The Indian Country of Southern Arizona

J. W. Hoover


Stable URL: http://links.jstor.org/sici?sici=0016-7428%28192901%2919%3A1%3C38%3ATICOSA%3E2.0.CO%3B2-5

*Geographical Review* is currently published by American Geographical Society.

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at http://www.jstor.org/about/terms.html. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at http://www.jstor.org/journals/ags.html.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

The JSTOR Archive is a trusted digital repository providing for long-term preservation and access to leading academic journals and scholarly literature from around the world. The Archive is supported by libraries, scholarly societies, publishers, and foundations. It is an initiative of JSTOR, a not-for-profit organization with a mission to help the scholarly community take advantage of advances in technology. For more information regarding JSTOR, please contact support@jstor.org.
IN Arizona, as in no other of our states, the Indian has maintained his hold upon the land. In numbers of pure-blooded Indians the state leads with over 46,000 of the nation's 355,000,1 while over considerable parts of the area primitive cultures hold sway. The white population has infiltrated itself into the region on a pattern largely indicative of the areas and zones originally unoccupied or of sparsest Indian population. Only the barren desert wastes immediately to the east of the lower Colorado River have been shunned by both Indian and white. Phoenix, the present metropolis, with the great oasis lying about it is contiguous with the relatively closely knit Pima communities but occupies the lands upon which the Indians were unable to apply water. Tucson, the second largest city and earlier metropolis, occupied a zone between Papagos and Apaches—a part of the Papago territory untenable on account of Apache raids. In northern Arizona the important settlements have grown up along the Santa Fe Railway which succeeded the old Santa Fe trail, proceeding in part through a neutral zone between hostile Apaches to the south and Navajos to the north.

The Indian population of Arizona remains distributed much as it was before white settlement. The present day reservations include the most important areas of Indian occupation, though considerably restricted, especially in the case of the hostile Apaches and Mojave Apaches. For convenience of treatment the Indians of Arizona may be divided into two groups: the southern tribes who occupy the drainage basin of the lower Colorado River and chiefly that of its one important branch, the Gila, and the northern tribes who occupy the drainage basin of the middle Colorado and its chief branch, the Little Colorado. This article aims to give a sketch of the southern group of tribes.

Pimería, Land of the Pimas and Papagos

The name "Pimería" was applied by the Spaniards to the territory occupied by the Pima and Papago Indians, that part which is now

---

1 If mixed-blood Indians are included, Oklahoma leads with some 120,000; but, whereas the Indian population of Oklahoma is only 29 per cent pure Indian, that of Arizona is almost 99 per cent pure. New Mexico ranks third in both full-blood and in total Indian population (Extracts from the Ann. Rept. of the Secretary of the Interior relating to the Bur. of Indian Affairs, 1927). Compare H. J. Spinden: The Population of Ancient America, Geogr. Rev., Vol. 18, 1928, pp. 641-660.
in Arizona being called Pimería Alta in distinction to the Papago country of Sonora, Mexico, Pimería Baja. The Arizona Pimería, so designated, is nearly coincident with the physiographic division known as the Basin Range Province, excluding the lands adjacent to the Colorado River and the unoccupied desert between the Colorado and the Gila rivers.

The Pimería is an arid country with well eroded fault block mountains rising between broad waste-filled intermont depressions. In the lower parts of the depressions, farthest from the mountains, sand and gravel washes traverse flat silt lands which have a surface veneer of coarser material. Nearer the mountains the land rises in long gentle alluvial slopes of sandy soil, known as the bajada slopes. Still nearer the mountains the bajada becomes gravelly or stony. Finally rock floor is exposed in the washes, revealing the mountain pediment, a subaerial extension of the mountain block protected from denudation. The general axis of surface features is northwest by southeast. The interlacing intermont plains rise imperceptibly from an elevation of several hundred feet in the west to over 2500 feet in the east and northeast. Out of them rise abruptly the low narrow mountain ridges, bare and harsh. In the east the mountains are most
massive and elevated, reaching the greatest height in the Baboquivari Range and its peak with an elevation of 7741 feet.

The outstanding climatic facts of the Pimería are the low and erratic rainfall, averaging about ten inches on the inhabited plains, accompanied by a very high rate of evaporation; the extremely high summer temperatures, very frequently rising above 100° F., and mild winters with temperatures seldom below freezing except in the higher parts; the marked daily range, often over 30° or even 40° F.; and the high percentage of sunny days averaging from 320 to 350 for the year. In other words, the region has a desertic type of climate.

In the west the Pimería is truly a desert, but farther east with more rainfall the vegetal aspect is rather steppelike. The vegetation is nevertheless highly xerophytic and is characterized by peculiar and striking forms.

The Pimas and Papagos who occupy the Pimería are about equal in numbers; but the Pimas, having occupied the best lands on the flats along the Gila and Salt rivers near the present city of Phoenix, have required only a fraction of the area that has been required for the support of the Papago population.

The Pimas were able to divert water from the rivers upon the flood plains and became definitely settled as agricultural village dwellers. Their situation on the northern border of the Pimería exposed them to the raids of their mountain neighbors. Constant danger prevented them from scattering, and under pressure of necessity they became valiant warriors. They performed invaluable services to the whites during the turbulent periods of the Apache wars, furnishing protection to the pioneers and supplies to travelers. "Their regular fields, well-made irrigating ditches, and beautiful crops of cotton, wheat, corn, pumpkins, melons and beans, have not only gladdened the eye, but also given timely assistance to the emigrants who have traversed Arizona on their way to the Pacific."3

With fairly certain crops, the Pimas never learned to provide for lean years as did their kinsmen of the south who led a more precarious existence. The Papagos are more industrious and are much preferred as laborers to the Pimas. They are more ready to seek remunerative employment than the Pimas, although much more remote from sources of employment. Until about 25 years ago, the Pimas allowed the Papagos to come to their villages and thresh their wheat for a share. The practice is still carried on to a certain extent.

The area occupied by the Pimas, mostly in the Gila River Reservation, extending about fifty miles along the river, possesses natural

---

3 See, for example, the meteorological summary for Sacaton in C. J. King and A. R. Leding: Agricultural Investigations at the United States Field Station, Sacaton, Ariz., 1922, 1923, and 1924, U. S. Dept. of Agric. Dept. Circular No. 372, June, 1926.

advantages which have from remote times made it a focal area for agricultural peoples. When first known by the whites, more than two hundred years ago, the Pimas had already occupied these lands at least several hundred years. For seventy miles along the Gila as well as along the Salt River are scattered the remains of the culture of a people much older and farther advanced. The land of the Pimas, including the Salt River plain, has in the past supported denser populations than any other part of Arizona. This is true today of the Salt River plain and would be true also of these lands along the Gila had they been given equal opportunity of development. The Indian population was here dense enough to maintain its hold upon lands coveted by the whites.

The several hundred Pimas who live on the north side of the Salt River settled there at the suggestion of white settlers around Tempe, who sought thus to place a buffer between themselves and the Apaches. Later these same people requested the government to return the Indians to the Gila Reservation; but the request was denied, and their lands were designated as the Salt River Reservation.

A third branch of the Pima family, the Sobaipuri, in early Spanish times occupied the Santa Cruz Valley and even the San Pedro Valley to the northeast on the other side of the Santa Catalina Mountains. As far as we know, they are to be distinguished from the Pimas and Papagos only geographically. Later they were driven westward by the Apaches, and it is supposed their remnants joined the Pimas and were absorbed by them.

THE GILA RIVER AND ITS CHANGED CHARACTER

The Gila River leaves the mountains to enter upon the detrital plains of the Basin Range Province about ten miles east of the city of Florence. Throughout its lower course it has incised a very shallow valley into the detrital plain. It is here a braided stream occupying a strip from a quarter of a mile to nearly a mile in width: the whole of its channel or any considerable part of it is occupied only occasionally after heavy rains. The channel is pretty well filled with shifting sandy deposits where only clumps of arrow weeds and low shrubs manage to get a hold here and there.

The Gila has changed greatly in character within the last half century. Old settlers are united in describing the Gila of fifty years ago as without shifting braided channels. Cottonwood, brush, tall grass, and weeds bordered the river, which was confined to a narrow channel. In the fall of 1849 a family and two other men floated down

---


Omar A. Turney: The Land of the Stone Hoe, Phoenix; see especially pp. 5-28.
FIG. 2—Gila River, looking northwest from the Sacaton bridge.

FIG. 3—Typical Pima home evolved from the primitive "ki." The arbor, which was formerly placed somewhere near the "ki," has here become an adjunct of the house.

FIG. 4—View from terrace over Pima grainfields. In the background are the cottonwoods of the bottoms, and Gila Butte is seen on the other side of the river.
FIG. 5—The upper terrace at Snaketown. Note the settlements on the upper terrace and the change in vegetation—salt bushes above and mesquite below.

FIG. 6—Terraces of the Gila River as seen from San Carlos, Apache Indian Reservation.

FIG. 7—Apache Indian village, near the Coolidge Dam site, San Carlos Indian Reservation.
the Gila from the Pima villages to the Colorado River on a flatboat 16 feet long and 5½ feet wide. This was the period when river boats sailed from the Gulf of California through the delta and up the Colorado River. The channels of the delta of the Colorado have long since silted beyond possibility of navigation; and the Gila, if not dry or very low, is in flood with current too swift for boats.

There is little similarity between the river of these descriptions and that of today; yet that portion of the Gila below the railway bridge at Pima Butte is perennial, and the waters except when high are clear. The perennial flow of the river here is primarily due to underground drainage deflected from the Salt River. There is also some extra seepage from the Roosevelt irrigation project.

According to the old Indians on the reservation the river used to be everywhere constant, always supplying plentiful water for irrigation. Only in occasional very dry years did it cease to flow, and then large pools remained in the bed. Little distress was felt by the Pimas even in such years; but the Papagos to the south, whose water supply was less dependable, would then seek relief from the Pimas. As late as the seventies, and even during the eighties, the river occupied a narrow channel and its bed was covered with large stones. There were no such stretches of bare and sandy waste as are found everywhere along the river now. Tall grass, sometimes several feet high, covered the whole countryside yearly. But the once grassy swales are now for the most part salt bush steppe or desert. Lakes or ponds were once common over the river flats where there is no trace of them today.

The changes in the character of the Gila have reduced the Pimas of the middle and upper parts of the reservation to a system of agriculture relying upon the irregular flood waters for irrigation. Their circumstances have been particularly trying during the late few years of drought. At the lower end of the reservation there is always water in the river, and there is no real want; but the floods wash out the dams and make diversion more difficult. However, whether there shall be water on the fields or not is chiefly a matter of industry.

The widening of the river channel still goes on. At Snaketown, north of the river near the center of the reservation, the river is rapidly cutting away land that has been under cultivation and that lies on the terrace. Near the pumping station on the north side of the river 7½ miles east of Snaketown, the river cut sixty feet into

---

the terrace the winter before last. In the upper Gila Valley, plane
table survey indicated that from October, 1915 to September, 1916
the Gila River washed away a total of 990 fertile acres in the San Carlos
Apache Indian Reservation and 1155 acres of lands higher up in the
Safford Valley. In October, 1917, 400 more acres were washed out
in the Safford Valley.

The changed behavior of the Gila is generally attributed to over-
grazing in the Upper Basin. Before 1870 there were few cattle,
but they increased rapidly after the settlement of the Apache Indian
troubles that year. During the eighties there was a series of wet
years with abundance of natural forage. The ranges built up rapidly,
and overgrazing resulted. During the same period the mountains
of the Upper Basin in southeastern Arizona were being rapidly stripped
of their timber for use in the mines. The hills were barer than now,
because with the advent of the railways better mine timber was
brought in from the outside; but the cutting for fuel continued. At
the end of this series of wet years came the disastrous flood of 1891.
Before this, flood waters of the Gila merely spread out over the flats
and irrigated them. Now with the banks of the river unprotected
by brush and grass, the channel suddenly widened, and many good
ranches along the river were cut out. Smaller branches of the river
in the upper basin cut channels as much as twelve feet deep. On the
desert deep channels appeared in what had been grassy swales.

On the other hand, Bryan⁸ calls attention to the fact that such
channel cutting has been general throughout the southwest and began
as early as the sixties. He, with others, is favorably inclined toward
Huntington's hypothesis of a slight change of climate toward drier
conditions as decreasing the vegetation cover and promoting run-off
with more rapid erosion. The erosive work of the flood of 1891
was greater than that of all the previous years of settlement in the
basin; a reduced vegetation cover greatly aggravated erosion. The
reservation area has suffered less than the lands above, partly because
of the low relief of the plain, but also no doubt because there has been
less cultural disturbance here. The only important recent topographic
change has been the silting up of the river channel and consequent
widening.

In addition to such possible general causes of change was the
reduction of water on the lower Gila due to irrigation farther up the
river. Serious deprivation of water on the reservation began with
diversion in the Florence district immediately above the reservation.
It began in the sixties and reached its climax in the eighties. The Flor-
ence district was in turn deprived of most of its water by diversion
in the upper Gila Valley.

⁸ Kirk Bryan: Date of Channel Trenching (Arroyo Cutting) in the Arid Southwest, Science,
THE GEOPHYSICAL REVIEW

THE TERRACES OF THE GILA RIVER IN RELATION TO PIMA CULTURE

The sides of a well developed valley flat in the alluvial plain along the Gila are marked by terraces varying in height up to about twenty feet on the Gila River Reservation. The terrace is best defined on the north side of the river below Gila Butte and vanishes entirely east of Gila Butte and around Sacaton. The flood plain reaches its greatest width of four miles between Casa Blanca and Snaketown, and the main river channel is nearly three miles from Casa Blanca.

Within this flood plain the river has cut an inner flat which confines all but the occasional master floods. It is bounded by lower terraces from three to ten feet in height. Over this flood plain the channel of the river varies considerably from time to time. For convenience we may speak of this low land bordering the river as the bottom land, the land on the outer flood plain as the lower terrace, and that above as the upper terrace.

The correlations of soil, vegetation, and culture are striking. The lands on the upper terrace are sandy with a veneer of gravel, while gray salt bushes mark it off distinctly from the bright green feathery foliage of the mesquite thickets so characteristic of the lower terrace where not cultivated. On the lower terrace the soil is silt and usually heavy. The bottom lands are sandy with an abundant mixture of silt. Cottonwood groves and arrow weed, a tall slender

---

**Fig. 8**—Map of the Gila River Reservation. Scale approximately 1:750,000.
reed, characterize the vegetation. Where the river is more stable or the ground is higher, the mesquite and salt bushes encroach upon the bottoms; but the cottonwoods and arrow weeds stop abruptly at the lower terrace, except that, wherever the lands are cultivated, cottonwoods take hold.

The cultural features of the reservation are as strikingly arranged with reference to the terraces as is the vegetation. Although the terraces are not indicated on the topographic maps of the Geological Survey, they can be traced fairly accurately by the cultural features as indicated.

The cultivated lands are limited strictly to the lower terrace, or terraces, where there is a further division of the terraces as at the villages Balchirl, Sweetwater, and Santan. The land under cultivation is further limited with reference to the possibility and ease of getting water on it. The villages are mostly located on the edge of the upper terrace overlooking the irrigable lands on the lower terrace. Up the river from Sacaton the upper terrace is not apparent as a topographic feature except for the characteristic vegetation association. Sacaton and Blackwater as well as the small villages between them are not definitely located with reference to terraces; but before white settlement there were no Pima villages in the upper end of the reservation. Sacaton itself was not an Indian village to begin with but developed around the government school.

The villages of the prehistoric people who occupied the area were distributed similarly to the villages of today. On the reservation, the most conspicuous of these ruins is that of the pueblo at Casa Blanca, now weathered into a huge mound. The largest cluster of mounds is directly across the river at Snaketown. The famed Casa Grande Ruin, just off the reservation to the southeast, is in a much better state of preservation. Some of the canals of the Hohokams, as these early people are called by the Pimas, extended onto the upper terrace lands, which they evidently cultivated in part. None of the upper terrace lands have been reclaimed by the Pimas; the ancient population was probably denser and certainly more advanced in technique and social organization. The river may also have been at a slightly higher level than now.

A main traveled road connects the villages all the way along each side of the river, following quite closely the edge of the upper terrace, where it is sandy enough to dry out readily, and is generally smooth. If a spot becomes rough it is simply avoided, and a new track develops around it. Many roads, if such they may be called, radiate from the villages onto the upper terrace lands called the “mesas.” On the lower terraces the roads become deep sticky mud after rains; and later this bakes hard and rough, very dusty when dry. Through the cultivated lands they now run in straight lines and at right angles
conforming to the plotting of the land allotments by the United States Indian Service. Before the advent of the Southern Pacific Railroad the old transcontinental stage road followed the terrace route through Casa Blanca and Sacate. Wherever the lower terrace is wide and at least partially under cultivation a secondary road generally follows in the main the terrace bluff.

Several reasons suggest themselves for the preferred siting of the villages on the upper terraces. The drainage is better, and there is safety from flood. According to the Indians, the waters of the Gila twice since 1890 rose over the lower terrace and covered it to Casa Blanca. Communication has always been easier along the upper terrace, and better protection was afforded against hostile attack as here the enemy could be sighted from afar. The low mesquite thickets near the river were certainly much less desirable for homes than the open upper terrace. Casa Blanca and Snaketown have especially attractive sites with unobstructed outlook for miles in every direction. The Indians may also have discovered that the upper terrace sites were more comfortable, being warmer in winter because the cold air at night drained to the lower levels and cooler in summer because more exposed to the breezes. As time goes on, however, the Indians are scattering more widely over their tilled lands on the lower terrace.

During the middle of the nineteenth century the Pimas were almost entirely concentrated in villages on the south side of the river, owing to the dangers from Apache raids. The Pima settlements then extended from a point about two and a half miles below Sacaton nearly to Pima Butte. Early in the nineteenth century, according to numerous accounts of travelers and explorers and old Indians, they seem to have been more widely spread. With the settlement of the whites along the Gila and Salt rivers and the establishment of peace with the Apaches, the Pimas have again extended their settlements.

ECONOMIC CONDITIONS OF THE PIMAS

The chief crops of the Pimas today are, in order of importance, wheat, corn, alfalfa, and cotton. Vegetables, as beans, squash, pumpkins, and melons are also grown. Pima squaw corn is a popular native variety as it flowers in 50 or 60 days after planting, making small demands upon irrigation water. Unless flood water is abundant, it often happens that the heavy irrigation preliminary to planting is all the water that the crop receives. As ordinarily grown by the Indians it rarely produces more than 10 or 15 bushels an acre.

The old Indians had a method of cultivating their grain which the whites have not been able to improve upon under the same condi-

9 Russell, op. cit., p. 20.
ions. A peculiar method of plowing in the seed left the surface rough and afforded some frost protection. The soil then crumbled with the first irrigation and did not bake. The Pimas divert their water from the river by brush dams, constructed with considerable labor, or sometimes by mere embankments of river sand or silt. There are usually five or more such dams in the river, but they are often washed out by floods. During the several past years the Indians in the middle of the reservation have had to depend largely upon cutting and selling mesquite wood. A man requires two or three days to assemble a load which he may sell for about $6.00. Then he must haul it 15 to 20 miles and peddle it, which takes two more days unless there is a prompt sale. With more plentiful water the Indians leave off wood cutting and go back to their fields. A few of the Indians, especially at Casa Blanca, own some scrub cattle from which they derive partial or entire support.

After a difficult political struggle, the Federal government in 1924 authorized the construction of a dam on the Gila in the mountain narrows below San Carlos, the object being to restore their waters to the Pimas and to reclaim other lands. Construction was begun some time ago, and water will soon be provided for that part of the reservation above the Arizona Eastern Railroad. With the completion of the project the flood menace will have vanished, and the bottoms will be cultivated. Much of the upper terrace lands will also be brought under irrigation. The Indians will generally move out upon allotments, and the original character and diversity of the landscape will give way to homogeneity of aspect.

**The Mohave Indians**

The Mohaves in their manner of living are much like the Pimas, being another tribe of oasis dwellers, utilizing the low narrow flood plains of the Colorado River between Needles, Cal., and Yuma where they formerly planted their corn, beans, and squash in the river ooze as the spring floods ebbed. The largest single village is near Needles. The Mohaves have been considerably reduced in numbers, suffering from contact with the worst element of the pioneer whites. Tuberculosis is now making serious inroads upon them.

About 25 Cocopah Indians live similarly to the Mohaves on two tiny reservations within the Yuma Irrigation Project.

**The Papago and the Papaguerría**

Barring a single outbreak in 1871 the Papagos, like the Pimas, have always been friendly to the whites, with whom, however, in their isolated location, they have had much less contact. To the country at large the Papaguerría has been a *terra incognita*, a waterless
land seldom visited by white men, a forbidding desert taking its toll of human life. The region is becoming better known since the advent of the automobile, the opening up of the mining camp at Ajo with railway connections to the Southern Pacific, and an automobile road now being extended eastward from Ajo and westward from Tucson. Over most of the area the Papagos are still the only inhabitants except for a handful of Indian agents, traders, and teachers. Southward the Papagos and their country continue into Mexico with no definite southern boundary, as the Papago population merges into the Mexican population. The Growler Mountains mark the western limit of their territory, though formerly a few people known as the Arenos or Sand Papagos eked out a meager existence in the barren desert west of this feature.

A very low standard of living prevails among the Papagos; yet, in spite of adverse conditions, they are among the few of our Indians who have remained entirely self-supporting. Hardly any other Indians have had their area so little exploited by other people. Their very poverty has been their protection. Those who know them best speak highly of their virtues and regret that American schooling too often breaks down their racial traditions of virtue and honor.

Today, as always, scarcity of water has been the determinant in the life of the region. The Papagos commonly migrated between two villages, the one located near a permanent water supply found locally around the base of the mountains, the other about their temporals or fields along the washes out on the plains or in the valleys. The practice still continues with many of the Papagos, especially on the western half of the reservation.

The water supply at the temporals, or summer rancherias, was obtained from surface run-off during the summer rains and retained in hollow basins called charcos which were made by digging out a depression and applying the earth to an embankment on the lower side. The water supply thus obtained became warm and stagnant and was shared by the animals, yet it had to serve all domestic purposes. Even the water supply at the winter villages was often to be had only by patient digging in the sandy washes on the mountain pediment, and then sometimes attained only drop by drop along a plane of contact between sand and stone till the labor, sometimes of hours, was rewarded by one or two gallons of water. Pumpelly, who traversed the region in the early sixties, describes the experience of a friend who reached such a well at a time when, after a succession of dry seasons, the Indians were dying of thirst. "He found a large

---

number of Indians digging recklessly, far below the surface, and following down the line of contact between sand and rock, in the vain hope of finding a few drops of water. In their despair, they undermined the high face of the sand, and it fell, burying for ever a number of the unfortunate creatures."  

Every drop of water was carefully conserved, even to the drippings from the olla, or earthen water jar, which might grow a couple of onions.

The desert scarcity of water had also its compensation in that it was the Papago’s best defense against the marauding Apaches. By the middle of the eighteenth century the Papagos had been driven west of the Baboquivari mountain wall, except for a group about the San Xavier Mission under the protection of Tucson. But the approaches to their country west of the Baboquivari were carefully guarded, and the passes were the scenes of desperate battles.

The periodic intervillage migration is typically illustrated by the people of Kaka and Moivavi in the west-central part of the reservation, who together constitute a community of about 250 people. They are about the most isolated of the villages. It is only within the last year that the government has succeeded in getting the children from these villages to schools. Kaka is a typical rancheria village, the huts being scattered around the cultivated area. The fields lie on a flat
alluvial fan at the emergence of a canyon in low basalt hills which are outliers of the Sand Tank Mountains. The lavas almost surround the fan, and the houses are mostly located on this elevated land. The Indians assist nature in spreading over the fan the waters which pour down the canyon after the occasional heavy summer rains. There is no well here, the only attempt at drilling having encountered porous basalt at no great depth. The Indians depend upon their charco, and formerly when it dried up they were compelled to leave or bring water from Moivavi 16 miles away in the mountains. Now a few remain and haul their water from the deep well on the Ventana ranch, six miles away.\textsuperscript{14} When the water in the charco becomes low most of the Indians move up to Moivavi. The water here is obtained from a well in the bottom of a sandy mountain wash; the village is built on the small grassy flats above. The well, which is typical of the winter rancherias, is 32 feet deep and timbered but fills up whenever there is a heavy rain. Upon returning to Moivavi the first task is the laborious redigging of the well.

The movements between villages are timed with reference to the crops and the rains. The summer crops, chiefly squaw corn, beans, pumpkins, squash, and watermelons, are planted with the arrival of summer rains usually in July. If water is scarce, most of the Indians then go back to Moivavi to return for the harvest in October, after which they again go back into the mountains. Before the introduction of wheat the Papagos lived at their temporals only during

\textsuperscript{14} The Ventana ranch grazes about 125,000 acres of land on “the strip” which was withheld from the reservation to give right of way for a railroad at the time under consideration from Tucson to Ajo. The writer is indebted to Mr. McKinney, owner of the ranch, for valuable assistance and information concerning the Papagos.
the summer months; but now wheat is the most important crop, and it is necessary for the Indians to come to their temporals for its sowing in December, January, or as late as February if the rains are delayed. It is usually harvested about May, and, as there are no rains at this time of the year, water must be hauled from the Ventana ranch.

The Indians are effective agents in checking natural erosion as they spread the waters from the washes over their fields. Above the temporals or villages the washes may be deep erosion channels, while below they may not be at all apparent. Shallow ditches sometimes extend out from the fields for more than a mile to collect the surface run-off. But the rains are uncertain, and sometimes the crop must be reseeded, and sometimes there is no harvest. The bean crop in 1927 had to be put in three times on some parts of the reservation. If planted too near the washes, the crop may be washed out; if too far away, it may dry up. This year a dry spring was followed by a record-breaking rain, which washed out much of the seed planted for summer crops and made it necessary to replant. The spring drought resulted in an almost complete failure of the wheat crop except with the Kaka Indians who had the largest yield. The United States Indian Service has in late years dug a number of wells convenient to the temporals. Permanent villages have developed about these, but many of their people still migrate a great deal from one village to another.

A boon hardly second to the digging of wells was the introduction of cattle among the Papagos, and now they graze and sell many.
The Indians of the eastern part of the reservation have profited most from the cattle, having the better grazing lands. Before the late series of dry years many of them had become fairly well-to-do; but, in spite of abundant pasturage last year, there are only about half as many cattle as there were a few years ago.

The largest of the temporals is at Big Fields where a great block of land is under cultivation with the homes of the Indians scattered around the margin. Indians come here from several of the villages lying around the mountains, especially from Cobabi, Comobabi, Nolic, and Santa Cruz on the flanks of the Comobabi Mountains. A well has now been drilled by the Indian Service, and some people always remain. Similar scattered farming villages that have been given a degree of permanency by government wells are Topahua, Komalik, Vamori, Indian Oasis, and San Miguel west of the Baboquivari Mountains. Formerly these Indians had their winter rancherias along the Baboquivari Mountains. Now the population has become differentiated as a result of the influences emanating from the agency at Sells. Those living at the agricultural villages with government wells are the most progressive and wealthiest of the Papagos. On the mountain pediment and in the mountain coves at the old water holes are found the most conservative Papagos. They are largely dependent for a livelihood upon cutting mesquite wood and marketing it in Tucson, from 40 to 80 miles distant. Fully a week is involved in a transaction bringing about $6.00. In addition wagons must be kept up and horses fed on the long haul across the desert.

Santa Rosa, farther to the northwest, is the center of an area with about 3000 acres of cultivated fields. In 1920 about 200 tons of wheat was handled from Santa Rosa, and almost none has been handled since. In spite of a government well, drilled in 1915, the population varies from three or four families to as many as 700 persons. The digging of the well was protested by the Indians, for they believed that if the waters were once let loose they might not be controllable. Near Santa Rosa is a shrine where according to tradition the waters once flowed, threatening inundation of the country, and were only stopped when two children were thrown into the hole and it was covered with stones. The shrine is still religiously cared for and guarded, for should the stones be removed the waters would flow again. There is some ground for their superstitious fears: even this last summer, as in times past, Santa Rosa was almost washed away in the torrential downpour that followed the too successful rain-making fiesta and incantations of old “Doctor Lopez,” medicine man and chief, who still reigns in the confidence of his people.

The people on the western part of the reservation, having the poorest lands, are themselves poorest; and in the summer many leave the reservation to seek employment in the cotton fields of the Salt
River oasis, nearly a hundred miles away. The journey both ways consumes about a week, and the season may be interrupted by a fiesta or two requiring return to the villages. But time enters little into the economy of the Papago.

Other migrations are occasioned by the religious fiestas. Each year many hundreds, especially from the western part of the reservation, cross the boundary on a pilgrimage to Magdalena, Mexico, and return for their fiesta flying the Mexican flag, while those at home go out with hands raised and palms out to meet those returning. They will save their money for months or even sell their cattle to be able to go to Mexico to celebrate at this time.

THE MOUNTAIN COUNTRY AND PEOPLES

The name Apache is frequently applied indiscriminately to all the peoples of the mountain provinces, as all depended in part upon raids for their subsistence and were the terror of the peace-loving plains tribes and later of the white settlers. The Yavapais, Yuma Apaches or Mohave Apaches, lived in a similar environment with the true Apaches and were similarly adjusted to it even to the building of their houses. They sometimes allied themselves with the Apaches for war purposes, but otherwise they remained distinct. Nor could the true Apaches be considered in any sense a nation. In spite of a common language, consanguinity, and the occupation of contiguous territory, most of the bands fought each other and lived in continual fear of reprisal. Their mountain environment prevented other than temporary unity. The Apache tribes were never all at once on the warpath, and from peaceful tribes were obtained the Apache scouts who rendered invaluable services in subduing their hostile confrères.

From the southeast corner of Arizona towards the northwest extends a series of roughly parallel mountain ranges with valleys between. This mountain province as related to the Indians may be divided into four subprovinces. The White Mountain region is located to the east. The Bradshaw Mountains with the surrounding
FIG. 13—Moivavi, mountain village, Papago Indian Reservation. The Indians from Kaka move here when their water supply becomes low (see Fig. 16).

FIG. 14—Primitive "ki" at Quajote, Papago Indian Reservation.

FIG. 15—Typical Papago rancheria, Big Fields, Papago Reservation. Cultivated fields in background.
Fig. 16—Charco at Kaka in early April, 1928—a dirty mudhole from which comes the water for all domestic purposes as well as for the animals.

Fig. 17—Vegetation near the Comobabi Mountains. Thorny cholla cactus and the low sagelike Franseria in foreground; Sahaura (giant cactus), cholla, palo verde, and ironwood in background.

Fig. 18—Cobabi, a piedmont village, Papago Indian Reservation. Typical mountain pediment vegetation in the foreground. Sahaura, ocatilla, and palo verde are conspicuous.
lower mountains are another distinct group to the west. Between the two groups extend long mountain blocks as the broken-down border zone of the Colorado Plateau. The intermont depressions, or structural valleys, are narrow in the north but widen to the southeast where they are also lower. A fourth subprovince may then be indicated to include the broad southern blocks, both elevated and depressed, as the Chiricahua Mountains, the Dragoon and Mule Mountains, San Simon Valley, and upper Gila Valley, Sulphur Springs Valley, and the San Pedro Valley. The Indians were grouped with reference to these mountain subprovinces, occupying the mountain valleys at the headwaters of the Gila and Salt rivers with their branches.

The mountain region is not only more rugged than the Pimería but differs also in climate and vegetation. The valleys average over 3000 feet in elevation, and the mountains generally rise more than a mile. The White Mountain province is all over a mile high and varies up to 11,000 feet. This area is in reality a subprovince of the Colorado Plateau, but the eastern part is made mountainous by numerous volcanic cones, and the western part is made rugged by the numerous canyons cut through horizontal lava beds by the headwater streams of the Salt River.

The rainfall varies from 15 to 25 inches, being greatest in the White Mountains. Some of the wider valleys in the south, with less than 15 inches of rainfall, are quite arid. The winters are to be reckoned with; in the higher areas, like the White Mountains, they are fairly severe, and the communities are isolated by the heavy snowfall. The higher mountains carry pine forests with scrub oak dominating their flanks. The broad lower valleys are semidesert, and the higher ones grassy if not scrub.

The Apaches, including the Mohave and Yuma Apaches, formerly consisted of four main groups distributed according to the four mountain subprovinces as outlined above.

The White Mountain Apaches lived in the narrow valleys along the swift-flowing streams on the Salt River watershed in the White Mountains. The chief center of population was along the White River, where the agency is now located. The Tonto Apaches lived in the Tonto Basin and the narrow valleys tributary to it. A separate group occupied the valley of the Cibecue Creek farther east. The Chiricahua Apaches lived around the Chiricahua Mountains and the San Simon and upper Gila valleys. They also roamed over the Sulphur Springs and San Pedro valleys and were the most troublesome of the Apaches and the last to be subdued. Before and after white settlement in the adjacent areas they made frequent raids into Mexico. A minor group, the Aravaipa Apaches, were located along the stream of that name and at its junction with the San Pedro
River. All these people were later confined to the San Carlos and Fort Apache or White Mountain reservations. The San Carlos Apaches now live along the San Carlos River and that part of the Gila on the reservation. The chief centers of Apache population are at San Carlos, where the agency is located, at Bylas on the Gila, and at Rice on the San Carlos River.

The Mohave and Yuma Apaches lived around the Bradshaw Mountains in the narrow valleys of the streams flowing south to the Salt or Gila rivers; also in the valley of the Verde River to the east. The Verde Valley reservation is the only part of their domain reserved to them, most of them having been removed to the Apache reservations. About 200 of them now live in the lower Verde Valley, and about 400 in the upper Verde Valley around Camp Verde.

Military forts were distributed among the hostile mountain peoples. Fort Whipple and Fort Date Creek near Prescott and Fort McDowell on the Verde were located in the midst of the Yuma and Mohave Apaches, though the last fort served also as a base of operations against the Tonto and White Mountain Apaches. Fort Apache was located in the midst of the White Mountain Apaches; and Fort San Carlos and Fort Thomas on the upper Gila, Fort Bowie at Apache Pass, and Fort Frank in the upper San Simon Valley were bases of operation against the Chiricahua Apaches.

The Apaches in common with nearly all the southwestern tribes usually chose to camp on a terrace somewhat removed from the water. The higher site was better capable of defense, but the principal reason was that the bottom lands are hotter in summer and colder in winter than the terraces above. They subsisted in part by primitive agriculture in the mountain valleys, producing the usual Indian crops of corn, beans, squash, and melons. Like the other Indians of the south they also depended partly upon wild foods like mesquite beans, mescal, and the fruits of the cacti. The greater rainfall of the mountain region eliminated the necessity for irrigation.

A considerable part of the area of the narrow flood plains of the upper Gila and San Carlos valleys in the vicinity of San Carlos and Rice is now cultivated by the Indians. The completion of the Coolidge Dam will submerge most of this land along the Gila, and the Indians will have to move to the Fort Apache reservation or will be given the privilege of taking up allotments on the land along the lower Gila, which is to be watered by the project.

In addition to farm crops the Indians now have beef cattle, pigs, and chickens. With few exceptions they adhere to their primitive huts, wikiups, built by bending over poles, binding them at the top, interlacing with branches, and covering the whole with brush or grass. Canvas has now become the chief covering material.

After being confined to the reservations the Apaches were rationed by the government until 1902. They are now better situated than any other Arizona Indians with regard to wage-earning employment and make good use of the opportunity. They are also the best laborers and command the highest wages. Important Apache villages are located close to the important mining centers near the reservations as at Globe and Superior. The largest of all is now temporarily located near the Coolidge Dam site, the construction employing a large number of them. Until the recent completion of the Horse Mesa Dam on the Salt River, a similar village was located near by.

The primitive simple Indian, as described above, is slowly but surely vanishing from the scenes. The smaller groups are already disappearing or being submerged in neighboring populations. As development of the agricultural and mineral resources on or adjacent to the reservations proceeds, many of the Indians will doubtless be induced to sell their lands, and will scatter and intermarry among others. To the nation at large all this will be applauded as progress, but to the geographer there must be regret over the obliteration of so much that is unique.16