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NAVAJO NOMADISM

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THE Navajos are by far the most numerous full-blooded tribe of the Indian population of the United States and they occupy the largest continuous area of land reserved in it for Indians. An area of 22,400 square miles is included in the combined reservations for the Navajo and Hopi Indians, a territory larger than that of Holland and Belgium combined. This great block of country, particularly the part in Arizona, is difficult of access, and, in spite of a wealth of scenic marvels, most of it is scarcely touched by tourist travel which surges around it. Considerable areas are still reached only by trail. Within the area is the post office most remote from railway communication in the United States—Kayenta, 160 miles from Flagstaff, Ariz., which receives mail twice a week. The reservations are untouched by railway; roads are few and almost entirely self-made. Only one road worthy of the name traverses the country north and south; that from Gallup to Ship Rock on the San Juan River, a distance of 90 miles—the only gravel surfaced road in the Navajo country. From Ship Rock, fairly good roads extend northward and eastward up the San Juan into Colorado. Other roads lead to the agency centers at Crown Point, N. Mex., Fort Defiance, Keams Canyon, and Tuba, Ariz. These are worked on and are usually passable or even good. The Navajos, women and children as well as men, are much in the saddle, and travel is largely on horseback. The Navajos have few wagons as compared with other Indian tribes; but a few of the wealthiest have cars, especially around Ship Rock, where road connections offer the inducement and a few oil wells afford the means.

THE NAVAJO COUNTRY

The Navajo country is a land striking in color, with grandeur of scale and form; but, for all its scenic interest, it is a poor country, and its chief resource is natural forage. Even that, judged by the standards of more humid lands, is poor enough. In spite of diversity in physical features, climate, and grazing conditions, all the reservation areas in a broad sense show common features resultant of an arid or semiarid climate controlling the denudation of an area of great relief, with also a dominance of resistant sedimentary strata,

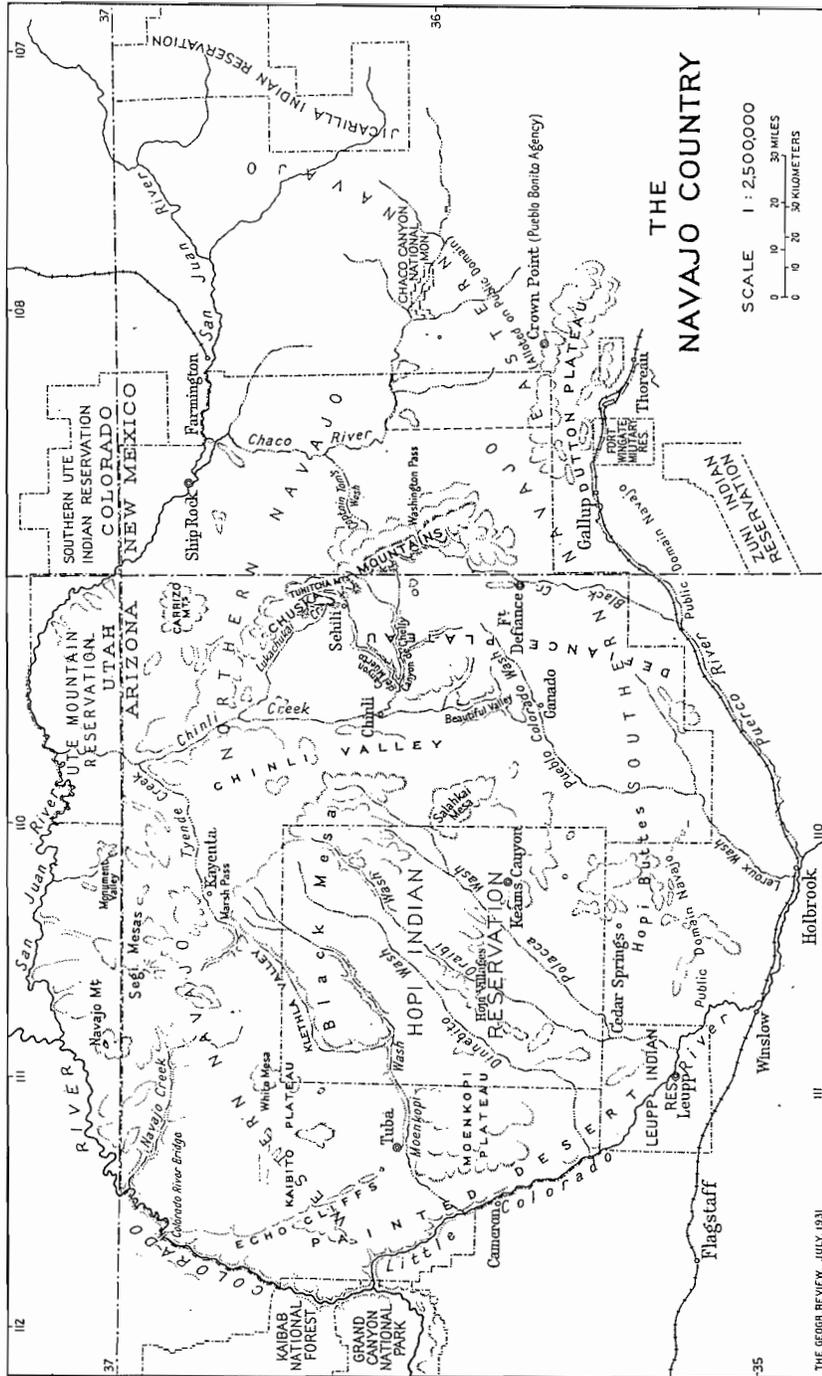


FIG. 1—Map of the Navajo country showing the Indian reservations. The Indian population of the reservations is estimated at some 40,000 Navajos (about five-eighths in Arizona, the remainder in New Mexico), 2800 Hopis, and 200 Piutes. The white population of the area comprises about 600 traders, missionaries, teachers, or other government employees.

essentially horizontal, but slightly disturbed diastrophically or volcanically—plateaus of uplifted peneplains now mostly in a youthful stage of erosion.¹ The influence of aridity and spasmodic rainfall is manifest in the dry stream channels, the enormous accumulations of coarse alluvium, sand dunes, bed rock in places swept bare by wind or sheet wash, bare rock walls which in a humid land would be buried under talus, and harsh lines generally.

The area is for the most part more than a mile high with about a tenth of it more than 7000 feet high. The greatest elevation is reached in Navajo Mountain (10,419 feet). The mountains and higher plateaus have cool summers and cold winters with heavy snow fall, the rainfall being generally more than 12 inches and in some places more than 20 inches. The most populous part of the Navajo country is the higher and better-rained-on portions about the Chuska Mountains and Defiance and Dutton plateaus near the Arizona and New Mexico boundary. The area tributary to the Fort Defiance agency alone contains nearly half of the total Navajo population, while the larger Western Navajo Reservation contains hardly a fifth of it.

The lower areas are fairly hot in summer and mild in winter, with less than 10 inches of rain and as little as 5 inches or less along the lower courses of the Little Colorado and on the San Juan. The months of July, August, and September average a little more than a third of the rainfall for the year. The rainfall for July is particularly critical both for pasturage and for corn.

In the lowest areas one encounters a desert flora, a sparse vegetation with scattered cacti, yucca, and tuft grasses. Above 5000 feet the flat or gently sloping areas are characterized by sagebrush (*Artemisia*) or tarweed (*Isocoma*), and rabbit brush (*Chrysothamnus*) with greasewood (*Sarcobatus*) on the salt and alkaline flats or along the drainage channels. Scattered juniper makes its appearance at about 6000 feet; and, as the elevation increases, piñon (*Pinus edulis*) also appears and finally dominates. Above 7000 feet is the yellow pine belt. The largest stands are on Defiance Plateau and the western side of the Tunitcha Mountains, with scattered stands on the higher parts of the other highlands.²

Vegetation associations of cacti, sagebrush, or timber do not suggest good forage; but in the sage and juniper belts are many spaces in which the nutritious grama grass naturally flourishes, while in the high areas the trees stand well apart with grassy forest floor.

¹ H. E. Gregory: The Navajo Country, *Bull. Amer. Geogr. Soc.*, Vol. 47, 1915, pp. 561-577 and 652-672; *idem*: The Navajo Country, A Geographic and Hydrographic Reconnaissance, *U. S. Geol. Survey Water-Supply Paper 380*, 1916; *idem*: Geology of the Navajo Country, *U. S. Geol. Survey Professional Paper 93*, 1917.

² For a description of these associations see the article "Forests," by Raphael Zon, in O. E. Baker: Atlas of American Agriculture, Part I, sect. E, Vegetation, U. S. Dept. of Agric., 1924.

Even in the most arid parts, after summer showers grasses spring up and quickly reach maturity before the soil completely dries out.

NOMADIC MOVEMENTS

The character of the country with the economic basis adapted thereto necessitates considerable movement, but such movement is no longer pure nomadism. For the Navajo, no matter how far he may wander, returns again and again to the same spot or general vicinity. Steadily increasing population, with fuller utilization of their lands and encroachments on one another's prerogatives, has compelled the Navajos to confine themselves to particular grazing lands and to follow a more or less regular beat. Their movements have thus come to resemble to some extent those of the Papagos between localities.³ Many of the Navajos do not move very far from their base.

While most of the movements of the Navajos are in the nature of transhumance, there is no one rule that governs such movements. Seasonal they are in the main; but, as conditions vary with localities, the movements also vary; so that for the same reason the Indians may regularly move up in some localities and to lower land in others. The migrations of the Navajos and their pastoral pursuits are withal of paramount importance in controlling their *mores*, their housing and diet, and the outward indications of progress.

The movements of the Navajos may be classified thus:

1. Moves between summer and winter pastures
2. Seasonal moves controlled by temperature conditions
3. Temporary moves for summer farming
4. Winter moves to convenient fuel
5. Moves after showers for pasture in the drier parts
6. Moves in search of water for domestic purposes and for animals
7. Autumn moves for piñon nuts and for peaches
8. Moves for social reasons

In reality the movements of the people in any locality are quite complex and involve various combinations of the above categories. Most of the Navajos have definite summer and winter localities, between which they move, and summer and winter hogans to which they return with the changes of season. The distances thus traveled vary from a few to sixty miles. The mountains and highest plateaus afford well watered summer pastures. This permits the open pastures of the surrounding lowlands to grow undisturbed under the stimulus of the summer rain. Then, as the winter comes on with

³ J. W. Hoover: The Indian Country of Southern Arizona, *Geogr. Rev.*, Vol. 19, 1929, pp. 38-60, especially pp. 49-55.

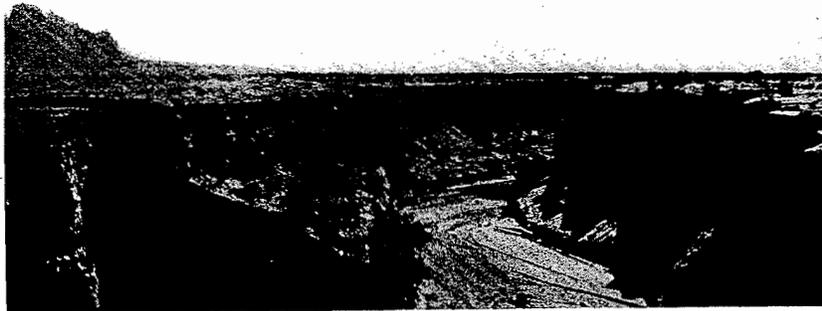


FIG. 2



FIG. 3



FIG. 4

FIG. 2—Great gully south of Ship Rock resulting from recently rejuvenated erosion and illustrating the difficulties of road building in the region. Remnant of ancient volcano at the left.

FIG. 3—Cultivated fields along the San Juan River looking east from the terrace, above Ship Rock, N. Mex.

FIG. 4—Ship Rock Indian Agency, with Ship Rock, a volcanic neck, in the distance.

its snow cover on the highlands, the flocks are driven down to the lowlands. Physical comfort also plays its part. The highlands are cold and snowy in winter but cool and pleasant in summer. The lower lands are fairly hot in summer and comparatively pleasant and free from snow in winter.

AROUND THE EASTERN HIGHLANDS

Illustrations of the above types of movements are best found in the eastern part of the reservation area; as for instance between Dutton Plateau and the lower lands to the north, Lukachukai Valley and the Chuska Mountains, the Carrizo Mountain and the valleys that radiate from it, Black Creek Valley with the surrounding highlands and the lower lands to the west. In the vicinity of Crown Point, situated at the base of Dutton Plateau, the Indians move only about twenty miles between summer and winter camps. Some settle around the base of the plateau for the summer, and others go on the top. They move up some time in June and back to the lower lands between the middle of September and the first of November. The Indians of the lower Lukachukai Valley move up the valley and drive their flocks up into the mountains via the Lukachukai Pass in June. Some of the Indians who winter in the Lukachukai Valley go some twelve to twenty-five miles farther south for the summer to the headwaters of the De Chelly and Del Muerto at Sehili and Wheatfields.

Farther south, in the area tributary to Fort Defiance in and around Black Creek Valley, there are no near lands low enough to be free from winter snow; and, though the area is comparatively populous in summer, few Indians remain through the winter. Most of the sheep are moved into the Chinle country to the west for that season. They move to the higher lands again in the spring, especially when it is dry, and on to the mountains when the snow melts and the feed starts. All have their ranges, and some sheep move as much as forty or fifty miles between summer and winter ranges.

NAVAJO AGRICULTURE

Most of the Indians who migrate as thus described practice very little agriculture. But in other parts the summer location is determined primarily with reference to agriculture. A number of small favorable areas are thus nuclei for summer settlements, and an increasing number are remaining more or less permanently in these places and devoting themselves primarily to agriculture. Thus we find Sehili to be a summer agricultural community at the base of the Tunitcha Mountains, on the western side, irrigated from the permanent mountain stream, Del Muerto, that flows through the valley.



FIG. 5

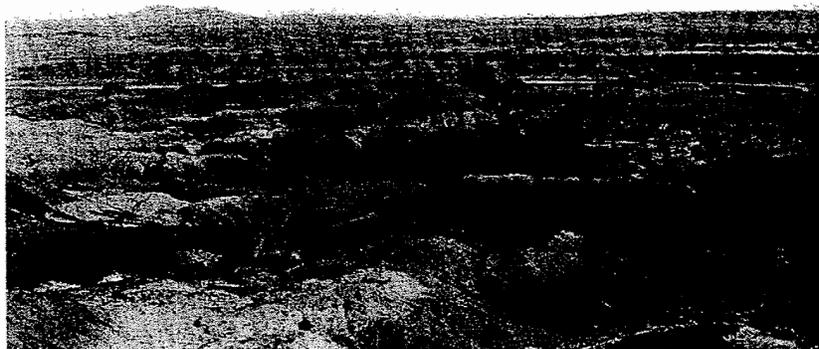


FIG. 6



FIG. 7

FIG. 5—Open grassy yellow pine forest, typical of the highest parts of the Navajo country. Tubby Butte, remnant of a thick ancient lava sheet, in the background. Tunitcha Mountains, Arizona.

FIG. 6—Brilliantly colored and virtually useless badlands, "Painted Desert," in Chinle formation, north of Adamana, Ariz.

FIG. 7—Road to Crown Point through Satan's Pass, Dutton Plateau. Piñon zone.

Likewise Lukachukai Creek supplies water for several hundred acres of fertile alluvial land on the fan at the mouth of its mountain gorge. The soil here is deep and fertile and becomes increasingly fertile toward the canyon. The district is irrigated by the permanent mountain stream and supports several hundred Indians. They farm mostly alfalfa, which is worth about \$28 a ton at Fort Defiance after a haul of sixty miles; and their greater prosperity is reflected in their homes. Somewhat similar communities are found elsewhere around the Chuska Mountains. On their eastern flank a rough-floored terrace, a mile or two in width, extends over outcropping beds of shale at the base of the yellow-gray cliffs of the sandstone formation that caps the mountain.⁴ About thirty springs emerge from the base of the sandstone between Tohatchi and Washington Pass, and more than a third of them are utilized to water the fields of prosperous Navajo farmers. They have both summer and winter quarters and produce grass, corn, and potatoes. The largest of the springs yields water enough for the fields of about fourteen Navajo families. A considerable area is also irrigated along the San Juan River under the wing of the Ship Rock agency. Some of this is farmed by the Indian employees of the agency, who have ten or fifteen acres each. About 2000 acres tributary to Captain Tom's Wash, a branch of the Chaco, are under ditch; but only 500 acres were under cultivation in 1928. Otherwise there is practically no cultivation east of the Chuska Mountains.

IN THE SAN JUAN AND CHACO COUNTRY

Along the San Juan, especially in the neighborhood of Ship Rock, the Indians move to the river for the summer months. They come here partly to utilize the farm lands along the river, partly for the water supply the river affords, and partly to save their winter pasturage. Mostly their hogans are found scattered on the terrace which rises abruptly a half mile to a mile away from the river. These summer sites are bare and desolate-looking, without shade or water near. They are located with reference to pasture convenience, the flocks being grazed on the lands above extending back from the river. Their fields are below the terrace on the river flat.

In the winter these people move back from the river to the mesas, usually not more than fifteen or twenty miles. The pasturage is thin in the river zone. Furthermore, it is cold as the country is open and the winds sweep along the river. The winter hogans are built, not on top of the mesas, but under their sheltering cliffs. Here the animals as well as the people can find shelter from the winds. Air drainage tempers the cold of the night, and the rocks absorb the heat of the

⁴ Gregory, *Water Supply Paper 380*, pp. 140-141.

sun during the day and radiate it during the night. Springs and seeps emerging from the bases of the cliffs, or in the washes, supply water. The mesas are also in the juniper zone, and wood is available for fuel. Coal is used when available, and in the San Juan section some of the Indians have their own little mines.

Essentially similar are the movements of the Indians in the Chaco country, south of the San Juan. There are no permanent streams there, but the Indians always know where water can be found; there are many springs or seeps unknown to whites passing through. The Chaco Canyon has an underground flow, as do some of its more important tributary washes. In these the Indians dig for water for both man and sheep. In fact the stream takes its name from the *charcos* found in it where tributaries enter. In the winter the Indians go back to the mesas, where they obtain water by digging in the washes coming out from them. Here, too, they find fuel and the protection of the sheltering cliffs.

CHINLE VALLEY AND WEST

From the Chinle Valley westward, as in the San Juan and Chaco valleys, the seasonal migrations are quite the reverse of those noted around the major highlands. Here the treeless valleys are wide and fuel is more distant. The Indians show a marked disinclination to haul fuel, it being to their notion easier to move themselves and their belongings. In the middle belt of the reservation, as represented especially by the Chinle and Pueblo Colorado valleys, they do some farming in the summer, depending for water upon the normal drainage of these washes, largely underground. East of this belt, as we have noted, the small areas suitable for farming are at high levels, where streams emerging from the mountains afford irrigation in small fertile alluvial valleys. Farther west, water and fertility are to be had only locally in the lower lands along or near the washes especially at the mouths of arroyos where the waters may be spread out over the land after rains. The Navajo agricultural practice is here very similar to that of their Hopi neighbors. And so, in order to farm, it is necessary to move to the valley bottoms in summer. In the winter the movement is from the valleys to the nearest mesas, where juniper or piñon can be found for fuel and water can be obtained from melting snow.

The juniper zone is also highly desirable for winter pasturage. The snowfall is not so heavy as to preclude grazing, as it is in the higher pine belt. Instead, the low-spreading branches of juniper and the sagebrush in the open spaces hold the snow which forms a shelter for the forage and the sheep grazing underneath. Such winter grazing is found at its best over the central and southern parts of the

Black Mesa. The Navajos who live there do not move off the mesa but make a circuit in summer, returning always to their winter hogan. Each clan has its definite grazing grounds and water holes which are respected by the others. The high, steep escarpment that borders the northern sides of the mesa prevents free movement from it in that direction.

The Indians of the Chinle Valley remain there until the corn harvest in October, then they move off to the margins of Defiance Plateau or of the Black Mesa. Some seventy-five or eighty Indians go for the summer into the Canyon De Chelly, which opens into the valley at Chinle. The canyon is famed for its towering walls of red sandstone. Its bottom is flat, of deep sand, and, except after heavy rains, dry; but water may invariably be found a short distance below the surface. In places the bottom is high and stable enough to support corn patches upon which the Indians depend.

Little patches of peach trees are also found in Canyon De Chelly, about the only place where they are cared for by the Navajos. The seedlings were originally brought in by the Spanish padres. The fruit is fine and of unique flavor; it does not ripen until late in September or early in October, when the Navajos go to the canyon in numbers.

During the peach season at the Hopi Mesas the Navajos come from twenty-five or thirty miles around to trade mutton or goat's meat for peaches. The Hopi women watch for their coming from the mesa heights, as eager to secure the meat as the Navajos are to secure the peaches. The Navajos stay around the mesas for some time eating as many peaches as they can. They also trade for the dried fruit, and the medicine men take a large quantity away to use for purgatives.

In the country of the washes, between the Black Mesa and the Little Colorado River, fuel is distant; and many of the Indians who farm along the Polacco Wash remain through the winter. Hopi Indians will spend three days in getting a load of fuel, but the Navajos have less patience. They are therefore dependent upon the light greasewood brush as the only available fuel, and in the severe weather their suffering is sometimes acute. At such times the children can be seen dragging in greasewood all day long. It is burned outside the hogans to get rid of the smoke, and the hot coals are taken indoors. In the distressing winter of 1918 these people died like flies, victims of influenza and the severe cold.

Some of the people of the washes go east to the Hopi Butte country in the winter. Although the grazing here is not so good as along the lower washes, some juniper grows on top of the buttes and mesas, and springs emerge from underneath the basalt that caps them. Most of the Indians living here move about within the area.



FIG. 8



FIG. 9



FIG. 10

FIG. 8—Greasewood Springs, a remote trading post near Lukachukai Valley, in the juniper zone. The greasewood, formerly abundant around the springs, has been tramped out.

FIG. 9—Navajo flocks brought in to water, near Crown Point, N. Mex.

FIG. 10—Navajo hogans, or log huts, the acme of Navajo house building, near Red Lake, north of Fort Defiance, Ariz.

THE WATER SUPPLY FACTOR

In the region west, toward the Colorado River, water is a more important factor in controlling migration than farther east. As in the middle belt the shift is toward the timber in the winter months and toward the non-timbered sections in the summer, to seek land where small crops may be produced. A number of Navajos farm on the Tuba Oasis in summer, but for the winter they go back to the rivers in the canyons to the north where juniper is available. In the dry seasons of spring and fall no water can be had on the higher, timbered sections represented by the White Mesa, the western border of the Black Mesa, and the canyon country to the north; it must be sought at lower levels. As the rains come the Indians move farther back to the higher and better pastures, whether it be summer or winter. As necessity demands they move to the places with permanent water.

In the Klethla Valley, northwest of the Black Mesa, the water pockets are dry except in July and August; and so for most of the year the people either go to Red Lake to the southwest or seek the springs around the mesas. In the canyons of the Segi Mesas there are plenty of springs and even running water. Here one may see a number of cattle but very few Indians, as they prefer to be out in the open country at Marsh Pass, Kayenta, and Monument Valley. One reason for this may be the presence of many cliff dwellings, which they call "cities of the dead."

Much of the western end of the reservation is quite desert and for the most part uninhabited; but in the summer time local showers cause the grass to spring up, and, as is characteristic of desert borders, the Navajos follow the showers seeking pasture for their flocks. Hollows in the rocks called "pot rocks," or "tanks," catch and hold enough water temporarily for the flocks and their herders.

The government has considerably improved the water supply on the reservations by the development of seeps and springs and by the digging of wells. About twenty wells are now scattered along the Chinle and Beautiful valleys, and about twenty-five have been dug on the Hopi Reservation. Fifteen of these, in the southeast of the Black Mesa area, are for the Navajos. There are also about seven pumping wells along the Pueblo Wash and about nine in the Lukachikai Valley. On other parts of the reservations the wells are widely scattered. In the Chinle district the stock doubled after the wells had been dug. The Navajos show no disposition to cluster closely around the wells or springs. They may build their hogans some miles away from any water supply, for the sake of privacy. If they live at a distance from a well or spring they drive their flocks to it every other day in summer or only once a week in winter. They also bring

barrels by wagon and carry back a domestic supply. Man and beast get along with a remarkably small amount of water.

ADMINISTRATIVE DIFFICULTIES

Considerable difficulty has been experienced in the eastern Navajo jurisdiction of New Mexico.⁵ For centuries Navajos have occupied and roamed over this area, which unlike the other reservations is public domain open to settlement. In 1887 the General Allotment Act was passed providing for Indian allotments on the public domain. The semiarid character of the country and the Navajo's pastoral economic basis do not lend themselves to successful allotment. But allotment is proceeding nevertheless. Increasing pressure is being brought by whites to drive the Indian nomads back onto the other reservations where allotment is unnecessary; but these lands are already overpopulated and overgrazed. Considerable difficulty is experienced in getting the Indians to stay on the allotments, and many of them are incapable of supporting even a Navajo family.

Two other difficulties present themselves in this area. First there are a number of homesteaders, mostly Mexican sheep herders, that are a constant source of friction with the Indians. Second, in order to encourage the building of the Atlantic and Pacific Railway, now the Santa Fe, alternate sections of land extending back fifty miles from the railway were granted. The Indians have wandered over these lands without recognizing boundaries. Others have established homes and water storage for which they cannot get title. The railways are also reluctant to make exchanges, as they could not get title to minerals on lands taken in exchange.

On all the reservations the problems due to overgrazing are receiving attention. Large numbers of Indian ponies, almost worthless, have ranged the country, helping to reduce its forage. A few families have owned as many as 300 to 400 ponies each, which are useless because never broken. One of these horses eats as much as eight sheep and drinks about nine gallons of water to a quart drunk by a sheep. An effort is being made to reduce the ponies to the small number needed for hauling, and, wherever the Indians can be induced to part with them, they are taken and sold for from \$2.00 to \$2.50 in Gallup, N. Mex., where a plant has been established that grinds them up into chicken feed. The use of horse meat is also increasing as a more profitable disposition of the ponies.

THE NAVAJO HOUSE

The Navajos cling tenaciously to their primitive hogans, or "quagans," as they were originally called. In terms of sheep some

⁵ Included within this jurisdiction are three outlying groups of Navajos, numbering about 750, at Puertecito, Canoncito, and immediately east of the Zuñi Indian Reservation.



FIG. 11



FIG. 12



FIG. 13

FIG. 11—Navajo hogan and great recess, or cave shelter, in Wingate sandstone, used as a sheep corral. In New Mexico, near Leupp, Ariz.

FIG. 12—Navajo hogans, Western Navajo Indian Reservation.

FIG. 13—Typical primitive winter hogan in piñon belt, with scattered yellow pine, just above Sehili Valley.

of the Navajos are now quite wealthy, having as many as 1500; but they do not save money, and a larger income may mean little or no improvement in living conditions. As with nomadic peoples generally, the shelter must be of simple construction, easy to build, and of little loss if abandoned. Moveable property must be reduced to a minimum; hence Navajo homes often belie the actual condition of their occupants. The hogans are always at some distance apart, never in villages but grouped into communities where conditions are favorable for pasturage, water supply, and possibly some farming. The hogan is suggestive of the Indians of the plains, whence the Navajos are believed to have come. There is considerable variety in the structures according to the kind of timber available, the season, the length of time the site is to be occupied, and the culture or wealth of the owners.

The summer hogans may be almost anything that can be called a shelter, as a frame covered with brush or a stone wall to protect from wind. The original and simplest type of winter hogan is somewhat conical. The structure is supported by five poles with forked ends, coming together at the top, with smaller poles laid closely together between and interwoven with boughs

of juniper or an available substitute, the whole overlain with bark or brush, which is in turn covered with earth. Another type, which lends itself to larger structure, is made by laying six or more logs or limbs in the form of a circle and building a dome, which is plastered with mud or covered with earth.

In the neighborhood of Fort Defiance and the valleys to the north we find the best-appearing Navajo homesteads—log huts or houses of the common square form with low gable roof. In a few cases stones are used for the walls. Other forms suggest an evolution from the primitive hogan described above and the square log house. In the same community with the log hut may also be found the simplest of hogans and all intermediate stages. While the log or stone hut containing a stove and chimney may appear more progressive, it is a doubtful advance. Tight and stuffy, it is inferior to the hogan from the sanitary point of view.

Superstitions also discourage house building. If anyone dies in a hogan, the devil is believed to be in possession. Such devil or *chindi* hogans are abandoned and carefully avoided henceforth. Pools and even canyons may likewise become *chindi*. Thus, while Canyon De Chelly is seasonally inhabited, Canyon Del

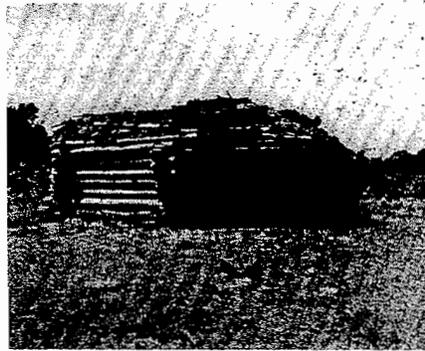


FIG. 14



FIG. 15



FIG. 16

FIG. 14—Navajo hogan near Sehili, Ariz. An intermediate stage in the evolution from primitive hogan to log hut.

FIG. 15—Stone construction in Navajo hogan, near Crown Point, N. Mex.

FIG. 16—Hogan of Piute Indians, Southern Ute Reservation, Colorado. The Piute hogans are built like the larger, or medicine, hogans of the Navajos.

Muerto (Canyon of the Dead), a branch taking its name from a massacre of many of its inhabitants by the Spaniards, has been abandoned by them ever since. In order that they may greet the daily appearance of their chief god, the sun, all hogans have their doors to the east and are thus an unfailing compass in the Navajo country

NAVAJO ARTS

This life, so closely adjusted to natural circumstances, is of comparatively recent date. Before the introduction of domestic animals the pastures of their country were of no direct use to the Navajos. They were then primitive nomads, an extremely poor people, subsisting largely upon roots and seeds and clothing themselves with the skins of such animals as they killed. The Navajos took no part in the insurrection of the Pueblo Indians of New Mexico against the Spaniards from 1675 to 1680 but took advantage of the struggle to rob and plunder and in this way secured many sheep and goats and captured some of the Pueblo women. Upon the return of the Spaniards many Pueblo Indians joined the Navajos rather than live again under Spanish rule. From the Pueblo Indians living among them the Navajos learned the art of weaving and improved upon the art until today they are noted chiefly for their blankets. According to their own traditions they had learned to weave cotton from the cliff dwellers before they had sheep. As the art is recent with them, the designs are in the main comparatively modern; many of them have been suggested by artists and traders as improvements or elaborations of their cruder primitive designs. Hence the Navajo woman does not, as is commonly supposed, know the meaning of her designs, if they have any, unless sand paintings furnish the motive; and some of the sand paintings are not allowed to be copied.⁶

A few black and brown sheep are found in every flock to supply black and brown wool for the blankets. Thus four natural colors of wool are woven into their blankets; gray being obtained by mixing black and white. The bright red that predominated in the old, now rare, *bayeta* blankets was obtained by unraveling imported *bayeta* bought from the Spaniards. The material was also used in old squaw dresses, which are now rare and almost priceless. All of the primitive Navajo dyes are the products of the prairie and mountain flowers or of bark and roots. The homestead scene is hardly complete without the characteristic Navajo loom suspended from a pole lashed between two trees if near, or if not, between two upright posts set firmly in the ground. The total annual production of Navajo blankets

⁶ From the standpoint of art the sand paintings of the medicine men rival the blankets, but they are seldom seen by white people as they are purely ceremonial and must be destroyed at sundown. At the State Museum, University of Arizona, Tucson, under the direction of Dr. Byron Cummings, may be seen the only genuine Navajo sand paintings allowed to be preserved.

perhaps averages over \$800,000 in value. Many blankets are sold off the reservation, and of these neither traders nor agencies have any record. In 1923 the receipts from the sheep and the related blanket industry were estimated at \$350 for each Navajo family.⁷ In 1929 the same authority estimated the average family income from livestock at \$300, while as many as 2000 families engaged in weaving blankets had incomes averaging \$400 each. In spite of some reduction due to protracted drought, the Navajos are today estimated to possess 650,000 sheep valued at \$3,900,000; 200,000 goats valued at \$400,000; 30,000 cattle valued at \$750,000; 10,000 horses valued at \$150,000. Receipts from sales of wool, lambs, cattle, hides, pelts, etc., totaled a little over \$2,500,000 in 1928. This did not include livestock slaughtered for consumption.⁸

With the continued steady increase of Navajo population, some must necessarily leave the reservation. These people are certainly not yet to be numbered among the "vanishing Americans." And they and their country bid fair to hold out as an outpost of Indian culture and pure Indian population after all others have lost their identity.

⁷ C. E. Faris: The Navajo Shepherd and His Problems, *The Native American*, Vol. 25, 1925, Phoenix, p. 13.

⁸ Data supplied by C. E. Faris, District Superintendent of the Southwest, U. S. Indian Service, Albuquerque, N. Mex. From official correspondence, 1929.