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priestly power — and now repeated by children in innocent ignorance of the practices and language of a sorcerer in some dark age of the past.

Although occasionally undergoing changes, being transmitted from one generation of childhood to another through oral repetition, the marvel is that they should survive at all with such apparent purity. This persistence is possible only through a conservatism of children which is as pronounced as it is unexpected, since in most of the matters that concern them, they are reformers of the most aggressive type — wholly oblivious of the traditions and limitations of their environment.

But in all that pertains to their play interests, they are conservative to the core. The formulas of play are clung to with gospel tenacity; and children themselves are most displeased when the canons of games have been violated.

Because of this insistence, this vein of juvenile conservatism, children's play interests and activities, with their counting-out rhymes, are the oldest things in the world, linking the child through his play-life to the mental life of savages and barbarians.

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NOTES ON THE INDIANS OF SONORA, MEXICO¹

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INTRODUCTION

My field-work in physical anthropology in 1902 included a visit to several of the scientifically important but little-known tribes of Sonora. This paper, the result of the visit, embodies the casual observations made, together with whatever reliable information I was able to gather, on the present state of these Indians, to which are added some preliminary notes on their physical characters. I shall not be able to present many entirely new data concerning the ethnology of the tribes of this region, because my visit was short and also because much of the purely Indian has become obscured; the object of the paper is more to direct the attention of students to this field of research than to cover the same.

(For historical information concerning the Sonora tribes the reader is referred especially to the writings of Ribas, Ortega, Zapata, and other Jesuits, and particularly to the anonymous *Rudo Ensayo*,² while more recent notes of value will be found in the works of Hardy, Velasco, Bartlett, Stone, Corral, Bandelier, McGee, and Hernandez.)

¹ Based on researches conducted for the Hyde Expedition under the auspices of the American Museum of Natural History, New York City, and published by permission of the Museum. All the illustrations are from negatives by the author, now the property of the American Museum.

² Andrés Perez de Ribas, *Historia de los triunfos de nuestra Santa Fe*, Madrid, 1645. [José Ortega,] *Apostólicas afines*, Barcelona, 1754. Ortega, *Historia del Navarri, Sonora, Sinaloa y ambas Californias*, Mexico, 1887 (same as his *Apostólicas afines*). Juan O. Zapata, *Relacion de las Misiones de la Nueva Vizcaya*, 1678 (in N. Vizcaya, Doc. Hist., tomo III, also MS.). The anonymous *Rudo Ensayo*, San Augustin de la Florida, 1803; also translation into English by E. Guitéras, *Records of the American Quilpic Historical Society of Philadelphia*, vol. v, no. 2, 1894.

W. H. Hardy, *Travels in the Interior of Mexico*, London, 1829. Ignacio Zúñiga, *Apéndice ojeada al estado de Sonora, Mexico*, 1835. J. A. de Escudero, *Noticias estadísticas de Sonora y Sinaloa*, Mexico, 1849. J. P. Velasco, *Noticias estadísticas de Sonora*, Mexico, 1850 (also in English). John Russell Bartlett, *Personal Narrative*, N. Y., 1854. Chas. P. Stone, *Notes on the State of Sonora*, Wash., 1861. Ramon

Another list of works, as well as an abstract of the historical references to Sonora and its indigenes, are given with noteworthy completeness in the works of H. H. Bancroft.¹

The territory now included in the state of Sonora was first penetrated by whites in 1533, when a party led by Diego de Guzman advanced from Sinaloa as far as the Rio Yaqui. Guzman was followed by Cabeza de Vaca (1536), Pedro Nadal and Juan de la Asuncion (1538), Marcos de Niza (1539), Coronado (1540), and Ibarra (1564 or 1565);² after these, early in the seventeenth century, came the main body of the friars, among whom (1604-20; in Sonora 1617-20) was the historian Ribas. From the narratives of these pioneer explorers or their companions it is learned that Sonora in the sixteenth century was inhabited by several populous and a number of minor tribes and divisions of natives. Some idea of the number of the Indians soon after the discovery can be gained from the assertion that in 1621 the converts of Sonora and Sinaloa alone numbered 86,340, and in 1624 they were estimated at over 100,000.³

The various tribes, as distinguished by different languages, and apparently many parts of tribes, were referred to by the early Spaniards under distinct names, usually those of their settlements. For example, it is recorded that Diego de Guzman reached a village called Yaquimi,⁴ and the name, in the form of "Yaqui," was extended to the river flowing by the village, to the people of the

Corral, *Razas indigenas del estado de Sonora*, 1884. A. F. Bandelier, *Final Report*, Arch. Inst. Am., Papers, pt. II, Cambridge, 1892. W. J. McGee, *The Seri Indians*, 17th Rep. Bur. Am. Ethnology, Wash., 1898. Fortunato Hernandez, *Las Razas Indigenas de Sonora y la Guerra del Yaqui*, Mexico, 1902. A. Hrdlička, *Report on a Seri Skull and Skeleton* (included in McGee's and Hernandez' publications here mentioned).

¹ *Native Races of the Pacific States*, vol. I, 1874, p. 571 et seq.; also *North Mexican States and Texas*, vol. I, 1884, and vol. II, 1889.

² It is possible that some portions of the Cortés expedition (1532), particularly that of Hurtado de Mendoza, came in contact with the Sonora Indians even earlier than Diego de Guzman. Some authors, including Escudero, mention Pedro Almenex Chiripos as the first to reach the Rio Yaqui, in 1533, but this is considered by Bancroft (*North Mexican States*, I, 54-55) to be an error.

³ Bancroft, *North Mexican States*, I, 226-27, from original sources.

⁴ See Bancroft, op. cit., I, 57; also map p. 43; original statement in Diego de Guzman's Relation (quoted in Bancroft, p. 56). For another account of the name Yaqui, or Hiaqui, see Ribas, *Historia*, op. cit.

village, and to their congeners along the river. Such was the case also with the Nevomi or Nevome, and Nuri, farther up the stream, and subsequently in many localities to the northward; indeed there is no historical evidence that any of the numerous names applied to tribes, found in early records of Sonora, were those used as tribal names by the Indians before the advent of the whites.

THE TRIBES IN GENERAL

The principal peoples early found in Sonora were, to use their historical names, the Mayos, Yaquis, Opatas; Heris, Ceris or Seris; Pimas, Papagos, some Yumas and possibly Cocos or Co-Maricopas; also the much later noticed and probably not truly indigenous Apache. There were likewise the Nevomes, apparently a separate band of either the Pimas or Yaquis; the Eudeves, Sahuaripas, etc., various divisions of the Opatas; the Jovas, who were, it seems, different in origin from the Opatas;¹ the Tepocas or Tepopas, Sobas and probably Guaymas,² who were parts of the Seris; etc. The Pimas were divided into the "Bajos" and "Altos" (Lower and Upper), and probably included the Corazones, Nuris, and others.³

All the above tribes (except the Apaches, who, being mainly an extraneous people, will not be further considered herein) are shown to be sedentary, for their descendants to this day preserve the same general geographical distribution as in ancient times. (Plate III.)

Most of the smaller divisions have disappeared as such, having doubtless become blended with the parent or main stock; the remaining distinct tribal groups in Sonora are the Mayos, Yaquis, Pimas Bajos, Opatas, Seris, and Papagos.

¹ "The Eudebes and the Jovas may be counted with the Opatas; the former, because their language is as little different from the Opatas as the Portuguese is from the Castilian, . . . and the latter, because they live among the Opatas, and for the most part speak their language, with the exception of some women and old men, who retain their own language, which is a very difficult one and different from all the others spoken in the Province."—*Rudo Ensayo*, p. 70 orig., p. 166 transl. "The Jovas are ruder and more awkward and less tractable than the Opatas, and prefer to live not in villages but on ranches in the mountain ravines."—*Ibid.*, pp. 98-99 orig., pp. 186-87 transl.

² "The Guaimas speak the same language, with but little difference, as the Seris."—*Rudo Ensayo*, p. 70 orig., p. 166 transl.

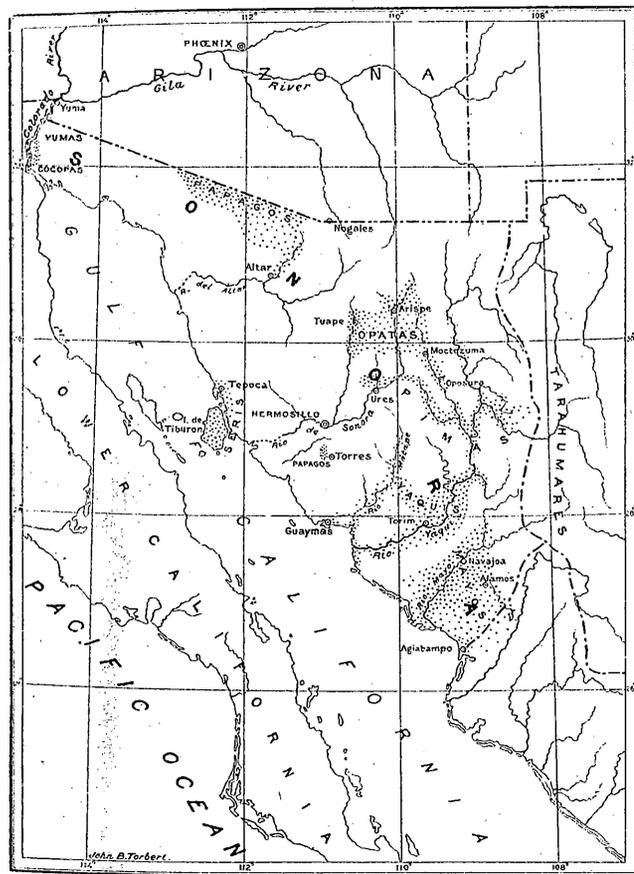
³ See identification of the Corazones village with Ures by F. W. Hodge in *Memoirs of Explorations in the Basin of the Mississippi*, II, "Harahay," St. Paul, Minn., 1899.

Habitat.—The Mayos occupy practically the same region as they did in the sixteenth century—the lower part of the Mayo valley and much of ancient Ostimuri. The Yaquis, until a comparatively recent date, remained centered along the lower Rio Yaqui, but they are now scattered over the larger part of southern Sonora. The Pimas Bajos still live along a part of the upper Sonora. The Pimas Bajos still live along a part of the upper Yaqui, as well as in certain localities about Ures (*e. g.*, Pueblo Viejo) and in the district of Magdalena. The remnants of the Opatas are found principally along San Miguel river, but they are also met with in many spots farther west, over their ancient territory. The Seris proper are restricted, as ever, to Tiburon island; but there remain also, on the mainland, a few Tepocas. The Papagos, since Sonora was reduced to its present boundaries, have become in large part a tribe of Arizona, but a fair number still live south of the Arizona line, in the district of Altar, reaching individually as far as the town of Altar, while a small group is settled a little west of Torres, south of Hermosillo. The Pimas Altos and Maricopas have nearly disappeared from Sonora, owing mainly to their assignment to reservations in the United States. In the northwestern corner of the state, according to information given me by some Yumas and recently confirmed by Mr J. S. Spears, superintendent of the Fort Yuma Indian school, there are a few Cocopa Indians on the Sonora side of the Rio Colorado, and about fifty Yumas are found about the boundary line. It is quite probable that a few Tarahumares also are settled near the southwestern boundary of Sonora, but on this point I have no positive information.

Population.—As to the relative numbers of the Sonora Indians, it was estimated by the padres in 1621 that there were 21,000 Mayos (30,000 according to Ribas), 30,000 Yaquis, and 9000 Nevomes. Zapata, in the latter part of the seventeenth century, reported the population of the seven main Yaqui pueblos as 8116; while in 1760, according to Jesuit accounts, the population of eight principal settlements of this tribe was 19,325.¹ In 1849, according to Escudero² (who is not so explicit in regard to other tribes), the

¹ See Bancroft, *North Mexican States*, 1, 245-247, 572 et seq.

² *Noticias estadísticas de Sonora y Sinaloa*, p. 100.



MAP SHOWING THE PRESENT DISTRIBUTION OF THE INDIANS OF SONORA, MEXICO

eight chief pueblos of the Yaquis contained from 54,000 to 57,000 natives and somewhat more than 200 *gente de rason*, or whites.¹ This particular estimate doubtless included the inhabitants of the entire territory belonging to the pueblos named, but even if so considered it appears to be an exaggeration.

The Opatas extended from the western branch of the Rio Sonora to the Sierra Madre, and, though scattered, must have been numerous. A Jesuit census of 1730² gives their number, including the Eudeves and Jovas, at nearly 7000; Hardy³ in 1829 estimated them at about 10,000.

Taken together the Pimas were also undoubtedly a populous tribe, extending over an irregular and possibly interrupted area from the region northeast of the Yaquis to the Gila. According to the Jesuit census above cited, their number in 1730 was 4378, but this can not have included the entire tribe.

Of the Papago population nothing is definitely known, but the tribe was large enough to make itself felt in several conflicts with the whites, particularly in that of 1840.

The Seris, including the mainland branch, numbered, at various periods prior to 1884, from 1500 to possibly 4000.⁴

As to the present numbers of these native tribes even approximate estimates can be given only with difficulty, since there are no reliable statistics concerning the natives in the state or country. Owing partly to constitutional peculiarities and partly to apathy, no thorough census has ever been attempted. There are, however, in Sonora, and indeed throughout Mexico, practically insurmountable obstacles to an ethnically correct census owing to the great intermixture of the various elements of population, combined with the character of some of the natives and the almost inaccessibility of a large part of the country. From what can be seen and learned

¹ Cocori, 4000 natives; 150 whites. Bacum, 4000 to 5000 natives. Torin, 10,000 to 12,000 natives; 6 families of whites. Bicom, 9000 natives; 3 families of whites. Potalam, 8000 natives; 4 families of whites. Racum, 6000 natives; 2 families of whites. Quiriribis, 10,000 natives; 4 or 5 families of whites. Belem, 3000 natives.

² Reproduced in Bancroft, *North Mexican States*, 1, 513-514.

³ *Op. cit.*, p. 437.

⁴ The various estimates by Velasco, Troncoso, Retis, Hardy, De Mofras, and others are summarized by McGee, *op. cit.*, p. 135. A reference to some additional reports on Sonora population will be found in Escudero, *Noticias estadísticas*, p. 83.

from reliable sources it would appear that both the Mayos and the Yaquis are nearly, if not fully, holding their own in point of numbers. Indeed little has occurred within the last half century that could materially affect the population of the Mayos; the Yaquis, however, since 1849 have lost many hundreds of men and even numerous women and children during their frequent rebellions, while others have been removed from Sonora to less healthful regions and have died in captivity. Yet during this period there remained many hundreds of healthy and prolific Yaqui families on Mexican haciendas, in or near Mexican towns, near mines, and in mountains, probably increasing sufficiently to equalize the loss. It is not possible to give reliable figures, but wherever one turns in southern Sonora he meets with pure-blood Yaquis, and sometimes they may be encountered in almost any part of the state, as well as beyond its borders. Stone, in 1860, estimated the Mayos at 10,000 to 12,000, and the Yaquis at about 20,000 persons. Conservative local estimates today give the Mayos a number nearly twice as large, while for the Yaquis the estimate for 1860 would probably serve very well for the present time.

The Pimas (particularly those in the Magdalena district and about Ures), and especially the Opatas, are nearing complete assimilation with the whites. Owing to the Yaqui revolution of 1902, I was not able to reach Tonichi, Soyopa, or other Pima settlements northeast of the Yaquis, hence can give no information as to their numbers in those parts; but about Ures the Pimas are reduced to not more than 200 or 300, and these are scarcely distinguishable among the general population.

Of the Opatas the pure-bloods today can barely reach 500 or 600. In such settlements as Opodepe, Arizpe, and others, where even a century ago the Indians of this tribe numbered hundreds, it is now difficult to find a dozen pure-blood individuals.

The Seris, according to McGee,¹ now number about 300 and are probably slowly increasing. I regret that with the means available I was not able to enlist a suitable party with which to visit the tribe, and therefore can give nothing respecting its numbers from my own observation.

¹ Op. cit., p. 135 et seq.

Civilization.—The Mayos, Yaquis, Pimas, and Opatas were among the earliest tribes of northern Mexico to receive missionary friars, and, consequently, the Catholic religion as well as some civilization. But with the limited possibilities of the padres, in the face of the deep-seated primitive religion and superstitions of the natives, coupled with the bad example of the white colonists and especially with the various conflicts that arose, real civilization of most of those who were not actually absorbed by the whites remained little more than nominal. The Opatas alone largely adopted the mode of life and organization of the whites and recognized their laws. The other three tribes accepted the dress and ultimately (but without relinquishing their own) the language of the whites; they also, probably as a reflection of their original traits, always respected, in some degree at least, their treaties, and when in conflict did not commit great atrocities. Excepting the Yaquis, they recognized the general law and authority of the government. For a long time, however, they adhered to and in many localities they still preserve their native practices. The tribes that were brought less in contact with the whites, such as some of the Papagos and particularly the Tiburon Seris, have firmly resisted, wherever possible, all change in their old condition.

At present the Opatas, Yaquis, Mayos, the Ures Pimas, and some of the Papagos are, with a few minor exceptions, in about the same culture-grade as the lower classes of white and mixed Mexicans. Most of the Papagos live in their own villages or rancherias about the frontier, and preserve their customs and traditions in almost aboriginal purity. The Tiburon Seris, as McGee has shown, remain entirely in a primitive state. The Opatas alone have reached such a stage that for the greater part they not only dislike to be called Indians, but (at least along the Rio San Miguel), even endeavor not to use their own language or anything else that distinguishes them from their neighbors. They preserve, however, a few of their old ceremonies or dances. They send their children to school when convenient, and in some localities, as at Tuape, are permitted to vote. The Yaquis, Mayos, and Pimas of Yaqui river still prefer their own tongue, but almost all of them know more or less of the Spanish. The members of these tribes who have received

some education are distinguishable from the whites only by their color and features. The members of these tribes generally prefer to live more or less together, in dwellings of their own; this is not alone from the desire not to associate with the whites, but also because they have been so long accustomed to their light, well-ventilated huts, which are more healthful and comfortable than the adobe houses of the Mexicans.

There is no doubt, from all that one sees today, that if really good schools, with industrial training, were provided for all the children of the Sonora tribes, barring the Seris, in two or three generations the state would be the home of only civilized Indians, and, judging from some examples, even the Seris are not a hopeless task by any means. The physical and intellectual qualities of the Sonora native stock are high; indeed they are such that the state, notwithstanding its disastrous past, has brighter prospects than almost any other in the Mexican federation.

Archaeological. — Before taking up the Sonora tribes in detail, a few words may be said about traces of prehistoric occupancy of the region. On the north the territory adjoins Arizona, in the central and northern parts of which ruin sline most every stream and extend into the valleys and plains. In Sonora, however, while in the northern and western parts remnants of old villages, artificially terraced farming strips, and simple fortified hills occur,¹ nowhere are there pueblo structures corresponding to those of Arizona. I have neither seen nor heard of a single ancient ruin along the lower Yaqui or to the south of it, and none to the south or west of Ures — a dearth which signifies the prevalence of more or less perishable dwellings ever since the aboriginal occupancy of the region began.

The early explorers saw only dwellings made from brush and poles and palm leaves or mats (*petates*), and such may be seen among the Sonora natives almost everywhere today. The Opatas

¹ For a detailed account of such structures see Banelier, *Final Report*, p. 482 et seq. There are two fortified mountains a short distance from Tuape. Dr Alderman, who visited one of these, found some remnants of well-laid walls and considerable broken pottery and metates. Similar hills are spoken of in other parts of the Opata region. Batres, in his *Cuadro arqueológico y etnográfico de la República Mexicana* (Mexico, 1885), mentions "ruinas de edificios conocidas con el nombre de S. Miguel de Babiacori," and "grutas de Sahuaripa."

alone, as they well remember, built stone foundations or walls to their habitations, which may account for the remnants now found in their country. A thorough survey of the state would probably bring to notice many more traces of archeological interest than are now known, but that any larger type of ruin exists in Sonora is very doubtful.

THE TRIBES IN DETAIL

THE MAYOS

The Mayos¹ form today the second largest, if not the largest, tribe of Sonora. They have been settled, since known to history, in the southern part of the state, principally along the lower Rio Mayo and extending nearly to the Yaqui on the north and the Fuerte on the south. Their principal settlements at the present time are Macoyahui, Conicari, Camoa, Tecia, Navojoa, Cuirimpo (or San Ignacio), San Pedro, Echojoa, Huatabampo, and Bacabachi, all of which, except Macoyahui and Conicari, are situated south of and near the Rio Mayo. Their population, including the dependencies, is locally estimated at about 20,000. There are many scattered Mayos on haciendas and elsewhere to within less than forty miles of the Rio Yaqui, as well as along the Fuerte and toward Sinaloa. One or two localities, the names of which terminate with the characteristic Mayo *bampo*, are found even north of the Rio Yaqui.²

A large majority of the people are still of pure blood (pl. iv, 1, 2, 4); but in San Pedro, Echojoa, and Huatabampo there are some of much lighter complexion and eyes, very probably the result of foreign admixture. A greater or less degree of mixture with Mexicans is quite general and is increasing.

The Mayos use the same language ("Cahita") and exhibit the same general degree of culture as the Yaquis; but the two tribes, contrary to general belief, show certain ethnological differences and are not identical physically. The primitive Mayo culture, of which only traces can now be seen, was apparently of different origin. The Yaquis, through conquest, regarded these people as their vassals and

¹ I take this opportunity to express grateful acknowledgment, for much aid in my work among the Mayos, to Señor Don Jesus Velderrain, of Guadalupe, Sonora, one of the most cultured men in the region.

² See strategic map in Hernandez, op. cit.

exacted tribute from them as late as the latter part of the nineteenth century, during the domination of Cajéme. During the last century the two tribes were occasionally allied in warfare, but always at the instance of the Yaquis.¹ No insurrection against the whites has ever originated with the Mayos themselves.

(The principal occupation of the Mayos is agriculture; they also raise some cattle and engage in various industries; but on the whole they do not seem to be so universally sturdy and habile as the Yaquis.) Lately the government allotted the lands of the villages in severalty, giving the Mayos separate deeds, a transaction which places them in this particular on an equal footing with the Mexicans.

(The native arts are apparently degenerating. The women formerly made beautiful woolen serapes, but now one such is rarely seen.) The blanket now manufactured is mostly crude in quality and with little or no decoration. Some of the men wear a blue *huipil*, or sleeveless, one-piece chemise of native weave, which I saw nowhere else in Sonora. The women make also a few fine *fajas*, or belts, which display considerable skill and are characteristic in color and decoration, reminding one of the finer Scotch plaids.² (Palm mats, hats, common baskets, and a little ordinary pottery practically complete the native manufactures, at least in the upper part of the Mayo country.)

(The Mayo dwelling consists mainly of a quadrangular hut, often with a partly open extension, with walls of brush, reeds, or adobe, and with flat or nearly flat roofs, all as among the Yaquis.) (Plate VII, 3.)

The dress, with the exception of the occasional *huipil*, *faja*, *serape*, and hat, is of Mexican origin. As among all the Sonora Indians, the Seris excepted, the hair of the men is worn short; that of the women is braided in a manner similar to that of the Mexicans.

There is no tribal organization, though the elders generally have much influence. The more important governing power is entirely Mexican in character, but many smaller offices are intrusted to the Mayos themselves.

¹ Consult notes on Bandera's revolution in Hardy's *Travels*, and the accounts of Sonora historians, *op. cit.*

² I obtained specimens of all grades of the blankets, as well as belts, which are now in the American Museum of Natural History.



MAYO AND OPATA TYPES
1. Mayo girls. 2. Mayo young men. 3. Opata young women. 4. Mayo men.

Of native customs I can speak but little from actual observation. According to Señor Velderrain the Mayos are wholly converted to the Catholic faith and are often quite fanatical in exercising it. A remnant of an ancient custom consists of sacrifice in honor of their dead, "*para que vallan al ciclo*" of sheep and cattle. There are certain men, called *maestros*, who are charged with curing the ill and of communicating with the dead. There are others who are resorted to for curing sickness alone, their treatment consisting of various incantations and of the use of certain herbs.

Alcoholism prevails among the Mayos, as among other Indians where the opportunity exists, but one rarely meets with a confirmed toper as among the whites. There is also manifest much love of feasting and ceremony, and a frequent want of providence, as among so many other tribes of Indians.

THE YAQUIS¹

The most interesting Sonora tribe, psychologically as well as physically, is that of the indomitable Yaquis. This is the only tribe on the continent that, surrounded by whites from the beginning of their history, have never been fully subdued, for they still intermittently carry on a fight for their lands and independence, as they conceive it, — a conflict which commenced with Guzman's invasion in 1533.² Some women and young men of the tribe are shown in plates v and vi.

An account of the long series of struggles, however interesting,

¹ In my investigations concerning this tribe I have received and gratefully acknowledge much valuable aid from Gen. Luis Torres; from Sr. Don Rafael Izabal, Governor of Sonora; and particularly from Sr. D. Francisco Muñoz, Secretary of the State of Sonora.

² Escudero (*Noticias estadísticas de Sonora y Sinaloa*, Mexico, 1849, pp. 137-38) wrote half a century ago: "The Yaqui nation has never been governed by the whites." The tribe "had its own governors and one principal *capitan*, who exercised a sovereign authority. Their authority has always been recognized by the judges and governors of Sonora. Neither have the Yaquis paid tribute; they were permitted to cultivate the native tobacco, called *mauchi*, because it was impossible to introduce that of commerce or to destroy what has been sown;" and, "the most surprising condition, culprits of all sorts were immune in their pueblos. A deserter or a criminal who escaped to the Yaquis was secure from apprehension by justice." The only apparent change effected since 1849 concerns the last-named privilege, of which no more is heard. But it is hard to see how any refugee once finding an asylum among the free Yaquis, could, even today, be retaken.

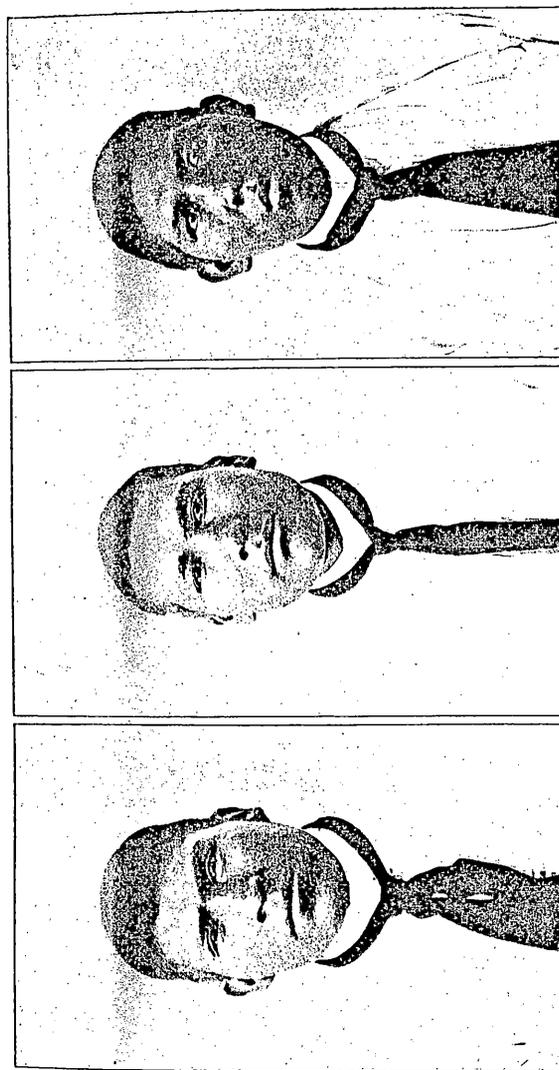
cannot be given here.¹ Notwithstanding their early conversion to the Catholic religion, and a fair degree of civilization, these Indians display a persistent insurgent spirit and general bitterness toward the Mexicans which lead again and again to organized outbreaks, resulting in serious losses. On the other hand the Mexicans of the lower class manifest an insatiable greed for the extremely fertile lands of the tribe, while the government, through its militia, wages a sometimes just but usually merciless warfare that spares neither sex nor age and which generally aims at the annihilation of what is the most virile element of the Sonora population. Occasionally there is a sort of truce, during which the Indians replenish their supply of ammunition and weapons, whereupon, if there be a leader (and the demand for such seems ever to be fitly met), the insurrection begins anew. And thus, the free Yaquis declare, when one can be induced to speak, it will be until the very last of them; and their history substantiates this determination. The friars have been accused, particularly recently, of fomenting the Yaqui wars for selfish interests; the charge may be true, but is difficult to prove.

Numbers. — From time to time the announcement is made that the Yaquis are becoming greatly reduced in numbers, and are even on the verge of extermination, but such statements are erroneous. As before mentioned, the pure-blood Yaquis alone still form one of the strongest tribes of Sonora. The current reports, including those of Mexican army officers, undoubtedly refer only to the Yaquis in the field, a contingent which varies according to season, opportunity, or other circumstance, and which occasionally, when the supplies are exhausted, or planting or harvest time approaches, disappears entirely. Fortunately for Sonora enterprise there is no prospect of the tribe at large becoming extinct, as has been pointed out.

Mode of Living; Dwellings; Dress. — From the time they first became known to the whites until a few years ago the Yaquis lived mainly in seven large villages² and subsisted by cultivating the very fertile neighboring country. No necessity existing for

¹ An account of the later wars of the tribe is given by Hernandez.

² Belem, Rahum, Potam, Bican, Torim, Bacum, and Cocori. Two or three other settlements are mentioned by different writers. It is uncertain what became of "Yaquimi."



YACUI YOUNG MEN



YAQUI WOMEN

scattered ranches, the people became grouped into large communities. The majority of these settlements are now abandoned to the Mexicans. Torim, Bicom, Potam, and Cocori, all of which I visited, have been more or less transformed into ordinary Mexican towns, with regular streets and rows of adobe houses occupied by newcomers under constant military protection. Only some of the more Mexicanized natives remain; the rest are either scattered in the mountains and over southern Sonora generally, or have been killed or captured. An uncertain number remain in the almost impenetrable cholla, mezquite, and other forbidding undergrowth that covers the entire country along the river, harassing the soldiers and keeping them constantly on the alert. The military not only garrison the former Yaqui towns, but have built a number of picturesque adobe and palisaded forts in the country (see pl. VII, 1).

The native dwelling in the towns mentioned has not yet been entirely superseded by that of Mexican construction. It is generally a fair-sized quadrilateral structure of poles and reeds, or of adobe and reeds or brush, with a flat or, more commonly, slightly sloping roof of grass and mud. The same type of dwellings is seen where the Yaquis live undisturbed; they are identical in style and material to those of the Mayos, and are very nearly like most of those still built by the Pimas and the Opatas (pl. VII). The structure consists usually of the main hut, substantially made, and a connected shelter in which the cooking and most of the indoor work are done. In the country districts I have come across an occasional, probably temporary, hut made in the same manner, but entirely of brush and with but few supporting poles. (Plate VII, 4.)

The simple life of the family in all of these dwellings does not differ materially from that which prevails among most other Indians in warm countries. There is hardly any furniture. The family sleep on petates. Sometimes there are a box for the better clothing, a water-jar, a saddle, one or more water-gourds covered with a mesh of raw-hide, a violin or harp of native make, perhaps a blanket or two, and occasionally a few crude pictures of religious subjects. In the kitchen are a metate and a supply of crude cooking utensils.

The dress of both sexes among the Yaquis is almost wholly like that of the ordinary Mexicans; the only wholly native articles are

the now rare blankets and fajas and the somewhat more common sombreros.¹

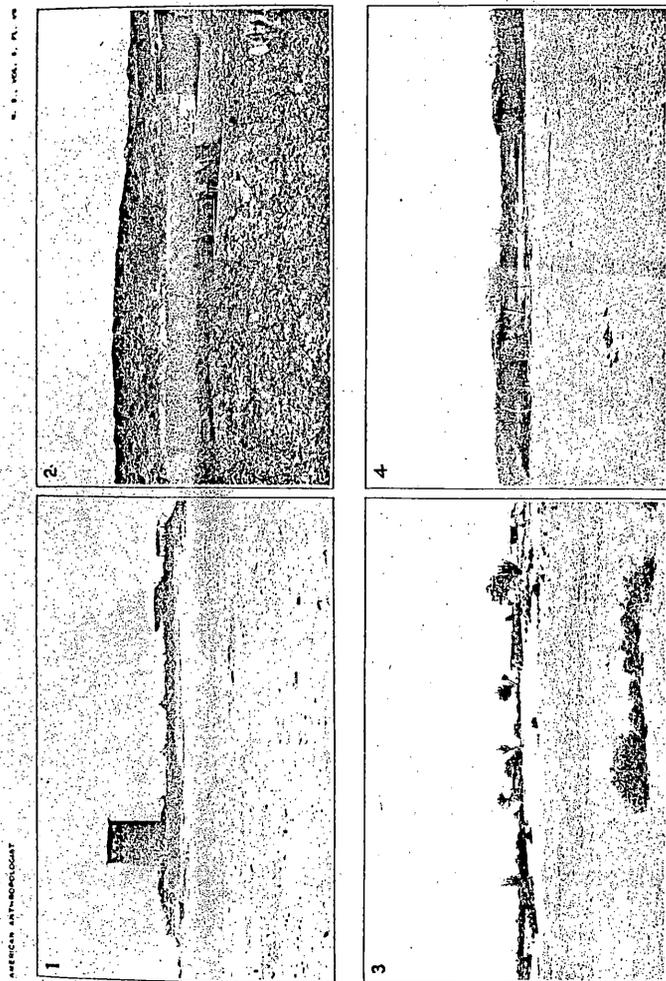
Industries.— My observations and information concerning the industries of the Yaquis may be briefly summarized by saying that, whenever a good laborer or an artisan is required in Sonora, a Yaqui is greatly preferred. (As to details I can do no better than to quote the former governor of Sonora, Ramon Corral,² for in this respect, except as to weaving, the conditions of 1884 still prevail :

“The principal industries of the Indians [speaking of the Yaquis and Mayos together] are agriculture, cattle raising, and commerce. Moreover, they are very apt in making cotton and woolen stuffs, using very imperfect apparatus of their own construction. They also make hats and very fine mats from palm leaf, shovels, reed-baskets of different forms, and other objects which they sell at Guaymas and other neighboring settlements. They gather the indigo which is produced in abundance on both rivers [Yaqui and Mayo], and prepare the color ; tan the skins of various animals ; gather honey ; and, in a word, exploit the inexhaustible virgin region to the utmost that their culture permits.”)

“Over all the districts of the state, especially in those of Ures, Hermosillo, Guaymas, Alamos (Mayos), and Sahuaripa ; in the adjacent regions of Sinaloa (Mayos) ; in Lower California, and in the mineral districts in the Chihuahua Sierra Madre, there are scattered a great number of these indigenous Yaquis and Mayos, who occupy themselves in all classes of work, from labor in the fields to the exploitation of mines and from the use of the plow to that of machines. It is they who compose the laborers of the haciendas ; they are the working element of the mines ; they are the best mariners of our coast ; they fish for the pearl in Lower California, are employed in all kinds of rural construction and work, form the domestic service, and execute whatever public work is undertaken. They resist equally well the cold of the winter and the great heat of the summer, and one of them is capable of performing twice as much work in a day as the best of white laborers. It is not rare to see some of

¹ At Mazatan (see pp. 66-67) a number of the slain men had on ordinary American jeans' overalls. In the abandoned camp there were modern stockings and small-heeled women's shoes ; and near the body of a child lay a little handkerchief with colored border and a picture of a boy with an English verse in the middle. No such gaudiness as is common among many of the United States Indians is ever seen among the Yaquis.

²Op. cit., p. 12.



1. A Mexican fortress in the Yaqui country. 2. Opatu dwellings at Tunpe, Sonora. 3. A small Mayo village near Guadalupe, Sonora. 4. Yaqui dwellings on a plain 20 miles east of Hermosillo, Sonora.

these Indians manipulating complicated instruments and machines with the ability of mechanics."

(*Arts; Decoration; Food.*—The manufacture of cotton and woolen fabrics has greatly declined. The only clothing of native weave now to be seen among the Yaquis is the faja and the white serape, the latter ornamented with one or two broad stripes in pale blue and natural brown or black; but even these garments are scarce.)

A few articles, particularly rings, earrings, and beads, are made by the Yaquis from silver or other metals. The rings, as a rule, are simple bands, much like those sold cheaply on gala occasions, sometimes with sharp edges and usually showing the weld. The earrings are mostly of one style, probably after the Spanish, but they show better workmanship. The metal beads seen were all rather rude and often angular, looking like drops or pieces of native silver modified by hammering. On the whole the Yaqui silver work seems to be inferior to that of the Navahos.

On ranches each Yaqui employed keeps a personal account, which he carries in a tube made from the native bamboo. Each of these tubes is differently decorated on its surface with numerous incised figures, mostly of geometrical pattern. These figures are not strictly property-marks, yet they serve to distinguish the tubes.

The bows and arrows (pl. VIII) made by the Yaquis are remarkable. On the battlefield in the Sierra de Mazatan, on the site of the camp of the non-combatants,¹ I found them in all stages of manufacture, and

¹ In June, 1902, a force of 200 to 300 free and armed Yaquis descended one evening on four haciendas near Hermosillo and, without doing any damage, took away, partly by force, over 600 Yaquis there employed. The whole party proceeded in the direction of Ures, with the intention of reaching the safe upper Yaqui country. A little southwest of Ures the party had a skirmish with soldiers, whom they defeated. Shortly afterward the Yaquis reached the isolated, rough, but not very high mountain called Sierra de Mazatan, nearly south of Ures. Here they waited for the soldiers. The armed party separated from the rest and took up a strong position on a rugged ridge facing westward. The men, women, and children from the haciendas, with a guard of about a score of armed men, made a camp on sloping ground, thickly overgrown with visaches, etc., separated from the ridge by a rough though not very deep barranca. It was in this camp that some of the men commenced to make bows and arrows, rude spears consisting of pointed sticks, and clubs. On the night of June 15th a force of about 900 Mexican soldiers, under General Luis Torres, instead of attacking the armed Yaquis from the front, as the latter expected, rounded the mountain and in the morning surprised the camp of Indians from the

in the barranca, where the Indians had been surprised by the troops, there were arrows and bows that had been used. The bows are plain, nearly 5 feet in length,¹ flat, but slightly arched, and occasionally are strengthened with sinew; they require considerable strength to draw them. The arrows² are stout and measure $2\frac{1}{2}$ to more than 3 feet long; the shaft consists of a stout, hollow reed, while the long point, of more or less prismatic shape, is made, often crudely, of hard, sometimes knotty, white or reddish wood. At short range the Yaqui arrow is no doubt a most effective weapon.

The only club found at Mazatan is made of heavy, dark-red wood; it is 56.5 cm. or $22\frac{1}{4}$ inches long, nearly cylindrical, and has a perforation for a thong at the end of the handle.

On my return to Hermosillo, General Torres presented me with a large ball-cartridge (now in the National Museum), the powder as well as the ball of which were made by the Yaquis, who, when hand-pressed for ammunition, pick up all the cartridge shells they can and refill them for further use. Our finding of heaps of Mauser cartridges at Mazatan was sure proof to my *rurales* that no Yaqui had visited the field after the battle.

(The Yaqui women make several kinds of uncolored palm

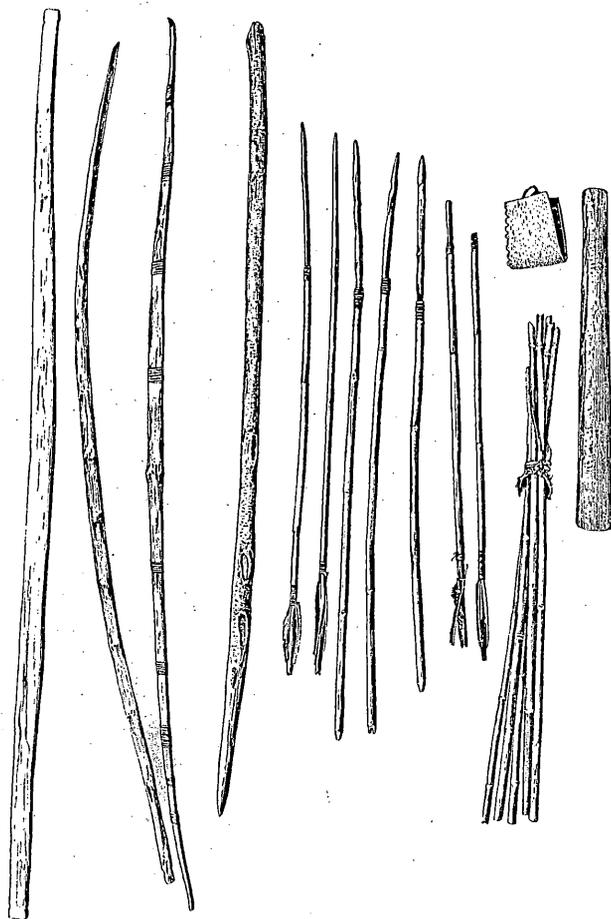
haciendas. At the first volley the entire party, except those who were wounded or killed on the spot, ran down the mountain, most of the women and the armed guard directing their flight through the barranca. The soldiers following, killed many here and took the rest prisoners. In one part of the gulch resistance was offered by the armed guard. The main armed body of the Yaquis was too far away to actively participate, and when the panic began, that part, with some of the men from the haciendas, escaped over the mountain. I visited the field with some *rurales* three weeks after the affair, and as no one had preceded us we found everything as left by the Indians and the soldiers. We found the bodies of sixty-four Indians, including those of a number of women; in one nook in the barranca there was a heap of twelve bodies of women and the body of a little girl, while in another place there was a cradle-board (pl. IX, 1) and some bones of a baby. In one spot a row of men lay executed, and a similar row was buried below the mountain. My object in visiting the place was to obtain skeletal material, in which I was successful; but most of the skulls, whether from a peculiar effect of the Mauser cartridges or from the closeness of the range, were so shattered as to be of no use. The material collected is now in the American Museum.

¹ No. 65-2511, A.M.N.H., shortest of five, 126 cm. (49.5 in.); No. 2502, 141 cm. (54.5 in.); No. 2507, the longest of five, 146.2 cm. (57.75 in.).

² No. 65-2531, A.M.N.H., without point, 86.7 cm. (34.25 in.). Bunch of shafts average length, 77 cm. (30.38 in.). Arrow 2524, shaft, 65 cm. (25.62 in.); point, 23.3 cm. (9.25 in.). Arrow 2522, shaft, 73.25 cm. (29 in.); point, 20.2 cm. (8 in.).

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PRIMITIVE YAQUI IMPLEMENTS OF WAR
(Specimens in the American Museum of Natural History, New York.)

basketry; they also make hats and *petates*, or mats, from the same material.)

The most common basket is quadrilateral with rounded corners, or cylindrical, woven in checker pattern from palm strips about half an inch broad; such baskets are used for ordinary household purposes. (A much better but rarer form of basket is woven in twilled style from narrow palm fiber.) It is cubical, cylindrical, or bottle-shaped.¹ The last two kinds are double, consisting of a somewhat coarse interior layer and a finer exterior layer. Each basket has a neatly made cover. The only decorations employed consist of varied woven bands, and, in the cubical baskets, of tasteful modes of exposing and ending the fibers. The hats are made in the same way as the double baskets; they are light, with a broad concave rim and a semiglobular body, differing very much from the ordinary pointed, high, heavy Mexican sombrero. The mats, which are used mainly to sleep upon, are made of the same broad fiber and in the same checkered pattern as the ordinary baskets. It is probable that occasionally material other than palm strips is employed.

Simple baby-boards are constructed by fastening together native bamboo splints and adding at the head a properly bent hoop which supports a cloth to shade the head of the infant.)

The women make some ordinary pottery.

Decoration of the person is practically restricted to the women and girls, who wear necklaces of various beads with usually a small iron pendant, bead bracelets, earrings, and rings. (I neither saw nor heard of painting or tattooing among the tribe.)

In food the Yaquis display at least one peculiarity, which I witnessed; this consists of eating the burro.² They are also said to

¹ This last form is probably made only for sale. I obtained specimens from the captives at Guadalajara. Examples of all the varieties mentioned, as well as of the hats, were collected on this trip and are in the American Museum. A somewhat similar cubical covered basket is made by the southern Tepehuanes. More technical notes and illustrations of these specimens will appear in Dr O. T. Mason's work on basketry, shortly to be published by the National Museum.

² On how little these people can get along, and how resistant their constitutions, was well demonstrated at Mazatan. Here over 300 women and children were taken captive and confined in a cattle corral of the nearby Rancho Viejo. These captives, according to reliable information, received nothing to eat, owing to lack of supplies, until the next day, when they were given a fanega (about two and a half bushels) of raw corn. The women

like horse meat, like the Seris, but do not consume it raw like the latter. Maize, prepared in numerous ways, is their chief diet, and fruit comes next.

Social Conditions; Observances, etc.—There is no organization among the Yaquis except of that part of the tribe which lives practically free and conducts the revolutions; but most of the remainder are bound closely together by strong sympathies, thus hindering any extensive blending with the whites. The hostile contingent recognizes rule by the elders, and these are generally headed by one or more leaders. The height of their organization was reached under the chiefs Banderas (1825-32) and Cajeme (executed in 1887); the name of the present leader is not known. There is said to be no secret organization among the warriors, and apparently the authority of no one in the tribe reaches further than it can find willing adherence or can be enforced. Not a few of the Yaquis actually served in the Mexican army, and during the uprising of 1902 I saw some among the Hermosillo volunteers, enlisted to fight their own people.

There are now apparently but few purely native observances among the Yaquis of the haciendas, and the same may be said of the old customs. Velasco,¹ in 1850, mentioned four special Yaqui dances, the "Tesguin" (Tesvino), "Pascola,"² "Venado," and "Coyote,"³ and at least three of these still survive among the freer

contrived to kindle a fire and parch the corn, on which they subsisted until nightfall, when they were marched to Hermosillo, about 35 miles distant. One of the men, whom I later examined in the hospital at Hermosillo, was badly wounded in the knee at Mazatan, but he crawled away into the brush where he hid for six or seven days, subsisting on anything he could find. The last day, from extreme thirst, he drank his urine. Finally he reached an arroyo. He was taken in a car to Hermosillo, where his leg was amputated. Two weeks later, when I saw him, he was approaching recovery, being strong enough to permit me to measure him. Similar instances might be cited.

¹ Op. cit., p. 74.

² Escudero (op. cit., p. 135) calls this dance *Pascol* and says it was thus named because it was celebrated particularly during Easter. This dance, as well as the Venado and the Coyote, are still practised. The principal feature of this Pascol dance is a masked and otherwise especially attired individual, preferably some old and sagacious man, who devotes his time to relating satirical, moral, amusing, or critical tales and epigrams.

³ In the "Venado" a male dancer carries on his head the head of a deer and performs remarkable muscular evolutions. In the "Coyote" or rather "Coyota," the dancers are a male and a female, and the dance, without being immoral, is said to be highly voluptuous. Compare Zúñiga and Hernandez.

members of the tribe. At the haciendas, however, or at Mexican fiestas, Yaqui music and dancing, as well as other Yaqui customs, are becoming more and more like those of the Mexicans.

Zúñiga, Velasco (page 78), and Escudero mention a peculiar but now apparently unknown Yaqui custom of exchanging wives. Escudero¹ says the observance was a part of a fiesta or ceremony called *Tutile Gannichi*, and those who did not exchange wives on this occasion were not considered good Yaquis. Hernandez² says he found no trace of this, nor could he obtain any account of it from the Yaquis themselves. If any survival of such a custom still persists it can be only among the free members of the tribe, observations among whom are lacking.

A former custom, traces of which are still heard of, was the initiation of the youths by the warriors.³ This ceremony, apparently identical with that practised by the Opatas,⁴ consisted in giving the applicant useful counsel and in subjecting him to various tests of endurance, particularly by lacerating him with eagle's claws.

Marriage, natal, and mortuary ceremonies are mainly Catholic, but from what I could learn of the subject they are never without a strong tinge of the native. Among women marriage usually takes place very early. The bridegroom is chosen, at least nominally, by the father of the girl. The dead are buried in the ground. (No tribe in Sonora practises cremation.)

Character.—The Yaqui, as all agree who know him and as can be easily seen anywhere, besides being a good workman is generally orderly, cheerful, intelligent, enduring, and brave. He loves music,⁵ dancing, and sport, and greatly appreciates wit and humor;⁶ but he is also easily provoked to rebellion, is occasionally inclined to shiftlessness and to drink to excess, is quite superstitious, and is

¹ Ibid., p. 135.

² Op. cit., p. 94.

³ Compare Hernandez, p. 91.

⁴ *Rudo Ensayo*, pp. 86-87.

⁵ Not a few of the younger Yaqui men know how to play the violin, flute, guitar, or harp. They learn this simply by perseverance, without any special instruction. They make their own violins, as do the Tarahumares and many other Mexican Indians, and also the flutes, harps, and occasionally drums.

⁶ "The Yaquis are celebrated for the exuberance of their wit."—Hardy, op. cit., p. 772.

never very provident. From my own observation it would seem that the Yaqui is in no way radically different from the typical Indian, save that he is of superior physique and virility.

The best account of the bravery of the warring Yaquis was given me by the Mexican army officers who fought or still fight against them.¹ They run if defeated, but once captured they offer no complaint and make no effort to escape execution, their usual fate. Velasco² wrote in 1850: "They are of firm character and nothing will move them when they decide upon some project or are guarding a secret. Even the Masons are hardly capable of equaling the Yaquis in the vigilance with which they keep their mysteries, secrets, or undertakings." The same is quite true today. No Yaqui captive has been known to turn traitor, even at the cost of life. The invariable answers of the prisoner to his questioners are: "*No se*" ("I do not know") and "*Caito culpa*" ("No fault").³

The determination of the Yaquis to resent Mexican encroachment on their land and white domination may be illustrated by merely stating that they have had important uprisings against the Spanish or Mexicans in 1609, 1740-41, 1764-67, 1825-27, 1832, 1840, 1867-68, 1887, 1889-1901, and 1902. Since 1825 the tribe has never been really at peace.

The warfare of the Yaquis is not that of savages. They have

¹The higher officers of the Mexican army are, as a rule, educated men and gentlemen; but the common soldiers are often recruited from criminals and are undoubtedly responsible for much of the gross injustice and many of the barbarities committed against the Indians.

²Op. cit., p. 74.

³Two days before my visit to Torim, some soldiers found a Yaqui eating *pinyas*. They shot him in the thigh, took him to Torim without any treatment of his wounds, and cast him into prison. A short time before a person obnoxious to the Yaquis was killed in his house, and as a rifle and a belt of cartridges were found near the prisoner, he was suspected of complicity at least. There was, I was told, no trial. Early next morning they placed the wounded man on a burro, telling him they would conduct him to a hospital; but he answered that he knew well enough to what sort of hospital they were going to take him! They then tried to obtain from him a confession, promising him mercy as a reward; but the answer was the invariable "*Caito culpa*," and "You can hang me if you want to." So they took him out, riding on the burro and his wound still unattended to, more than four miles beyond the town, and hung him from a visache, where I found him on my way to Torim the next morning (pl. IX, 2). The history of the case was related to me by Torim Mexicans themselves.

many times in the past been reported to have plundered neighboring ranches, but I have learned of no such occurrence in recent time. Mail stages, sometimes with passengers and valuables, pass daily through their country; only once during the uprising of 1902 was one of these attacked and its occupants killed, and then it was not certain that the deed was done by Yaquis. Instances of torture have been spoken of; it is said that some captured Mexican soldiers were compelled to walk barefooted, or even with the soles of the feet cut off, over hot coals, but the statement of the occurrence is difficult to verify. It would of course be folly to suppose that all the Yaquis lack barbarity as well as other bad qualities.¹ Two Americans from Hermosillo were killed by members of the tribe near Torim,² but it appears that the men had been imprudent, endeavoring, in the face of warning, to photograph an armed band.

THE OPATAS

The Opatas have a good claim to be better known to anthropology. The tribe has nearly always been friendly to the whites, and, with other good qualities, has always shown a brave spirit. The people speak, or rather spoke, a language different from that of all the other large Sonora tribes; they differ also in other ways, all of which increase the desirability of learning something of their original habits and relations. For much knowledge that could once have been acquired, it is now too late, but with persistent effort something might still be saved. The tribe is disappearing — in a manner exceptional among American tribes — by voluntary amalgamation with the whites, whose numbers in the Opatas country, since the termination of Apache hostilities, have greatly increased. In a few generations, under conditions similar to those of the present, the Opatas as such will have ceased to exist.

¹Particularly after such examples as they witness in the Mexicans. They are distributed broadcast among the ranches, where they are practically in slavery. At the Guadalupe Hospital I examined over twenty women, nearly all speaking Spanish and belonging to the Catholic church, every one of whom had lost not only every adult relation but even her children, the latter having been torn away from their mothers and given to whomsoever applied for them. At the Hermosillo Hospital I saw a girl, seven or eight years of age, with three bullet wounds in her body, and there were also a number of wounded women. There is no end of such examples.

²Their bones still lay in the brush in 1902, but I was unable to recover them.

I visited this tribe in several localities, particularly at Opodepe, along San Miguel river, and at Tuape.¹ San Miguel valley is apparently the principal focus of the remnants of the people.

According to data gathered from all sources, small numbers of pure-blood Opatas may still be found at Masacauvi, La Concepcion, Suaque, Baviacori, Distancia, Aconche, San Felipe, Huepac or Huepaca, Banamiche, Sinoquipe, Arispe, Chinape or Chinapa, Biquache; also at Rayón, where they are mixed with the Pimas; and at San Miguel, Opodepe, San José, San Juan, Marysiche, Pueblo Viejo, Tuape, and Cucurpe, on the Rio San Miguel; with a few more in the district of Moctezuma and Sahuaripa (pl. iv, 3; pl. ix, 3).² In a number of these settlements which I visited there were but few pure-bloods. At the little village of Tuape, however, and in the adjacent Pueblo Viejo, the pure Opatas are still in large majority.³ Here also many of them still know their own language and preserve at least some of their customs and ceremonies, and probably some folklore and traditions. This fact, together with the proximity of Tuape to the railroad (less than a day's journey from Querobabi, on the Sonora Railroad), makes this locality especially favorable for investigation.

(*Dwellings; Dress; Industries.*)—The present Opatá dwellings are quadrilateral, with flat or slightly sloping roofs, thus following the general type of native dwellings throughout Sonora (pl. vii, 2). Formerly, I was told, the Opatas also built round structures. (The materials used for the walls are stone, adobe, and reeds (or a combination of some or all of these), and zacate, reeds, boughs, and mud for the roofs. Formerly stone foundations or walls were common, with roofs of native timber, ocatilla, grass, and mud.)

Of native costume but few traces now remain. (Men wear pan-

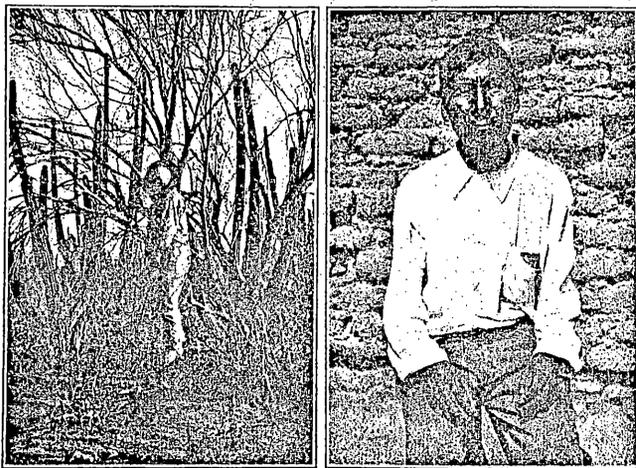
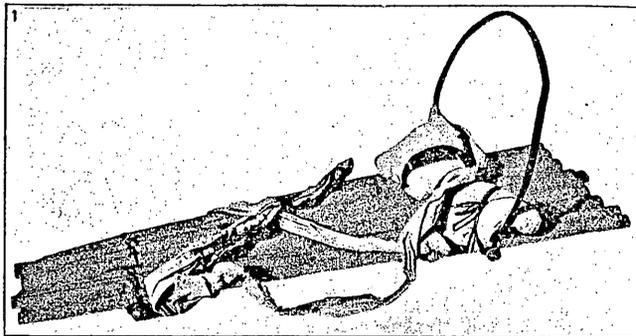
¹At Tuape I was so fortunate as to find two resident Americans, one, Mr James G. Chism, actually the *jefe politico* of the village, the other Dr E. M. Alderman, a physician-miner, Mr Chism's companion. Both of these gentlemen have given me much valuable aid. I owe particularly to Dr Alderman, who has lived many years among the Opatas, a large part of the information herein noted in regard to the tribe.

²Some of these names differ somewhat in local native pronunciation from the usual orthography. For old Opatá pueblos see Bancroft, *North Mexican States*, 1, pp. 513-514; *Rudo Ensayo*, cap. vi; Hernandez, *op. cit.*, pp. xii, xv.

³According to the census furnished me by Dr Alderman, there are 41 pure-blood Opatas at Tuape and 154 at Pueblo Viejo; but here, as elsewhere, they are decreasing.

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1, Yaqui baby-board, from the battlefield at Sierra Mazatan. 2, "Caito Culpa," executed Yaqui near Torim, Sonora. 3, Type of Opatan man, San Miguel valley, Sonora.

talons and shirts of manta, as do all the rural male population of the locality; the women dress in loose shirts, jackets, and skirts, all made of manta or calico. A few serapes of wool or cotton are the only specimens of native weaving now to be seen. In the past, Dr Alderman was told, these people made blankets or *tilmas* of coarse woven fabric, which were wrapped around the body; originally this was the only article, except a breech-cloth, worn by the men. The women formerly wore short skirts made from the inside bark of the cottonwood, which was obtained in large sheets and scraped down nearly to the thinness of paper.

(The chief occupation of the Opatas is agriculture, their crops consisting principally of maize, frijoles, melons, and chile.²) They also fish in the rivers for a species of minnow, which they eat whole; formerly they netted them with their *tilmas*. Some of the men are employed as laborers, drivers, etc.

The Opatas make water jars and cooking vessels of clay, burning them to about the hardness and color of red brick. In ancient times, they say, they made a kind of stoneware, some of the stone jars being nicely finished inside and out and holding up to ten gallons or more. The women make hats and a few ordinary baskets and mats from the palm leaf; formerly they made baskets and water vessels of willow. They also make ropes and thongs from the fiber of the maguey and yucca, from which they also formerly manufactured snares for deer and peccaries, when these animals were very abundant in their country. This was the principal means of trapping known to the tribe. Of the same fibers they also wove better *tilmas*, which were worn at fiestas and on other great occasions.

It appears that the Opatas made four kinds of fermented liquor — one of corn (*tesvino*); one of mezcal;³ one of the fruits of various cacti, such as the saguaro, the pitaya, the cholla, and the nopal; and the last from the stringent native grape.⁴ *Tesvino* seems now

¹ Compare *Rudo Ensayo*, p. 95 et seq.

² *Ibid.*, cap. iv, sec. 1.

³ *Ibid.*

⁴ "The wild grape is to be found all over the Province [Sonora] in damp ravines, creeping up the groves of willows, poplars and mezquites. It is called *hurague* in Opatan, and is ripe in May and June. It is eaten by the Indians, who also eat the leaves; but it

to be the only native liquor, being sometimes made in San Miguel valley.

Social Customs.—There are now apparently no traces of tribal organization among the Opatas, and their only religion is an adaptation of the Catholic faith. To correctly determine the exact status of any people in these respects, however, would require personal and prolonged, specific investigation.

Along San Miguel valley the Opatas do not like to be regarded as Indians; they prefer to be called "Mexicans." Very few under thirty years of age can speak their native language; even if they understand it they do not like to employ it, and if any one addresses them in Opatá, they answer in Spanish. According to Dr Alderman, in all the families of Tuape, with one exception, the older people speak the native language while the children use only Spanish.

The Opatas maintain their reputation for honesty, but there are exceptions among youths who come frequently in contact with whites. Crime is almost entirely confined to murder, the result of drink or jealousy.

Both sexes among the Opatas are apparently as much inclined to excess in drink as among the neighboring tribes; but there is nowhere north of the Río Grande del Sur (Río Tololotlan) such thorough addiction to drink as in many parts south of it—in the *pulque* or *caña* regions. The only native drink made today by the Opatas of San Miguel valley is, as above mentioned, a rather weak *tesvino*, made by fermenting corn with yeast. Occasionally the corn is first made to sprout, which was the original method. This liquor seems to leave no permanent bad effects. Unfortunately, at the numerous fiestas, particularly among the *vecinos*, the Indians consume much Mexican mezcal or other liquor, often of a vile quality. Alcoholic drinks of all kinds generally produce at first a state of hilarity, manifested by singing, shouting, playing, dancing, and sometimes by fighting; this is followed by stupidity and finally stuporous sleep.

is acrid and of little benefit. I have seen vinegar and even rum made of it, but it is seldom used for this purpose."—*Rudo Ensayo*, cap. iv, sec. 1. Among the Pimas, ("the wine or drink, with which they become intoxicated, is made out of maize, the maguey called mezcal, wheat, Indian fig, and other things"; but the worst of all is that made of the alder tree."—*Ibid.*, cap. v, sec. 4.)

The women are reported to be virtuous, but those addicted to drink are said usually to become dissolute; for neither vice, however, are they ostracized, and indeed occasional drunkenness is not regarded as at all degrading.

The Opatas deny that polygamy ever prevailed among them, but they acknowledge that occasionally men had concubines.

Traditions; Former Culture.—There are certain traditions among the Opatas, but the subject would require long and patient investigation and careful sifting from foreign elements. The younger generation, as among all Indians adopting white men's habits, are ignorant of their history. Perhaps the Opatas farther eastward, near the lofty sierras, preserve more traditional lore than those of San Miguel valley. Bandelier¹ obtained from them references to their fights with the Casas Grandes (Chihuahua) people, which must have occurred in very ancient times, since the Casas Grandes structures have not been inhabited within the historical period. Their most vivid and numerous recollections, however, pertain to their long struggle against the Apaches.

As to the former culture of the tribe we must rely mainly on the account preserved in the *Rudo Ensayo*. A few surmises may also be made from relics found in the Opatá country. According to Dr Alderman the only farming implement found is a hoe made from *guayacan* (lignum vitæ), but stone axes, mealing stones, and stone mortars are found quite frequently. Arrow-heads and lance-heads of bone are also often found, but few of flint have been discovered, and these are believed by the Opatas to have been lost by other tribes, especially the Apaches, while at war with them. A few broken clay images have been unearthed, but none of these nor any of the other specimens mentioned have been preserved.

Native Observances.—The chief one of the few entirely native observances still practised is known as *Taguaro*,² which purports to be the celebration of a peculiar victory once achieved by some Opatá women over a band of marauding Apaches. According to

¹ *Final Report*, part II.

² According to the *Rudo Ensayo* the term *taguara* (there is no mention of the observance bearing the name) means the large sparrow-hawk (p. 46), while *taguaro* was the plant *tolache* or larger *estafate* (p. 61 orig.).

the more or less variable tradition, an important Opata pueblo, in which was kept the much-coveted figure of the powerful god Taguaro, was one day suddenly attacked by Apaches while the men had departed for some reason, leaving the women alone. The Apaches were always enemies of the Opatas, and on this occasion they wanted above all to get possession of the idol. It chanced, however, that they were discovered by some women who went to get water; these alarmed the others, and all armed themselves, principally with ashes, with which they blinded the invaders, threw them into confusion, and finally repulsed them. The men returning soon after, the pueblo with its precious idol remained safe. The strange victory was attributed to aid from Taguaro, hence the *Taguaro* is now celebrated in its commemoration.¹

El Taguaro is held the first Monday after Easter week. A doll is made from straw and rags, in representation of Taguaro, and is placed during the night preceding the ceremony on top of the church tower. Early in the morning of the *Taguaro* day a band of Opatas, dressed to represent Apaches, with faces and bodies painted, and armed with bows, arrows, and guns, proceed for a certain distance beyond the village, then turn and simulate the stealthy approach of an enemy. They pass unnoticed until near the church, when suddenly they begin yelling and shooting at the stick on which the image is perched, trying to knock it down. They eventually succeed, and as the image falls they pounce upon it and dance with it through the village, carrying it away. But as they reach the plaza they are confronted by the women of the settlement, who carry baskets and other utensils hidden under their rebozos. The two parties commence to taunt each other, and finally rush together as in battle, whereupon the women reach into their receptacles and the rushing "Apaches" are treated to a shower of ashes, which blinds them; they are thus thrown into confusion and the entire invading

¹ I find only one report of this observance and that in Hernandez, *op. cit.*, p. xii. According to this author the Apaches "come and steal burros and women, and the inhabitants of the pueblo come to the defense and to recover what has been taken. After this the people go to the plaza, where stands a high pole with a figure or doll (*muñeco*) on the top, which is the Taguaro. The old ones come with some rattles and sing, while the warriors shoot at the figure and according to their dexterity receive ovation or vituperation."

party retreats, pursued by the women who take as many prisoners as possible. Sometimes half a dozen women seize a single "Apache" and carry him off with them by main force. Finally the whole attacking party is dispersed or taken captive, leaving the image of Taguaro in safety. The prisoners are taken to the guardhouse, and in order to gain freedom are obliged to pay a fine (in Tuape usually two and a half pesos). The money thus obtained is generally expended for drink.

Thus is the occasion celebrated one year. The next year the doll is made and put in place by the men who the year before belonged to the attacking party, and a band of women dress in representation of Apaches and attack the town, while the men at home take the part of the women with the ashes, etc.

Another ceremony still observed is known as *La Cuelga*,¹ and occurs the day after the *Taguaro*. There are music and dancing, but the principal feature is an exchange of gifts between men and women, mostly, though not exclusively, between husband and wife — the peculiarity of the giving being that the receiver is bound at the next *Cuelga* to repay the donor at a double rate. There is no limit to what may be given: it may be a piece of money or a cow, and the custom is a source of much merriment as well as of some vexation. Articles that cannot conveniently be made up in a package are transferred by means of signs or of writing in a wrapper or an envelope.

These observances were witnessed by both Dr Alderman and Mr Chism, and their description agrees with the above. The same custom, with variants, is observed in several places besides Tuape.

In former times the Opatas practised, with ceremony, the initiation of young men as warriors.² They also had a nocturnal dance as an invocation for rain, in which "a number of girls, dressed in white or simply wearing a chemise, would come out at night to dance in a place previously well swept and embellished, leaving behind them, in the house from which they came, their musicians,

¹ Hernandez (*op. cit.*, p. xi), who also speaks of this observance, citing an unnamed author, says it is known as "*Dagüinemaca*" ("Give-me-and-I-shall-give-you") and is in commemoration of the fraternization of the Opatas and the Spanish. The "double rate" is not mentioned.

² *Rudo Ensayo*, pp. 86-87.

who consisted of old men and women, making a noise with hollow gourds, sticks and bones."¹

In addition the Opatas have numerous nominally Catholic fiestas, of which drinking seems to be the general culmination.

Physiological and Medical.—Opata girls generally attain puberty during the twelfth or thirteenth year, but Dr Alderman saw two girls who reached this stage at about nine years. Puberty, as well as the established function, seldom occasion difficulty; yet there are exceptions. The menses last mostly from three to five days; menopause generally occurs between forty-five and fifty years. Women remain secluded during menstruation.

Opata girls now marry at all ages after puberty, although generally between fifteen and eighteen years. Marriage is seldom contracted as a result of mutual love, it being arranged by the parents. During married life the woman occupies a subordinate position, not, however, without having and asserting some rights of her own and enjoying considerable liberty.

A few cases of sterility have been observed, but in general the Opata women are prolific. Five or six children in a family are common, and there are instances in which one woman has borne twelve, fifteen, and even more children. Nevertheless, a large grown-up family is not usual, many of the children dying, particularly of intestinal disorders, when young. Twins are born occasionally, probably somewhat more frequently than among whites.

With the aid of Dr Alderman I have obtained the following limited statistics, which were recorded with reasonable care and after repeated inquiry. As among all Indians, it is hard to obtain the actual facts of this nature among the Opatas, owing to ignorance and prejudice. But few of the Opatas know their age, hence most of the ages could only be approximated by asking the Indians how old they were when the French were in Mexico, or when the cholera raged in their country, or if they remember when gold was discovered in California, etc.

The interest of the different columns is self-evident; they show the fertility of the people, the high mortality of children, the very

¹ *Rudo Ensayo*, pp. 79-80 (173 of trans.). For accounts of further observances see *ibid.*, cap. v, and Hernandez, op. cit., p. xii.

early age at which women frequently commence to bear, a large percentage of miscarriages, and frequency of twins.

NAME	AGE	CHILDREN			AGE AT BIRTH OF FIRST CHILD	MISCARRIAGES	TWINS	CONCEPTIONS
		LIVING	DEAD	TOTAL				
1 Antonia Villa	31	4	3	7	15	1	—	8
2 Maria Angeles	34	4	2	6	23	—	—	6
3 Oulana Tabinico	40	5	1	6	17	—	—	6
4 Luisa Albera	50	9	6	15	17	2	—	17
5 Francisca Pares	52	2	4	6	20	2	—	8
6 Salome Urquidas	53	4	2	6	15	1	1	7
7 Jesus ¹ Murieta	58	8	14	22	15	3	2	25
8 Pascuala Robles	62	3	2	5	15	—	1	5
9 Gabriela Sierra	62	8	12	20	15	5	—	25
10 Jesusa Vergana	64	5	7	12	17	2	—	14
11 Delfina Atondo	64	7	2	9	26	4	—	13
12 Josefa Cocoba	65	2	1	3	27	1	—	4
13 Valerina Pares	69	0	9	9	13	3	—	12
14 Albina Ajesta	82	8	11	19	14	—	3	19

Some of the miscarriages are undoubtedly due to syphilis; others, in Dr Alderman's opinion, are caused by the women lifting heavy loads on and off their heads, this being their favorite mode of carrying, the women conveying in this way nearly all the water used by the family from the rivers up trails to their houses, which at Tuape are 75 to 100 feet above the supply. The jars in which they carry the water often hold six gallons, and when filled weigh

¹ Some names, although possessing a feminine form, are used for both sexes in the same form. Two children in the same family may bear the same name. Dr Alderman writes me, Oct. 16, 1903, on this interesting subject as follows: "You would find in almost all the families two of the same name and sometimes more. They name their children after the saints, such as Jesus, Juan, José, etc. And if a child dies, the next child that is born in the family takes the same name in memory of the departed. In some of the large families, as many as three, or even four, children have honored some one saint by wearing his name. Some of their names are used for both girls and boys, such as Jesus, Refugio, etc. It is true that these names have a feminine termination, as Jesusa, Refugia, but these people use the masculine name for both sexes. In rare cases I have known two of the same sex and same name in one family, and both living. It is not very exceptional to find a brother and a sister by the name of Carnacion, and often two little Jesuses in the same family, full brother and sister. In a house adjoining the store where you worked when you were here, there was a case of this kind, although the people were not of full blood."

about 55 pounds. To raise this load and put it on the head certainly cannot be conducive to the safety of a pregnant woman.

(Most of the children die, when young, from intestinal disorders, measles, and occasionally smallpox.) But little care is taken of the health of the children. No effort is made to avoid contagion or epidemics. On the contrary, mothers will deliberately expose their little ones to measles and other contagious diseases, believing that they must contract them sooner or later and that it is better for them to get through with it. I have met with a similar sentiment and practice in several localities among the white Mexicans, and indeed it is not unknown among our own people!

Although Dr Alderman has attended nearly fifty confinements among the Opatas, he never observed a deformed pelvis, and I have not seen one. The external as well as the internal genital organs do not differ appreciably from those of whites. In only a small proportion of the cases is the pubis or the axilla without hair.

The fetus is believed to breathe in the womb, air gaining access to it through the vagina; should the latter be occluded in any manner, the child will lose its breath and die. An Opatá woman recently testified to this effect before a judge.

Labor lasts usually from eight to eighteen hours, but instances are known of a duration of but a few minutes, while, on the other hand, in a small number of cases several days elapsed between the first occurrence of pains and the delivery, without prolonged interruption in the pains. There are but few instances in which the labor was more or less atypical and really difficult. Among the cases in which he assisted, Dr Alderman has seen but one feet presentation; he never saw nor could I learn of any monstrosities.

In labor the woman usually kneels or squats with her feet apart. She is attended by her nearest female relatives, but other women and even men and children may be present: the event is not considered one making secrecy necessary. A rebozo, or light shawl, is tied about the woman's abdomen, above the fundus, and tightened as much as "two women can draw" (Alderman). During the pains (at any period of the labor) a woman takes the patient (who has assumed a sort of sitting posture) by the hips and shakes her violently to and fro; this manipulation is repeated at intervals until the child

is born. Sometimes two women, one at each side, will alternate in pressing strongly on the fundus.

The cord is tied and cut. The placental portion must in some way be fastened to the thigh, otherwise, it is believed, it might recede and be lost within, when the woman could not be delivered of it and the after-birth. The placenta, however, seldom causes trouble; it is buried, with no special care or secrecy. The toilet of the mother is restricted to drying with pieces of cloth, washing being delayed until the *dieta* is over. (If flooding occurs, the women set fire to mescal wine, which, when warm, is extinguished; into this is then dipped a piece of muslin which is introduced as far as possible into the vagina.) This treatment is sometimes, though not generally, effective.

After delivery the woman usually remains four or five days in bed; but she observes a *dieta* for forty days, during which time she must not wash nor comb her hair. The *dieta* consists of the exclusion of chile, frijoles, fresh meats, etc.; the woman subsists solely on a little dried meat, chicken, eggs, and a few other simple unstimulating foods, with but a small allowance of salt. It is probable that this limited diet is in part the result of Mexican influence. Nursing is generally normal, although it happens, particularly in the more fleshy women, that the secretion is scanty. As among others Indians the nursing is often prolonged until the child is two years of age or even older, but the child is weaned at once if the woman finds that she is again pregnant.

The Opatá women attribute a peculiar influence on the health of the new-born child to the anterior cranial fontanel, though I have reason to doubt whether this is original with them. This soft place on the infant's head is called *mojera*, and is believed to be capable of "falling down," thus making the child ill. To prevent this, Dr Alderman told me, a woman takes the babe on her knee, lets its head hang downward, and, introducing her thumb into its mouth, presses strongly upward upon the palate, sometimes sufficiently to abrade it, thus "raising" the *mojera*. Sometimes, when an older child is sick, an old woman will suggest that its *mojera* needs "raising"; the child is thereupon lifted by the heels and shaken up and down.

Another curious belief of the Opatas which Dr Alderman has sometimes observed, is that people, and especially children, have a certain part of the intestine, called *tripüde*, which they may lose, but which can grow again.

Native medical treatment is on the decline among that portion of the Opatas more particularly dealt with here. I could learn of no medicine-men, of which there was no dearth at the time the *Rudo Ensayo* was written, but along the Rio San Miguel there are a few old medicine-women who know and use such herbs as peppermint, *rosa de castilla*, etc. Camomile, red-lead, and metallic mercury are procured from the dealers and are used quite indiscriminately. Dr Alderman, whose services are frequently demanded, knew of a child who was given a decoction of native herbs which resulted in death a few minutes later. Some of the old women's mixtures are said to contain twenty or more ingredients, as barks, thorns, roots, leaves, flowers, seeds, nuts, grass, and domestic supplies, such as coffee, rice, salt, sugar, tea, pepper, and egg-shells. These are sometimes boiled in water, milk, wine, or vinegar. Such concoctions are given even to babies while teething, and some of them, as might be expected, do not survive.

There is no doubt that there are many valuable medicinal plants in the region, some of which may have been well known to the earlier Opatas;¹ but nowadays they are rarely used with discrimination. For snake bites the people employ a lactescent cathartic plant called *golondrina*, while scalds or burns are sometimes treated by the application of dog excrement.

Prayers and offerings to saints are today resorted to more than medication by the Opatas, as by the white Mexicans.

Sick persons must not touch water except to drink, and they must not shave nor comb their hair, nor taste fruit of any kind. To cover the body with a coating of lard is regarded as very beneficial. Vermin, especially on a sick person, are believed to be healthful, and few can be found who are not supplied.

¹The *Rudo Ensayo* is replete with accounts of native medicinal herbs and their uses. There were remedies for amenorrhœa, difficult labor, wounds, fractures, etc. The *peyote* was well known to the Opatas, as well as to the Yaquis. Treatment by incantation and sucking was also practised.

According to Dr Alderman the Opatas believe it to be unwholesome to bathe, except on San Juan Bautista's day (the great holiday of all Sonora Indians), when all water is holy and therefore harmless.¹

The most common disorders among the Opatas, as among all the Indians of the Southwest, are those of the digestive system; in infants, as above mentioned, they are often fatal. Malarial fever is also prevalent.

Among twenty-two women from San Miguel valley whom I measured, seven had goitres.² In these cases the enlargement was twice unilateral, only on the right side, and five times bilateral, but without exception larger on the right. The natives have no definite conception of the cause of this disease and no knowledge of how to cure it. All the goitres seen but one were of moderate size. I observed no case of the disease among the men, but was informed that they are afflicted with it also, though much more rarely than the women.

Veneral diseases are quite common, but, as among other north-Mexican tribes, serious syphilitic lesions seem to be rare. Rickets is unknown among those of pure blood. Pulmonary tuberculosis occurs, but is not prevalent; it seems to attack the half-breeds oftener than the full-bloods.

Insanity and idiocy are said to be very rare. In all his experience with the Opatas Dr Alderman knew but one insane person (a man who had the delusion that he owned everything) and but a single feeble-minded individual. I could obtain no information regarding children born blind or deaf. The only case of serious

¹These beliefs are not wholly original with the Opatas, but were largely introduced by the Spanish Mexicans, among whom they are still prevalent. The ordinary Mexican is afraid of water. I have never seen my *mozo* companions, and very seldom those of the better class of white Mexicans, wash. I was many times warned not to wash my hands and face every morning; and when toward the close of 1902 I was stricken with fever, it was the unanimous opinion of those about me that it was due to my morning *baños*. [Since writing the above I have found a similar state of affairs reported among the Mexicans of the Opata country in 1829 by Hardy (op. cit., p. 715); and I find also the following note in the *Rudo Ensayo*, p. 158 transl.: "These poor women [Opata] are in great need of such remedies [for amenorrhœa], for they go into the water and bathe at all times."]

²*Native Races*, I, p. 588: "The Opatas of Oposura are disfigured by goitre, but this disease seems to be confined within three leagues of the town."

nervous disease of which I could learn was that of paralysis agitans in a woman who had been addicted to liquor.¹

On the whole the Opatas are healthier and generally in better physical condition than their white or mixed Mexican neighbors; and were the main principles of hygiene inculcated into them and alcoholism prevented they would rapidly increase in numbers.

Lost Customs.—Among the customs the Opatas have abandoned are two that deserve particular mention. One is tattooing, which used to be practised on both sexes and from childhood (*Rudo Ensayo*, p. 84); the other is that of burial, in which the body was laid in a grave with all the effects of the individual—his favorite dish, basin of water, etc. (*ibid.*, p. 85). I have seen no instance of tattooing, while burials take place in the *campo santo* of the church and according to the rites of the new religion.

SERIS, PAPAGOS, PIMAS

Of the Seris I have met but one individual, the measurements of whom, for purposes of comparison, are given in the table at the close of this paper.

The Papagos and Pimas were both studied principally in Arizona. Many of the Pimas Bajos, as mentioned before, are of about the same culture-status as the Yaquis or Mayos; while the Papagos along the Sonora border still retain enough of their aboriginal customs to make them ethnologically important. The Papagos near Torres, south of Hermosillo, make characteristic white coiled basketry with red figures. Several comparisons concerning the physical anthropology of these tribes will be found in the tables.

PHYSICAL CHARACTERS OF THE SONORA INDIANS

As the details of my physical examination of the Opatas, Yaquis, and Mayos are being prepared for publication in another form, with

¹An interesting case, probably allied to chorea, was recently communicated to me by Dr Alderman, as follows: "One of the men who work for Mr Chism looks, walks, and talks like a very drunken man, and this has been his condition since birth. He is married, and is the father of several children, whose intelligence is on a par with other Opatas children of the same age. He does not drink to excess, he is an expert vaquero, but rides in the most drunken manner, and how he manages to remain on his horse and throw his reata with precision is a wonder."

similar data on all the tribes visited, I will restrict myself in this place to a few particulars only.

The most important result of the measurements is the definite separation, particularly by their head-form, of tribes that have always been supposed to be of identical origin, such as the Yaquis and Mayos, and the Pimas and Papagos. But there are also other points of great interest.

The color of the Sonora Indians differs only individually; the pure-bloods are of the same brown as the Indians generally, ranging from light yellowish brown in some women and in some of the dressed younger men, to dark, nearly chocolate brown in others, particularly in some of the aged. The color of the little children, as a rule, is a live light to rich brown, of more uniform shade than in the adults.

The hair of the Sonora Indians is black and straight, growing to a fair but not extraordinary length. As a rule the beard is short and scant, particularly on the sides of the face.

The body is generally well-developed and, except in the old, is well nourished and regular. Some of the women past the prime of life are rather stout, but none are obese.¹ Their breasts are usually of moderate size. There is no steatopygy and no excessive abdomens. The feet and hands are always of moderate size.

The face usually exhibits more or less pronounced alveolar prognathism and prominence of the malars. The forehead is seldom as well arched as in the pure whites. The eye-slits are often slightly oblique, the outer canthi a little higher than the inner. As a rule the nasion depression is well marked in men, but is liable to be shallow and long in women. The nasal bridge ranges from straight to moderately convex, while the septum is either horizontal or slightly inclined downward. Regular and pleasant features are the rule in the younger Indians, but real beauty is very rare among the pure-bloods.

So much for the characteristics common to the Indians of Sonora, and indeed to practically all those of the Southwest. The tribal differences are scarcely detectable from casual observation; they are confined almost exclusively to physical proportions, as ascertained by measurements, and to the interrelations of these. The

¹Some actually obese women are seen among the Pimas of the Gila, however.

Yaquis, whatever the cause may be, have among them taller and more powerful men than any of the Sonora tribes. The Pimas are the most dolichocephalic of the Indians of the region, closely approaching the ancient cliff-dwellers of southern Utah; the Mayos are the most short-headed, resembling in this respect the Opatas, Tepehuanes, and Nahuas.¹ The Yaquis are apparently a Pima physical stock, modified by mixture with the Mayos. The Seris seem to belong to the same type, possibly modified somewhat by the Apache. The Opatas are, according to many indications, a Tepehuane stock, with a considerable element of the Pimas or Tarahumares.

The above and other differences, on the details and signification of which I shall not now dwell, are shown in the accompanying tables.

As the data which I obtained in the Southwest accumulate, it becomes more and more apparent that we shall have to deal there not only with type but also with tribal differences in the various body dimensions; when these can be eliminated or explained, there is good prospect of reducing all the numerous ethnic divisions of that great and important region to probably three principal physical groups. It is also evident that close relations of a physical nature to the various Sonora tribes will be found both north and south of that region.

MEASUREMENTS
HEIGHT (Males)

	OPATAS (31) Percent.	YAQUIS (51) Percent.	MAYOS (53) Percent.	SERIS (1) (1)	PIMAS (53) Percent.	PAPAGOS (50) Percent.
152.6 to 155 cm.	—	—	3.8	—	—	—
155.1 to 157.5	—	3.9	1.9	—	—	6.0
157.6 to 160	9.7	7.8	7.5	—	—	—
160.1 to 162.5	12.9	7.8	5.7	—	3.8	6.0
162.6 to 165	19.4	9.8	9.4	—	9.4	8.0
165.1 to 167.5	6.4	5.9	20.8	—	7.5	6.0
167.6 to 170	22.6	9.8	15.1	—	17.0	10.0
170.1 to 172.5	12.9	11.8	20.8	(1)	20.8	18.0
172.6 to 175	3.2	19.6	5.7	—	11.3	14.0
175.1 to 177.5	6.4	13.7	7.5	—	11.3	20.0
177.6 to 180	3.2	7.8	—	—	15.1	10.0
180.1 to 182.5	3.2	1.2	—	—	3.8	2.0
182.6 to 185	—	—	1.9	—	—	—

¹ Compare the tables in my paper in the July-September number of the *American Anthropologist*.

CEPHALIC INDEX (Males, Undeformed Heads)

	OPATAS (31) Percent.	YAQUIS (49) Percent.	MAYOS (50) Percent.	SERIS (1)	PIMAS (51) Percent.	PAPAGOS (50) Percent.
70-70.9	—	2.04	—	—	3.9	—
71-71.9	—	2.04	—	—	1.96	—
72-72.9	—	—	—	—	3.9	—
73-73.9	—	2.04	—	—	9.8	2.0
74-74.9	6.4	4.1	2.0	—	11.76	2.0
75-75.9	3.2	2.04	6.0	—	14.73	4.0
76-76.9	6.4	14.3	6.0	—	16.7	6.0
77-77.9	19.36	18.36	4.0	—	14.73	10.0
78-78.9	9.7	14.3	8.0	—	7.8	18.0
79-79.9	9.7	8.2	14.0	—	5.9	16.0
80-80.9	19.36	12.2	20.0	—	3.9	28.0
81-81.9	9.7	8.2	16.0	(1)	1.96	6.0
82-82.9	9.7	6.1	8.0	—	5.9	2.0
83-83.9	—	4.1	6.0	—	—	10.0
84-84.9	6.4	—	2.0	—	—	—
85-85.9	—	2.04	8.0	—	—	—

LOWER FACIAL INDEX ($\frac{\text{menton-nasion} \times 100}{\text{diam. bizygom. max.}}$) IN MALES

	OPATAS (30) Percent.	YAQUIS (52) Percent.	MAYOS (53) Percent.	SERIS (1)	PIMAS (50) Percent.	PAPAGOS (50) Percent.
75-76.99	3.3	—	3.77	—	2.0	2.0
77-78.99	—	—	3.77	—	—	—
79-80.99	6.7	7.7	5.66	—	2.0	2.0
81-82.99	13.3	19.23	11.30	—	20.0	8.0
83-84.99	10.0	19.23	18.86	—	24.0	16.0
85-86.99	13.3	30.8	28.28	—	18.0	30.0
87-88.99	16.7	11.54	16.98	—	10.0	16.0
89-90.99	16.7	7.7	9.43	(1)	16.0	20.0
91-92.99	20.0	1.9	—	—	4.0	2.0
93-94.99	—	1.9	1.89	—	4.0	4.0
Aver. Menton-Nasion Height.	12.18	12.09	12.04	(12.6)	12.35	12.34
Aver. Diam. Bizygom. Max.	14.05	14.18	14.17	(14.0)	14.45	14.25
Aver. Lower Facial Index.	86.6	85.3	84.97	(90.0)	85.52	86.6

	NASAL INDEX (Males)					
	OPATAS (31)	YAQUIS (52)	MAYOS (53)	SERIS (1)	PIMAS (53)	PAPAGOS (50)
Average	81.1	78.96	80.24	(71.9)	78.067	79.85

MEASUREMENTS OF A SERI AT HERMOSILLO, SONORA

Name, Fernando.

Age, about 70.

Physical condition, fair; no deformation.

Height, 170.7 cm.

Head: diam. antero-posterior max., 18.7 cm.

diam. lateral max., 15.2 cm.

height, biauricular line to bregma, 13.1 cm.

Face: menton-nasion height, 12.6 cm.

menton-crinion height 19.5 cm.

diam. bizygom. max., 14.0 cm.

diam. frontal minim., 10.0 cm.

diam. bigonial, 10.2 cm.

nose, height to nasion, 6 cm.

nose, breadth max., 4.35 cm.

mouth, width, 6.1 cm.

Nose moderately convex, septum horizontal. Forehead but slightly sloping; supraorbital ridges, malars, and alveolar prognathism quite prominent.

YAQUI SKULLS (Male)

DEFORMATION	CALVARIUM			FACE			ORBITS			NASAL APERTURE			
	Diam. antero-post-max.	Diam. lateral max.	Cephalic Index	Height Nasion to Bregma	Menton-nasion Height	Diam. bizyg. max.	Index	Mean Height	Mean Breadth	Mean Index	Height	Breadth max.	Index
1.	18.05	13.65	73.78	13.4	12.4	13.25	93.58	3.3	3.9	84.62	5.2	2.85	54.81
2.	18.1	13.6	75.14	14.8	12.9	14.05	88.06	3.8	4.3	88.37	5.2	2.6	50.0
3.	18.3	13.7	74.86	13.9	11.9	13.85	85.92	3.55	3.9	91.02	4.95	2.75	55.56
4.	17.8	12.95	72.75	13.7	12.4	13.4	92.54	3.75	4.05	92.6	5.35	2.6	48.6
5.	17.3	14.0	80.92	14.4	13.0	13.9	93.53	3.75	4.0	93.75	5.5	2.65	48.18
6. Slight occipital compression.	(17.0)	(14.25)	—	(14.35)	?	13.3	—	—	—	—	—	—	—
7.	18.6	13.7	73.66	13.4	11.3	13.3	—	3.7	4.0	92.50	5.05	2.25	44.55
8.	18.1	13.4	74.03	14.2	11.8	14.0	80.71	3.4	4.0	85.0	5.5	2.25	53.04
9.	17.9	13.9	77.65	13.4	12.4	13.4	88.06	3.3	3.85	85.73	4.7	2.95	58.51
10.	17.7	13.4	75.71	13.8	12.3	13.3	93.43	3.4	3.95	86.09	5.3	2.65	50.0
11.	18.0	14.0	77.78	14.5	12.3	13.4	91.79	3.4	4.0	85.0	5.2	2.65	50.96
12.	17.5	13.4	76.57	13.6	12.9	?	—	3.5	4.05	86.43	5.3	2.2	41.51
						14.15	91.17	3.5	4.05	86.43	5.4	2.55	47.22