amarillo (*Tabebuia chrysantha* (Jacq.) Nichols).—Forest tree with a massive bright-yellow bloom in the fall. The wood is valued highly for beams, cabinetwork, and construction. Another species, "amapa colorada" (*Tabebuia palmeri* Rose), distinguished by its pink to red flowers, is much more common and the wood is equally valued. They are very enduring, strong, hard, and are attacked by few insects.

Algodoncillo, papelio (*Wimmeria mexicana* (DC.) Lundell).—A slender tree found on rocky hilltops; employed for posts and general construction.

Batamote (*Baccharis glutinosa* Pers.).—The common riparian bush along arroyos. It is employed in making roofs of brush, as on "ramadas."

Batayaqui (talaka'o) (*Montanoa rosei* Rob and Greenm.; *Montanoa patens* Gray).—These two tall composite shrubs of the barrancas are very similar in appearance but *Montanoa rosei* occupies the lowland canyons and flowers in the spring, while *Montanoa patens* grows in the higher elevations, even occurring with the pines and flowers in the late summer and fall. In both the white bloom is profuse and odorous. They are used by the Warihios in making crates, "guacales," granaries, fences around houses or gardens, in the sides of mud-wattle houses, as well as to support underlying grass in earthen roofs, a function they share with several other shrubs having long straight branches. Formerly they were employed as the points for arrows, poisonous properties being attributed to them; whence the name "batayaqui" or "mata yaqui", meaning Yaqui killer. The leaves are still used medicinally as poultices for bruises, sores, and aches when coated with animal fat or grease, or better with some patent ointment when available.

Brasil (huchachago) (*Haematoxylon brasiletto* Karst.).—A small tree or shrub with a deeply fissured trunk. It is used for uprights, for the sides of mud-wattle houses, and for posts in corrals. From the deep-red heartwood little rosary crosses are carved and a light red dye is obtained by boiling it in water. The wood is excellent for fuel and will burn green; it is widely employed throughout the lowlands of Mexico.

Carrizo (*Arundo donax* L.).—This giant reed of the Old World is so widely dispersed along the creeks, rivers, and settlements of the warm lands of Latin America it appears as if a native. Could it be an early Amerindian introduction? It is used by the Warihios for making pens for fowl and pets, for storage bins in houses, etc.

Kowusamo (kowusamo) (*Coursetia glandulosa* Gray).—Large shrub with tough springy branches which were used by the Warihios for bows. It is also used for fuel and construction.

Chilicote (*Erythrina flabelliformis* Kearney).—Small tree of the rocky baranate slopes with very soft white wood employed for gourd and bottle stoppers.

Chirowi, huinola, huinora (sinala) (*Acacia cymbispina* Sprague and Riley).—It has an abundant use as fuel along the west coast of Mexico. In Sinaloa it is extensively employed in making charcoal. See also under Seed Foods.

Chopo (cho'po) (*Mimosa palmeri* Rose).—A small Thorn Forest tree used for construction and fuel.

Encino, roble, Encino blanco (kusi, hachuka, sahawo) (*Quercus* spp.).—There are 8 or 10 species of oaks in Warihio land which have a limited use for building and a more general use as fuel.

Guiloche (*Disphysa occidentalis* Rose).—A small spreading Thorn Forest tree with yellow flowers and tough pliant wood. At San Bernardo it was reported to have been used in earlier days as a battle club. Used for fuel and posts.

Güirote de Culebra (*Serjania mexicana* Willd.).—A large vine climbing high upon trees. The tough stems are often employed by the forest peoples, whether Indian or Mexican, as cordage for binding up such gatherings as wood, grass, poles, or herbs to carry home. *Serjania palmeri* and *Gouania mexicana*, similar tough vines, are also employed as rough cordage.

Guasima (ahiya) (*Guazuma ulmifolia* Lam.).—Employed in construction and furniture; see under "Fruits."

Mauta (sahí') (*Lysiloma divaricatum* (Jacq.) MacB.).—A dominant forest tree. The wood is regularly employed in the construction of buildings, corrals, and as fuel.

Mesquite (hupala) (*Prosopis juliflora* (Swartz) DC.).—Used for fuel and in construction. See also under "Seed Foods."

Nesco (*Willardia mexicana* (Wats.) Rose).—A small tree with a light gray trunk, flowering leafless in the dry season. Used in construction. Reported to poison honey.

Otate (pakwi, pakuwe') (*Arundinaria longifolia* Fourn.).—The bamboo of the Rio Mayo country, growing in the moist shady canyons of the barrancas. Estrella Canyon in the Cedros range appears to be about its northern limit. The poles are employed for building roofs, granaries, corrals, fishing, and fruit-gathering, etc. Barranca dwellers cut and carry them to the lowlands, selling them by the piece.

Palo blanco (*Piscidia mollis* Rose).—It is a sturdy white-barked tree, oaklike in habit, scattered through the foothill valleys in sandy alluvium. It is used for fuel and posts. Reported also to be used in poisoning fish.

Palo chino (*Pithecellobium mexicanum* Rose).—A mesquite-like tree of the alluvial bottomlands. It is used in construction, for musical instruments, and as fuel.

Palo chino (*Pithecellobium mexicanum* Rose).—A mesquite-like tree of the lowlands used for posts, for general construction, and as fuel.

Palo de asta (*Cordia sonorae* Rose).—A slender tree flowering white in the spring dry season. The wood is used in construction and for tool handles.

Palo duce (*Eysenhardtia polystachya* (Ort.) Sarg.).—Small shrubby treelet with light checkered bark and hard durable wood employed in building, tool handles, cane mills, etc. An infusion is made of the wood and drunk for stomach trouble and other afflictions; it forms a dark reddish brew, which floresces brightly under ultra-violet light.

Palo joso (*Albizia sinaloensis* Brit. and Rose).—A rather large tree infrequent in the lower valley where ground water is available. The long trunks are used for beams, posts, and other constructions.

Palma (ta' cu) (*Sabal uresana* Trelease).—The largest native palm of the Rio Mayo foothills. The leaves are employed for thatching roofs. The Warihios also collect the terminal leaf buds and strip out the young tender segments for making baskets, while the mature leaf is employed in "petates," the plaited mats. Sections of the trunk also serve for posts, uprights, and beams. A smaller species of palm, probably *Erythea aculeata* Brge., is also employed for baskets and petates, while the leaves are considered superior to those of *Sabal uresana* for roofing. See also under "Root and Herbage Foods."

Pino (heko) (*Pinus* spp.).—The wood is employed by the Warihios in making their musical instruments, the violin and the harp. Pitch slabs are used for torches and lighting houses in the barrancas and are known by the Mexican name of "ocote." The resins are employed medicinally for breaks and bruises, catarrh, and other afflictions. The wood is used generally in construction, for shakes, furniture, etc. *Pinus ayacahuite* Ehrenb., *P. arizonica* Engelm., and *P. oocarpa* Schiede are common species.

Sabino, cedro (hawoli) (*Taxodium mucronatum* Ten.).—Fine groves of these trees occur in the canyons east of the Cedros River and more scattered ones in higher affluents of the Rio Mayo. Large bowls and spoons are made from the wood.

Sacate.—Sacate is the common name for grass in Mexico. The larger coarse species are used as a lay-bed for earthen roofs. *Muhlenbergia gracilis* and others are used for packing the "aparejos," the Mexican pack saddle.

Sauce (*Salix bonplandiana* HBK.).—Used for posts and furniture.

Tepeguaje (machawi') (*Lysiloma watsoni* Rose).—Large spreading tree of the barrancas. The very strong heavy wood is used in construction. The Mexicans employ it for making gears and rollers in sugar mills. The bark is used in tanning skins, chewed to harden the gums and strengthen the teeth, or decocted as a potion for fevers.

Vara blanca (*Croton alamosanus* Rose).—An abundant, slender, closely branched shrub employed as a first layer covering over beams in earthen roofs. Over them is laid grass and finally clay soil. It is also used in fences. The roots are mashed up and cooked in water, making a very bitter potion for indigestion and stomach troubles, "empache del estomago."

Vara prieta (*Brongniartia alamosana* Rydb.).—A closely colonial Thorn Forest treelet or shrub commonly used through the Warihio area for fuel and construction, especially in mud-wattle construction.

MEDICINAL AND MISCELLANEOUS USES

Aguaro, peritos, see under "Seed Foods."

Amole (hauwe') (*Agave vilmoriniana* Berger).—A limber-leaved, unarmed, cliff-dwelling Agave employed in washing clothes. The dry fibrous butt ends of leaves cut from plants that have flowered and died are rubbed directly upon the clothing, the sapogenin making a soapy spume with the rubbing. The leaf bases are usually beaten with a rock to free more of the sapogenin and lengthen the bristles. It functions as a readymade, self-soaping brush.

Anisillo (*Tagetes filifolia* Lag.).—A delicate, aromatic, colonial, summer annual common in the pine meadows of the mountains. A licoricelike tea is made from the dried herbage as a refreshing drink and to relieve minor indispositions.

Añil (*Indigofera suffruticosa* Mill.).—Emiliano reported that the Warihio formerly employed the herbage for making a dark dye for woolen fabrics.

Ariosa (wachomo') (*Viguiera montana* Rose).—A harsh-leaved, perennial, composite herb of the oak belt. Emiliano reported that the Warihio women bind the leaves on the stomach to facilitate menstruation and to induce labor pains.

Bacatón (talakao) (*Lippia pringlei* Briq.).—Licha Acuña reported this shrub or small tree as being particularly efficacious in treating many different ailments. The sap is used for toothache. The leaves after being steeped in hot water are coated with mentholatum, grease, or other ointment and applied to bruises, headaches, etc.

Baiboria (nachachicoli) (*Elytraria squamosa* (Jacq.) Lindau).—A common, xerophytic, perennial herb of the Thorn Forest. The herbage is decocted or infused for fevers.

Barboria (*Dorstenia drakeana* L.).—A small herb of the shady barranca forests with tuberous roots, which are decocted for treating fevers. They may be found in the markets of the lowland towns.

Beraco, veraco (peychi) (*Stemmadenia palmeri* Rose and Standley).—A treelet or shrub with heavy green foliage common along the arroyos and canyon bottoms. The Warihios report it as efficacious in treating sore eyes, the latex being inserted in the eye from the dripping cut stem. It is also applied for other afflictions.

Brasil (huchachago), see under "Construction and Fuel."

Buli (wuli) (*Lagenaria siceraria* (Mol.) Standley).—The cultivated gourd vine, the hard shell of which is widely used in Mexico as a dish, water container, and dipper. Nearly every "rancheria" in Sonora has one of these hung or placed near the family drinking ollas, frequently floating in it. The Warihio,

Mayo, and Yaqui Indians also employ them as gourd rattles in their dancing ceremonies.

Cacachila (himoli) (*Karwinskia humboldtiana* (Zucc.) R. and S.).—This is an abundant shrub, usually holding leaf longer into the winter dry season than many other plants. The leaves are put on the forehead to relieve headaches, preferably with some aromatic salve. The fruits are sometimes eaten by small children and are reported to make them weak and produce trembling. The author has observed "cholugos" (*Nasua narica*), eating the fruits with gusto. The seeds are known to contain a dangerous toxin.

Cachana (*Helianthella madrencia* Watson).—Composite herb of the high pine mountains. The roots are used in treating rheumatism and other similar ailments.

Chanate pusi (*Rhynchosia pyramidalis* (Lam.) Urban).—A leguminous vine with bright lacquer-like seeds, half red and half black, which ripen through the fall and winter, and from which the plant takes its Mayo name; "chanate" meaning bird, and "pusi," eye. The Mayos are reported to have used the seeds in necklaces and they are also regarded as having medicinal properties. The seeds are ground and mixed with an oil or grease and applied as an ointment to sores, bruises, headaches, and similar troubles. I have no definite note that this plant was or is employed by the Warihios, but it is common through their environment. It is found in the subtropics and tropics of both Asia and the New World.

Cardo (tachiná') (*Argemone ochroleuca* Sweet).—A white-flowered poppy common in fallow fields and about milpas. In San Bernardo it was reported that the juice of the plant as it exudes is applied to sore eyes.

Chirowi, see under "Seed Foods."

Chopo, palo chopo (cho'po) (*Mimosa palmeri* Rose).—A small thorny Thorn Forest tree common in the foothill valleys. Emiliano reported that its bark was chewed to harden the gums and for ailing teeth. It is also used for construction and fuel.

Cocolmea (*Eupatorium quadrangulare* DC.).—A tall, shade-loving, composite herb of the canyons reputed to have curative properties. The stems are quadrate.

Cominillo (*Pectis stenophylla* Gray).—A low, aromatic, perennial herb on coarse rocky soils. The natives of San Bernardo make an infusion of the herbage and inhale the hot vapor in treating colds.

Confituria (*Lantana horrida* HBK.).—A spreading bushy shrub with orange-red flowers, rather common through the barrancas. A decoction of the herbage is made as a wash for insect stings and snake bites; small doses may also be taken orally.

Confituria blanca (*Lantana velutina* Mart. and Gal.).—A low, thin, spreading shrub with white flowers, through winter and spring. It is abundant through the Short-tree Forest. Like the preceding species it is used for snake bites and stings. Other confites employed in the same way are: Confituria amarillo (*Lantana glandulosissima* Hayek); confituria grande (*LAGASCEA decipiens* Hemsl. a composite); and confituria negra (*Tournefortia hartwegiana* Steud.), in the Borage family.

Copal, see "Torote."

Copalquin (hutetiyo) (*Hintonia latiflora* (Moc. and Sesse) Bull.).—A slender tree of the barrancas, flowering showily in summer. The tree is highly regarded as a specific cure for fevers and for its purgative properties. The bark is boiled in water and taken as a potion. As a purgative, it is boiled with salt and drunk before meals. No specific case of the Warihios using the

decoction was noted, but the tree and its attributed medical properties are certainly known to them and there is little doubt but that they so employ it. The tree is also used in construction and fences. A variety grows in the more arid lowland Thorn Forest and is similarly employed. Copalquin is widely known as a fever cure.

Corneton del monte (wahtauwi) (*Solanum verbascifolium* L.).—A large-leaved, spreading shrub common in the warm moist canyon bottoms of the barrancas. The leaves coated with grease or salve are laid on sores or applied to the forehead for headaches. The Mexican name is also applied to *Nicotiana glauca* Graham, and probably others.

Coronilla (*Berlandiera lyrata macrophylla* Gray).—Herb of the mountain meadows. It is much sought after by the herb gatherers who transport and peddle it to the herbalists in the lowland towns. It was also pointed out by the Warihio, Lusiano, who stated that it is used in treating stomach troubles, either as an infusion or decoction.

Ensangregrado (he'uho') (*Jatropha malacophylla* Standley).—So called in the vernacular from the pale pinkish or brownish juice which exudes when the stem or bark is cut. It is a smooth-limbed turgid shrub of the barrancas. As for torote papelio, the exudate is applied to cankers and other mouth sores, directly from the cut twig end. Being abundant, this medicine is almost always at hand. *Jatropha plataniifolia* Standley (Gentry, 1942 a, p. 166) is a synonym of this species.

Escosionero (*Iostephane heterophylla* Hemsl.).—Composite summer herb of the mountains. The roots are valued for their medicinal properties and it is one of the plants handled by the drug trade in the lower towns. It is known to the Warihio, but informants could not supply me with any other name, which suggests it is not one of the original items in the Warihio pharmacopodia.

Escoveta, Arenilla (hipechila) (*Dalea diffusa* Moric.).—This species and *Dalea grayi* Vail, "popote," are slender wandlike shrublets frequently employed by both Warihios and Mexicans as brooms. Several of the long stems are lashed together to form a handle, while the terminal spread of diffuse branchlets constitutes the actual brush.

Estafiate, fiata (*Franseria acanthicarpa* (Hook.) Cov.).—Annual ambrosialike herb of the summers. It is highly regarded as an infusion or decoction in treating stomach troubles, colds, and other ailments.

Frijol cimarron (nowa') (*Phaseolus caracalla* L.).—A large bean vine with lavender flowers in late summer and fall, commonly found climbing over shrubs and upon trees. The Warihios use the enlarged roots as a catalyzer in preparing their fermented drink, batari (see text, p. 91). Another bean vine with somewhat coarser stems and procumbent upon the ground (*Phaseolus metcalfei* (W. and S.)), is also reported used in the same way. It is quite common over median elevations of Sierra Canelo.

Golondrina (*Euphorbia adenoptera* Benth.).—The herbage is decocted in water and used as a wash for bites and stings and also for sores. This is a small prostrate spurge, scarcely separable by the layman from other species in the same area, as *Euphorbia arizonica* Engelm., and *Euphorbia gracillima* S. Wats., which are employed in the same way. Medicinal properties are widely ascribed to the golondrinas in Mexico.

Gordolobo (*Heterotheca subaxillaris* (Lam.) B. and R.).—A common field-side weed in middle and higher elevations infused or decocted for curative practices.

(Hichiconi) (*Tillandsia inflata* Mez).—This is an attractive epiphyte growing upon oak limbs or rock cliffs. The cuplike axils of the leaves catch and hold rainwater for many days. The Warihios and others drink therefrom, where and when other water is not available.

Juve (*Bidens ferulaefolia* (Jacq.) DC.).—Composite herb of the high meadows with yellow rays. At Memelichi in the Sierra it was reported that the Tarahumaras make an orange-colored dye from the yellow flowers for coloring their weaving wools.

Quiqui (kiki) (*Laelia autumnalis* Lindl.).—A showy orchid growing on oak limbs and rocks in the mountains. The Warihios employ the mucilaginous sap of the pseudobulbs as a glue in making their musical instruments, principally the violin. It is applied directly by rubbing the skinned pseudobulb along the seam or wood surface to be jointed. There is also a belief, reported at Guarsaremos, that where "kiki" grows is no place to plant maize, for it will fail or do poorly.

Mantela de Maria (*Ipomoea pedicellaris* Benth.).—A large copious climbing vine with reddish-purple flowers, common in the lowlands. Summer. The seeds are taken as a purgative after being ground, roasted, and boiled in water.

Manzanilla del rio (*Gnaphalium leptophyllum* D.C.; *Gnaphalium leucophyllum* Gray).—These and other closely related species of *Gnaphalium*, tribe Inulae of the Compositae, are either infused or decocted as a potion for indigestion, for ailing children, and for adults afflicted with "empache."

Mata gusano (pipichowa) (*Perezia thurberi* Gray).—A coarse perennial herb with prickly leaves widely scattered in the Oak Forest belt. The enlarged roots are infused or decocted for various genital afflictions: to facilitate menstrual flow, for women ailing across the back over kidneys, for a man with a bad penis, and as a laxative (Emiliano report). A well-known herb in local pharmacies.

Matayaqui, see Batayaqui under "Construction and Fuel," pp. 96-99.

Matarique (*Cacalia decomposita* Gray).—An ugly summer herb with long scapose stems about 1 meter tall, native to the high Sierra Madre. The tuberous roots are highly valued for their medicinal properties by Warihios and others, and are collected and transported to the herbal markets.

Melon de coyote (ha'lu), see under "Fruits."

Ocotillo (*Parthenium stramonium* Greene).—Shrub of the barranca slopes. The heartwood is decocted in water as a remedy for various illnesses. One or two large spoonfuls are administered internally, while the rest is applied externally as a lotion. Whether this use originated with Warihio or Mexican is not known; it is employed by both.

Palma de la virgen, Palmita (*Dion purpusii* Rose?).—A low cycad rarely found growing in the moist shady canyons, as near Conejos and Guirocoba. The Mexicans report the seeds to have a medicinal value in treating sore eyes. After being finely ground, a paste is made and inserted in the eye.

Pamita (*Descurainia halictorum* (Ckl.) O. E. Schulz).—A small cruciferous winter annual. The leaves are eaten as greens, while the seeds are valued for their medicinal properties. At San Bernardo they are mixed with sugar and water and drunk as a hepatic remedy. Carlota Arguelles reported that formerly they were collected by the natives of San Bernardo to sell to the druggists in Alamos and Navojoa.

Palo dulce, see under "Construction and Fuel."

Palo mulato (*Bursera grandifolia* (Schl.) Engl.).—The pale greenish bark of this common tree is decocted and drunk as a remedy for fevers, especially

malaria. It is widely renowned among the native peoples of Mexico as a fever remedy.

Pioniya (*Zexmenia podocephala* Gray).—A highland, composite, perennial herb with tuberous roots, which are highly valued for their medicinal properties and are traded in the drug business of western Mexico. The barranca folk decoct them for stomach ailments.

(Picachalf) (*Euphorbia cuphosperma* Boiss.).—A leafy erect summer herb with red floral bracts. The Warihios report the milky juice as a remedy for sore eyes; the raw milky sap dripping from the cut stem is dropped into the eye. They do not distinguish between this and the similar appearing, *Euphorbia heterophylla* L., which they also call picachili.

Pipichowa, see Mata gusano.

Poleo (*Mentha canadensis* L.).—This aquatic herb grows only in the high mountains above the Warihio settlements, but is probably known to and used by them. The Mexicans of the region report that it is either infused or decocted as a cure for ailing kidneys, sleeplessness, or just to be taken as a refreshing drink. This may be the species to which Zingg refers in his list of Tarahumare plants, Bennett and Zingg, 1935, p. 144.

Popote, see Escoveta.

Rastrillo (tahewali) (*Maurandia flaviflora* Jtn.).—A leafy, suffrutescent, pendulant herb on cliffs. Emiliano reported that the leaves are rubbed on the skin to cure sores and pimples.

Saca manteca (palowisi, pusira) (*Solanum amazonium* Ker.).—The Mexican ranchers use the fruits for curdling milk to make cheese, whence the name, "to draw out fat." It may be similarly employed by the Warihio.

San Juanico (*Jacquinia pungens* Gray).—The green fruits are used for washing clothes and the hair. However, it is necessary to keep the eyes well closed when washing the hair since the juice is harmful to the eyes. The cleansing property is a sapogenin. The seeds are also employed as medicine, a paste being made into a ball and inserted in the nose to cure catarrh. It is a small tree with dense foliage, the leaves pungently tipped. It flowers abundantly in the spring. The bright orange-colored corollas are easily detached from the calyx, but are tough and endure for many days; are strung into necklaces and worn as garlands. A similar use of them has been observed among the Seri Indians and perhaps it was so used by other Sonoran tribes.

Siendre (heste') (*Porophyllum gracile* Benth.).—Suffrutescent slender herb of the more arid lowlands. When crushed the herbage has a pleasant pungent odor and Emiliano reported it to be infused and used in treating colds or catarrh.

Sitavaro, palo verde (*Vallesia glabra* Cav.).—Slender evergreen shrub along alluvial terraces and moist saline bottomlands. The juicy pulp of the small opalescent fruits is inserted in the eyes as a remedy for pink eye and other eye diseases. The foliage and branches are burned and the ashes rubbed on itches and measles.

(Soco') (*Yucca* sp.).—A small relatively inconspicuous *Yucca* with a sessile rosette of pliant thin leaves from a thick root crown or rhizome containing a viscous white fecula. This is employed by the Warihios and other barrancan people for washing clothes and hair. It grows in the higher elevations with pine and oak, and was never observed in flower or fruit, which is necessary for positive identification. It is an unknown species in literature. It may also be referred to as "amole," a term widely used in Mexico for saporific plants used as soap.

Tabachin (talpakachi) (*Caesalpinia pulcherrima* (L.) DC.).—Emiliano reported the roots boiled in water for treating insect stings and snake bites. See also under "Seed Foods."

Toji (tohi) (*Struthanthus haenkeanus* (Presl.) Standley).—A mistletoe found growing on palo blanco, (*Piscidia mollis* Rose). Emiliano reported that a decoction of the herbage is made and used as a wash for insect bites and stings.

Toloachi (tecuyawi) (*Datura wrightii* Regel).—The leaves are smeared with animal fat or some other available salve and applied as poultices to aches, bruises, and sores. It is a wayside perennial herb partial to sandy soils.

Torote copal, torote prieto (toro') (*Bursera penicillata* (DC.) Engler).—One of the large copal trees codominant through the Short-tree Forest. The herbage and bark is employed for treating catarrh and other afflictions. The aromatic gum is used for toothaches. The gum is also used by a mason wasp in building its nest. These nests are collected by the Warihios and used as incense in their ceremonies (see p. 128).

Torote papelio (wa'pe') (*Jatropha cordata* (Ort.) Muell. Arg.).—Like the *Bursera*, this euphorbiaceous shrub has a smooth bark which exfoliates paper thin. The juice of a cut stem exudes freely and is used as a wash for clearing the eyes or for curing eye diseases. Also, the exudate from cut stem may be applied directly to mouth sores. It is one of the most abundant shrubs or treelets of the lower elevations. It was mistakenly reported as San Miguelito (Gentry, 1942 a).

Torote prieto, torote jolopete (*Bursera fragiles* Watson).—The aromatic gum is used as a poultice for backaches, bruises, and bone breaks.

Uruqenia (*Croton ciliato-glandulosa* Ort.).—A low shrub with stipitate glands injurious to the eyes. Emiliano reported that the Warihio formerly mashed and boiled the herbage to make a black dye for their wool blankets and other woven articles.

Vara blanca (*Croton alamosanus* Rose).—A common, strictly branched shrub with whitish bark. The roots are mashed and cooked in water as a potion for indigestion and stomach troubles, "empache del estomago"; said to be very bitter. See also under "Construction and Fuel," pp. 96-99.

Vinorama (kuka') (*Acacia farnesiana* (L.) Willd.).—The Warihio pulverize and mix the fragrant flowers with grease, which they rub on bruises and foreheads to relieve headaches. The tree is also used for fuel and construction. In the Old World the flowers are employed in making perfumes.

(Wachomo') (*Zexmenia seemanni* Gray).—A harsh-leaved perennial herb of the Oak Forest belt. As with *ariosa*, the harsh leaves are bound on the abdomen by women to facilitate menses or induce labor in childbirth.

Yerba colorada (*Potentilla thurberi* Gray).—Perennial summer herb in the meadows of the Pine Forest zone. A decoction is made of the roots as a purgative for stomach or digestional ailments. Herb gatherers take it from the high mountains to sell to the druggists in such lowland towns as Navojoa, Ciudad Obregon, and Alamos. I have no note of it being used by the Warihios, though they are known to collect the plant, and doubtless also employ it medicinally.

Yerba del aigre (*Trixis wrightii* Rob. and Greenm.).—Perennial herb on the more arid rocky slopes in Oak Woodland, blooming in February and March. Emiliano reported that the flowers are mashed and applied to the forehead for headaches and for calming the insane. It has a wide reputation as a curative herb through northwestern Mexico, and doubtless other uses are made of it.

Yerba del Indio (*Aristolochia quercetorum* Standley).—Prostrate herb of the Oak Woodland. A decoction is made of the tuberous roots and drunk for

"empache," stomach ailments, and used as a wash for sores. The roots of several species of *Aristolochia* are widely used as remedies for varieties of ailments in northern Mexico, the name, Yerba del Indio, being generally applied to them.

Yerba de flecha (*Sapium appendiculatum* (M. A.) Pax and Hoffm.).—The bark of this tree is employed by the Indians to stupefy fish for collecting. It was also used formerly to poison the tips of arrows, whence the name. Similar uses and properties have been reported by the natives for *Sebastiania pringlei* Wats., known as Brincador, source of the "jumping beans" in the curio trade.

Yerba del pasmo, batamote del monte (*Baccharis thesioides* HBK.).—Bushy shrub resembling *Baccharis alamosana* Blake, but larger and more widely distributed in western Mexico. Both are infused or decocted and taken internally for digestive afflictions and for cancer, "pasma."

USE OF ANIMALS

DOMESTIC ANIMALS

Beef is eaten fresh or dried. The fresh meat is broiled over coals and eaten out of hand. A stew or soup made up of bones and meat ends is boiled in large ollas placed over fires. Most of the animal is cut into strips and dried hanging in the sun, to be cooked over the coals and eaten later. It is not a regular item in their diet. He who has more than six or seven cows is regarded as a rich man.

Goats, and less often sheep, are generally slaughtered for serving in the ceremonial *tuwuris*. Most of the animal, including the visceral fat, is stewed in large ollas and served in small earthen bowls. It goes by the general term "wacavaki," probably Mayo, but is called "wepasuni" by the Warihio. The blood is also used. The food is eaten with the hands or sucked out over the edge of the bowl, and if the party is large, two or more may work upon the same bowl. Meat is torn between the teeth and hands into strips convenient to the mouth for chewing.

The pig furnishes meat for boiling, for "tamales de coche," and lard or "manteca." It is the universal cooking oil of northern Mexico and the Indians sell it to their Mexican neighbors.

Chickens are sometimes kept and their meat and eggs eaten.

Sheep are infrequently kept for their wool.

Dogs live regularly with the Warihio. Generally they are poor and mangy starvelings, living on what little bits of scraps are thrown them, on refuse, and on human excrement. This latter, though its nourishing content must be very low, is their most regular supply. When the Indian eats, the dog will eat in his turn. Excrement eating is a common habit of dogs all over Mexico. They, with pigs and chickens, are the sanitary departments in the small pueblos.

Among the Warihio a small houndlike, short-haired, blue-gray breed is common. They are tendered only the most fleeting and fickle

affection. Children unwittingly mistreat them in play. Due to all this abuse the poor dogs live with a sour, unresponsive temperament, and because of their proneness to bite are dangerous to have around. The relationship suggests that of symbiosis, which, as the beginning of dog domestication, we think of as long past.

A relevant note in Carimechi:

Leecha and Esteban have a dog which they treat rudely. When visitors arrive they immediately drive him away from the house with sticks and stones, because, they say he is "muy bravo." He lives most of the time skulking about the bushes growing round about their house and reminds one of what the incipient stages of early dog domestication were probably like. The dog is not loved, hardly befriended, but obviously tolerated.

WILD ANIMALS AND METHODS OF CAPTURE

Of wildlife, the meat of fish and deer is eaten most often. The minnows are laid upon rocks in the sun to dry and are eaten whole a few hours or a few days later. The larger species are gutted, a "tuna" (prickly pear cactus, *Opuntia* sp.) pad, peeled, is inserted in the ventral slit, and baked in the coals. To residents along the good fishing streams, the Guajaráy and the Rio Mayo itself, fish is a more common food than to those elsewhere, and an important part of their menu. Fish are taken by the modern steel hook, by poisoning, by "baskets," and by diverting small streams. Of the first nothing further will be said, since it is self-explanatory and not indigenous. Of poisons four vegetative sources have been reported. The shrub or small tree, known widely under the Mexican name of "yerba de la flecha" (*Sapium appendiculatum*), is probably the most potent and has been figured in accounts since early conquest days (Beals 1932 b, p. 115). The second is a perennial herb or shrub, known locally as uruquenía (*Croton ciliato-emarginata*). Then there also grows a tree known as brincadores (*Sebastiania pringlei*), thus named because its seeds in season are made to jump about over the ground by a larval insect within, and known in this country as the jumping bean. The method of use in all three is the same; foliage and branches or the bark are beaten up and put in pools during periods of little water flow—fall and spring. All three plants are members of the Euphorbia family, many members of which are known the world over for their toxic compounds. Palo blanco (*Piscidia mollis* Rose), is also reported to have fish poisoning properties. By "baskets" is probably meant the large carrying frames, "colotes" (wakahali W.). No special nets or anything like nets were observed. With the poisons the men enter as a unit into pools where many fish lie and, working together, scoop up many into their baskets. By damming or diverting

small streams, the water is drained or bailed out and the fish may be picked up as they flop about in the little pools or on the surface of the ground.

They claim to kill deer with the sling by hitting them in the head with a rock,³ and to capture them with a snare. The snare is fashioned by bending a stout pliable sapling and securing it by agave or palm twine with a loop and trigger arrangement upon ground where deer are known to run. It is so set that the implantation of the cervid foot will release the sapling and jerk the animal into the air, where it is held until the coming of the hunter. The venison is treated like beef. It is also served as "wepasuni" during *tuwuri*. The species of deer is *Odocoileus couesi*.

Javelinos, the wild peccaries (*Pecari angulatus sonorensis*), are taken by driving them into caves, to which the animals will run for refuge. Brush is then piled in the opening and set afire, suffocating the animals within. The hides are sold and the meat eaten. This capturing method has been reported for other parts of western Mexico. The Mexicans also employ it.

Occasionally a chachalaca, a pheasantlike bird (*Ortalis vetula vetula*), may be knocked over with a stone. Ducks and mergansers are said to be caught by men entering the water with a disguise over their heads and drifting with the current among the quarry as reported by Licha Acuña. Occasionally a quail nest is robbed of eggs; if so, eggs of other wild bird species are probably also taken. Grasshoppers are reported to have been eaten by families in Bavicora in times of hunger. Rattlesnakes are reported by Lusiano to be edible; head and tail are cut off and the central portion eviscerated and roasted. The fat of the cholugo (*Nasua narica*) is eagerly sought by some as a medicine for bruises, sores, cuts, and aching ailments; it is rubbed upon the afflicted part.

Honey of several species of bees is taken by fire and smoke from the high cliffs. Some of the Warihios have little fear of climbing, by means of rude ladders, upon the perilous faces of the cliffs to obtain the honey. They are regarded as experts, after the manner of men of trades, as they aboriginally are. Such men as Ramon Gascon of Sierra Garcia and Vicente Guireña of Tiruta can truly be called wild-honey gatherers. Honeycombs that cannot be reached otherwise are sometimes dislodged with thrown stones and fall within reach.

Animals in times past were, no doubt, taken with the bow and arrow, for living Warihio have memory of their use. Juan Campa remarked that a deer shot through the shoulder was immediately taken, but

³ Sling observed in Conejos.

if shot in the belly would run away and escape. One bow at least is still extant in Warihio possession in Loreto. (See "Myths," p. 134.)

Lusiano reported the bow made of a tree known as palo moro (*Morus* sp.), with draw string of rawhide, the arrow of the small stalk, entirely of *Agave* sp., and the point from the shrub batayaki (*Montanoa rosei*), because it was poisonous. In the lowland district of San Bernardo and Chorijoa the bow was about 1 meter long and made of the tree kowusamo (*Coursetia glandulosa*); the arrow shaft, of carrizo (*Arundo donax*), or better of taiyecholi (*Agave* sp.); the point was of brasil wood (*Haematoxylon brasiletto*), or better yet of batayaki (*Montanoa rosei*), because it was supposed to have poisonous properties. Emiliano reported that contests were held by shooting at a white cloth on a plank, accompanying the statement with the following monolog, which he freely translated upon request into Spanish:

Muhimani tosaname chewatane	A ver si puede de el blanco!
Ka-i' chewaluni!	No lo di!
Seneche muhimane	Voy a dar otro.
Ba' chewaluni!	Ahora, si le di te!

A free translation of Emiliano's vernacular Spanish would be in English: "Let see if the white can be hit. I didn't do it! I'll give it another. There, I did it!"

Since this was within his memory, the use of the bow hung on, at least as a playful survival, until very recent times. Also, Bartolo Hernandez recounted that he fought with allies of Indians from the vicinity of Macoyahui and Conicari during the revolution in 1914. In a pitched battle near Macoyahui the Indians used long bows, which they pulled with their feet and hands, sitting upon the ground with the bow horizontal.

DIVISION OF LABOR

The women cook; keep house; weave baskets, blankets, and petates; make pottery; carry water; gather wild fruits and seeds; and help their husbands in the milpas. They carry out the rather extensive process involved in making tortillas, from preparing the harvested seed on through the several steps of soaking, grinding, and cooking. They also prepare many other seeds in more or less this same way and in general appeared to be the regular cooks in Warihio families. They attend to the small children and teach the girls from early childhood to work. By the age of puberty they can make tortillas and carry out all essential daily chores envolved in living.

The men clear and cultivate their milpas and carry wood and provisions. They tend livestock, if they have any; do rope work, leather work, woodwork, and build the houses, although they may be helped in the transport of materials by their women. They some-

times help the women about the house in such daily routines as shucking and graining corn off the cob. They hunt and fish and go upon journeys. Some play the violin or "harpo," or sing at *tuwuris*, an activity that may be a kind of duty within their religious structure. The sons help their fathers, beginning at a very early age, and thus learn by traditional methods. Primary instruction in both sexes is therefore a part of the family institution, the basic educational and social unit of the Warihio. This working-learning method by both sexes was observed in many instances.

SHELTER

The common house (*ka'li'*) of the Warihio is of mud-wattle with a palm-thatched roof. It may or may not have a foundation of stone, either mortared with mud or laid up loose. The sides are constructed of upright poles (*otona*) embedded in the ground, between which are laced pliable sticks. Mud in some cases is plastered to the sticks, but more often they remain unmortared on two, three, or all sides. Or again a simple stone and mud-mortared wall may be used under the palm-thatched roof (pl. 33, *a*), which in this case is probably a result of the Russo influence around Guasaremos. Sr. Russo immigrated to Guasaremos about 1890 and built fortlike houses of mud and mortar with shake or tile roofs at Guasaremos and El Limon. It is evident the Warihio has been rather quick to adopt new types of construction and one wonders if the mud-wattle is not a recent borrowing from the Mayos. Usually the shelters are rectangular in outline, but there is one type of house with a circular outline. The sides are of loose-laid stones of a variable 2- or 3-foot height. Over this is laid the peaked palm roof, here taking a circular form. A circular type of house is represented in the ruins (pl. 31, *b*) and suggests that it was the earlier and perhaps even the original type of Warihio construction. Many of these were discovered during explorations through the Rio Mayo barranca country in areas which are uninhabited today. Both the rectangular and circular types of houses are used for dwellings today.

The roof is formed with a ridgepole (*huseda*), two side ridgepoles (*kenori*), rafter poles (*mordasa?*), and across the latter are laid slender, light, strong *otate* poles (*sewula*). Upon the *otate* poles the palmetto leaves are lashed with palm-leaf fiber thongs, overlapping like shingles. Along the ridge top, pairs of short, heavy sticks are tied together and placed astraddle, functioning as a weight upon the last loosely tied row of palm leaves.

In the lower towns, as in San Bernardo and Chorijoa where there are no near palms, the Warihio construct the flat mud roofs of the Mayo or Mexican. They still retain, however, the mud-wattle sides.

Woods commonly employed in Warihio construction are:

For stout uprights:

Mauuta	<i>Lysiloma divaricatum</i>
Palo colorado	<i>Caesalpinia platyloba</i>
Vara prieta	<i>Brongniartia alamosana</i>
Guayacan	<i>Guaiacum coulteri</i>

For horizontal lacings:

Batayaki	<i>Montanoa rosei</i>
Brasil ^{3a}	<i>Haematoxylon brasiletto</i>
Vara prieta	<i>Brongniartia alamosana</i>
Batamote	<i>Baccharis glutinosa</i>
Chicura	<i>Franseria ambrosioides</i>

and many others

For the roof, besides those listed under uprights:

Palma	<i>Erythea aculeata</i> (leaves)
Otate	<i>Arundinaria longifolia</i> (poles)

The houses occupy a characteristic position in reference to the terrain. They rest upon natural eminences, "mesitas" or hillsides, from one to four hundred yards from the water supply, which is usually an arroyo, or less often a spring. The eminence provides protection from the floods suddenly arising in thunderstorms, and the distance from water is protection from many insect pests, such as gnats and mosquitoes. Carrying water up the hillsides, of several hundred feet altitude, is very laborious.

A small plot around the house is kept clear of "monte," i.e., weeds and brush, though often great boulders will clutter the terrain, as is the case with houses at Guasaremos and Saguacoa. There is, however, at least a small flat area near the house where the religiously required tuwaris are held. In Guasaremos there is a house (pl. 37, *b*) used as a kitchen, whose earthen floor has several round boulder tops issuing from the ground, while not 10 paces aside is a flat clear space used for dancing tuwuri.

Many families have one house as a kitchen and another as a storehouse and for sleeping quarters. The former is hardly more than a palm-thatched "ramada," while the latter is better constructed with tighter and more complete siding. In it are kept the few valued possessions, as clothing, rattles, violins, and very often maize.

GRANARIES

Storage cribs commonly occupy a quarter or a third of the space in the larger dwelling. They are raised from the earthen floor about

^{3a} This is a stiff-branched shrubby tree; hence the sticks may be cut half through to make them bend about the upright.

a foot. The bottom of the crib is of poles, while the sides are fashioned with sticks of otate or batayaki placed perpendicularly. Such storage bins are found throughout the range of the Warihio.

Sonovoris (tekoa') are curious circular granaries of masonry set aside from the house (pl. 32, *a*). They are made of mud and stone with a mud cap supported by closely laid wooden poles. The outside dimensions are approximately 6 to 8 feet high by 4 or 5 feet in diameter. These are found only on the Tarahumare side of Warihio land, as in the Guasaremos locality, and hence may be regarded as a recent borrowing. Illustrations of the similar Tarahumare structure may be seen in Lumholtz (1902, vol. 1).

STORAGE CAVES

In the Guasaremos locality there are occasional small caves (pl. 32, *b*), containing 3 or 4 cubic yards of space, which have been used recently for storing maize and anciently for storing acorns.⁴ The openings were closed by mortar and stones. Some are in distant and obscure places, from a mile to a league distant from the nearest dwellings or ruins. Bartolo says that some of the Indians still have such little caves for storing their provisions and that those of the Rio Mayo, living in the vicinity of Aquinavo, Tepara, and Yuromo, still have hidden storage places where they cache maize they have stolen from other localities. Macedonio of El Limon charges the lower river Warihios with stealing from his isolated milpas. Several of the Indians who formerly lived in Guasaremos had hidden caches of maize. Similar storage caves were observed in an uninhabited district of Sierra Saguaribo, and others were reported from Sierra Canelo.

Caves or caverns are still used as temporary living quarters or camps. Two were observed in Guisiego where families of the Warihio had lived the year before while they were tending their milpas during the summer months. Upon the rock walls were petroglyphs, crude drawings of domestic animals and men and others of a symbolical nature. They appeared to be not very ancient, probably drawn within the last 50 or 75 years, a hundred years at most, and were no more than a thin lime wash traced upon the rock (pl. 35). The family of Lolo, a Warihio, was photographed living under the edge of a large boulder, following the burning of their house several months previously (pl. 33, *a*). A cave near San Bernardo was inhabited a few years previously by an old solitary Indian.

⁴ Hulls of acorns were found in the bottom of one or two of the caves and again in the burial caskets of the dead.

ELEVATED STRUCTURES

Near the house there is usually a platform, about 5 by 7 feet, raised 4 or 5 feet above ground (pl. 30, *a*). It is made of poles and upon it dishes of food, ollas, etc., are laid with some security from prowling dogs and other domestic animals.

A like structure is the elevated garden (pl. 33, *b*), formed in the same manner with poles and supporting a little earth, where such as green onions and chiles may be germinated. Both the Warihios and Mexicans call them "tapancos." These two structures are also found among the neighboring Mexicans and Indian tribes.

SUBSTRUCTURES

"Wehcari" is the Warihio name for a small chamber dug in the earth and topped by a low roof of palm leaves. It is a storage chamber, containing 3 or 4 cubic yards of space, for palm and other leaves where they will remain comparatively fresh and moist until time of use. They are common throughout the Warihio country.

Sweating chambers might identify small pits half covered by loose palm leaves observed in the sand banks of the Guajaráy at Conejos and again on the Rio Mayo in Carimechi. No certain explanation, however, was obtained for them.

FURNISHINGS AND TOOLS

The following articles are listed as possessions of the present day Warihios. All of these are never found in any one house, many having only a poor minimum of a couple of "petates," sitting logs or benches, baskets, earthen dishes, a "metate," "machete," hoe, and a few other odds and ends. When a family goes visiting or to tuwuri for a day or two, many of their possessions are carried with them. This they do in fear of robbery in their absence and for need of them during their visit. Figure 12 indicates the simplicity of some of their furnishings.

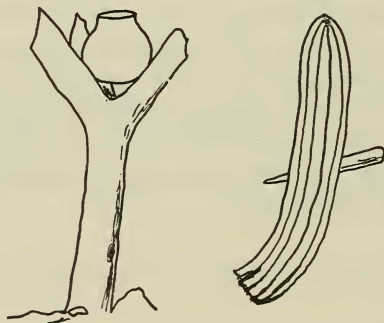


FIGURE 12.—Exterior furnishings; an olla stand and a peg in a pitahaya.

Furnishings:

Chair

Stool (banko)

Tapesti (a rack of otate poles laced together with rawhide and laid across a couple of small poles either upon the ground or elevated. Over this a "petate" mat is thrown and the whole used as a bed)

Guacali (swinging cradle, see "Woodwork")

Sitting logs (chunks of wood)

Benches (crude, hewn out of a tree with an ax or "machete," the legs usually an inverted forked branch)

Pottery iron (for ironing clothes)

Table

Basket

Bull scrotum bag

Earthen dishes: water olla, cooking olla, eating bowls

Gourd dipper

Wooden bowl

Wooden spoon

Metate and mano de metate

Blanket

Tools:

Machete

Ax

Knife, butcher and pocket

Steel needle

Hali (see "Olla," p. 114)

Smoothing stone (ibid.)

Loom (horizontal)

Hoe

Shovel

Broom (a bundle of sticks)

Hand broom (made of palm leaf for cleaning metate)

Colote (carrying frame)

HANDIWORK

POTTERY

Pottery is of the coil technique and undecorated. The materials employed are a red clay, dug from the best formations nearest to the potter's hand, and sand from the arroyo beds. There is a difference in quality, recognized by the natives themselves, depending upon the locality from which the materials are taken, and upon the craftswoman. It is thick crude pottery and in general appearance similar to sherds found about caves and ruins. The technique, as observed in the work of Licha Acuña, is given below. She was taught, she says, by her grandmother who was a Warihio.

Red earth is dug from the ground at a spot near the house of Esteban's brother. Sand and water are brought up from the river.

The dry chunks of red earth are pulverized, partly by grinding between two stones and partly by breaking and mashing with the fingers. The red earth is moistened with water until it is of a sticky consistency and put into a bucket.

Licha sits upon the ground and on a large flat stone beside her mixes sand and the sticky red earth with the help of water. First she puts a double handful of sand on the flat stone, then a double handful of water from a bowl beside her. Then she adds the sticky red earth and mixes and kneads the whole together. She adds more water and more earth until, under the skill of her kneading, the mass assumes a malleable consistency and may be called potter's clay, "wehcho'li."

THE OLLA

With the left hand the potter takes a chunk of potter's clay; with the right hand she starts work upon it, pressing and hammering with the fist, until a shallow bowl is formed. This is placed before the potter on a wooden tray.

By whirling the lumps of clay between two extended palms a long round string is next worked out. This is held in the left hand dangling over the shallow bowl below, until the right hand presses its lower tip to the round bowl edge, and the whole string is lowered and laid around the bowl edge. With the thumb and forefinger this new stratum of clay is pressed onto the top bowl edge. The two meeting ends of the coil are carefully pinched together until they taper and overlap.

With a "hali," a piece of the rind of a native gourd dipped in the bowl of water, the worker presses and smooths the coil upon the bowl foundation. The right hand with the "hali" works against the left hand held within on the inner surface of the bowl. Every now and then the "hali" is dipped into the water, so that the surface of the growing olla is kept moist and workable. Gradually, with the outside, down stroke of the "hali" the coil becomes a smooth continuation of the bowl. Then a horizontal stroke is used both inside and out, further smoothing and integrating the whole. Special care is given the meeting of the coil. For each successive coil this technique is repeated and as the olla increases in diameter, two round strings of clay are necessary to make one encompassing coil. The growing weight of the clay presses downward upon the plastic bottom until it flattens a bit of its own accord.

As the potter works the bowl is turned round and round and here the use of the wooden tray below expresses itself. Having less adherency than the moist olla it turns easily upon the ground, adding considerably to the facility of the whole process. The last coil is

left thicker than the others thus forming a rim, which is leveled, scraped, and turned outward with special care.

After this the vessel is allowed to dry for an hour or so. Then it is polished. For this a small river stone is used. It is alternately dipped in water and rubbed on the bowl.

THE SMALL BOWL

In making small bowls, coiling is not necessary. The bowls are formed by working the clay in the two hands, as in beginning an olla, and then by smoothing and polishing the bowl with the "hali" and stone.

FIRING

Before the new pottery is fired it is allowed to dry in the shade (in the house) for a day or two until it is hard.

The olla is placed in the fire with a good supply of wood laid around and over it. When the wood burns down, until even the coals are low, the olla is taken out and considered a finished product. It may remain in the fire for 5 or 6 hours. For smaller pieces a couple of hours in the fire is considered sufficient.

WEAVING

Baskets (wari) are made from two plant leaves; sotol (*Dasyllirion wheeleri*) and palmita (*Nolina matapensis*). In both plants, it is the growing cone of compact terminal leaves that is selected. The leaf of sotol is armed with lateral spines, which are scraped off before use. The larger, stronger baskets are made of the sotol.

The baskets are unornamented and are of one weave only—a simple "over two under one" with an occasional broad "skip belt" as a border near the top. The beginning of a basket is started with four units, each of three leaves.

"Petates" (hi'peta) are made with the same weave as the baskets but only the leaves of palms are used. The strips are woven double into mats about a yard wide by two yards long, which are used for drying tobacco, fruits, seeds, etc., and as a bed at night. The word for bed and "petate" is the same in Warihio.

Blankets (keyma') are woven from the wool of sheep. No dyes are used, but the brown and black wool, which frequently comes from the herds of neighboring Mexicans, is often woven in as ornamental solid terminal borders. The weaving methods or tools have not been observed. The loom, however, as described, is horizontal.

Hats (sawo') are made from the leaf of a plant known as yerey palma (wechasas) which grows only in certain localities, one near Conejos. The hats are readily distinguishable from the Mexican

"sombrosos," for, though they have a "sombbrero" shape, they differ in being smaller and of finer weave. They are the one article on a dressed Indian which most quickly identifies the wearer as Warihio.

WOODWORK

The men have developed considerable skill in working wood. Their tools are very limited, being in most cases only the ax, machete, and pocket knife, or butcher knife. The materials used are those which they cut out of the living trees around them.

The classic violins and harps are their finest productions. A tree known in native Spanish as palo chino (*Pithecellobium mexicanum*), is employed for making the box and neck. The bridge is made of the soft wood of the guasima tree (*Guazuma ulmifolia*); the bow, of horsehair and a branch of a hardwood tree such as the chirowi (*Acacia cymbispina*) or palo fierro (*Pithecellobium undulatum*). The chin rest of the violin is made of bull horn, and the gut strings are bought at the Mexican stores.

The instrument known as the "harpo" is the Mexican harp (pl. 6, a). It is provided with a double leg at the lower end, so while the neck piece rests in the lap of the instrumentalist it reclines in a horizontal position and is so played.

Glue for sealing the joints is obtained from an epiphytic orchid, kiki (*Laelia autumnalis*). The bulb is skinned and rubbed directly upon the jointing surfaces, leaving a sticky excretion that holds strongly.

Gourd rattles (hali' ?) are made from the fruit shell of the vine, buli (*Lagenaria siceraria*). They are simple in manufacture and undecorated. Stick handles are run through diametrically, after the insertion of a few rocks or seeds.

Chairs and stools or "bankos" (wanko') are made in Carimechi. Detailed notes of "banko" manufacture follow.

The maker of the "banko," Esteban Suha, selects straight young branches from the guasima tree (*Guazuma ulmifolia*), 3 or 4 inches in diameter. These he splits in the center with his "machete." From the inner side of the half, he splits off a strip, 3 feet by 2 inches by three-eighths of an inch thick. With the "machete" the bark is trimmed from the edge.

The soft pliable wood is then easily bent into a hoop about a foot in diameter, the two ends overlapping about 3 inches. The new circle is secured in this form by a heavy twine made of twisted palm leaves tied around. A second hoop is made and the diameter matched to that of the first by tightening or loosening the twine encompassing the hoops.

Next, with the aid of a hot pointed iron, holes are bored through the overlapping ends of the hoops. Through these holes rawhide is tightly laced. The temporary encircling twine is removed and eight other holes evenly made through the hoops. Thus the two hoops for one "banko" are now complete and ready for the supporting spokes (tauwureti).

The supporting spokes are made from the same wood as that used for the hoops. The small sticks are first split out with the "machete" and then dressed down with a knife. They are bound at crisscrossing angles to the hoops. Through each hole of the hoops rawhide is passed and a pair of spokes lashed, one outside and one inside. Notches are cut around the ends of the spokes so that the rawhide thongs will hold the spokes securely. Finally a piece of cowhide is cut to fit the top of the "banko" and lashed on with the rawhide thongs.

Other wooden artifacts which the men make are hoe and ax handles, pack saddles, bowls from the giant roots of the wild fig trees, long handled spoons, and "guacales." These latter are crates of sticks, cut from the guasima tree and lashed together into a rectangular form a foot or so in depth. They are widely used in Mexico for transporting fruits, vegetables, and other cargo on pack animals.

ROPE WORK

Small rope and cords are made from plant fibers; fibers of the palm leaf and of the agaves are used and probably others also. The strands are twisted or twirled in threes. Stems of tough pliant vines are also often employed as emergency cords for carrying in an object from the forest or fields, i.e., the feet of a captured cholugo (*Nasua narica*) may be bound together and the animal thrown over the shoulders, or a bundle of leaves or wood tied up.

PETROGLYPHS

Rock drawings and scratchings are found in many localities. Many are reported from an arroyo above Satajaqui at the western foot of Sierra Charuco, and some in an arroyo immediately below Guasaremos. Two localities of rock drawings were visited near Conejos on the Arroyo Guajaráy and one at Guisiego near Guasaremos (pls. 34 and 35; fig. 13). Both are in localities where shallow caverns show evidences of past habitation, as bits of old burnt sticks and fire-blackened rock walls.

Many of the present Warihios do not admit to the drawings, but say only that they were made by "los antiguos," in such vagueness that one cannot know whether they refer to their own ancestors or



FIGURE 13.—Pictograph along Arroyo Guajaráy near Conejos.

to others. Only one, Licha Acuña, stated directly that they were made by the older Warihios.

Two methods have been used in drawing them: by rock chipping and by dyes. Many of the dyes are very enduring and cannot be removed after these long centuries with soap and water or alcoholic liquor, the substance having passed into the grain of the rock. The colors red, green, brown, and orange were observed in the paintings in Arroyo Guajaráy (pl. 34).

TRANSPORTATION

The Warihio carry their own burdens, the women with ollas or baskets upon their heads or arms, the men with the burden on the shoulder or back. The children grow partly under burdens and are strong from carrying them. In Mexican towns they use the yoke, but its lack is often observed in the barrancas.

They occasionally employ burros for carrying maize or palm leaves long distances. The use of the burro is not habitual as it is among the neighboring Mexicans. The Warihio has but infrequent use for beasts of cargo, as he is accustomed to carrying his harvests, and he enters but little into even the small world of trade peripheral to his area.

The following story by Bartolo Hernandez, of Juan Palomo, a Warihio, who lived several years ago in Canelo, reveals much of life and customs in the Warihio world.

Juan Palomo was noted for his great strength, being of short stature but of enormous width of heavy hard muscle. When rather an old man he could still carry a "fanega" of maize (ca. 200 lbs.) from El Limon to Canelo, a heavy load for a strong burro, a distance of approximately 5 leagues, or about 15 miles. The trail led up over a high mountain ascending perhaps 4,000 feet of altitude. On his last trip he left El Limon with 100 pounds or so of wheat and a bale of cloth, the load upon his back secured with a strap around his forehead. Two-thirds of the way up the mountain he stopped at a stream to drink and bathe. The day was warm, and no doubt the old man was in a sweat. Eight days later some "vaqueros" (cowboys) found buzzards at feast upon his remains and his cargo still sitting secure and neatly beside the trail.

DRESS AND ORNAMENT

Until recently the Warihios went about without clothes. Children still are commonly naked and occasionally naked women were observed in the evening about the house fires near Carimechi. Now the prevailing dress among them is the usual Mexican habit (pls. 36, *a*; 37, *b*). A singular form of dress was observed on Warihio men along the Rio Mayo: loin cloth and back-cover. The back-cover consists of a rectangular piece of white cotton cloth hanging over the back, secured by a cord around the neck and waist. It appears to have been the customary form of early Warihio dress, as it is worn only by the more remote Warihios. Boys beyond baby stage and until the age of puberty usually wear a loin cloth; thereafter they clothe themselves in any garment they are able to secure, which is frequently ragged.

The "chairígora" is an anklet composed of a string of lepidopterous cocoon sacks. The sacks are tough, ovoid in shape, and provided with little pebbles that rattle rhythmically upon the legs of men dancers. They were observed only upon such occasions and are similarly employed by the Mayo and Yaqui Indians.

The Warihio are said to have painted their faces in times past when going into battle. How different must have been the men then, for now they run from any suggestion of strife. Near Guasaremos there is a locality known as Canyon Chanate, where until a few years ago there lived many families of Warihios. They came thither from the lower towns to escape the danger of revolution, until at last for many years the lower towns were peaceful again. Then they left their mountain hideaway about 1931 and returned to Conicari. Mexican conscriptors were wont to haze them away to be soldiers. There is another such retreat near San Bernardo known as Pericos, to which the Warihios of San Bernardo retired for a while during a local war several years ago (1926-27), when the Yaqui rebelled against Mexican incursions. My census-taking questions, coupled with my notebook, aroused suspicions and may account in part for the empty homes I encountered during my first season's travel among the Warihio, as it was later explained that the Indians mistook me for a Mexican conscriptor.

Warihios living in the vicinity of San Augustin are reported to wear a long lock of hair over the front of the face, called "un capote." The conservative Warihios, wherever observed, generally wore their hair long, falling down over their shoulders and backs, while the less secretive wore it cut into a short bob (pls. 37 and 38).

GAMES

The Kicking Race Game is played at Guasaremos and Bachoco and probably at other localities also. Two teams of several players each race around a given course "foot-throwing" a heavy wooden ball always before them. The ball is not kicked in our usual sense of the word. The foot is slipped under the ball and then the ball is projected forward from the dorsal forepart of the foot. The players race up and down or around a given course and when one side succeeds in throwing the ball over the head of a laggard of the opposite side, he is eliminated from the game. Thus it is a contest of endurance and elimination. The balls are made of wood of the guasima tree (*Guazuma ulmifolia*); before they are used they are soaked in water to make them heavier and far carrying.

Inordinate betting accompanies the sport. Nearly all forms of personal property are wagered: cattle, blankets, coffee, sugar, tobacco, money, etc.

The Warihio girls are reported to have played the same game in the Arroyo Guajaráy country and at San Bernardo, only instead of kicking, the ball was tossed ahead by long handled "rackets" (ka'to') (fig. 14) made for the purpose. Men patrolled the sides of the course to toss the ball back if it was thrown aside in the "monte."



FIGURE 14.—The ka'to, according to oral description.

At San Bernardo, Arroyo Gochico was used as a running course for both games. The game of the men is known generally as "wohi-mari" and in Warihio as "womihiba." The Warihios call the women's game "wochihibalo."

SOCIAL INSTITUTIONS

MARRIAGE

Marriage, says Lusiano, is without payment and with whomever one pleases, sometimes with cousins—not with brothers or sisters.

The priest, "selyeme," when he comes is paid three pesos by the Warihios; no one else is paid anything whatever, neither the father nor the mother of the girl, nor the parents of the boy.

One Warihio, Sebastian Rodriguez, "flojo," living in Babicora has two wives. They are not sisters.

Marriage is arranged by the fathers. The father of the boy visits the father of the girl and the two agree on the union. The young man thereafter goes to the house of his future bride, where he resides for an indefinite period, a few days to a month. At the end of the period he conducts his bride to their new home which he, perhaps with the help of his father or brother, has previously built, usually in the vicinity of his father's house.

Trouble between husband and wife may bring punishment administered by the selyeme. One or both of them are beaten with a stick. The selyeme can also dissolve the marriage, which he does by striking husband and wife with three symbolical sticks. A recent family upset occurred last year in Guasaremos between Vicente Guireña and his wife, and was narrated to me as follows:

One day a young girl came to live with Vicente and he, thus attracted by other fleshly conquest, sent his old wife (still young) out. Bartolo encountered the angry wife departing, who gave him the story. By threatening to send Vicente to jail and sending the new girl home, he successfully mediated the matter and Vicente still keeps his old wife in Tiruta. "She," says Lusiano, "goes naked, for Vicente is very lazy; plants only a little milpa which goes to weeds."

In Guisiego there is a Warihio orphan child adopted by the good Mexican, Antonio Bringas. He adopted the girl 3 years ago after taking pity upon her as she wandered unguided from one poor hut to another.

THE SELYEME

His chief functions are to conduct ceremonial *tuwuri*, provide medicine for the sick, and adjudicate matters pertaining to marriage. His consultation and permission is sought for holding *tuwuri*, details of which are given under "Ceremony." With the ripening of maize and squash in late summer he becomes very busy, almost sleeplessly going from one house to the next to make *tuwuri*. In such times he is heard to remark upon the arduousness of his duties, unconsciously perhaps to argue justice for the food tax he levies on his neighbors—perhaps a burro load of squash and maize or a quarter of a goat.

The people must await their turns; hence, it is self-evident that a consequent authority grows up with the selyeme, as the people must ever run to him for assent to their ceremonial plans. It is a form of chieftainship or priesthood.

The extent of his medical administrations are unknown. He may visit the sick, or messengers are sent to him asking for medicine. As related by Lusiano, the messenger, usually a member of the afflicted one's family, tells him what the sick person is supposed to suffer. The selyeme then makes up an herbal medicine (or a medical counter-belief) with which the messenger returns. According to Lusiano, the selyeme does not hold forth with any ritualism in curing the sick, nor does he make recitations, but only gives medicines of herbs. How far this limitation carries in the area is conjectural. He is reported to adjudicate troubles between husband and wife and can initiate divorce. Though no information was collected showing his function at the time of marriage, the above paragraph on marriage indicates he may have an important influence on the maintenance of marriage as an institution. In this and in other frictional matters he may operate as a conciliator or judge.

When a selyeme dies, the people of his community select another to replace him. He will be chosen from among those who sing best and know best the Warihio songs, especially if he also knows the religious recitations—he will probably be the selyeme's son. He is asked to officiate at the next *tuwuri* and from thence his tenure in office begins. His selection, so far as is known, is done rather casually by community consultation and without ceremony.

The office has a general looseness and immaturity about it. The religious recitations practiced at Guasaremos are said to be lacking among the Warihios along the lower Rio Mayo, and previous to the present selyeme in Guasaremos also. The present selyeme there is Cosme Valdez, the son of a selyeme, and comes from Loreto. Other localities reputed to have selyemes are: Loreto, Arechuybo, Gachavachi, and San Luis Barbarocos. It is said that the chief of all the Warihios lives near Loreto.

BIRTH

The Warihio wife beds down alone in the house upon a "petate" on the ground. The husband remains nearby to see that all goes well. If it does, he may continue to sit at the house or take up some occupation. If the wife has trouble he goes for the selyeme, who may be a considerable distance (several hours) away. In one case under discussion⁵ the assistance of the selyeme, Cosme Valdez, consisted of the selyeme getting hold of the infant's foot and pulling it directly out. Both the child and mother died. Any phenomena of a *couvade* nature were denied. If the delivery is normal the woman rises the next day and carries the child down to the arroyo and washes it and herself.

⁵ Recounted by Bartolo and his wife.

At that time she gives the child its name. Thereafter she returns to her habitual tasks and the care of the child.

WARIHIO NAMES

Among Warihio names there are: Juan Antonio Chapapoa, Tiojilo Taquachi, Crisanto Taquachi (*Taquachi* sp., opossum). Near Plantonita there lives a large family of Coyotes among whom are; Juan Coyote, Manuel Coyote, and Angel Coyote. Neighbor to them is a family of doves: Juan Palomo, Matiana Paloma (wife of Lusiano Guireña). Among others are Juan Campa, Nicolas Anaya, Felipe Anayña, Vicente Guireña, and Santana Vecerro (calf). Then there are Marciel Chirowi, Leonicio Filaremos, Marcos Guasaremos, and Felipe Chanate, whose last names are those of the localities from which they came, respectively, or in which they live. Chirowi is also the name of a thorn tree (*Acacia cymbispina*), and Chanate the Mayo name for a bird.

Thus is the simple origin of Warihio names—the assumption of common Spanish first names seconded by some other designation whose selection is not always clear. Those containing place names are easily understood. Surnames such as Campa and Guireña are obvious annexations of Spanish appellations. The preponderance of animal names is not easily explained, and those with whom the writer talked threw no further light on the subject.

Concerning the Warihio names before the intrusive Spanish factor, there is a little to note. Juan Campa said that earlier the Warihios had no certain names or Christian names, but were called by whatever name happened to fasten itself upon them as they grew up. All the Mexicans and Indians at present distinguish between the name given them at birth by their mother and their baptismal name, taken from their saint day and pronounced by the priest. They are commonly called by the name their mother gave them, since they are often half grown or fully grown before a priest gets around to call on them. It would be rather difficult to change over, yet it is their baptismal name which they consider real. It is probably the baptismal names to which Licha Acuña referred when she said; "The antiguos (Warihios) lived in nakedness, foraging upon the natural wild food, without names, like animals."

The Warihio are self-conscious and sensitive over any intimation of namelessness, as though from the tongues of Mexicans they had been put to shame, and bitten with the same contempt loitering in the words of Licha.

BURIAL

Today the dead are buried in the earth. In Guasaremos are graves a mile from the nearest hut. The comparative age of the persons at time of death may be estimated by the mound of stones capping the interments: those for children are small; those for adults, large. In San Luis Barbarocos, graves have been made at the site of the old Mission, between its front and the separate belfry. The most recent graves are almost under the church porch, as though with proximity they were gradually creeping up to a greater sanctity.

In times past the dead were trussed up into large baskets made of palm leaves or of carriso and cached in caves, the openings of which were walled shut with stones. One such cave was visited in Sierra Canelo. Cattle had gained entrance to the large half-open cavern and had eaten many of the burial baskets and trampled and broken the bones of the dead. Pedro, the head Warihio of the town of Loreto, said that many Indians had died and been so buried at the time of the cholera. Hair and pieces of skin still adhered fragmentarily to some of the skulls. The following articles were collected among the scattered bones: crude shell beads, two samples of "petate" baskets on the northern slope of Sierra Charuco, is reported to be another cave burned bone, a sherd, and hulls of acorns. These last were provisions for the dead and had been placed inside the baskets. Near El Limon, in the northern slope of Sierra Charuco, is reported to be another cave containing a similar cache of ancient dead. Others also from indefinite localities have been reported.

The occupants of several graves disinterred in the valley of Guasaremos are not so easily identified. They were discovered several years ago when a hole about 8 feet deep was excavated for making a "maya," mescal roasting pit.

The oldest Warihio, now dead, had no memory of them. Their depth indicates a considerable duration of soil deposition, which, considering the round contour of the bordering hills, is at slow rate, though Bartolo says he can note a certain filling in the area surrounding the graves during the last 20 years. What ancients could they have been? A hundred years ago the Warihios did not bury their dead, or at least there is good evidence to show they were sewn up in carriso or palm mats and cached in caves. There were no Spanish-speaking people here previous to old Sr. Russo who came 40 or 50 years ago.

It is still possible, however, that they are the remains of early Warihio converts of the Jesuits, whose influence was established in the early part of the 18th century, and emanated from two mis-

sions—one in Conicari and another in San Luis Barbarocos, still standing and attended by the Warihios, though there is now no priest present.

The Warihios burn or abandon a house in which a person has died. They construct another in a different place. At the funeral a fiesta is held during which plenty of food is served. In the grave with the dead they leave some tortillas or other provision, and upon the heap of rocks are placed little bowls of water, beans, and more tortillas. These offerings upon the graves are replenished from time to time. The fiesta is made to facilitate the entrance of the dead to "Tata Dios," and the food is for their journey thence.

CEREMONY

In Loreto for the planting of maize the Warihios hold a ceremony conducted by the "selyeme" (fig. 15). The seed to be planted is placed before the cross and a recitation is made over it. The ceremony was said to be conducted in a manner similar to that described below for tuwuri. Other allusions to planting indicate this ceremony is common practice, a belief being that a blessing guarantees a harvest.

When the seed is grown to ears of corn, another ceremony is made. In this ceremony grains from the first roasted ear are scattered into the air during the recitation. A good believer will not eat of his corn until this ceremony has been performed. Such a one was Pedro, Warihio headman of Loreto. Though it had been a long year since he had had the pleasure of eating fresh corn, he stayed his hunger for a week or more while he awaited the coming of the "selyeme." He did, however, sell roasting ears to our party, because we were hungry travelers and our guide, his friend. His house and milpa are shown in plate 10, *a*.

Nearly all social and ceremonial life centers around the tuwuri (fig. 16). At them the people gather to talk, laugh, dance, sing, and make obeisance to the supernatural dieties. They are a definite form of ritual actively leading and sustaining them toward a tribal unity. In them are perpetuated the tradition, custom, and religion of the Warihio.

There are two classes of tuwuris or fiestas, though their differences were never clearly defined to the author. Those visited were of one class and performed with the ripening of cultivated plants about Guasaremos. They are conducted to give thanks to "Tata Dios," for the rains, the foods, and for everything that the Warihios enjoy or need. The sons of "Tata Dios," who are the Warihios, believe that three tuwuris, each with its individual ceremony, are necessary to

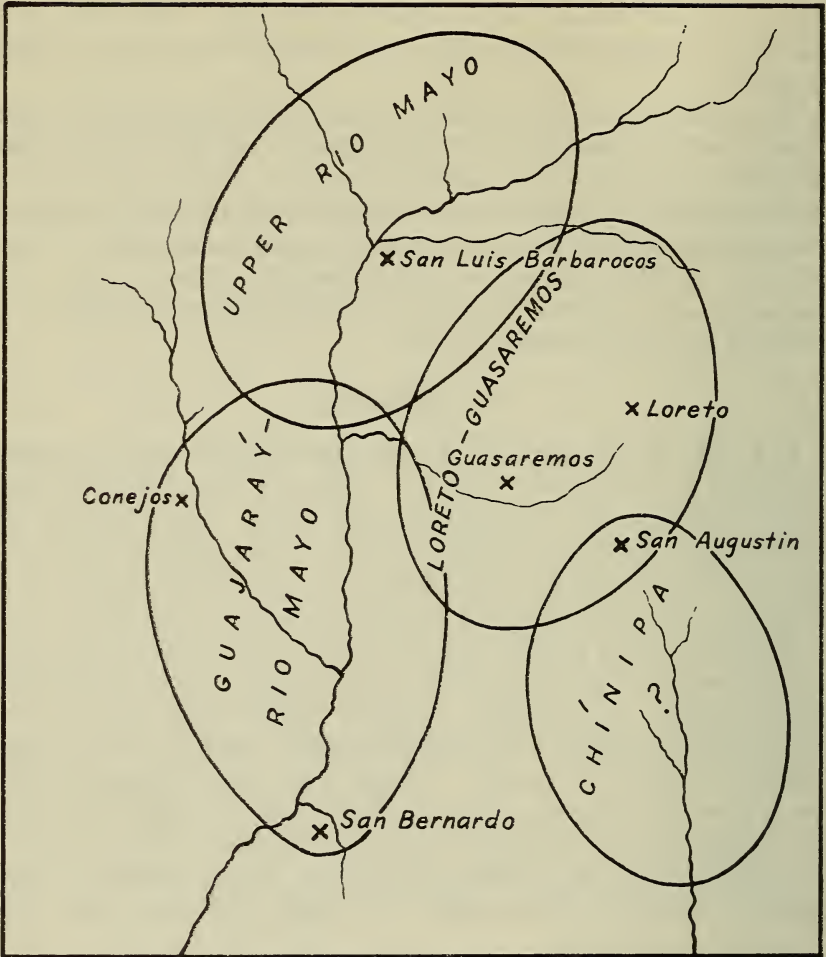


FIGURE 15.—Ceremonial groups or areas of social exchange.

accomplish the thanksgiving. Each household tries to have the three some time during late summer and fall. Thus, as long as plenty of food lasts they are busy with *tuwuris*: the “*selyeme*” in traveling from one household to the next and officiating; the householders in harvesting their beans, corn, and squash; carrying them to the houses; preparing them; and gathering and transporting the wild agave plants for making “*tesguino*.” When not directly concerned with the production of *tuwuri* they can keep themselves occupied going to those of their neighbors. The differences between the three types of thanksgiving *tuwuris* are only partly discernable to a green observer. The recitations, some of the songs, and a few of the dances

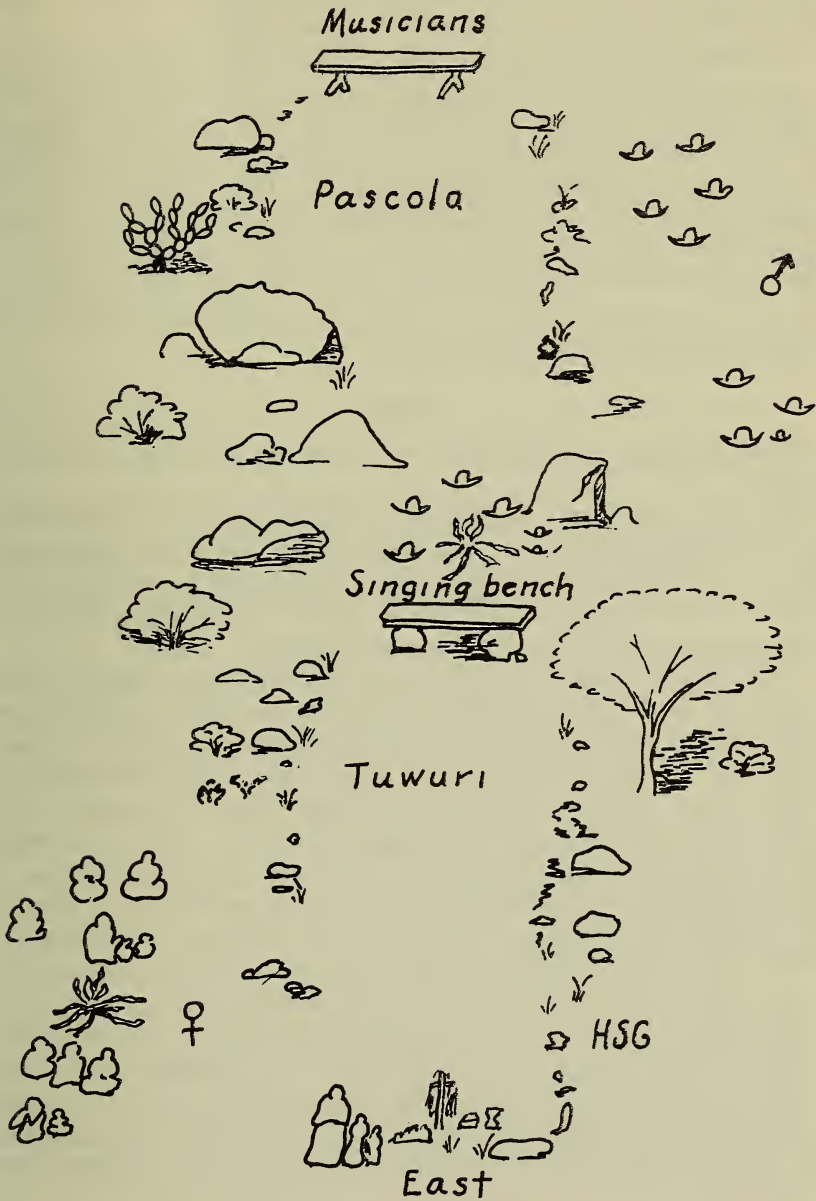


FIGURE 16.—Diagram of tuwuri and pascola setting.

differ, while the general order of things remains unchanged. The system as a whole is enough to show that there is a definite system of ritual carried on as a structural social pattern.

One does not know his fellow man so much by the custom of greeting upon the street as by his social and habitual structure carried like a heart within. So may the Warihio and also his many mysteries of origin and place, be known by his self-expression timidly given in his indigenous system of song and story. If the Warihio have any tribal coherence there will it be expressed. It is the fulcrum on which their hazy tribal unity seems to turn. Hence, in view of this importance the following observations, taken from two different tuwuris of the thanksgiving type, are written out in detail, and scenes of the dance are shown in plates 37 and 38.

TUWURI

Second night; ceremony said to be the same as that of the first night.

A small cross about 2 feet high stands at the east end of the dancing flat. It is shrouded in a plain white cotton cloth and ornamented with a necklace of grass beads (job's tears) and a medallike ornament. Near it upon the ground is a small bowl filled with incense and another bowl in which the incense is burned.⁶

The selyeme rouses himself in the late afternoon from his sleep under the shade of a tree near the house of the host. He shakes out and carries to the foot of the cross the petate on which he has been reclining. Upon this he spreads a white cloth. The host brings out food—beans, tortillas, and water—until there are a dozen or so little bowls which the selyeme spreads upon the cloth. He kneels before the cross, the food offering between, and makes crossing gestures up and down his face and breast. The motions are similar to those of the cross of Catholicism, but they are more ornate and sustained. Then with a dry cornhusk he tosses beans from the bowls around him into the air. He breaks off pieces of tortillas and also throws them about him in the air, from where they fall unnoticed upon the ground.

He retrieves some hot coals from the fire and drops incense upon them in the incense burner. He makes gestures with the burner emanating smoke before his body much as he did with his hand, then he passes it over the food spread toward the cross, and once more

⁶Incense is in the nest of a solitary mason wasp built upon the face of rocks. The Indians sometimes spend much time looking for it. The nest is a mortar of little pebbles and gum exuded by one of the torote trees (*Bursera* sp.) (The gum is known in commerce as "copal"). The aroma is very pleasant and aromatic, and seems to stimulate the singers and dancers to livelier participation.

into the air about him. Again he casts up food toward the heavens and in a low monotone makes a recitation toward the cross.

The several remaining bowls of beans and tortillas he hands to the host, who carries them to the small children, who eat them. The selyeme carries a flask of water, which he pours into a small bowl and one by one proffers it to the children until it is all drunk.

He carries the petate and cloth away and returns to the cross, where he makes more gestures and places a gourd rattle with two smaller ones beside it upon the ground at the foot of the cross.

The host then serves all the guests, seven or eight families, with beans and "tamales de elotes." The guest women have helped the hostess, who has been very busy with her hands in and out of hot water, prepare the food.

Soon after eating, the selyeme sits upon the singing bench and after a short interval begins to sing. Some of the songs are sung to the children urging them to dance. The little ones gradually come and stamp time upon the ground before the singing man. A pair of girls about marriageable age enter the flat area and stand shyly beside the cross, conversing and giggling in low voices, watching the little children. Eventually they gather courage and with right hands clasped come surging and stamping in to dance in unison a yard in front of the singer. The selyeme sings on through the evening, an hour or more, until darkness.

After an interval of an hour or so he makes ceremony again. He approaches the cross, kneels, crosses himself (gestures hand up and down and across face and breast, which hereafter will be called crosses). He picks up the three gourd rattles lying at the foot of the cross, crosses himself, still kneeling facing the cross and the east, shakes the large rattle steadily for a couple of minutes, and the two smaller ones also one by one, each preceded by crosses. He rises, crosses himself, shakes the big rattle again; turns and walks back to the middle of the dancing plot, faces east, crosses, shakes second rattle for a couple of minutes; turns and walks back farther from the cross to the singing bench, faces east, crosses, shakes third rattle.

He turns his back upon the cross and east and, facing the bench, calls three men, who come and stand facing the selyeme on the opposite side of the bench. These are the three singers, whose turns in singing are determined by their respective times of arrival and their singing ability. Thus if two good singers are present, the one who arrives earliest in the evening or afternoon is given first choice and will stand at the center of the bench with the second singer on his left and the third on his right. Often the third man never sings, but is only a filler to make the three, which the ceremony requires.

The selyeme makes an address to the three men, at the conclusion of which he crosses himself and with a shake of a rattle hands the big rattle to the first singer. With the same manner and gestures he hands over the other two rattles to the other singers in their respective turns. Each singer crosses himself as soon as he receives his rattle, which the selyeme acknowledges by like crosses. Then the three singers sit down upon the bench and after an interval of a half hour or so, the mid-man begins to grunt and mumble in time to his rattle which he has developed into a regular beat and rhythm. Gradually his chant and beat quicken, his voice grows until coherent song finally swells forth to go ringing over the little group and off into the vast assemblage of confining forest trees. Soon the girls come out and dance before him. For a while the other two men continue to sit upon the bench accompanying the singer with their rattles. Only one man sings at a time.

After a couple or three hours of dancing the host again serves food to his guests; this time "wacavaki" and "tamales de elotes." The men have gathered around little fires and the musicians are warming up their instruments. The selyeme mingles with the crowd of low slow conversation. They pay but scant attention to the women who have dispersed themselves to a small fire on the ground on the opposite side of the dancing flat. Occasionally their voices and laughter drift over to the men. Their conversation is in the Warihio tongue, while that of the men, perhaps because of the strangers' presence, is partly in Spanish.

After eating, the singing and dancing begin anew. The selyeme takes another turn during the night, the one which would have been that of the third singer. Of all the men the people like best to hear him sing, for his voice is strong and melodious, his words clearer. He accompanies himself in strong stroke rhythm with the gourd rattle. He sits on the bench and leans forward as if always on his toes. While his right hand shakes the gourd, his left holds a handkerchief to the side of his head. He works hard putting most of what he has into his chanting. The gourd never stops; at the end of a song it breaks suddenly into a diffusive unaccented rattle waving the dancers back. While they walk back to the end of the dancing flat, where the small shrouded and beaded cross stands, the singing gourd seems to hold them with a promise and a power.

On and on tirelessly through the long night the dancing continues. Singer follows singer with song after song. The older women also dance and there are as many as eight or a dozen in the dancing plot at once. They clasp hands in lines of four and their regular thudding feet beat the ground to dust until it floats in smothering clouds about them and the singers. Yet the singer chants on in two or three-hour

stretches without so much as a glass of water. After each song the voice rests a moment or two while the rattle alone continues.

Then again the rattle takes up a regular accented stroke and the singer starts another song. A moment later the dancers plunge in again in long flat-footed pounding strides ending in a little jump, thudding before him. Thus dance follows dance with almost no repetition of song. The melody is similar in many and its difference depends upon the skill of the singer. In a poor singer all songs carry about the same tune, but in the best they break up into distinct melodies related only in basal structure. Thus in one evening of Warihio singing there is given a sketch of music development. Beginning with the dull tonal chants, there follows in increasing intricacy the variation of basal tonal patterns and cadences. Then there is a broad step from the voice to the instruments—for Pascola—violin or guitar, and with these latter they play the Warihio melodies and at last also the more modern Mexican pieces.

The songs fall into two classes: religious and festive. The first are addresses to heavenly deities or religious objects of worship. The opening song is sung to "Tata Dios" himself, the second to the sons of Tata Dios, who are the Warihios, and is called "koloka" or "sogilla" in Spanish. In one *tuwuri*, *La Grulla* (*korowe'*) was sung, which is the longest and most intricate dance of any observed, both men and women participate and *tesguino* is served as part of the ceremony. It is the final song just before the closing ceremony at dawn.

The festive songs are sung for the enjoyment of those gathered. They are named after animals and definite pantomimic play actions are practiced. In *La Pitache* (*wasp*), women dancers leave the flat dancing space and glide among the lolling men, looking for those asleep. These they "sting" by pinching and poking them, an excellent device for stirring up the deadheads of the fiesta. It is accompanied with laughter. Another is *La Panela* (*momoha'*, a honey-making bee), "mas bravo," for the dancers pinch the ears and poke their fingers in the eyes of sleepers. In this dance they also rob the fires of burning brands in further imitation of honey gathering. In *El Aguila* (*wa'we'*) they descend upon unfortunate sleepers with "rebozos" spread like black wings and picking them up carry them back to the dancing flat, where they lay them before the feet of the singer.

PASCOLA

Immediately behind the singers' bench is the dance space for the men. They dance singly the *pascola* (see fig. 16) to the music of cello and violin. The singing of the man singer and the music of the instru-

ments have no rendered connection, yet the two function independently side by side, neither confusing the execution of the other.

The men are reluctant to start and urge one another. They dance solo, a flat-footed jig step, each lasting until either the dancer or the musicians tire. One or two wear the "chairígora" on their ankles, the swish rattle accenting the cadence of the dance. They are reported also to be worn around the waist. Some dance easily, tirelessly, and well, some dance heavily, ineptly, tiring soon; and others dance not at all but sit all night apathetically puffing cornhusk cigarettes and intermittently conversing. These latter are the elders.

The men are also reported to dance *tuwuri* with the women when there are no instrumentalists present. In the same area years before they danced much more with the women. The word "pascola" is one employed also by the general population of southern Sonora, and applies to the solitary flat-foot jig dance of the men, accompanied by instruments, whether the men be Mayos, Warihios, or Mexicans. No Warihio word was obtained for it. The dance *pascola*, as are the instruments, is probably a recent adoption of the Warihios from the Mayos. It has no ceremonial importance as has *tuwuri*, and no singing accompanies the instruments.

For a long while in the late night one of the young men sat by the side of the singer softly trying to sing. It is thus that they learn the songs and eventually become singers. Only the older men sing, and the songs are, of course, all in the Warihio tongue.

All recitations are in Warihio. It is very probable that had not Spanish-speaking people been present, Spanish would not have been spoken at all. A few of the men and many women do not speak the Spanish language.

About midnight the host served steamed squash. As *La Grulla* is sung and danced *tesguino* is served, first to the *selyeme*, who stopped singing long enough to drink, next to the dancers at certain libatious moments in the dance as part of the ritual, and last to the assembled guests. When the concluding ceremony of the *tuwuri* is done and most of the guests have departed for their homes, many of the men sit around in the morning sun drinking until the last of the *tesguino* is downed. They sometimes become drunk and sometimes sing in unison the Warihio songs.

THE CONCLUDING CEREMONY

At dawn the *selyeme* once more approaches the cross, while the small multitude sit idly, inattentively about, a few asleep. A few paces before the cross he stops, facing the east; he crosses three times, he bows three times, he kneels three times, he crosses incense up and

down three times before the cross inhaling the smoke the while. He delivers an oration of several minutes, speaking into the great east where the first colors of dawn are growing.

Next he turns and calls to the multitude about him and one by one men come to bow, kneel, and make the cross before the cross. After the men, the women line up and bow, kneel, and cross themselves. Less than half do this.

Then with the men ranged on one side and the women on the other the selyeme again stands before the cross facing east, makes gestures with the incense burner and delivers another invocation. He walks around the line of people making gestures toward them with the burning incense. Some of the men cross themselves as he approaches. To these hand crosses the selyeme replies with like hand crosses. Thus he circumnavigates his lines of people three times. No word is spoken.

Following this the host brings him something as he stands again facing the east. Then with a last gesture of the incense burner he says, "Adios, Tata Dios," and takes up the cross with its ornaments. The host brings him a broom and with it the selyeme sweeps away all tracks upon the dancing plots.

MYTHS

CREATION MYTH

(By Lusiano)

In the beginning of things the world was a "laguna," a plain of water. Tata Dios sang for 3 days and 3 nights. From the bottom he took a handful of sand and scattered it before him. These began to grow into hard land. At the end of 3 days he sent out a little white dove to see if the world had not grown hard in some part. The dove went to the farthest corners three different times. The last trip it returned and said the world had grown to land.

Tata Dios was singing all the 3 days and nights. That is why we sing *tuwuri* now, that we may not forget these things: Tata Dios and how the world began.

Then Tata Dios made three little figures; "ceniza," "barro," and "mona." After he had made them the three little figures asked, "Now what are we going to do"?

Tata Dios blew on them and they turned to ashes. He made them again, and again blew them into ashes. He made them again and when he blew on them this third time, they did not turn into ashes but became men. They had received the breath of life from Tata Dios. From ceniza came the white man, from barro the black man including

the Warihios, and from the third, mona some other kind (Luisiano had forgotten).

MYTH OF SAN JOSE

(By Lusiano)

One day San Jose was in an orchard very much alone. He was very sad because he was very lonely. A little bird flew about in the orchard singing gaily.

Tata Dios came and asked San Jose what he was thinking. "Nothing," replied San Jose. But Tata Dios said; "Yes, you are. You are thinking of many things." Then he asked San Jose again what he was thinking and again San Jose replied that he was thinking of nothing. For the third time Tata Dios asked, and the third time San Jose replied, "I was wishing I could be happy as the little bird flying about here. But I have no one to talk to, no family, no children."

Then Tata Dios spread a wool blanket on the ground—so that it would be soft and clean—and ordered San Jose to lie down upon it. San Jose lay down. Then he ordered him to stand up again. This he did three times. On the third time a woman stood with San Jose. Thus did Tata Dios make woman from man. Some say from the rib.

THE CROSS MYTH

(By Lusiano)

Tata Dios was sitting up in a tall palm tree, the kind they use in making hats. Some soldiers were out hunting Tata Dios. They came to the tall palm tree in which Tata Dios was sitting, sitting right in the very top amongst the branches. The tree was extremely tall, "muy arriba," taller than you can imagine. The soldiers struck at the tree trying to cut it down, but they could not, their axes availing no more than to smooth the trunk. It was as hard as a rock.

Tata Dios called down and told them to make a cross of the wood, but they could not. They could not cut the tree.

Santo Glorio was their chief. He came and cut down the palm and it fell to earth with Tata Dios. Tata Dios and the palm broke into little pieces. Santo Glorio made the cross from the pieces. Tata Dios rose again and went off to some far away place where he is yet. He could not be killed. Santo Glorio was the eldest brother of Tata Dios.

In Loreto there is a bow with arrows, and a bayonet which is used as a "recuerdo" or symbol of the event of Santo Glorio slaying Tata Dios and making the cross. On a day in April on the "Dia de Santo Glorio" they get out the implements and use them in the ceremony. They are for that day only.

Lusiano believes that sometimes some of his people talk with Tata Dios. They have to know just how to do it. Cosme Valdez claims to know where Tata Dios is and to talk with him. Luisano thinks it true. He says the wife of Cosme says that sometimes Cosme gets up in the night and will pray and talk to Tata Dios.

TALES OF HIS FATHERS

(By Juan Campa)

There was a fiesta. They ordered La Señora to bring in a little boy to the dancing place. La Señora of Tata Dios, who is the mother of us all. She brought in a child to the dancing place. This, they then ordered La Señora, is to be killed, cooked, cut up into small pieces, and given to the people (at the fiesta).

"But no," said La Señora. And she took the child away and returned with two lambs. "We will not kill the child for the people to eat. That would make devils of them. We will kill these two little lambs and give of them to eat. Then all will be well."

So that is what was done and ever since the Warihios have eaten sheep in the tuwuris.

FIGHTING DAYS

(By Juan Campa)

In the early days the Warihios fought much amongst themselves, "mucho garambuyo, donde quiere;" there was much fighting. Brother killed brother or father, and nothing much was done or thought about it.

Then they appointed a chief (governador) who ruled the wild people and stopped them from fighting among themselves. That was long ago, uh-ha, long before the year of the cholera.

HISTORY OF TUWURI

(By Juan Campa)

First, in the very beginning of tuwuri, before they made tuwuri as they do now, they gathered around a stone; a large round boulder. Upon this boulder they beat with small stones until the large boulder began to sing. Then they danced to the singing of the rock. This boulder may still be seen aside an old trail, running from Salitral to Macoyahui. Another similar stone is near Carimechi. Upon both of them may be seen the marks where the smaller stones were beat upon them.

Then after that period there came a time when the men began to sing.

The third thing they did was to tie an old beast or two near the stone they had carried in.

Then at last there came Santa Cruz and they put up the cross, which they dance before to this day.

"And all, all of these things happened before me. I never saw them. They are the things the old ones told me, and who are all dead now."

SONGS OF JUAN CAMPA

High upon the mountain	Kaweyo tepayo kawikuya
The morning sun is striking.	Taenani mehile nopeali
	Kaweyo tepayo kawikuya
	Taenani mehila nopeali.
Dance tuwuri	Meheleno meheleno peyaleno
	Huhuwuli huhuwuli chanimane
	Kawiyana kawiyana chanimane.

SONG OF EMILIANO BOURBON

I sing tuwuri	Tutuwuri tutuwuri chanimane
	Melene' melene' chanimane
Dance, little ones, dance	Tanirachi tanirachi tuwuri vum.

METAMORPHOSIS IN ANIMALS

Emiliano Bourbon and Juan Campa stated that animals change form:

The crawfish to the scorpion
Fish to muskrats
Leeches to centipedes.

Licha Acuña stated:

Mice become bats.

THE CARBUNCO (By Juan Argüelles)

The Carhunco is a small, haired animal, slightly smaller than a house cat, which carries a light in its forehead. There are very few and they come forth from their ground lairs only at night. The light they carry is presumably to enable them to see their prey. It is like a blue stone and emits a bright white light. They are very wild and will run if one approaches, and they will immediately extinguish the light which betrays them and one is unable to follow them. They live in the rocks and just beyond Chorijoa a few have been known to come forth in "las aguas."

THE STORY OF JUAN ANTONIO CHAPAPOA (By Juan Argüelles)

Juan Antonio Chapapoa was a bad Indian, Warihio. When he was a young man he worked peacefully and industriously in the fields

about Chorihoa. None there took him for other than he appeared—a good Indian, “muy bueno por trabajos.”

But at times Chapapoa would take trips up country presumably to visit his relatives. He went up the Arroyo Guajaráy, but also he went beyond as far as Nuri. There he stole horses, mules, cows, and whatever else he could. These he drove towards the lonely sierras to a barranca near Baniri near the head waters of the Arroyo Guajaráy.

Once men from Nuri trailed him and found this canyon with much stolen stock. There also they found Chapapoa camping among some large rocks. The men were armed with guns and sought to take or kill Chapapoa. They fired their guns at him as the bad Indian charged down amongst them, his great machete flying in his hand. He cut off their hands and they all died.

Then he returned again to work peacefully about the old river-split town of Chorihoa, none suspecting him of any crime. But one day a man from Nuri visited Juan Argüelles and saw this Indian working for Juan. Thereupon he told Juan who this Indian really was and what he had done around Nuri. It was then generally known that this Indian had killed many people.

“Si, said Don Juan, “Juan Antonio Chapapoa era un muy malo Indio,” but he lived to be very old. Now he is dead.

SOCIAL CUSTOMS, CEREMONIAL GROUPS, AND EXTRANEOUS INFLUENCES

It is said that when one Warihio family wished to visit a neighbor, which was seldom, the husband went first by a half hour or so. The greeting was stoical, brief, often without apparent expression of welcome. The host perhaps squatting on a chunk of wood answered the “yos kwida” with “kaniri” or kaniri va’.” The two men did not face each other; the host extended his hand as he looked off in another direction, while the visitor sat down to stare into his own space. They sat thus possibly for several minutes or a half hour until eventually talk got under way. Since the handshake is European, it is likely the original custom of greeting was different or simpler. It suggests that recorded by Lumholtz (1902) for the Tarahumare. Even today there is generally a strong reserve in greeting and rarely none at all. They usually respond either to the Spanish address or to “yos kwida” (from “Dios cuida,” may God care for you). Friends or intimates may employ a modification of the Spanish “embraso” by touching first the right shoulder with the right hand and then lightly the hands—a unique type of greeting widely practiced in the hinterlands of the west coast of Mexico. In approaching a house the writer was commonly ignored or eluded by the women.

A fisherman youth at Conejos slipped away into the "monte" when the writer was trying to converse with him. Another youth was discovered hiding back of a stone fence while we were traveling through a gate with the pack train.

They are a solitary and unsocial people. The writer knows of no others less social or who have or pretend to have so little in common with one another. A son or daughter may return to visit his or her paternal home; rarely will neighbor visit neighbor. The Indians of the locality of Guasaremos do not know the Indians of the Rio Mayo settlements, a day's journey distant. There is a dialectic difference in speech between the two and each group regards itself with some difference from the other, though they all regard themselves, apparently vaguely, as Warihios.

The following sketch of a Warihio penned in Guasaremos provides a character sketch of one of the ruder or more primitive types.

In Tiruta there lives Vicente Guireña, who, they say, is expedient at climbing cliffs in the search and gather of honey from the nests of wild bees. He will mount by the slightest holds up rocks and cliffs high to indefiniteness, without the slightest fear. He has arrived at the fiesta with a dress coat on, the only one to be seen in this country, which is altogether incongruous to his savage appearance. His hair is long, uncut, and apparently uncombed. He sits off alone on a rock, not yet venturing to join companions. Later, in the morning, he will dance pascola. Dirty, uncouth sort of person, thoroughly Indian; of staring eye, stoic poise, flaccid face, a torpid animate engine of resistance; resists hunger, cold, heat, passion?, laughter, thought, and all such difficult nuances of change. Man brute lingering in a long dawn.

He lived with his wife for a while last winter in Guasaremos. They lived under the hospitable edge of a granite boulder as large as a house, apparently resting safely and comfortable upon a hillside. He contracted with Bartolo to clear a small tract of valley land of weeds; part of the playa choked with *Cyperus* rush. He worked at this in his own way for a month or more, assiduously and faithfully cleaning perhaps 3 or 4 square yards a day, about 2 hours' work. He would work a while then lie back upon the ground and doze, then another little while and another doze. After that it was too late in the day to work so he returned to the shelter of his rock to eat a bite and sun-sit out, like a ground perching buzzard, the rest of the day.

The Warihio have no tribal unity nor conception as such. They are just a group of people occupying a certain geographical position, broken into many small groups but all speaking variably the same tongue, living on about the same subsistence pattern, and perpetuating similar customs. Our involuntary subconscious conception of them as one definite distinct people, would probably strike their minds with surprise, were the concept offered them. The Warihio of Loreto and near Guasaremos regard one ancient, Nicolas, as being chief of all the Warihio. Not all among them knew his name, only having heard that

such a one lived near Loreto, while it is doubtful if some of the river groups have heard of him at all.

Mainly through *tuwuri* are they all held to something near a common consciousness and general cultural pattern. It draws the people together in thought, play, song, and story. But even its uniting power is limited. The *Warihio* of *Guasaremos* only seldom visit the *tuwuris* of their relatively near neighbors in *Platonita* 2 leagues away and rarely if ever go farther below. Nor do those of *Platonita* often go to *Guasaremos*. This may in part be simply social preference. There is, however, a regular ceremonial interchange between *Mesquite*, *Saguacoa*, and *Guasaremos*, each about 1 league distant from the other. Aside from any innate shyness the Indian may have, distance and *tuwuri* frequently impose a natural limitation on the number of *tuwuris* he can visit. There are natural physical factors tending to form ceremonial social units within the *Warihio* area. Using actual observations of the terrain and people together with their reports, we can draw in roughly the areas showing this ceremonial grouping (see fig. 16, p. 127).

The ovals overlap and so do the respective cultures. Correlated with these ceremonial groups we also find: certain dialectic differences between the *Guajaráy Rio Mayo* group and the *Loreto-Guasaremos* group; a strong infusion of *Mayo* traits among the *Guajaráy-Rio Mayo* as against the preponderance of *Tarahumare* traits in the *Loreto-Guasaremos* set; and several cultural elements shared only or feebly by part of the groups. These latter may be due to geographic conditions, as bean cultivation and the mountain variety of maize, which do poorly or fail in the lowlands. For appraisal purposes it will be handy to list these singular traits, provided that, recognizing our incomplete knowledge, we use them with caution. Too little of the *Chínipa* group is known to enter anything here (table 2). Doubtless they would show affinity with the *Loreto-Guasaremos* group.

TABLE 2.—*Endemic traits correlated with group ceremonialism*

Endemic trait	Mayo side, Guajaray- Rio Mayo	Upper Mayo	Tarahumare side, Loreto- Guasaremos
Highland maize.....			×
Beans.....		In part.....	×
Job's tears.....		?	×
Tesguino.....			×
Mud-wattle.....	×	×	×
Flat roof.....	×	?	(in part)
Sonovori.....	×	?	×
Back-cover and breech-clout.....	×	In part.....	
Sling.....	×		
Regular fishing.....	×	In part.....	
Chiefs or civil officers.....			×
Religious recitation.....		?	×
Rasping stick.....	×		
Gourd drum in water.....	×		
Deer dance.....	×		

The area lacking the mud-wattle is Loreto in a region of high altitude, where the more severe climate is best controlled by the stone and mortar type of wall, shown in the place of Pedro, plate 37, *a*. While the list is short, it suffices to show that field researches, aimed at determining the group differences, could do much to throw light on these ceremonial groups, and in addition show the relative impact of Mayo, Tarahumare, and Mexican culture upon the Warihio.

The presence of the Mexican rancher is now the most aggressive change the Warihio has to meet. Certain phenomena are indicative of a slow reciprocation of cultures. While the Spanish tongue has dominated, and most of the Indians have learned a simple use of it, the Mexicans in the area have adopted certain Warihio terms: "batari," the name of a fermented drink of the wild Agaves, "capido" for "kapiah," the name of a root, the names of many other plants, and the names of localities. The Mexicans learn weaving of baskets and other objects from the Warihios. There are a few Mexicans who plant the cultivated sauwi (*Panicum sonorum*), and weywi (*Amaranthus hybridus*) of the Warihio. The Mexicans attend, dance, and even sing in the Warihio tuwuris, while the Warihios in turn play the violin and harp of the Mexicans. In Guasaremos, Bartolo, a Mexican, induced Lusiano, a Warihio, with a generous gift of maize, to hold a fiesta, making supplication for rain. The great preponderance of culture exchange, however, flows to the Warihios from the Mexicans as carriers of the aggressive European culture, elements of which can be picked out through the pages of these notes.

This exchange has done a great deal to modify the Warihio pattern and, especially in the mental culture, the disintegration is still going on. This is well illustrated in the following note written in Guasaremos.

Cosme Valdez is propogandizing for food. He is the selyeme. He tells his Warihios to slaughter goats and make tuwuri. For, says he, a "chubasco" (wind and rain storm which sometimes razes roofs and damages corn) is coming larger than the one before, but if they hold tuwuris its force will be less. He has talked with Tata Dios and that is what Tata Dios told him and instructed that the people should do.

This he spoke in Saguacoa. Isador heard him and imparted the message to Bartolo. Many of the Warihios believe him. Two tuwuris have been held (rather early) in the last few days. Isador is somewhat of a Warihio infidel and does not make tuwuris, though he sings in them. To Bartolo, he called Cosme a liar and said such talk was Cosme's way of getting his belly full for nothing. Cosme's contrariness towards labor is well known. Part of Isador's opinion may proceed from that of Bartolo, who gave the information to me. Thus we see clearly begun here the dissolution of Warihio ways, as it encounters the ridicule and skepticisms of the Mexican rancher.

The rate of culture disintegration is at present slow in the distant barrancas. It depends upon the amount of contact of the Warihio

with the foreign Mexicans. In the lowland towns, as San Bernardo, Macoyahui, and Chorihoa, the culture hangs spent and dying, a tattered remnant, being surely engulfed in the newer, stronger general Mexican culture. Even the Warihios there may not know their own blood and have forgotten their own ancestral name. With the Warihios in the isolated canyons it is a little different story, for they occupy a place very few others want, and it is likely they will hold on for an indefinite period, especially if they keep up *tuwuri*.

SUMMARY AND CONCLUSIONS

This is the first ethnographic report to be made of the Warihio Indians. Until Dr. Sauer and Dr. Kroeber contacted them in 1930, the Warihio had remained almost unknown and presumably extinct. Other references to them have been based on indirect allusions in historic sources as exemplified in Thomas and Swanton (1911, p. 9). In the field of indigenous Mexican culture they have been one of the many balls of obscurity to be kicked back and forth by various teams of historians and anthropologists. They have been considered variously as: a distinct tribe, a subtribe of the Tarahumare, as only Tarahumare, as related to the Guasapares, as synonymous with the Chínipa, and as a subtribe of the Mayo or Yaqui. Their actual place in the Mexican sun has never been known. This is true also of many other peoples reported to inhabit what Sauer (1934) designates as, "The Mountain Margins of the Fuerte and Mayo Rivers"—the Chínipas, Guasapares, Conicari, Macoyahui, Tepahue, the Baciroans, Huites, and Hios (Harihios?). Do these names represent only townsmen, or tribes, or exogamous clans as suggested by Sauer?

In view of the foregoing notes, the identity and relationships of the Warihio can more accurately be determined. Kroeber (1934, p. 13) on the basis of language relates them with the Tarahumare, but suggests that they are nearer the ancestral source of the Cáhitan group, and thus linguistically predate the Tarahumare. Certainly the present differences in language indicate two peoples who have long lived distinctly in a tribal sense.

While Warihio material culture as a whole rings very true to the Cáhitan, their social culture, particularly the *tuwuri* institution, relates them quite definitely with the Tarahumare. There appear to be more culture traits common to Warihio and Tarahumare, than to Warihio and Mayo. However, a present-day field study of the Mayo would probably reduce this difference, especially in material culture. Also there should be considered the diffusion of Tarahumare traits to the Warihio in more recent times, such as the sermons, civil officers,

and various elements of ceremony, inferred to be new to the Warihio since only the adjacent Guasaremos-Loreto group have them. But even with these deductive allowances the Warihio-Tarahumare ceremonialism remains spectacularly close and the basic pattern of *tuwuri* or *dutuwuri*, an ancient and common heritage. It appears to be less perverted by Catholicism and generally more incipient among the *barranca* Warihio along the Rio Mayo.

Beals (1932 a, p. 99) doubts that the prehispanic Tarahumare had maize, but Bennett and Zingg (1935, p. 356) express an opposite view in their historical hypothesis. The large cornless area bounding them on the east, the questionable Tepehuanes on the south, and the most probable lack of maize among the Warihio would argue, because of their very isolation, for a prehispanic Tarahumare without maize. Historically, on this tentative basis, they would join the Warihios and possibly also the Macoyahuis and Guasapares as part of a large group of hunting and gathering peoples. The Warihios at the best could only have been subagricultural. The whole *barrancan*, *montane*, and *piedmont* peoples of this western Sierra Madre area would always have been, because of the broken terrain, more or less isolated into groups, which, diversely affected by adjacent influences, could easily with time have developed local differences of customs and speech. This disjunctive condition might well be reflected in the confusion regarding these people so apparent in the early allusions to them.

On the whole, however, the basic pattern of their way of life must have been fairly uniform and static. The Mayo-Yaqui groups, with whom they had contact on the west, were quite surely at least subagriculturalists. Yet it took the full impact of the rising tide of modern Mexican culture to carry maize to the timid, stubborn *barranca* Warihio.

The early culture exchanges between the Warihio-Tarahumare and the Mayo-Yaqui are not clear. The presence of abalone among the Tarahumare indicates some trade across the Warihio area. The more prevalent adoption of the lowland *pascola* and deer dance among the Tarahumare than among the Warihio is hard to explain at first glance. Geographically the Mayo are contacted by the Warihio, in whom, hence, we should expect these elements to be best developed. However, the trail to Chínipas, which very early became a mining center, provided a direct contact for the Tarahumare with the Mayo, both tribes very likely having been requisitioned by the Spaniards for work in the Chínipas area. All the while the Warihios in the Rio Mayo *barrancas* remained in the backwater of this travel and commerce. Those who lived along the trail to Chínipas have vanished as a distinct cultural entity, although it is

Warihio habitat and many of the natives show clearly Warihio physical characteristics. To the last man in Mexico we discern traces of the cultural reverberations of the guns of Cortes.

One of the most significant things developing from Warihio investigations is the fertility of the field for the well-trained ethnologist who can live with the discomforts of travel and life in the barranca wilderness. This is true not only for the Warihio, but also for all the back parts of the states of Sonora, Chihuahua, Durango, and Sinaloa. Early traits and relationships can still be ferreted out as illustrated in:

1. The memorial knowledge of cannibalism and human sacrifice among the Warihio.
2. A prehispanic culture still plainly discernible and still largely active among the Warihio.
3. The presence of mythology among the Warihio and a voluminous expression of it in Sinaloa.
4. Rain ceremonies, survivalistic, and the beating of tin pans during an eclipse by the Spanish-speaking natives of Guirocoba, Sonora.
5. The writer's observation of decorated trees, occurring apparently at random through southern Sonora.
6. Tribal residues occurring as backward peoples in many hinterland corners.

Precious little remains of indigenous culture in northwestern Mexico, but it is more than has been generally suspected. Much of it will flicker out in our present generation with the advance of the machine, upon which rides the modern Mexican exploiter, hotly spurring, like his northern neighbor. Roads one by one creep back into the interior for the trucks to contact more efficiently the virginal resources. In minerals and woods the Barranca region (Gentry, 1942 a, b) is one of the last great frontiers of Mexico. Our ethnographic field wanes not from too much desk work, but from too little living with the great unwritten source book.

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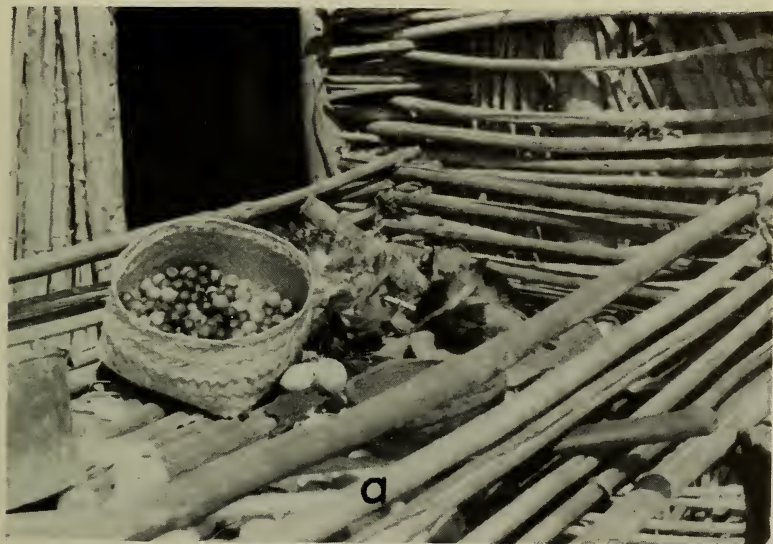
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a, Juan Campa and Warihio boy. *b*, Licha Acuña making tortillas.



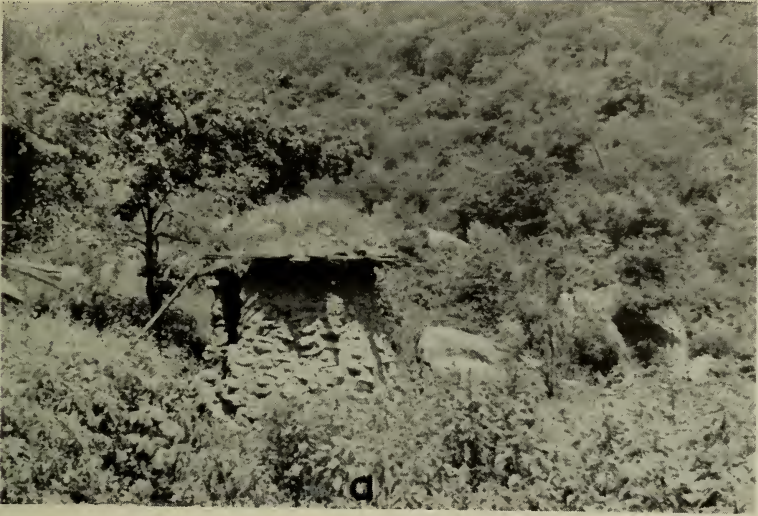
a, Hills near Loreto. *b*, Ruins of low, circling stone walls.



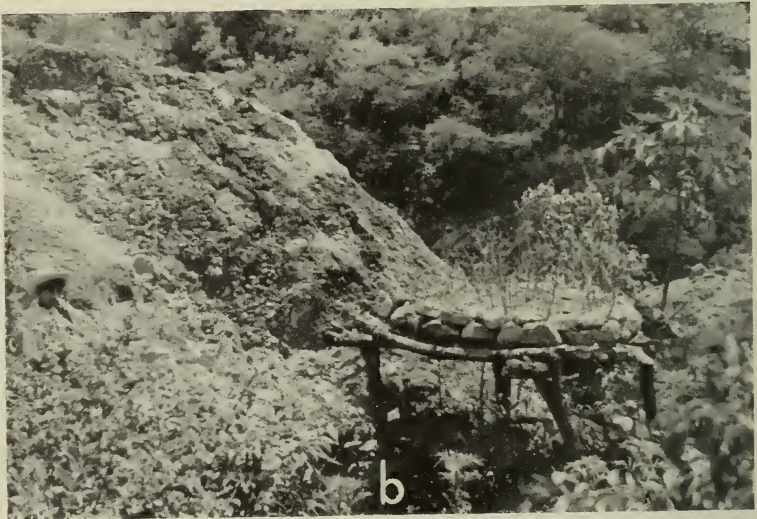
a, Wild foods on a table in Saguacoa. *b*, Edible root of guayavilla.



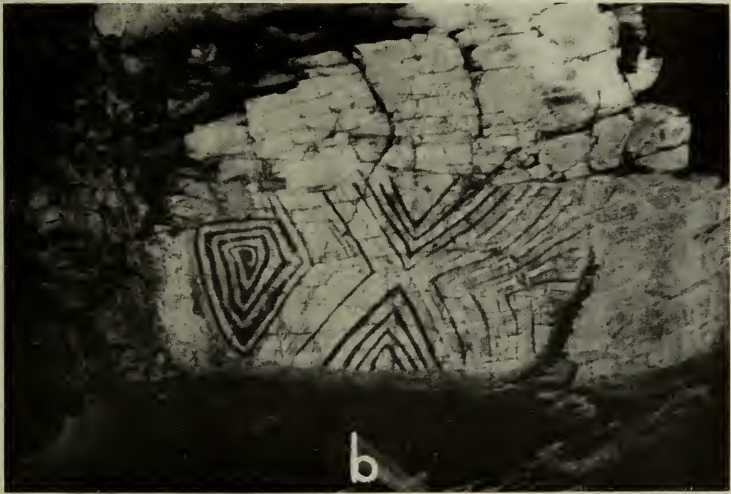
a, The first leaf on a palm thatch. *b*, House of Lusiano in Guasaremos.



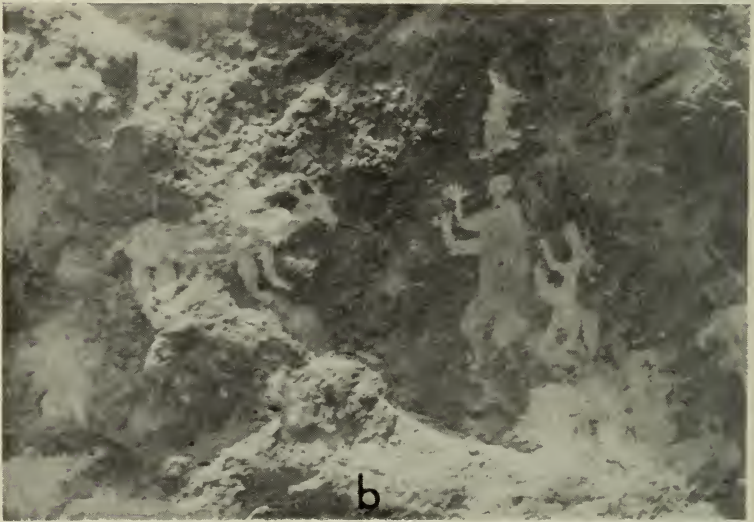
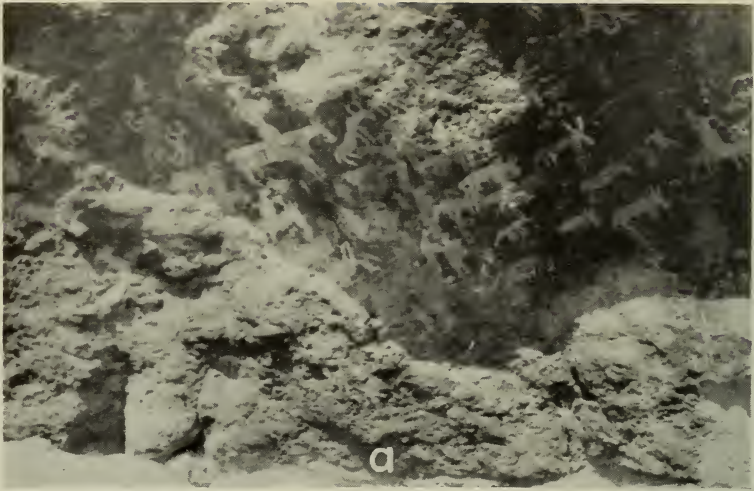
a, Sónovori. *b*, Old storage cave near Guasaremos.



a, Abode of Lolo in Saguacoa. *b*, Elevated garden in Saguacoa.



a, b, Petroglyphs near Conejos.



a, b, Petroglyphs near Guisiego.



a, Group of Warihio females. *b*, Warihios and the Mexican family of Bartolo.



a, Place of Pedro in Loreto. *b*, Dancing tuwuri in Guasaremos.



a, Singing tuwuri, Guasaremos. *b*, Rest period in the dance.