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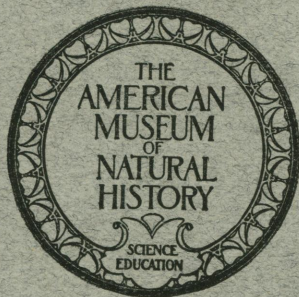
VOLUME XXXIII, PART V

THE HIDATSA EARTHLODGE

BY THE LATE GILBERT L. WILSON

Arranged and Edited

BY BELLA WEITZNER



BY ORDER OF THE TRUSTEES
OF
THE AMERICAN MUSEUM OF NATURAL HISTORY
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1934

THE AMERICAN MUSEUM OF NATURAL HISTORY

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INTRODUCTION

The following paper is based on material gathered by Doctor Gilbert L. Wilson in the course of his extended field-work among the Hidatsa Indians on Fort Berthold Reservation. Doctor Wilson first visited the Hidatsa in 1906 and began his field-work for the Museum in 1908. He was then, as well as on several immediately subsequent trips, accompanied by his brother, Mr. F. N. Wilson. Both investigators were much impressed with the importance of recording, as completely as possible, all the available information obtainable on the construction of the earthlodge, the use of which was then rapidly nearing complete extinction. In 1908 seven earthlodges were still standing on the Fort Berthold Reservation and Mr. F. N. Wilson embraced this opportunity to make the detailed structural drawings, groundplans, and diagrams of interior arrangement and equipment, which accompany the text. This unexcelled contribution by Mr. Wilson can scarcely be overestimated. His interest and labor have preserved the details of earthlodge construction, which would otherwise, like so many other culture traits, have been lost beyond recovery. The original sketches for all other drawings in the text should be credited to the skill of Edward Goodbird, an Hidatsa, who also acted as interpreter and informant.

The data here presented were accumulated over a period of twelve years, from 1906 to 1918. In gathering the information, Doctor Wilson pursued the same method described in reports¹ previously published by him; that is, he secured concrete accounts in the form of detailed narratives from various informants and later published them practically as they were recorded—with the resultant repetitions and contradictions.

Unfortunately, Doctor Wilson died in 1930, at which time only an insignificant part of the data dealing with the earthlodge had been transcribed from his field notebooks. It became necessary, therefore, to complete the manuscript from these notes. Since it seemed somewhat more practical to deviate from Doctor Wilson's method of presentation, we have attempted in the accompanying paper to synthesize and coordinate the data secured from the several informants. We have, however, followed Doctor Wilson's method in that wherever possible the informants are credited with the information presented in each section, and have also, wherever necessary, called attention to discrepancies and inconsistencies in the several accounts. This method of presentation

¹The Horse and the Dog in Hidatsa Culture (*this series*, vol. 15, part 2); Hidatsa Eagle Trapping (*this series*, vol. 30, part 4); Agriculture of the Hidatsa Indians, an Indian Interpretation (*University of Minnesota Studies in the Social Sciences*, No. 9, Minneapolis, 1917).

admittedly lacks much of the charm and vivacity of the narratives published in previous papers. But, in justification for the abandonment of Doctor Wilson's method of presentation, it may be said that the data on the earthlodge were, on the whole, more concrete, more definitely isolated, and less involved in the complete picture of Hidatsa life, than was, for example, the information on the horse and dog, and the descriptions of the earthlodge were not, as may be assumed, ruthlessly lifted from the narrative context.

Homely as is the earthlodge, and lacking the airy grace of the tipi, the complexity of the structure is impressive. No pegs, nails, or similar fastening contrivances were used; the completed structure was merely the result of a nicely calculated adjustment of its numerous parts, aided either by a minimum number of notches or offsets, or occasionally by natural forks or crotches in the posts and poles of the framework.

Despite the apparent wealth of detail here presented, it is obvious that much has been forgotten and lost since the earthlodge among the Hidatsa was replaced first by the log cabin and later by the frame house. For example, the tantalizing hints that setting up the four central posts was a special purchasable privilege, that any assistance rendered in building was repaid by a feast, that offerings were made and prayers recited to the center posts, etc., lead us to believe that the erection of an earthlodge by the Hidatsa may have had, in the past, a ceremonial and ritualistic significance, as among the Arikara. However, an examination of the earliest data available on the Hidatsa and the Mandan, as well, does not bear out this assumption. Early information on the earthlodge is extremely meager, the descriptions being in most cases sketchy and devoid of detail; consequently, the annotations in the footnotes merely call attention to such points of similarity or difference as were noted in the literature dealing with the Indians of the Upper Missouri.

We have not attempted in this paper to consider the historical significance of the distribution of the earthlodge. Its origin and diffusion have been discussed at some length by Linton¹ who believes it to have been developed from a single original form; also, that the earthlodge had a southern origin with close relations to the thatched and earth-covered houses of the lower Mississippi Valley and the southern Plains and that its earliest forms were related to the earth-covered houses which had their distribution "from eastern Siberia down the west coast of America and across the Southwest."

¹Linton, Ralph, The Origin of the Plains Earth Lodge (*American Anthropologist*, n.s. vol. 26, 247-257, 1924).

Russell Reid¹ has recently reviewed the descriptions published by early explorers, as La Verendrye, Lewis and Clark, Maximilian, Henry and Thompson, Catlin, etc. The North Dakota State Historical Society in 1930 initiated a project to reproduce, as an historical exhibit on the State Capitol grounds in Bismarck, an authentic full-sized replica of an earthlodge. To supplement the very inadequate data available in the literature, information on the details of construction was obtained from a daughter of the last Mandan corn priest which description² should be compared with that presented in the following paper.

We have not felt it necessary to make a detailed comparative study of resemblances and differences among those tribes—Arikara, Mandan, Hidatsa, Oto, Omaha, Pawnee, Ponca—known to have used the earthlodge, but a survey of the available accounts, inadequate though they are, has left an impression of great homogeneity in structure. Were it possible to recover at this late date all the details of construction, the attendant ceremonies, and other significant points, we would doubtless find the general pattern very similar throughout, with tribal distinctions and differences playing a minor part in the story.

BELLA WEITZNER.

¹The Earth Lodge (*North Dakota Historical Quarterly*, vol. 4, no. 3, April, 1930).

²Will, George F., The Mandan Lodge at Bismarck (*North Dakota Historical Quarterly*, vol. 5, no. 1, October, 1930).

LIKE-A-FISHHOOK VILLAGE¹

The site of Old Fort Berthold and its vicinity, the name given by the whites to the Hidatsa village at Like-a-fishhook-bend, is shown in Fig. 1, a map drawn by Goodbird, under the direction of Wolf-chief, with the

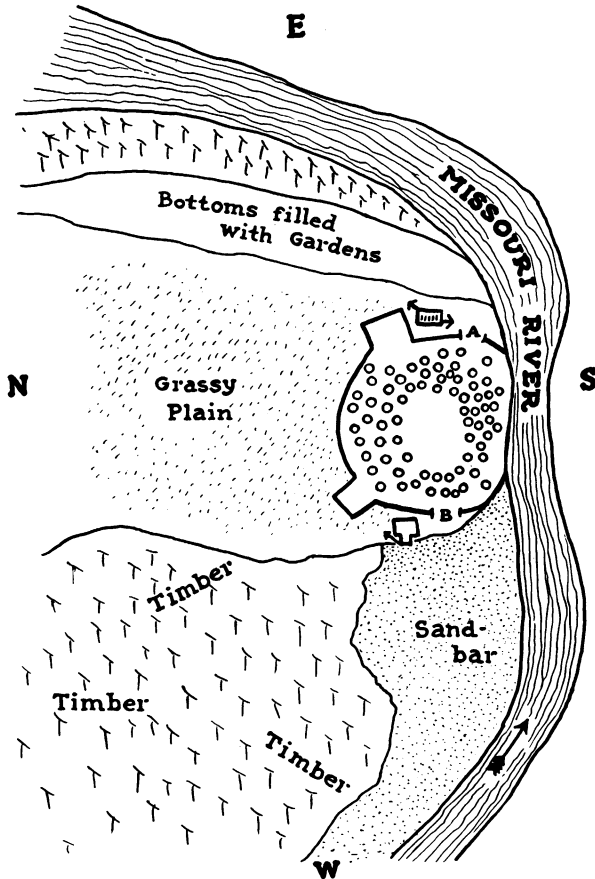


Fig. 1. Site of Like-a-Fishhook Village (Old Fort Berthold) and its Environs.

assistance of Butterfly. An enlargement of the section of the map representing the village proper appears in the following illustration (Fig. 2). Commenting upon the map, Wolf-chief stated that though he and Butter-

¹Based on information secured from Wolf-chief, an Hidatsa, born about 1849, in July, 1911, and August, 1913, with supplementary data from other informants as noted in the text.

fly did not remember the position of every lodge in the village,¹ the central circle was accurate, and the position of the remaining lodges approximate, based on their memory of the lodges which stood behind each one in the central circle.

In August, 1912, Buffalo-bird-woman, an Hidatsa born about 1839, stated that the Hidatsa were accompanied by many Mandan families, although the greater part of that tribe did not join them until later. In substantiation of this statement she listed the following names of Mandan heads of lodges or families:—

Dressed-like-a-Sioux	Bite-nose
Flying-eagle	Moves-slowly
Bird's-bill	Bears-on-water
Mule-quiver	Big-turtle
Big-foot-bowl	Goes-along-tinkling and sisters owned one lodge and dwelt together
Bob-tailed-bull	

When the Hidatsa arrived at Like-a-fishhook-bend seven years after the smallpox year (about 1845) to build a village, they camped at first in tipis a little north and west of the position of the lodge numbered 1 (Small-ankle's) on the map (Fig. 2). All the important medicinemen sat in a circle to consider the plan for laying out the village. Wolf-chief narrated as follows:—

Missouri-river then owned the two skulls of the Big-birds ceremony. The shrine bundle of this ceremony was the most important in the tribe. Therefore the medicinemen depended on Missouri-river to lead in the suggestions. They said to him, "Your gods are strongest. What plan do you suggest?" Missouri-river rose with the two skulls, walked around in a wide circle, and returned to the starting place. "We will leave a circular open space as I have marked," he said. "Thus shall we plan the village!" Addressing Big-cloud, Small-ankle's son-in-law, who lived in Small-ankle's lodge, he said, "Your gods are strong. Where do you want your earthlodge?" Big-cloud answered, "Where the shrine now stands and facing the west, for my gods are birds that come from the west,² and also the thunders. Thus I am sure we will have an abundance of rain. I am sure we will live here a long time and our children and our fields will thrive. Big-cloud had once seen a vision of a thunderbird."

Has-a-game-stick was next asked to select a site for his earthlodge. "You stand up," they said. Has-a-game-stick did so and said, "My god is the Sun-set woman. I wish my lodge to face the sunset. Then I think the Sun-set woman will remember me; I will pray to her and I hope she will hear me. Then the village will have abundance and enemies will not take it."

Then the medicinemen addressed Bad-horn. "You stand up and choose a place for your earthlodge!" "My gods are the (grizzly) bears," said Bad-horn. "The

¹Cf. with Matthews' description of the village at Fort Berthold (Matthews, Washington, *Ethnography and Philology of the Hidatsa Indians, Miscellaneous Publications, No. 7, United States Geological and Geographical Survey, Washington, 1877*), 4.

²He refers probably to the fall migration of eagles. The birds of the Big-birds ceremony were eagles.—G. L. W.

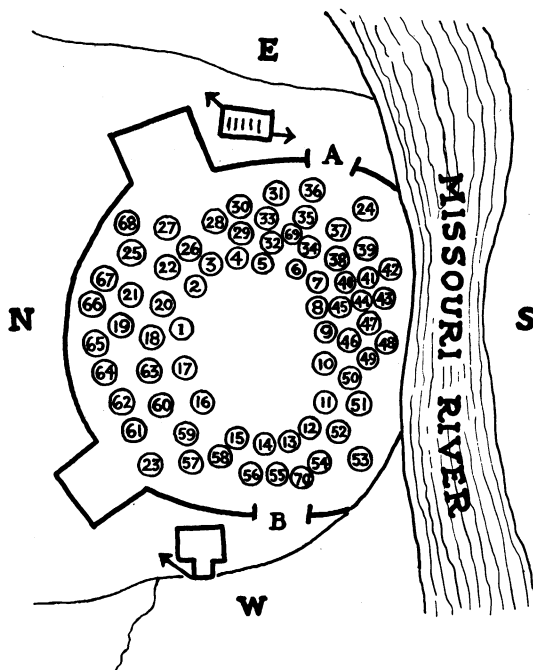


Fig. 2. Position of Lodges in Like-a-Fishhook Village. 1, Small-ankle; 2, Has-a-game-stick, one wife; 3, Has-a-game-stick, a second wife; 4, Cherry-necklace; 5, Crow-paunch; 6, Mussel-necklace; 7, Kit-fox-fat; 8, Bear-heart; 9, Feather; 10, Other-kind-of-wolf; 11, End-rock; 12, Bear-nose; 13, Missouri-river; 14, Porcupine-pemmican; 15, His-red-stone; 16, Black-panther; 17, Dried-squash; 18, Dog's-urine; 19, Red-belly; 20, Poor-wolf (or Lean-wolf); 21, Four-bears; 22, Wolf-walks-with-the-wind-at-his-back; 23, Blue-stone; 23, Reddening-a-knife; 25, Bowl; 26, White-dog; 27, Small-bull; 28, Rough-arm; 29, Hawk; 30, Wears-a-snake-coat; 31, Crow-heart; 32, Cherry-necklace, a second wife; 33, Dog-cries; 34, Full-of-honor-marks; 35, Prairie-chicken-tells-lies; 36, Big-bull; 37, Prairie-chicken-cannot-swim, one wife; 38, Prairie-chicken-cannot-swim, another wife; 39, Goose; 40, Wolf-eye; 41, Eye-has-no-water; 42, Bad-horn; 43, Frost-mouth; 44, Magic-bird; 45, Flying-eagle; 46, Bloody-mouth; 47, Wooden-lodge; 48, He-raises-all-hearts; 49, Dry-of-milk; 50, Big-black; 51, Lone-buffalo; 52, Thrust-in; 53, Skin-worn-through; 54, Old-woman-crows; 55, Butterfly; 56, Nutadokic; 57, One-horn; 58, Paints-shoulder-yellow; 59, Man-has-long-hair; 60, Blacks-his-shield; 61, Intestines (or Guts); 62, Man-smells-bad; 63, Little-bear; 64, Wolf-head; 65, Bull-has-spirit; 66, Seven-bears; 67, Black-horn; 68, Paints-tail-red; 69, Red-thigh; 70, Has-a-game-stick, a third wife.

mouths of bears' dens always face the north. Therefore I want my lodge to open toward the north; my bear gods will remember me and I will remember them and I will wish this village to stand a long time." What Bad-horn said of (grizzly) bears is true; they always have the mouths of their dens toward the north.

They told Missouri-river to stand up and select a place. Missouri-river took the two skulls and singing a mystery song walked around the circle he had marked out, pointing his right hand toward the center and moving in a sunwise direction. Three times he paced around the circle and the fourth time he stopped at the position of his lodge site (Fig. 2, No. 13), and prayed: "My gods, you are my protectors. Protect this village and I am sure it will stand long. Also, send rains that the gardens may grow. The children will grow up strong and healthy because my shrine is in the village." Then Missouri-river said to the other men, "This is all. Rise. The rest of you may choose lodge sites, but keep the circle open as I have marked it."

In the village, some new lodges were built every year and others were torn down, so that there were continual changes. The earthlodges were usually set up in a circle facing an open space in the center. The circle of lodges was one, two, or three lodges deep, as the number demanded. About the year 1861 the lodges stood approximately as shown on the map (Fig. 2).

Old Fort Berthold, or Like-a-fishhook village, was fortified¹ in old times by a palisade about eight feet high constructed of tree trunks or small logs, some round and some split, set upright in a trench, as closely as possible, and the trench was then filled. Earth was thrown up against the palisade to a height of about three feet, with a ditch about three feet deep on the inside. Fig. 3 is a rude diagram in vertical section of the palisade fence, showing the ditch on the inner side and an arrow thrust through the loophole. The palisade was built to such a height as to make it impossible for an enemy to climb over it and loopholes for muskets and arrows were cut in it.

¹Friedrich Kurz in his journal for 1850 states that the Hidatsa village at Fort Berthold consisted of eighty earthlodges, so well surrounded by palisades that one could see the lodges only after passing inside the gate. He remarks also that the Hidatsa dared not wander far from the palisades for fear of attacks by the Sioux (*Aus dem Tagebuch des Malers Friedrich Kurz über seinen Aufenthalt bei den Missouri-Indianern, 1848-1852, Bearbeitet und mitgeteilt von dem Neffen des Malers, Bern, 1896*).

According to Matthews (*ibid.*, 10) these palisades or fortifications which consisted, in the main, of ditches and stockades, were maintained at Fort Berthold until 1865, when they were destroyed and used for firewood.

Writing of his visit to the Hidatsa village a few years after Kurz, Henry A. Boller (*Among the Indians. Eight Years in the Far West: 1858-1866. Embracing Sketches of Montana and Salt Lake*, Philadelphia, 1868) remarks: "The lodges were precisely like those of the Rees and the village was similarly built upon a commanding bluff, surrounded by a fine expanse of prairie . . . one side protected by the swift current of the Missouri, and the remainder by pickets." (37).

According to Bradbury the Arikara villages were also surrounded by fortifications for he writes: "I quitted the feast, in order to examine the town, which I found to be fortified all round with a ditch, and with pickets or palisadoes, of about nine feet high. The lodges are placed without any regard to regularity, which renders it difficult to count them, but there appears to be from 150 to 160, and they are constructed in the same manner as those of the Ottoes, with the additional convenience of a railing on the eaves: behind this railing they sit at their ease and smoke." (Bradbury, John, *Travels in the Interior of America in the Years 1809, 1810, and 1811; including a description of Upper Louisiana, together with the States of Ohio, Kentucky, Indiana, and Tennessee, with the Illinois and Western Territories, and containing Remarks and Observations useful to Persons emigrating to those Countries*. Liverpool, 1817, 114). Cf. also Brackenridge, H. M., (*Journal of a Voyage up the River Missouri performed in eighteen hundred and eleven*. Second Edition. Baltimore, 1816), 136, 143, and Maximilian, Prince of Wied, (*Travels in the Interior of North America*, 3 vols., Edited by Reuben Gold Thwaites, Cleveland 1906), vol. 2, 335.

Bastions¹ were also placed along the palisade. Although these projected outward beyond the line of the fence, they were nevertheless a part of it. The bastions were provided with a platform, mounted by a small notched log ladder (Fig. 4) and constructed much like the stage used by a garden watcher. The platform rested on four forked posts of no

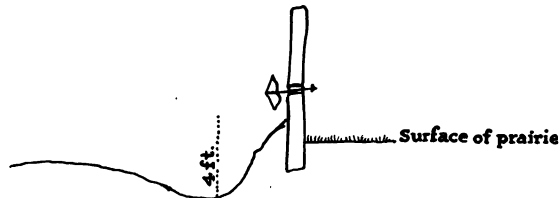


Fig. 3. Vertical Section of Palisade Fence in Like-a-Fishhook Village.

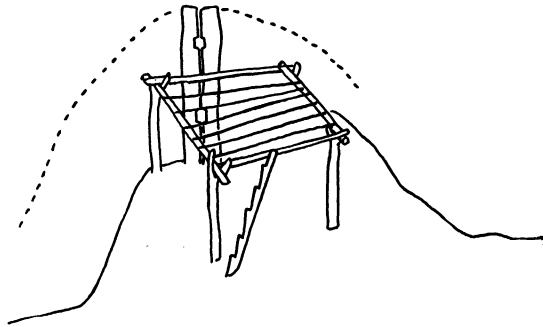


Fig. 4. Diagram of Bastion with its Platform and Ladder. The platform is floored with puncheons, but in this drawing by Edward Goodbird, the wall beyond is also shown. The dotted line indicates the top of the palisade.

¹Maximilian (vol. 2, 268-269) describes a Mandan village, with its palisades and bastions, in some detail: "Their villages are assemblages of clay huts, of greater or less extent, placed close to each other, without regard to order. . . . The circumference forms an irregular circle, and was anciently surrounded by strong posts, or palisades, which have, however, gradually disappeared as the natives used them for fuel in the cold winters. At four places, at nearly equal distances from each other, is a bastion built of clay, furnished with loop-holes, and lined both within and without with basket-work of willow branches. They form an angle, and are open towards the village; the earth is filled in between the basket-work; and it is said that these bulwarks, which are now in a state of decay, were erected for the Indians by the Whites."

Catlin (vol. 1, 81) who preceded Maximilian, states that the Mandan village was on a bluff forty or fifty feet above the Missouri. The landward side was protected by "a strong piquet, and a ditch inside of it, of three or four feet in depth. The piquet is composed of timbers of a foot or more in diameter, and eighteen feet high, set firmly in the ground at sufficient distances from each other to admit of guns and other missiles to be fired between them. The ditch (unlike that of civilized modes of fortification) is inside of the piquet, in which their warriors screen their bodies from the view and weapons of their enemies, whilst they are reloading and discharging their weapons through the piquets." (Catlin, George, *Letters and Notes on the Manners, Customs, and Condition of the North American Indians*, Third Edition, 2 Vols., London, 1842).

These statements are significant since many of the circular earthworks, with inside ditches, in the Ohio Valley may have been of this character. If a row of palisades were set up on one of these walls, the inside ditch would serve the same purpose as in the village observed by Catlin.

Cf. also *Original Journals of the Lewis and Clark Expedition, 1804-1806*, Edited by Reuben Gold Thwaites, New York, 1904, vol. 1, 208.

great height. Loopholes were cut in the palisade both above and below this platform. If attacked, the villagers shot through these loopholes, some using those above and some those below the platform. At the east and west two gates swung on hinges. The white men at Fort Berthold took part in the construction of these palisades. Two forts (quarters for soldiers) stood at the east and west and a sentry was constantly on duty at the point marked by an arrow in the plan (Fig. 2). Fig. 4 is a crude diagram of a bastion with its platform and loopholes.

BUILDING AN EARTHLODGE¹

The erection of an Hidatsa earthlodge was not strictly an individual, but rather a community² task, in the sense that an Hidatsa desirous of building a new earthlodge called upon his fellow villagers for assistance. For the services so rendered those assisting were entitled to all the residue left from trimming the poles. Payment was also made in the form of a feast when the structure was completed. The first requisite, therefore, was to accumulate the provisions for a feast, usually meat and vegetable foods, as well as a quantity of bone grease. Bone grease, or marrow fat, was not obtained by cracking the leg bones and scraping out the marrow, but by pounding them, especially the joints, boiling the crushed pieces, and skimming the grease with a horn spoon. The bones of one buffalo yielded about five pounds or two quarts of this edible fat. Sometimes the marrow fat of several buffaloes was collected for such a feast.

Though lodge building was essentially woman's work, the decision as to the actual size of the lodge was said to rest with the man.

THE FOUR SUPPORTING POSTS

Before an earthlodge was raised, the four great central supporting posts³ (*iptsi akú topa*, posts that are four) had to be prepared and erected. Only a few women in the village possessed the right to superintend the trimming and raising of these four sacred foundation posts and the four great beams (Cf. plans of Wolf-chief's earthlodge, Figs. 11-14) resting on these poles.

Buffalo-bird-woman, who was one of the select few who had this privilege, had acquired it from her mother (ceremonial mother?), paying

¹This section is based practically in its entirety on information supplied in 1909 and 1918 by Buffalo-bird-woman, an Hidatsa born about 1839. To this have been appended data on specific points furnished by Hairy-coat, born about 1836, and his wife, Not-a-woman.

²Maximilian (vol. 2, 270) says of the Mandan, "The men and women work together in erecting these huts, and the relations, neighbors, and friends, assist them in the work." See also Matthews, *ibid.*, 5.

Among the Omaha also, as reported by Fletcher and La Flesche (Fletcher, Alice C. and La Flesche, Francis, The Omaha Tribe, *Twenty-seventh Annual Report, Bureau of American Ethnology*, Washington, 1911, 97) lodge building was a coöperative task of the men and women, the men marking the site and cutting the heavy timber.

³Cf. Maximilian's account of the Mandan, where he definitely states that there were four central posts (vol. 2, 270) in contradistinction to the statement by Will and Spinden (Will, G. F. and Spinden, H. J., The Mandans. A Study of their Culture, Archaeology and Language, *Papers, Peabody Museum of American Archaeology and Ethnology, Harvard University*, vol. 3, no. 4, Cambridge, 1906, 107) that they used either four or five center posts.

The Omaha, on the other hand, set up from four to as many as eight crocheted supporting posts, about ten feet high (Fletcher and La Flesche, *ibid.*, 97).

According to Brackenridge (*ibid.*, 142), the Arikara also set up four forked posts. These were about fifteen feet high and about twenty feet apart.

The Pawnee (Dunbar, John B., The Pawnee Indians, their History and Ethnology, *Magazine of American History*, vol. 4, no. 4, April, 1880, 273) used six or eight forked center posts about twelve feet in height.

Compare with this also the description of the Osage lodge in James, Edwin, *Account of an Expedition from Pittsburgh to the Rocky Mountains performed in the Years 1819, 1820*. Compiled from the Notes of Major S. H. Long, Mr. T. Say, etc., 3 Vols., London, 1823, vol. 1, 112.

her a suit of finely tanned skins for it. She claimed to have superintended, in the course of her lifetime, the building of ten earthlodges, eight of these of the flat-topped variety, as well as the cutting and fitting of eleven skin and two duck tipis, making a total of twenty-eight dwellings,—not an inconsiderable accomplishment even for a long lifetime. Her prerogatives were recognized by the entire village and she was bound to perform this service for anyone requiring it, and, in turn, received a carefully dressed soft-tanned buffalo skin and a large wooden bowlful of meat and other food.

A square place was leveled off on the ground for the lodge site.¹ At the corners of the central space, the places for the four posts, or the post holes in which they were to stand, were marked. The post holes were carefully dug with digging-sticks which were similar to but longer than those used in agriculture.

The loose earth was cleared from the holes with the hands. When the holes became too deep and the bottom could not be reached easily the earth was removed with large buffalo horn or Rocky Mountain sheep horn spoons. Dug to a depth of about twenty-seven inches, the holes were just large enough for the posts, each of which was carefully measured and its hole dug to fit exactly. This was not only to assure firmness for the posts, but also that their tops, when the four were raised in place, all stood at exactly the same height from the ground, ordinarily about eleven and a half feet.

A new lodge was quite commonly built on the site of an old earthlodge that had been wrecked, and though no excavation was made for the floor of a new lodge, the frequent sweepings and constant wear of the earth floor,² after the course of years, gave the appearance of an ex-

¹After a lodge site was chosen, the Omaha marked with a stick "the spot where the fireplace was to be, one end of a rawhide rope was fastened to the stick and a circle twenty to sixty feet in diameter was drawn on the earth to mark where the wall was to be erected." (Fletcher and La Flesche, 97).

²Mr. F. N. Wilson adds on this point that none of the Hidatsa would admit that the lodge floor was excavated, nor did he find definite evidence of such excavation in the lodges he examined. However, since most families customarily retained their assigned positions in a village and if the village remained for any length of time in one place, each lodge was probably rebuilt several times. In rebuilding, all the earth from the roof was pulled down around the lean-to puncheons. This circumstance, together with the fact that the lodges were quite close together, that there was a constant washing down of earth from each, and a more or less regular accumulation of debris, would readily account, in his opinion, for the assumption that the floors were excavated. Doctor Wilson's notes contain no information to the contrary, yet we find that Matthews (*ibid.*, 4) makes the definite statement that "they often dig down a foot or more, in order to find earth compact enough to form a good floor, so, in some lodges, the floors are lower than the general surface of the ground on which the village stands." Referring to the Hidatsa village at the mouth of the Knife River Henry and Thompson state: "The Big Bellies' huts are constructed in the same manner as those of their neighbors, excepting that the ground is dug out about four feet below the surface, which makes them deeper than the others." The Mandan earthlodge was also "dug out about 1½ feet below the surface of the earth." (Henry, Alexander and Thompson, David, *New Light on the Early History of the Greater Northwest*. 3 vols. Edited by Elliott Coues. New York, 1897, vol. 1, 348, 338). Catlin (vol. 1, 81) goes so far as to call the Mandan village semi-subterranean stating that the floor of the lodge was excavated to a depth of two feet.

cavated floor.¹ It was often necessary to clear the stumps from the old post holes, so that new logs could be set in them (Fig. 8). The earth for six inches around the post was dug away. A stout ash pole was rigged with a thong bound in a notch at the end. The thong was then made into a noose and passed around the stump as low in the ground as possible. Then two women, resting the ash pole on a log rolled under-

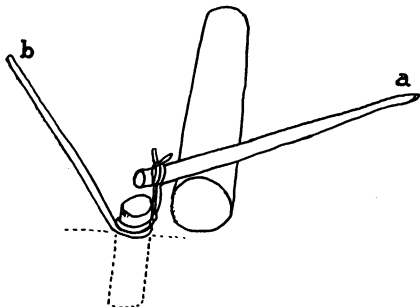


Fig. 5. Method of pulling out an Old Stump in Preparation for Building an Earthlodge.

neath, plied the pole like a lever (Fig. 5). At the same time, another woman pried at the stump on the opposite side (Fig. 5) with a stout ash stick. In preparation for pulling it out, the women drove an ax blade into the center of the stump, splitting it slightly. The ax blade was pulled out and the stump, thus loosened, was easily withdrawn.

Since an old lodge was usually wrecked in the spring, often before the ground had thawed out, coals were put in the old post holes to thaw the ground so they could be cleared and dug out to receive the new posts. When a post had been broken off and the rotten end was in the ground, fire was often used to thaw the ground so the rotted base could be removed.

The new posts were very heavy, about twelve to eighteen inches in diameter, depending on the size of the lodge, and thirteen and about three-quarter feet long or longer, and supported four massive beams. Large heavy posts insured a longer lasting lodge. The usual life span of an earthlodge was ten or twelve years. Posts and beams were cut by the woman the preceding summer and dried and were brought to the village

¹Fletcher and La Flesche describe the Omaha procedure in preparing the floor as follows:—"The sod within the circle was removed, the ground excavated about a foot in depth, and the earth thrown around the circle like an embankment. . . . Much labor was expended on the floor of the lodge. The loose earth was carefully removed and the ground then tamped. It was next flooded with water, after which dried grass was spread over it and set on fire. Then the ground was tamped once again. This wetting and heating was repeated two or three times, until the floor became hard and level and could be easily swept and kept clean." (Fletcher and La Flesche, 97, 98.)

Bradbury (*ibid.*, 56) in his description of the Arikara earthlodges observed by him states that "I found the length of the porch to be an inclined plane to the level of the floor, about two and a half or three feet below the surface of the ground. . . . In the centre, a circular space of about eight feet in diameter is dug, to the depth of two feet; four strong posts are placed in the form of a square, about twelve feet asunder, and at equal distances from this space. . . ." But compare with this the statement by Will and Spinden (106) in which they differentiate between the Mandan and Arikara earthlodge stating that the latter do not excavate the floor. In May 1810 Bradbury visited an Oto village on the Platte River and found the floors of the earthlodges had been excavated.

See this series, vol. 22, 330-331, for a discussion by Mr. George F. Will of the archaeological evidence for tribal distinctions in the excavation or non-excavation of the floor of the earthlodge.

Dunbar (273) in describing the building of the Pawnee earthlodge denies that the floor was excavated though he states the accumulation of earth around it was likely to give that impression.

in winter when snow lay on the ground by the men who dragged them over the snow with rawhide ropes.¹ One informant stated that drift timber stranded on the Missouri sand bars was preferred to freshly cut logs, since the former was said to last longer.

TRIMMING AND SETTING UP THE POSTS

It was the particular task of the woman possessing this right to trim and prepare the four central posts and the four heavy beams, and to oversee their raising into place.

With an ax, a shallow notch about three inches deep was first cut in the top of each of the four posts. The two short projections forming the fork were called ears. These were only about three inches long. The lower two of the four beams rested in these notches. The fork was commonly cut in the root or butt end of the post because the trunk was wider at this end and provided a larger working surface.

Then the ends of the two upper and the two lower beams were prepared. The lower beams (about thirteen inches in diameter) were heavier than the upper ones (about eleven inches in diameter) and rested in the forks of the big supporting posts, held in place by the ears which made the fork. The ends of these two lower beams were cut square for a short distance, and each end fitted snugly into its fork. To assure accuracy in the adjustment of these beams, measurements were made with a small stick.

According to information supplied by Mr. F. N. Wilson, these heavier and longer lower beams were used in order to allow for the squaring of the ends in the ordinary sized lodge. Heavier lower beams were also doubtless used for large sized lodges, and more especially for the flat-roofed lodges to uphold the weight of the necessary additional timbers.

Occasionally also, when a larger lodge was desired, it was built with a so-called "tail," an unusually heavy beam which extended beyond the rear central post on which it rested (Fig. 6).

The two upper beams, unlike the lower ones, were rounded off at each end to permit the roof poles [rafters, or *atí-dútidu*] to lie evenly in place; on the under side, at each end, a piece the width of the stringer upon which it rested, was cut out, leaving a heel which rested against the lower beam. This prevented any slipping. (Cf. details of joints in

¹"When the Indians used to build sod houses [earthlodges] they clubbed together into a bee to raise the building. After the poles and logs were cut, a single day sufficed to raise the frame. I am told that at Old Fort Berthold the men used to bring in some of the timbers that were to make the supporting posts, after they had been cut, by hitching a lariat to one end and dragging them by hand one at a time to the village. Horses were scarce in those days." Rev. C. L. Hall, in 1909.—(Rev. Hall began missionary work among the Hidatsa about 1875.)

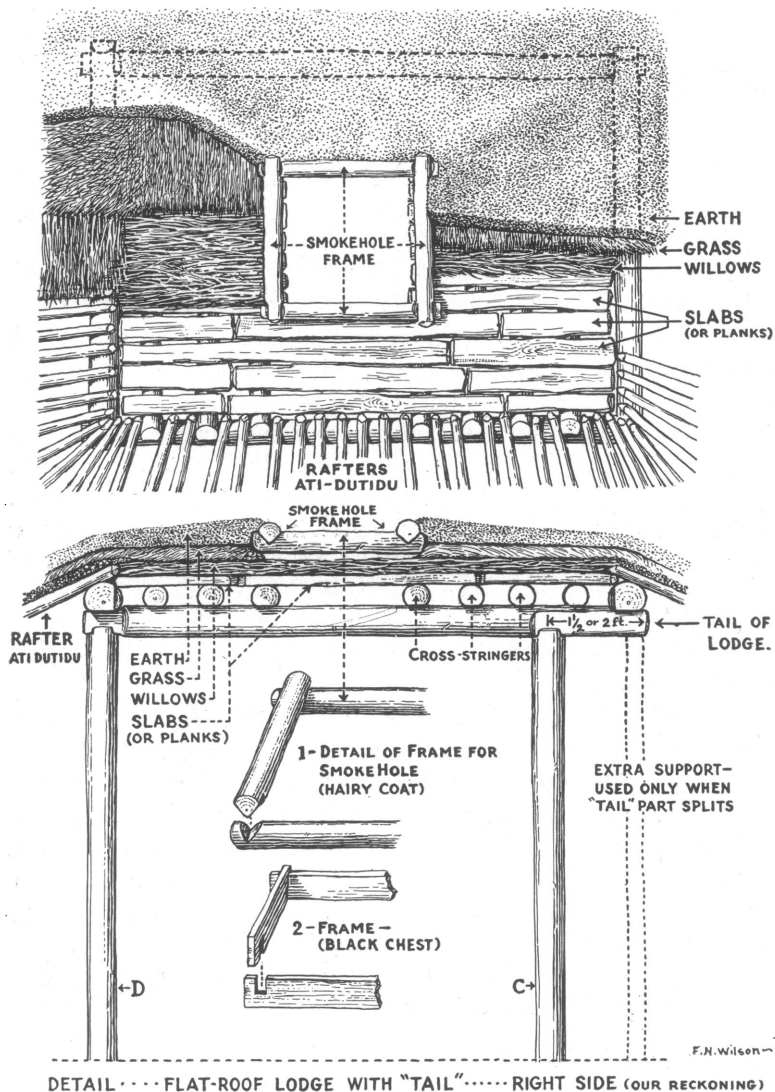


Fig. 6. Details of the Structure of a Flat-Roofed Earthlodge.

Wolf-chief's lodge, Fig. 17.) Squaring the ends of the lower beams and trimming the ends of the upper beams, had to be accomplished with great care so that the flat surfaces were made true. To test these, a little round stick was rolled back and forth over the surface to reveal any small inequalities. All the preparatory work on posts and beams alike was done with careful regard to measurements.

The surfaces of the four posts and beams were smoothed off neatly; any little projections were trimmed away and the bark peeled off. Part of this preparatory work, like peeling the bark, was completed before the posts were brought to the village. The small chips made in cutting were not touched with the hands but were removed with a buffalo bone because the Hidatsa believed the logs had worms in them and feared they might enter their bodies.

Notching and trimming the logs and beams having been completed, and the post holes dug by the woman possessing the right to do so, the earthlodge owner called a number of young men to assist in setting the posts in the holes and raising the beams on the posts. About twenty men were needed to raise one of these large posts. Standing on either side of a post as it lay on the ground, they thrust poles under it, and using them as levers, were able to raise the top end of the post with their bare hands.

Slings were then slipped under the raised end. To construct these, a number of poles a little heavier than tipi poles were laid on the ground in pairs and joined at one end by a short rawhide rope. A number of these having been prepared, two young men were appointed to manage each sling, one for each pole. The posts were raised one by one, and slid into the post holes by means of the slings. In hoisting the posts, the two poles of the sling were held crossed (Fig. 7). Besides the young men who managed the slings, others helped lift the posts with their hands, and some held the lower end of the post down to the hole into which it was to fall. Meanwhile two men held two poles in the edge of the hole (Fig. 7) to catch and steady the base of the post, and as the post was raised upright and the base slipped into the post hole, the two men holding the poles jerked them out deftly and sprang back. As each post fell into its hole, it was twisted around until it was in the proper position to receive the lower beams which were to the right and left of

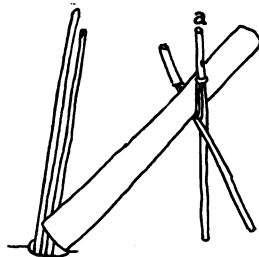


Fig. 7. Sling and the Method of Raising the Central Posts.

the fireplace as one faced the lodge door from within. When the posts appeared to be properly placed, a slender pole was laid across their tips to test their levelness.

After the four posts were raised, the two lower beams were placed in their correct positions. A rawhide rope was thrown over the fork of one of the posts now standing and looped over the end of one of the two beams. Some of the young men pulled at the rope while others manned the slings. The two upper beams were hoisted in the same manner, except that the rawhide rope could not be drawn through the forks of the posts because the lower beams lay in them.

These four beams were so placed that when the lodge was completed one of the upper beams lay on the side toward the door and the other, on the side toward the rear of the lodge. The two lower beams were always at the side of the lodge, extending front to back, and the upper beams were always at the front and back, extending from side to side.

The post holes were filled in after all four beams were in place, a labor purposely left to the last, so that after the beams were raised and laid, the supporting posts could be moved about slightly and adjusted for any little error of measurement that may have been made. Earth was then shoveled into the post holes and firmly packed.

To raise these four great central posts and the four cross beams usually occupied one day, though if the posts were of extraordinary size, more than one day might be required to set them up. This central structure formed an almost exact cube. The outer or *atúti* poles described below were almost exactly half the height of the foundation posts. Thus it was possible to place the roof poles at a good drainage angle, yet not at such a pitch that they were liable to slip off.

To the Hidatsa, the earthlodge was sacred; consequently, because the four great posts supported the earthlodge and "have life" as they said, offerings were made to them and prayers recited. In the old days, after the earthlodge was completed, a six days' task after the erection of the center posts and accompanied by an appropriate prayer, a buffalo skin or buffalo calfskin, carefully dressed and trimmed square, was bound neatly about each of the four supporting posts; later, brightly colored cloth was substituted.

THE EXTERIOR SUPPORTING POSTS

The exterior supporting posts (*iptsi aki atúti kúa*, posts that are on the *atúti*) were twelve in number, excluding the two outer posts of the covered entrance way (Figs. 11-14, 16). The two door posts and the

two posts to the right and left of the door and those in the rear of the lodge were somewhat higher than the remaining exterior posts. In an ordinary-sized earthlodge the door posts and those of equal height should be of a height equal to that which a woman is able to reach with her arm and hand extended straight up above her head. The shorter exterior posts were less by the length of a woman's palm, measuring from the wrist to the tip of the middle finger.¹ These exterior posts were ordinarily about thirteen inches in diameter.

The tops of the twelve² exterior posts were cut off level and did not have ears like the four great central posts. Smaller beams or stringers were laid on them. These stringers (Figs. 11-14, 16) were leveled somewhat on the under side at the ends and cut a little to fit snugly end to end. No nails, pegs, nor fastenings of any kind were used anywhere in the building. The length of these cross stringers was measured by the distance between the bases of the posts. A log was cut and used as a measuring rod. For the section of the earthlodge nearest the smoke hole, the largest and best logs were cut for cross stringers; inferior logs were left for other parts of the structure. The stringers were laid on the exterior posts, beginning at the door, the first stringer laid forming the lintel. Working to the right and left, the last stringer was laid in the extreme rear and was harder to fit into place than the others.

When all the exterior stringers were in place, lean-to puncheons (*atúti kúa mída*, or wood at *atúti*, from *atúti*, space under the puncheons, *kúa*, at, and *mída*, wood) of small logs were split and leaned against them, flat side inward, the lower end of each puncheon resting on the ground. The upper end was cut even with the top of the stringer against which it rested. The space under these lean-to puncheons was called the *atúti* and used ordinarily as a storage place. In old times the lean-to puncheons were split with wedges.

DOOR FRAME

The circle of exterior posts was always begun by setting up the two front or door posts. A door sill, a log section about nine inches in diameter, was carefully cut to fit between the two door posts, the ends being

¹The front and rear exterior posts were a trifle higher to make the lodge more symmetrical, as the beams on the central posts that lay on the door and rear sides were the two uppermost ones and hence lay five or six inches higher than the lower beams on which they rested. Considerable ingenuity is shown in this arrangement since the five inches gain in the height of the exterior posts at the door are a gain in the height of the doorway and also a gain in the height of the posts in the place of honor back of the fireplace where sacred objects were hung.—G. L. W.

²Wolf-chief's lodge had thirteen of these exterior posts.—G. L. W.

Maximilian (vol. 2, 270) gives the number of these posts for the Mandan earthlodge as "eleven or fifteen thick posts, four or five feet in height, between which other rather shorter ones are placed close together." Bradbury (56) states that the Arikara used from fifteen to eighteen forked posts about seven feet high. The Pawnee posts according to Dunbar (273) were seven feet high.

so trimmed that the log sill fitted closely to them. The sill was not sunk into a trench, but lay on the ground. The lintel was also cut and fitted carefully to the adjoining beams.

THE ROOF

The *att-dútidu*¹ poles or rafters were next laid. These numbered one hundred² and were raised into place from the inside of the lodge. The poles were selected and divided into four piles. The best and largest were placed over the door and the middle of the sides since these sections of the roof were used as lounging places and consequently had to be prepared for the additional strain. Two women usually placed these rafters. The upper end of a pole was first raised into place on the central stringer, and then either one or both women lifted the lower end and set it in place on the *atúti* stringer. With a forked stick, or another pole, one of the women adjusted the poles so they were symmetrical at the top. In the old days the poles were placed in position and then taken down and cut to fit; in the relatively more modern earthlodge the practice was to cut across the poles at the smoke hole with a saw. The lower ends of the rafters rested upon the exterior stringers and were cut so that they lay in place without further adjustment.

Two types of roofs³ were built, the simpler method was to allow all the rafters to project upward over the beams of the central posts upon which the rafters rested with their lengths and ends adjusted to form the square or nearly square smoke hole. The earthlodges standing on the Reservation in 1909 were of this kind.⁴

The more difficult, but better, method was to make the extreme top of the roof—the part around the smoke hole and within the square made by the four central posts—flat. For this flat roof,⁵ the upper ends of the rafters were made to reach only to the tops of the beams on the central posts, on which beams the upper ends of the rafters rested. Three heavy poles or small logs were laid on either side of the smoke hole,

¹From *ámáti*, earthlodge, and *dútidu*, rib. *Ámáti* is a compound, *áma*, earth, *áti*, lodge, house dwelling; *áti* is common in compounds, I am not certain if it is used singly.—G. L. W.

²The poles of Wolf-chief's lodge examined by F. N. Wilson (Fig. 15) were all round and numbered eighty-five. The diameter of every fifth pole, at the upper and lower stringers is given in Fig. 15.

³The Omaha lodge was generally more conical than the Hidatsa. The roof poles consisted of slender trees divested of the bark. Unlike the construction of the Hidatsa roof "these [roof poles] were tied at their larger ends with cords (made from the inner bark of the linden) to the beams at the top of the stockade and at the middle to those resting in the crotches of the large posts forming the inner circle about the fireplace." (Fletcher and La Flesche, *ibid.*, 97-98). To form the smoke hole the ends were cut and interlaced with elm twine.

Cf. Catlin (vol. 1, 82) for a description of the construction of the Mandan roof.

⁴The Arikara dance lodge is of the second or flat-roofed variety.—G. L. W.

⁵According to the informants, there were many flat-roofed lodges in the village, but they were not so numerous as to be common. Though there were no restrictions as to building such a lodge, and any one might build one, apparently lodges of this type were occupied by the most influential members of the tribe, most probably the chiefs or keepers of ceremonies.

parallel to and adjoining the two upper beams, their ends resting upon the two lower beams; they lay of course inside the upper beams with space enough between for a smoke hole. At either end of these small logs and laid upon them transversely, and thus parallel with the two lower beams, were placed planks split from logs. Carefully fitted in, they enclosed the smoke hole on the two sides, the small logs enclosing the other two sides. Over the planks and small logs was laid a thick matting of dry grass. The smoke hole itself was boxed in on all four sides with planks split from logs. The edges of these planks that boxed in the smoke hole did not project upward above the roof, but were level with its earth covering. This was to prevent the dry grass matting from catching fire from sparks. The grass matting was later covered with earth. The flat roof provided a fine lounging place¹ for the young men; often all the members of one of the men's societies congregated on one of the flat-roofed earthlodges to be seen by their sweethearts.

LAYING THE WILLOWS AND GRASS

After the rafters were laid, the chinks between the lean-to puncheons were filled with willows laid parallel and cut the preceding summer so they would be dry when needed. Willows were also laid transversely over the *ati-dútidu* or roof rafters. The willows covered the entire roof not only in the flat-roofed type of lodge, but in the peak-roofed earthlodge, from the exterior stringers to the edge of the smoke hole itself (Fig. 6).

A matting² of dry grass was laid about six inches thick over the roof proper and the work was inspected from the inside of the lodge where any thin spots revealed themselves by the light which shone through. The grass was cut in the old days with hoes of bone, but later, with iron ones. Dead, thick, long grass (river, swamp, or slough) was preferred for this foundation for the final earth covering.

¹Henry and Thompson seem to have been impressed with the use of the roof as a convenient place for idling as well as a place to station a lookout, for they state: "The young men kept watch during the night, sitting on the tops of the huts or walking round the village. . . . Day and night the young men watch and sleep upon the roofs, which are level and spacious, being about 50 feet in circumference, and so well supported by the four stout posts on which the squared timbers rest, as to sustain the weight of 50 men at once." Henry and Thompson, vol. 1, 327 and 351.

²Cf. also Brackenridge's (147) account of the use of the earthlodge roof by the Arikara.

³The Mandan, according to Maximilian (vol. 2, 270) used a kind of mat, made of osiers, joined together with bark, and Catlin states (vol. 1, 82) that the roof timbers were covered with "a complete mat of willow-boughs, of half a foot or more in thickness."

Henry and Thompson (vol. 1, 339) write of the Mandan: "The whole roof is well thatched with small willows in which the Missouri abounds, laid on to the thickness of six inches or more, fastened together in a very compact manner and well secured to the rafters. Over the whole is spread about one foot of earth, and around the wall, to the height of three or four feet, is commonly laid up earth to the thickness of three feet, for security in case of an attack and to keep out the cold."

Among the Omaha willow branches were laid crosswise and bound firmly to the slabs and poles. Over these was a thatch of grass designed to shed water, and finally a thick layer of sod was laid on like shingles and tamped with earth (Fletcher and La Flesche, *ibid.*, 98).

For the Pawnee Dunbar (274) states: "These poles formed the support of the roof. Willow withes were then bound transversely with bark to these poles at intervals of about an inch. At this stage the lodge had some resemblance to an immense basket inverted."

For an ordinary sized earthlodge, one hundred bales of grass were sufficient to cover the roof. The bales were brought in on the backs of ponies, or carried on the backs of the women. Two bales were a load for one woman.

THE EXTERIOR RAILING

A row of forked sticks was set against the outside of the lodge, reaching about halfway up to the tops of the exterior supporting posts. Poles were laid in the forks, making a railing which extended around the earthlodge from one side of the entrance to the other and served to keep the turf in place and guard against the earth slipping down where the roof was steepest.

ROOFING

Of the two methods of roofing employed by the Hidatsa, with loose earth or with turf,¹ the latter was preferred. The sod was cut square, in sections of about four inches, with an equal thickness. Sod cutting was done, usually most easily after a rain, some two hundred yards outside of Old Fort Berthold Village. This appears to have been no slight task, for, according to Buffalo-bird-woman, eight women dug the sod, twenty girls or young women of marriageable age, accompanied by several young men, sweethearts of the girls, carried the sods back to the village, and six women laid the sod on the roof.²

The sod was dug with hoes, or pried out with ash digging-sticks and carried back to the village in the largest burden baskets available, half a basket making a heavy load. As the loaded baskets were brought to the earthlodge, they were emptied nearest where they were to be used. The older women, working from the bottom upward, laid the sod on the roof, with roots upturned and, kneeling or sitting on the roof, pounded them firmly in place with clubs. The turf was laid to a depth of five or six inches over the grass covering so that neither rain nor wind could penetrate. The pounders were merely rough sticks, about eighteen inches long and two in diameter. No attempt was made to trim these to any symmetrical shape. Sodding was begun immediately above the railing passing around the circumference of the lodge. This railing therefore, served a double purpose, to hold the grass layer against the poles and as a support for the sod roofing.

When the lodge was covered with loose earth,³ this was dug at either side of it, forming pits about six feet in diameter and three feet

¹For the Mandan Maximilian (vol. 2, 270) does not mention the use of sod as a roofing material; stating merely that "hay" is spread over the matting, and that the outer covering is of earth.

²Among the Omaha also cutting and laying the sods was a task confined to the women, a group of related women combining their efforts (Fletcher and La Flesche, 98).

³Cf. *this series*, vol. 15, 202.

deep. Two women ordinarily dug the earth while ten carried it up to the lodge in baskets. The loose dirt was spread on the roof, leveled with the hands, and then trampled. Sometimes the diggers could not supply the earth fast enough for the roofers and in such a case, they too would go into the pit to assist. Earth roofing occupied two days; the first day the earth was carried to a foot above the upper ends of the lean-to poles; the second day, the earthing was completed.

To make the earth roof firm and smooth, as well as to shed rain more efficiently, the sides were wet and plastered down with the hands.¹ Water was brought either from the Missouri River or from a depression in the open space in the center of Like-a-fishhook Village which formed a convenient pool after a heavy rainfall. The lodge roof was repaired from time to time, as it became necessary, with earth mixed with water. With her hoe, the woman dug a hole about one foot in diameter and eighteen inches deep until she found the proper kind of black earth (*áma-kati*, or real earth), not that used in pottery making. The pits thus made served to hold refuse. The earth was carried in pails or bowls and laid around the base of the lodge as illustrated in Fig. 8. With her hoe the woman made a depression in one of the earth piles, poured some water into it, and worked it into the earth with the hoe. The lower parts are repaired first, beginning at the door and working around. The prepared earth "plaster" was placed in a pail or wooden bowl, applied where needed, and patted into place with the moistened palms.

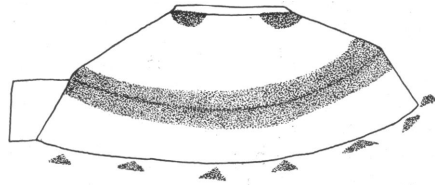


Fig. 8. Sketch of an Earthlodge showing the Weak Places in the Structure where Leaks are Most Probable.

A heavy downpour of rain often resulted in a badly leaking roof,² especially under the four angles of the flat roof and along the connecting line of the *atúti* puncheons and the rafters (*ati-dútidu*). In Fig. 8, these weak spots in the lodge structure have been marked with stippling.

¹One informant emphatically denied that this method was used when a new lodge was constructed stating that mud plastering was resorted to only in mending a leaky roof.

According to Catlin (vol. 1, 82) the roofing of a Mandan lodge consisted of a layer of earth two to three feet deep over which was placed a layer of hard clay which was waterproof. Mr. F. N. Wilson reports, however, that in measuring the earthen roofs of modern Hidatsa lodges, he found none over five inches deep.

The earth covering of the Pawnee lodge was nine inches thick (Dunbar, 274).

For the Arikara Brackenridge makes a definite statement that "the whole is covered with earth, though not sodded." (142)

²Describing his experience at an Arikara village Brackenridge remarks: "... The Indian women and girls were occupied all this morning in carrying earth in baskets, to replace that which the rain had washed off their lodges." (140).

The pits resulting from the removal of the earth later were receptacles for refuse from nearby lodges. When the pits were filled the tops were leveled off and covered with earth, leaving no indication of their existence.¹

Elmbark and dried buffalo hides were also said to have been used as coverings,² in old times, for the flat-roofed lodge. In early summer, the bark was carefully cut and peeled from the trees in sheets which were laid flat, weighted with logs, and thus dried.

When ready for use, the sheets of bark were laid on the roof smooth side down. The bark was presumably laid over planks, since the constant use of the roof as a lounging place, made some kind of firm support for it a necessity. Such a bark roof is said to have been leak-proof.

There appears to have been some difference in the content of the feast provided for the assistants in the two kinds of roofing. For a sod roof, the feast consisted of four bladders of bone grease, a parfleche of dried meat, cooked and ready to serve, six kettles full of boiled corn and beans, and perhaps two kettles full of boiled dried green corn. For an earth roof, two bladders of bone grease with boiled corn and beans of indeterminate quantity were considered sufficient.

LADDERS

Notched log ladders were used to ascend to the roof with the loads of willows, grass, and turf. Sometimes only one ladder was used, sometimes more. These were moved from place to place against the roof as the work progressed.

SMOKE HOLE COVER³

The frame of an old bull-boat was turned upside down over the smoke hole of an earthlodge. Its chief use seems to have been to keep puppies from falling through the smoke hole to the fire directly beneath it. Against the windward side, a buffalo skin was laid, so that the wind would not blow the lodge full of smoke. This skin was also useful in keeping out rain. Some earthlodge owners did not habitually keep a bull-boat frame over the smoke hole. During a storm a bull-boat was

¹If any of these pits were ever discovered, they should have been the source of much information to the archaeologist. We have been unable to find any citations in the literature for the Missouri River region which may be identified with assurance as referring to the pits here described.

²Doctor Wilson's notes do not mention the use of an additional covering of grass and earth over the elmbark.

³For the Mandan Maximilian (vol. 2, 270) writes: "In the centre of the roof is a square opening for the smoke to find vent, over which is a circular sort of screen made of twigs, as a protection against the wind and rain, and which, when necessary, is covered with skins." As Maximilian later (vol. 2, 279) describes a bull-boat in some detail, he is obviously not confusing the two types of cover.

Cf. also Matthews (*ibid.*, 4) who describes a wickerwork frame for the smoke hole though he too mentions the use of a bull-boat. See also Henry and Thompson, vol. 1, 339.

dragged to the roof, overturned, and propped up on its own paddle. The boat usually rocked in the wind, but was blown down only during severe storms.

COVERED ENTRANCE

The covered entrance passage to the lodge door was added after the roof was completed. The length was decided upon and two forked posts were set firmly in the ground to form the door posts of the exterior entrance (Cf. Figs. 14 and 15), the distance between the posts being slightly more than the width of the door itself. A small log or pole supported on the forks served as a lintel. A trench connected each of these with the corresponding post of the interior doorway. Heavy poles or small logs were laid with one end resting on the lintel stringer of the interior doorway and the other end upon the exterior lintel log of the posts of the outer doorway. Small logs were split into puncheons similar to lean-to puncheons and set on end with their tops against the entrance way roof and their lower ends sunk in the trenches and the trenches filled. These formed the sides of the entrance passage. The roof of the entrance passage was covered with willows laid transversely and with grass and earth exactly like the lodge roof.

As the exterior supporting posts of the earthlodge stood some feet inside the lodge and as the covered entrance way must be carried within to meet the lintel of the interior doorway, the effect was to carry the puncheon-enclosed entrance way into the lodge for the depth of the *atúti*, as the space under the lean-to puncheons was called (Cf. Figs. 11, 14, 15, 16).

The sides of the covered entrance way were not plastered within or without;¹ but split sides of the puncheons were turned inward² and the bark was removed, as was the usual procedure for all the posts and logs and rafters used in the construction of an earthlodge.

THE DOORS

A rectangular piece of dry, short-haired buffalo hide, was hung in the doorway, fur side out, so arranged as to swing inward. Straight poles of diamond willow or cottonwood, about an inch in diameter and carefully peeled and dried were used to construct the framework for the skin

¹Buffalo-bird-woman was positive that the Hidatsa and Mandan never plastered the walls of the covered entrance. A dance lodge of the Arikara, standing on Fort Berthold Reservation, of the larger flat roofed type, has the entrance way plastered with mud apparently mixed with grass.—G. L. W.

For additional descriptions of this covered entrance passage see Henry and Thompson (vol. 1, 339) for the Mandan; Brackenridge (142) for the Arikara; Fletcher and La Flesche (98) for the Omaha; and Dunbar (274) for the Pawnee.

²Mr. F. N. Wilson states that in all the entrance passageways to modern lodges, observed by him the puncheons were turned outward.

door. The wood frame fastened on the flesh side of the skin and consisted of two longer upright poles on either side, a pole attached at the top and bottom, and a horizontal bracing pole in the middle. These latter were all notched to fit firmly over the side poles. The ends of the poles were so trimmed that the corners would be as nearly squared as possible.

Fig. 9a illustrates the method followed in swinging the door from the ends of the supporting rafters of the roof of the entrance passage. The uppermost door frame pole was not fastened at the edge of the skin, but about four inches below, forming a hinge-like projection of the skin. The door itself swung from four thongs passing through the projecting

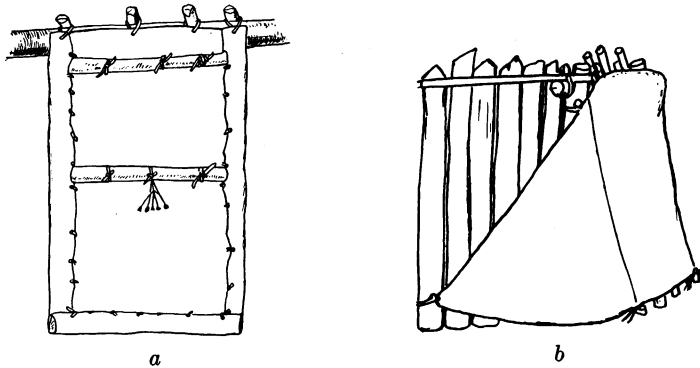


Fig. 9. Earthlodge Doors. *a*, The door of the summer earthlodge; *b*, A temporary skin door at the outer entrance to an earthlodge.

portion of the skin and was bound to the rafters as shown in Fig. 9a. The skin door,¹ which presumably allowed a freer circulation of air, was preferred to the plank earthlodge doors furnished the Hidatsa by the government, since, it was said, the lodges were smokier when the latter were used.

From the horizontal bracing pole of the buffalo skin door hung five buffalo hoof rattles (Fig. 9a) which clattered as the door was raised and allowed to fall. To make a rattle, half a buffalo hoof was oiled with bone grease, thrust on a stick, and held over a fire to soften it. All the hoof

¹Cf. Matthews (*ibid.*, 4) who mentions the use of a door of this type as well as one constructed of puncheons.

Of the Mandan door Henry and Thompson (vol. 1, 339) write: "The doors are made of raw buffalo hide stretched upon a frame and suspended by cords from one of the beams which form the circle. Every night the door is barricaded with a long piece of timber supported by two stout posts set in the ground in the inside of the hut, one on each side of the door."

Writing of the Arikara Bradbury (56-57) says: "The door is placed at the immediate entrance into the lodge; it is made of a buffaloe skin, stretched in a frame of wood, and is suspended from the top. On entering, it swings forward, and when let go, it falls to its former position."

was then cut away, except two inches of the hollow tip in which a hole was bored and a skin thong drawn through, knotted at the end to keep it from slipping through.

The bottom of the door fell against the door sill described above.

A buffalo hide door which seems to have been a variant of this form was hung over the interior doorway. The legs and head were cut off and the skin hung, tail down, lashed to the lintel with four or five stitches of a rawhide thong which passed around it. To hold the skin flat, slender poles were sewed on the upper and lower edges, much like the rods of a window curtain. A hole was cut in the middle of the hide and through it was drawn a short thong to which were attached a half dozen buffalo hoofs. These had been boiled to free them of the enclosed cores¹ and were tied to the thong through a hole in the toe of each hoof. They made a rattling sound when the hide was pushed aside and thus gave warning when anyone entered.

Within the lodge, on either side of the door and a few inches in front of it, two lesser posts about the height of a woman's head were sunk very firmly in the earth floor. The buffalo hide door was somewhat wider than the doorway. When it was desired to lock the door,² four bars or short poles kept in the lodge were dropped behind these lesser posts. As the latter were set at an angle so that they approached the door posts a little nearer at the foot than at the top, the bars effectually wedged the hide against the door posts. If the owner of the lodge found the door thus locked, he could push in the hide at one side of its upper part and gain room to insert his arm. In winter ponies were often stabled in the lodges and the bars kept them from breaking out and escaping through the door.

According to Goodbird, one did not knock before entering an earth-lodge; the visitor, however, went in rather slowly. If the lodge owner did not welcome the visitor, he did not look up, and the visitor stayed but a few minutes. If the owner was pleased, the latter said, "Come and sit here in the *a'túka*." Goodbird's father customarily coughed politely as he went into another's lodge, so that if anyone within happened to be dressing, he was duly warned.

¹The boiled cores or interior parts of a steer's hoof were eaten by the Hidatsa. The author has had such served him at dinner and found them not unpalatable, but rather tough.—G. L. W.

²In Maximilian's account of the Mandan (vol. 2, 270) he states that "When the inmates are absent the entrance is shut up with twigs and thorns; and if they wish merely to close the door they put up a skin stretched out on a frame, which is shoved aside on entering."

For the Arikara method of closing a lodge we read in Bradbury (56): "At almost every lodge, the door or entrance was closed after the manner which is customary with Indians when they go on hunting parties and take their squaws and children with them. It consists in putting a few sticks across, in a particular manner, which they so exactly note and remember, as to be able to discover the least change in their position."

Though a permanent door was never hung at the outer entrance to the covered passage to the earthlodge, during inclement weather, especially in the spring, the doorway was protected with a piece of skin. The skin was tied to poles that leaned against the lintel as well as to the ends of two of the upright puncheons of the wall of the passageway. (Fig. 9b) Another form of temporary door also of skin was hung from a log laid on the roof of the entrance passage. Entrance and exit were to the right and left, respectively, as for the main door.¹

DURATION

With reasonable care, an earthlodge ordinarily lasted, according to various informants, from seven to ten years; but its durability depended in great measure upon the care taken in building it, as well as upon the staunchness of the logs used. The lodge showed its first signs of wear at the posts which always rotted at the base, or rather, the section in the ground, and owing to the weight of the structure above it, the posts settled down into the ground. This settling down of the lodge indicated that the posts were rotting. Once this occurred, it was useless to attempt to replace the rotted posts.

WRECKING

When it was evident that a lodge needed to be wrecked, the owners, husband and wife, invited five or six of their women blood relatives to assist. The woman attended to inviting the proper individuals.

Because the Hidatsa had observed that a gale arose whenever a lodge was torn down, the women always chose a calm, clear day for this work. They arrived soon after breakfast, but before the lodge was completely wrecked, a wind was sure to begin blowing. It was said that an earthlodge was sacred and therefore imbued with power to cause a wind to blow up.

A lodge was torn down in the spring, before the gardens were planted, often before the ground had thawed. Beginning at the smoke hole the women with their hoes scraped all the earth from the flat planked section of the roof allowing it to fall to the ground just outside the lean-to or *atúti* puncheons. They carried the grass off in their arms and cast it away outside of the village, since it was now useless. It was possible, of course, to use the old earth to cover the *atúti* puncheons of a new lodge, but many families preferred fresh earth.

The willows, for the flat planked roof was also covered with them, were taken down and divided among the women for firewood, the lodge

¹It is not clear, however, that this was the invariable rule. The side of the door shown in the sketch, Fig. 9b is against the wind.—G. L. W.

owner keeping some for her fire. The women carried the willows down in their arms. The planks covering the flat roof were also carried down by armfuls and divided among the women. The rafters supporting the planks of the flat roof were rolled down the roof slope at the back of the lodge and were left for the owner to use in building the new lodge.

The main rafters or *ati-dútidu* were next taken down. A woman stood outside of the lodge; with a pole about the size of that of a dog travois frame, she pushed against the end of each rafter as it rested on its exterior beam, so that it fell inward to the floor of the lodge. All these main rafters were likely to be used again and were left to the owner. Lying as they did under the roof, they had been protected from moisture and many of them were sound enough to encorporate in a new lodge as the outer lean-to or *atúti* poles.

The lean-to or *atúti* puncheons were divided among the women assistants and the owner for firewood.

To dismantle the four big beams which rested on the central posts, the two shorter ones which lay uppermost were dislodged by pushing one end with a pole. The two larger beams lying underneath were set in forks cut into the tops of the supporting posts. To dislodge them it was necessary to lift the beam out of one of these forks. Two men did this with a sling made by tying a thong to the tops of two crossed poles. They were careful to spring aside when the beam fell. As the beam was lifted off one post, the jar of its fall often broke off the other post on which it lay, and brought it down. The four long beams on the central posts were preferably made of driftwood trunks salvaged from the Missouri in the June rise. These were more durable than cottonwood posts which insects attacked and were often still sound enough to be used again.

The beams on the exterior posts were taken down by two women who stood on an overturned bull-boat and readily lifted them down. Sometimes, when the posts of a new lodge were to be raised, two men stood on an overturned bull-boat, for such a boat had a strong frame.

The four central posts were often sound, except for the end resting in the ground. These rotted ends and the ears at the top of the post were cut off; the posts thus trimmed were used for the four rearmost exterior posts of the new lodge; sometimes, the four large beams might be used for these exterior posts. If the central posts were rotten at the base, these were pushed until they broke off. If they had not rotted, they were cut off with an ax or were dug out from one side and thus removed from the post hole. The women were the chief workers in all these tasks, the men acting merely as assistants. Exterior posts were pushed and broken

off or felled with an ax, as were the main posts. Posts that were rotten and no longer useful in a new lodge were left to the owner for firewood.

Small-ankle's earthlodge, as remembered by Goodbird, with its adjoining cabin used as a winter dwelling, is shown in Fig. 10. As may be observed in the illustration, this was of the flat-roofed type, with twelve outer or *atúti* poles, and as was usual, the smoke hole was protected by an old bull-boat frame. At either side of the doorway were votive poles: those to the left, facing outward from the lodge, were erected for

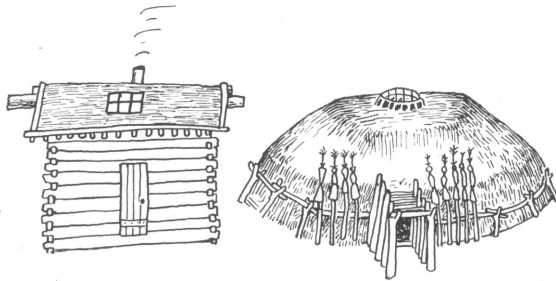


Fig. 10. Small-ankle's Earthlodge and the Winter Cabin adjoining It, as It appeared about 1878.

Above-woman and Sacred-woman; on the right the poles were set up in honor of the birds, because the two skulls of the Big-bird ceremony were housed in the earthlodge which was thus rendered sacred and consequently the use of the roof as a lounging place was prohibited. These ceremonial poles were not all put up at one time, but one was erected to the birds and to Above-woman each year, or at considerably longer intervals.¹ The poles were never torn down and were unmolested until they collapsed so that a series of them stood on either side of the doorway as the tangible remains of repeated offerings.

¹Goodbird apparently was not clear as to the frequency with which these votive offerings were made. The Mandan also set up poles with offerings. Of these Maximilian (vol. 2, 323-324) writes: "Besides the white buffalo skins which are offered in sacrifice and hung on poles, there are, in the villages of the Mandans and Manitaris, other strange figures on high poles. These figures are composed of skin, grass, and twigs, which, it seems, represent the sun and moon, perhaps, also, the lord of life, and the first man. The Indians resort to them when they wish to petition for anything, and sometimes howl and lament for days and weeks together."

MODERN EARTHLODGES

An integral part of this study, as has been previously stated, was the detailed examination, in 1908, of the earthlodges then standing at Independence, Fort Berthold Reservation, North Dakota, by Mr. F. N. Wilson. At that time there were still seven earthlodges on the Reservation, so that since 1872, when Matthews made a census of the earthlodges and recorded seventy-eight, the use of this kind of dwelling by the Hidatsa was almost entirely abandoned. Of these seven lodges gross measurements were made of the following: Little-crow's, Old-woman's, Kidney's, Old-white-man's, Crow's-heart's, and the Arikara dance lodge. One lodge, that belonging to Wolf-chief, was measured in detail as carefully and accurately as the circumstances permitted and groundplans and other drawings prepared (Figs. 11-17). Later, in 1912, Hairy-coat's earthlodge, at that time the only inhabited lodge on the reservation, was measured and the accompanying drawings prepared (Figs. 20-24).

Since there were no means at hand for taking levels, when measuring Wolf-chief's lodge the ground was assumed to be level; consequently, all vertical measurements taken from this uncertain base line, may have had a slight variation. These variations are, however, unimportant, primarily because the Hidatsa earthlodge was at best not rigid and unalterable in size and other details, but was under all circumstances variable in many of its main features. In addition to these possible variations of the measurements due to inequalities in the base line, it must be remembered that the cottonwood timbers of which the lodge was constructed were merely stripped of bark and slightly trimmed, and often diverged materially from the absolute perpendicular or horizontal. All these irregularities were necessarily ignored and the measurements taken as if of dressed timbers. However, in the accompanying diagrams all timbers were drawn so as to resemble their actual appearance in so far as this was possible. The only instruments used were a tape line (fifty feet), a home-made pair of calipers, and a stake.

Wolf-chief's lodge was chosen for these detailed measurements, because among the lodges then in existence, it appeared to be the most typical as well as one of the best constructed and since it housed the shrine of the Two Skulls was assumed to have been built with more than usual care. This earthlodge was at that time about eleven years old. As will be observed in the drawing (Fig. 11) it was not absolutely true to the established form, in that it had five extra supporting posts (Fig. 11 Aa, Bb, Cc, Dd, and IIIa), four in the center, making eight center posts,

and an additional supporting post for the outer series. These had evidently been added to reinforce weakened posts which had begun to split.

At that time also only two lodges on the reservation surpassed Wolf-chief's, both in size and finish. These were both used as dance houses.

According to the observations made by Mr. F. N. Wilson, the only numbers of any significance in the construction of the earthlodge are four, twelve, and one hundred, referring respectively to the main posts, the outer poles, and the roof poles. Further, from the foregoing information secured from the Hidatsa themselves it is evident that these numbers were considered a conventional standard to be adhered to or not, as circumstances and convenience might dictate. In all probability they were the normal numbers associated with the earthlodge.

In making the measurements noted on the accompanying plans (Figs. 11-17), it was necessary to follow a system based on practicability for the investigator rather than one which would conform with the procedure of earthlodge building, as previously described. By cross-measurements with a fifty foot line, the exact center of the lodge which was also practically the center of the fireplace, was found, and a stake driven to serve as a fixed point. From this point, each of the supporting posts was considered as centering on a line which was itself the circumference of a circle made by using the measuring tape as a radius and the stake as a center. Ground measurements are shown in Fig. 11. All series measurements were taken beginning at the left of the door as one entered and all individual measurements to the right of each post, and, as near as possible at the exact center. The resultant drawings demonstrate better than any description the structural intricacies of the earthlodge and should be examined in conjunction with the preceding data furnished by native informants for a clear understanding of the details.

In Fig. 11 will be observed how the vestibule or entrance passage-way (p. 369) encroaches on the *atúti* space. This and the following illustrations (Figs. 12-16) show the arrangement of both the roof poles and of palisades. In Wolf-chief's lodge the outer supporting posts of the vestibule were of squared timbers or heavy planks fastened together. These were of drift timber from the Missouri and of white manufacture. Two of the extra main posts (Fig. 11, Bb-Dd) were of squared timbers.

Two elevations or sections, one from the front (Fig. 12) and one from the rear (Fig. 13) through Wolf-chief's lodge show the main timbers. The exact position of the outer posts is shown by the circles in the inscribed perimeter. The measurements to the left of each post indicate

the height of the supporting surface of posts from the ground; those to the right, the height of the upper surface of the stringers from the ground. The elevation of the left half of the earthlodge is illustrated in Fig. 14. As in the preceding, the measurements to the left of the posts indicate the height of the supporting surface of posts from the ground.

In Fig. 15 the roof poles of the lodge and the vestibule as well have been drawn somewhat more symmetrically than they were actually arranged in Wolf-chief's lodge. The palisades enclosing the vestibule were of split logs or poles placed flat side out.

A cross-section through Wolf-chief's lodge at the left of the door and a front elevation (Fig. 16) show the method of placing both the *atúti* or lean-to poles and the *atí-dútídu* or roof poles, as well as the manner of turning the corner of the main stringers. In turning the corner of the lodge, the rafters were placed on the lower stringer first and then worked upward over the nose of the upper stringer. Each succeeding pole was thus braced by one below it, if necessary. In the front elevation (Fig. 16) may be observed the relation of the lean-to and the roof poles. The former, coming within the space between the roof poles, rose above the outer stringers, and those filling the space under and meeting the roof poles are cut to fit. No evidence of braces as noted for the Mandan earthlodge¹ by Morgan for the posts (I, II, III, etc.) were observed in this particular earthlodge. Apparently the weight of the earth and timbers tended to force the posts inward rather than outward and consequently, possibly as a method of correcting this tendency, most of the outer posts were so arranged as to lean outward a trifle. The pitch of the roof was such that no brace was needed for the roof poles, the lean-to poles being sufficient for this purpose. The willows in the cross-section (Fig. 16) were laid transversely upon the rafters and were placed upright as in natural growth against the lean-to poles. Upon these, as has been described, willows, grass, sod, and earth were laid (p. 365 *et seq.*).

The *atúti* poles in the modern earthlodges examined appeared to have been placed in a shallow trench which has been indicated by a broken line in Fig. 16. It is possible that this appearance of trenching was due to the washing down of earth between the poles. The depths to which the poles were sunk into the ground were naturally not determinable, and therefore these are merely approximated in the illustration (Fig. 16).

¹Morgan, Lewis H., *Houses and House-Life of the American Aborigines* (*Contributions to North American Ethnology*, vol. 4, Washington, 1881), 126.

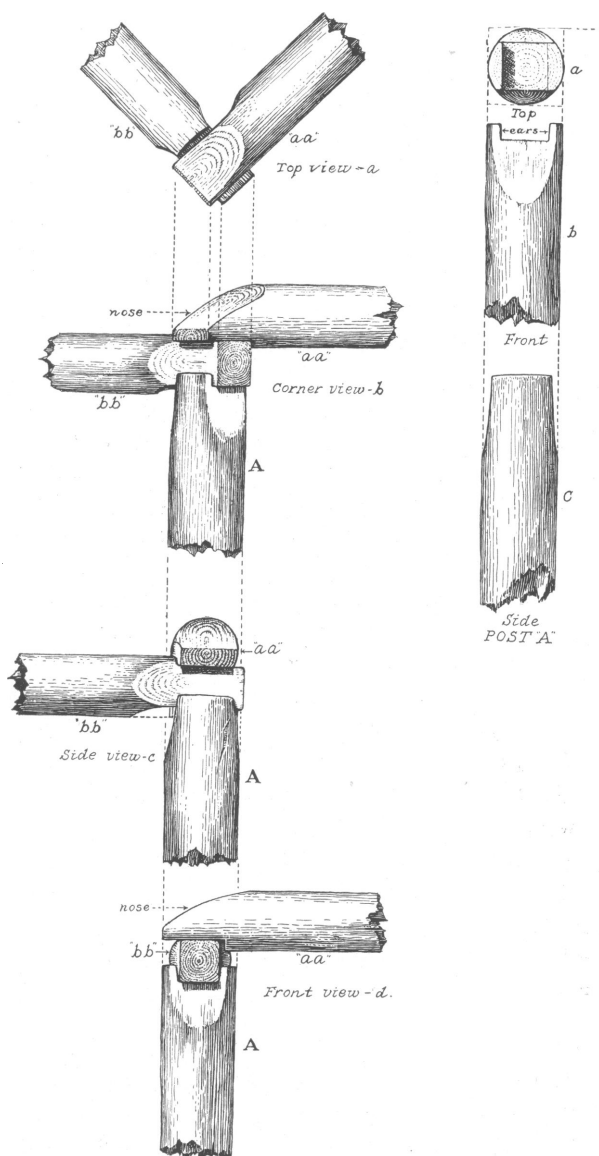


Fig. 17. Details of Center Posts and Stringers of Wolf-chief's Earthlodge, showing Method of Cutting, to avoid slipping of Stringers. The "nose" (b and d) was cut to allow for pitch of rafters. The center posts were usually beveled as here shown.

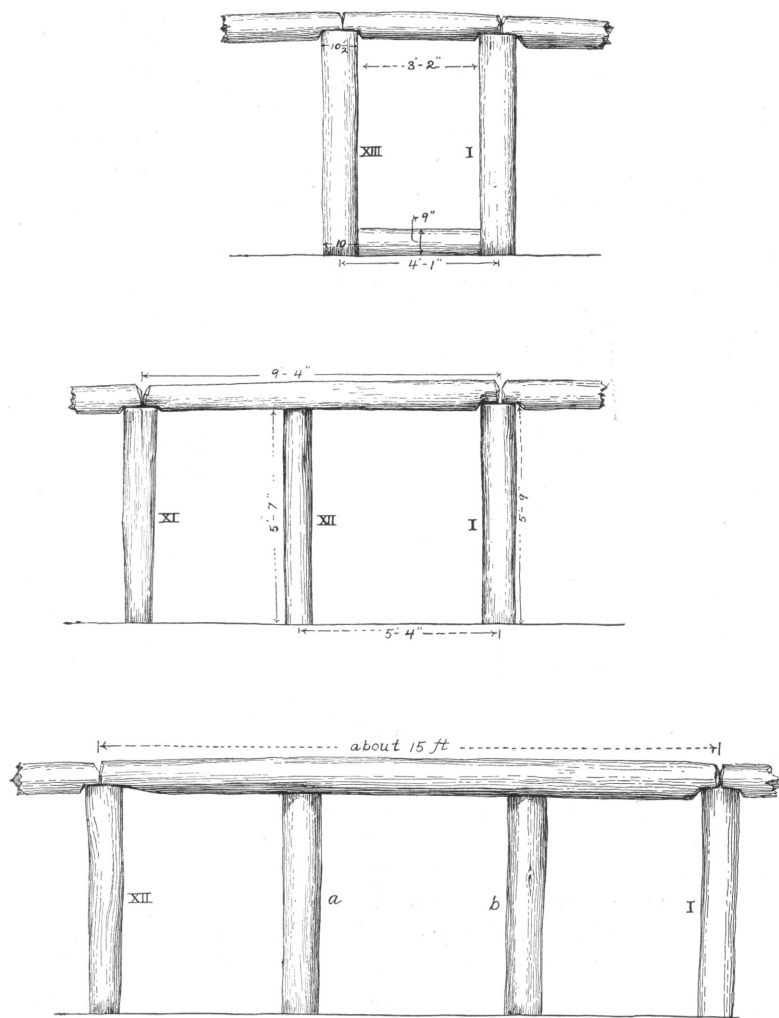


Fig. 18. Three Methods of constructing the Door Frame. At top, Wolf-chief's earthlodge, thirteen posts; in the middle, Owl-woman's earthlodge, twelve posts; at the bottom, an Arikara dance lodge, fourteen posts.

Various structural details are clarified by the drawings reproduced in Figs. 17-19. The details of the joints in the main and outer string courses as well as the method of cutting the proximal ends may be seen in Figs. 17-18. Three types of door framing are illustrated in Fig. 18.

It may be of interest to append here, for comparison with the measurements¹ of the two lodges illustrated in detail (Figs. 11-23) a table of the gross dimensions of the six other earthlodges on the reservation in so far as it was possible to obtain them.

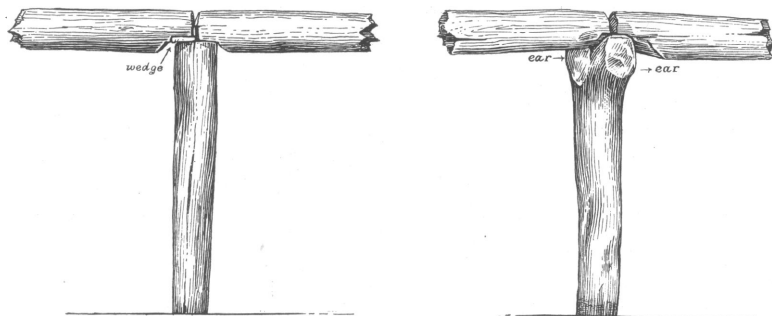


Fig. 19. The Method of placing Stringers on Two Types of Outer Posts. A wedge was frequently driven under one end to level up the stringers.

<i>Lodge Owner</i>	<i>Exterior Diameter</i>	<i>Interior Diameter</i>	<i>Height</i>
Little-crow	50 feet	.....	13 feet
Owl-woman	42 feet	40 feet	.....
Kidney	49 feet	.....	10 feet 10 inches
Old-white-man	.....	.....	.....
Crow's-heart	.....	45 feet	12 feet 10 inches
Arikara dance lodge	70? feet	.....	.....

As has been previously stated, Hairy-coat's lodge at Shell Creek was the only inhabited earthlodge in 1912. In the groundplan (Fig. 20) the dimensions of the posts at their bases, the lengths of the stringers, the measurements, and relations of the various posts to each other, and the gross dimensions of the lodge are given.

¹See also Matthews (*ibid.*, 5) who states that Hidatsa lodges were thirty to forty feet in diameter; ten to fifteen feet high at the center; and five to seven feet high at the exterior posts. Catlin's estimate of size is slightly larger for he mentions diameters of forty to fifty feet.

The diameter of the Mandan earthlodge has been variously recorded. Catlin (vol. 1, 81) estimates it at from forty to sixty feet. Henry and Thompson appear to have measured at least one lodge which they found to be ninety feet from the door to a point at the extreme rear of the lodge (vol. 1, 338). This may, of course, have included the entrance passageway. They point out, however, that the dimensions varied considerably.

Dunbar's figures for the diameter of a Pawnee lodge range from twenty-three to fifty-six feet. He mentions also the remains of an old medicine lodge which seems to have been two hundred feet in diameter (275).

In preparing the diagrams of Hairy-coat's earthlodge (Figs. 20-21) it was assumed to have been revolved slightly on its axis and a section taken through the resulting median line to show all the central posts in their proper position and as much as possible of the construction as well as the maximum number of measurements. Since it was impossible to measure the shrine space it was necessary to approximate its size.

The string courses for the central and the *atúti* posts and the entire scheme for the roof and smoke hole are shown in Fig. 22 as well as the measurements for the roof and *ati-dútidu* (lodge rib) poles for half the earthlodge comprising about sixty-five poles. Of these, five or six poles were added in the drawings to complete the corner at the left. In the diagram the figures near the ends of the poles indicate their diameters, at the middle, their lengths. The *atúti* space and its poles have been omitted.

In Fig. 23 is a section of Hairy-coat's earthlodge similar to those shown in Fig. 21, but with the forks, poles, and slabs for the palisades in place with a few removed at the fork *y* to show it and the poles and the forks *x* and *z*. (See also Fig. 24.)

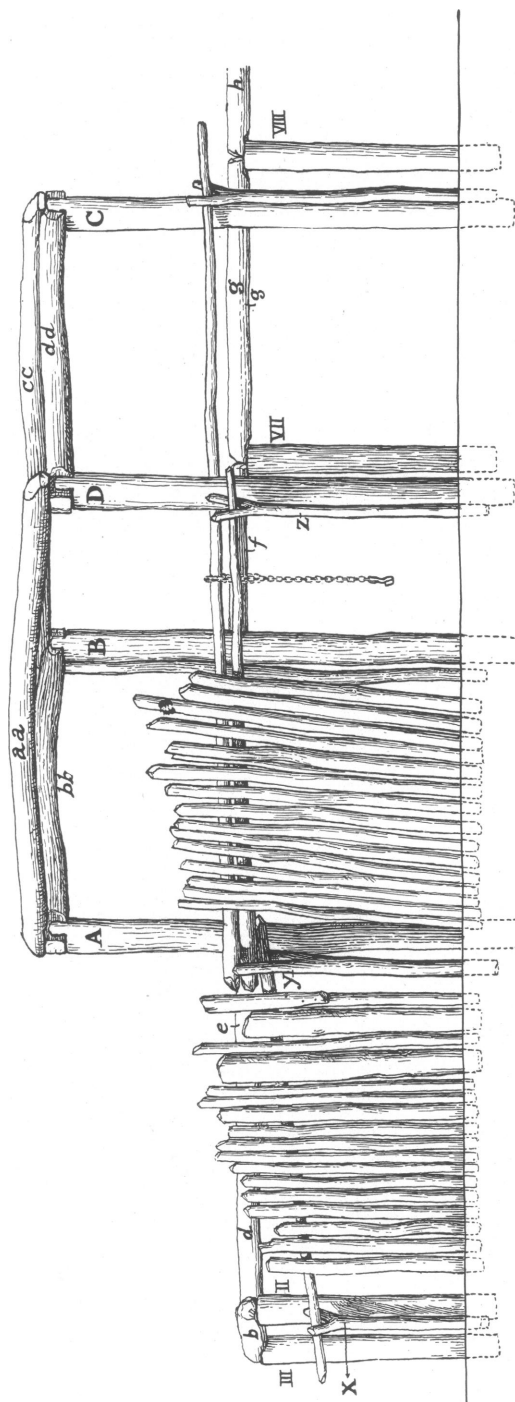


Fig. 23. Details of the Construction of the Palisade in Hairy-coat's Earthlodge. Note the forks, x, y, and z, at posts II, A, and D.

INTERIOR ARRANGEMENT AND EQUIPMENT

As one part of his independent investigation of the structure of the earthlodge which resulted in the accompanying detailed structural diagrams (Figs. 11-23), Mr. F. N. Wilson obtained concrete accounts of its interior arrangement¹ and, on the basis of these data, he prepared the detailed groundplans and other illustrations which are reproduced in Figs. 24 to 30. Thus we are able to present detailed descriptions of the household paraphernalia and arrangement in four different earthlodges. One (Fig. 27), owned in 1878, by Small-ankle, the father of Buffalo-bird-woman was described by her. Later, the author supplemented this independent study by his brother, with information secured from the same informant and her son, Goodbird, who had also acted as interpreter during the original investigation. Two other lodges (Figs. 25-26) described by Hairy-coat² had been occupied by his father at Awatiha-Ati, one of the Five Villages at the mouth of the Knife River and at Old Fort Berthold. The fourth studied was the last earthlodge extant at Fort Berthold Reservation in 1912 and was unique, for that period, in that in most respects the old time interior arrangement as well as the furnishings were still used. These accounts obtained from the several informants as well as the personal observations by Mr. F. N. Wilson have been telescoped in an attempt to unify this description of the interior of the earthlodge.

The accompanying drawings (Figs. 24-27) show the equipment as well as its disposition within the lodge. The interior of Hairy-coat's lodge as it stood in 1912 is represented in Fig. 24 except that in the drawing articles of white manufacture have been omitted. All the Hidatsa furnishings were drawn to scale. Since they may be assumed to take the place of native beds, those of white origin are shown by dotted lines. The platforms were so laden with miscellaneous paraphernalia that it was possible to make only very meager measurements of them.

This examination of Hairy-coat's lodge was initiated with some ceremony. The entire shrine space (see also Figs. 20, 24-27) was carefully curtained off. Sweetgrass was burned in a bit of broken pottery and in the meantime Hairy-coat prayed to the shrines for forgiveness for the offense about to be committed.

¹For further descriptions of earthlodge interiors, see the following: Matthews, 6 (Hidatsa); Maximilian, vol. 2, 270-272, 370 (Mandan and Hidatsa); Dunbar, 274-275 (Pawnee); James, vol. 1, 113; vol. 2, 125 (Osage and Pawnee); and Catlin, vol. 1, 83 (Mandan).

²In 1912, when these data were obtained, Hairy-coat, or Hairy-necklace, was seventy-six years old. He was born at Awatiha-Ati, the second from the west village on the Knife River.

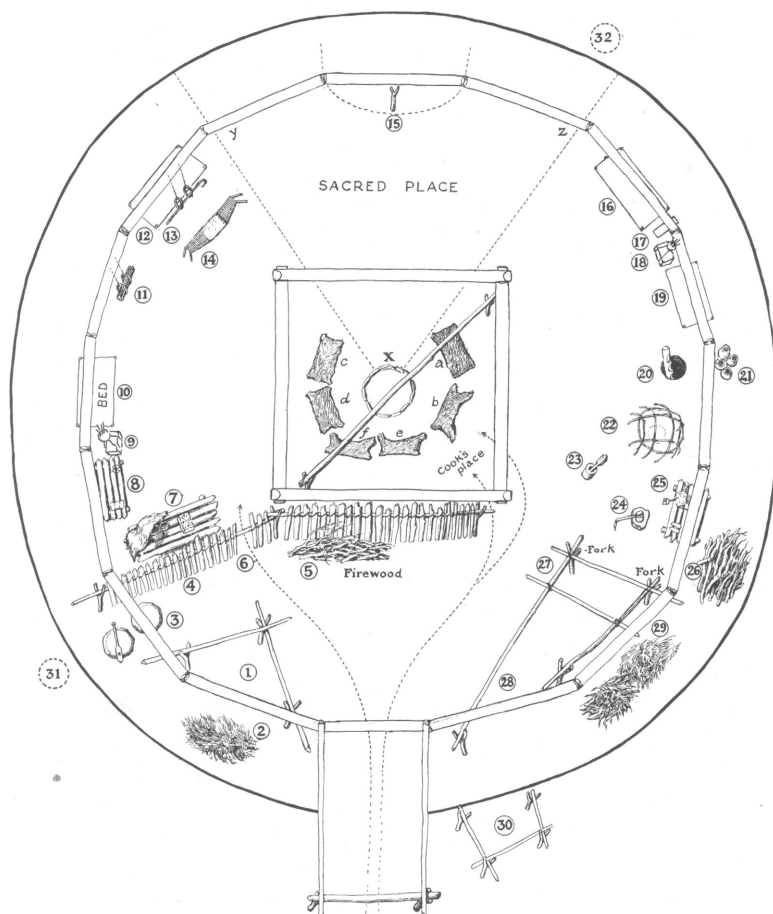


Fig. 25. Diagram of the Interior of Hairy-coat's Father's Earthlodge at Old Fort Berthold. a, Father's place; b, Mother's (the wife's) place; c, Goes-on-water; d, Hairy-coat's place; e-f, Children; 1, Corral for stud horse; 2, Feed for horse; 3, Bull-boats; 4, Partition or palisade; 5, Firewood; 6, Door in partition (only in large earthlodge); 7, Food platform for general use; 8, Saddle platform; 9, Clothes in bags; 10, Hairy-coat's bed; 11, Empty spade, arrowshafts and feathers in rings, suspended; 12, Goes-on-water's bed; 13, Lance; 14, Backrest; 15, Shrines (the segment outlined, x-y-z, from the fire outward is sacred); 16, Father's bed; 17, Set of arrow-making tools on a board; 18, Clothes suspended from roof; 19, Children's bed; 20, Cache pit; 21, Pottery and cooking utensils; 22, Sweatlodge; 23, Mortar; 24, Stone and hammer for cracking bones; 25, Platform for saddles, moccasins, etc.; 26, Firewood piled between posts; 27, Stall in corral, for a mean horse; 28, Corral for eight or ten mares and foals; 29, Feed for horses; 30, Extra corral, outside; 31, Cache for yellow corn; 32, Cache for corn and vegetables.

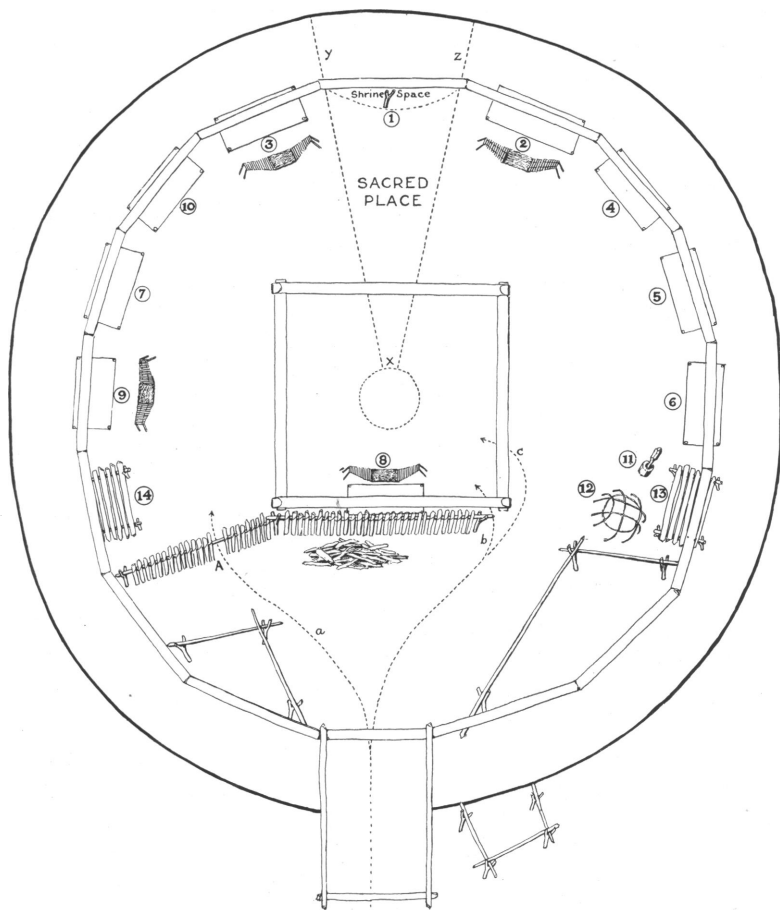


Fig. 26. Diagram of the Interior Arrangement of Hairy-coat's Father's Earthlodge at Awatiha-Ati, one of the Five Villages on the Knife River. 1, Shrines; 2, Bed of Dry-tears (father) and Tsidi-weash (his oldest mother); 3, Cherry-blossom (his own mother); 4, Bed of Black-horn (uncle); 5, Bed of Spotted-feather-tail (uncle); 6, Bed of Atakish (grandmother, Black-horn's mother); 7, Bed of Atakiahush (his mother's mother); 8, Bed of Painted-yellow (grandmother's husband); 9, Bed of All-blossoms (Black-horn's wife); 10, Bed of Weasel (Black-horn's daughter); 11, Mortar and pestle; 12, Sweatlodge; 13, Food platform; 14, Food platform; x-y-z, Sacred section; a-c, Dotted lines indicate path of those entering the earthlodge; A, Door in palisade.

The plans considered together (Figs. 24–27) give a fairly clear idea of the interior of the earthlodge and all its important accessories,—beds, fireplace, fire screen, corral, storage spaces, sweatlodge, etc.

The door was shielded by a partition or fire screen which consisted of a sort of palisade built of forked posts, stringers, and logs split into puncheons. To construct this screen,¹ a trench eight or ten inches deep was dug between the center posts, A–D (Figs. 24 and 27) and also between the center post (Figs. 24 and 27) and the *atúti* post, II (Figs. 24 and 27). To dig the trench the woman straddled it, using an ax, and scooped out

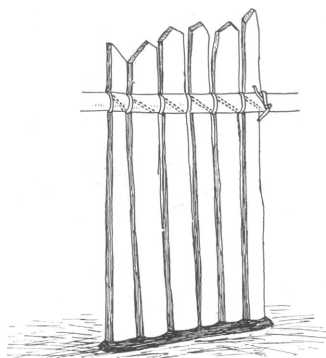


Fig. 28. Detail of the Construction of the Fire Screen.

the loose and lumped earth with her right hand. Forked posts were set into the ground close to the three lodge posts delimiting the extent of the trench (Fig. 24x, y, z) and poles laid across from fork to fork to join them. These poles did not fit end to end in the forks, but overlapped. Split logs or puncheons² were set into the trench in upright position and with green rawhide rope were lashed at the top to the horizontal poles or stringers laid across the forked posts. After the rawhide lashing was secured, the trench was re-filled by raking the loose earth back into it with a hoe. Then the earth was trampled and

tamped down with a stick. This palisade served doubly, as a fire screen and as an effective and efficient check to marauding dogs and pilfering boys or against organized raids by various societies whose members knew that near the *atúti* pole beyond the screen (Fig. 27b) was the food storage platform. This platform, constructed like the foundation of an Hidatsa bed, floored with puncheons or split cottonwood logs, was sometimes used for meat drying. In an earthlodge lacking this permanent screen it was customary to hang a tipi cover between the posts as a shield against the inrushing cold wind which was liable to blow the fire about and make the lodge smoky.

¹Henry and Thompson (*ibid.*, vol. 1, 339) describe the Mandan screen as follows:—

"On entering the hut, the first thing that strikes the view is a kind of triangular apartment, always on the left hand and fronting the fire, leaving an open space on the right, this is to hold firewood in winter. This partition is constructed of square planks about 12 feet high, well calked to keep off the air from the door. Between this partition and the fire is commonly a distance of about five feet."

Maximilian, on the other hand, describes for the winter earthlodge of the Mandan a hide-covered screen of willow branches used to protect the fire and keep off draughts (vol. 2, 271–272).

²The informants were in disagreement as to whether the flat or convex side of the puncheons faced the fireplace.

Outside this partition screen, to the left of the doorway, as one entered, at the *atúti* post (Fig. 27; see also Figs. 24–26) were the bullboats, hides, and firewood.¹ Here too, the dogs were kept since they were never allowed to go beyond the partition. Additional firewood was stored at the right of the door, for as Boller (p. 119) remarks “those great round earth-covered dwellings of the Minnetarees are very chilly during the early damp spring weather, requiring much fuel for warming, as well as cooking.”

Behind the screen and directly in front of the fire, between the posts A–D (Figs. 24, 27), it was customary to place a bed, usually occupied by the older people in the earthlodge. As will be observed in the diagrams as many beds as were necessary were arranged at intervals around the circumference of the lodge.² The beds³ were made with posts at the corners (Figs. 29–30; see also Fig. 31) and each was fitted with a canopy made of half a tipi cover, decorated with the honor marks of the man who occupied it, thus forming a box-like structure with a door-like aperture in the middle of the side facing the fireplace, just large enough for one individual to sit in it. The canopy was bound on the upper edge to the overhanging framework at either corner by tying a piece of corncob into the skin and drawing a thong around it to form a knob. Sometimes the thong was passed through a perforated stake, such as was used to pin down a drying hide. Over the door-like opening in the canopy was hung either a woman's painted, or a man's quilled or painted robe which was thrown over the top of the bed during the day and served as a screen at night. Such curtains were hung only on the beds of married couples; children's beds were allowed to remain unscreened. The robe was hung fur side in, exposing the decorated side, with the head of the pelt at the top and the tail at the bottom.

The beds illustrated diagrammatically in Figs. 29–30, differ in that in Fig. 29, the fork and stick for the canopy are in one piece, while in the bed shown in Fig. 30, the fork is separate and the canopy stick becomes an extra post set in beside it.

It may be of interest here to add a note on the building of beds⁴ for the winter lodge which, as will be noted, is not so carefully and accur-

¹Cf. *this series*, vol. 15, 208, for position of firewood in winter earthlodge.

²It is my belief that the arrangement of beds and other interior movables had not yet become wholly fixed in custom and that the beds had come into use quite late. Adoption of the breechcloth is sufficiently late for Wolf-chief to remember one old man who wore none and Buffalo-bird-woman stated that the old style bed was well remembered by old women when she was a girl. Both changes invaded the tribe about the same time. The older bed was continuous or nearly so, encircling the wall like a Turkish divan.—G. L. W.

³Maximilian (vol. 2, 271) describes the Mandan beds thus: “The beds stand against the wall of the hut; they consist of a large square case, made of parchment or skins, with a square entrance, and are large enough to hold several persons, who lie very conveniently and warm on skins and blankets.”

⁴Cf. also the description of beds in the eagle hunting lodge (*this series*, vol. 30, 167–168) and on a tribal hunt (*this series*, vol. 15, 242, 244, 294), and that by Henry and Thompson for the Mandan (*ibid.*, 326).

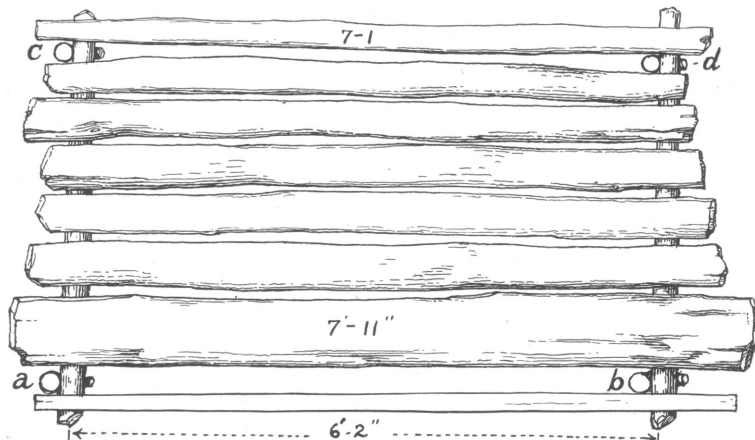
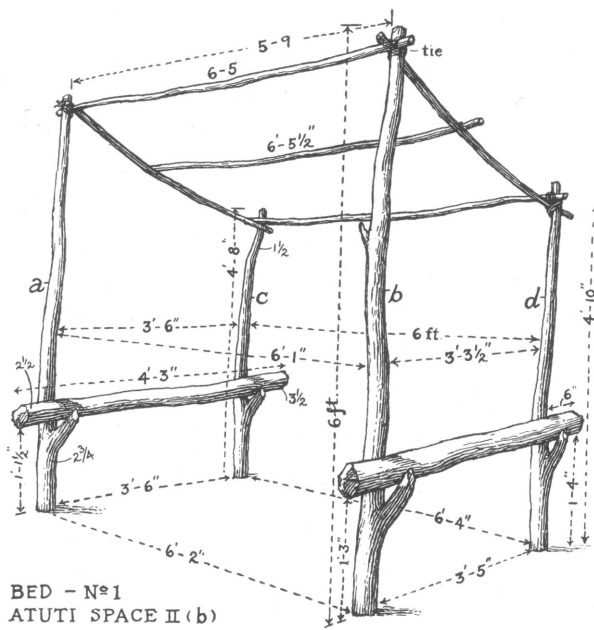


Fig. 29. Diagram of Bed Construction of Bed No. 1, Hairy-coat's Earthlodge.

ately built a structure as the typical earthlodge. The beds likewise vary from the fixed form. Thus, leafless willow branches were gathered and laid on the floor with the butt ends of the willows toward the head of the bed and branches toward the foot, and neatly squared off. Over these willows was laid dry grass which was covered with three or four robes, half a hide each, with the tail end at the foot of the bed, fur side up. (In summer robes were usually laid fur side down.) The covering robes

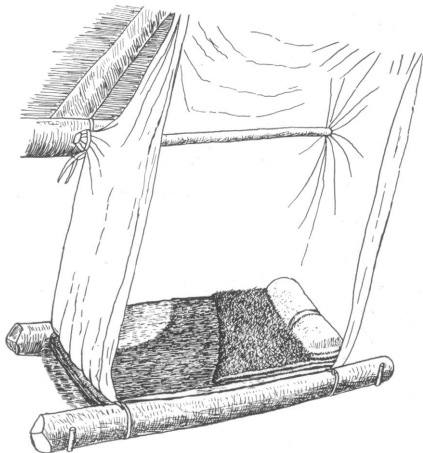


Fig. 31. A Native Drawing of the Structure of an Hidatsa Bed.

were laid in the opposite direction, fur side down. The bed was separated from the fireplace by a log.

Pillows for the bed were made of an old tipi skin padded with antelope hair which was soft and light.¹ The pillows were scented with dry pine² which was shaved and rubbed all over the cover, or sometimes sweetgrass or some other aromatic herb was wet and applied to the cover, especially on the inside. When dry, the antelope hair was put in the case which was then sewed up.

In addition to the storage platform behind and to the left of the doorway partition, no Hidatsa earthlodge was complete without its cache pits for the storage of corn and other agricultural products. These pits were dug both inside and outside the lodge. In Fig. 27, for example, the cache within the lodge is shown near the fireplace in section *h* of the groundplan. This pit was used to store boiled corn. The depth of such a pit was usually measured to the height of the woman digging it, so that when she stood in it, the rim reached her mouth. Its width at the rim was about 2½ feet, the base diameter was somewhat less. Like the pits outside the earthlodge it was covered with a trap door. The cache pits were not customarily opened daily, but enough food was removed at each opening to last for several days. Bags of corn were stored in the open space designated as *a* in Fig. 27.

¹Cf. description of pillows in eagle hunting lodge, *this series*, vol. 30, 159.

²Goodbird's translation and apparently accurate, or does he mean fir?—G. J. W.

The cache pit¹ outside the earthlodge (Figs. 25 and 27) was used for yellow corn and was about 2½ feet wide at top and bottom and quite deep so that to descend into it, the drying stage² ladder, which projected from it a foot or a foot and a half, was used.

The second pit outside the lodge (Fig. 27, Cache 3; Fig. 25, Cache, 31) was about 7 feet deep and used for corn and vegetables; the third outside pit (Fig. 27, Cache 4) was used for shelled corn and dried squash.

Especial care was always exercised to keep the cache pits clean and dry when not in use, or emptied of their usual contents. Therefore an unused pit was filled with corncobs which neither decayed nor became odorous with time.

Squash and meat were stored in parfleche bags which were hung up out of reach and fastened by means of thongs to the lodge poles.

The cooking place was, as indicated in the plans (Figs. 25, 27), in front of the fire screen and somewhat to the right of the fire.³ All utensils and food containers, such as dishes and horn spoons, were common family property and when not in use were usually set on the food platform. Empty spoons and dishes were invariably placed bowl down; when holding food they were covered with a piece of tipi skin.

Pottery jars used as water containers were generally kept near the mortar and pestle at the main post, *c* (Fig. 27). To carry water and keep

¹A good description of this type of cache may be read in the journals of Henry and Thompson (*ibid.*, vol. 1, 360): "It is customary in the fall, after the harvest, when the grain is well dried in the sun, to take it off the cob, and deposit it in deep pits about the villages. These holes are about eight feet deep; the mouth is just wide enough for a person to descend, but the inside is hollowed out to any size, and then the bottom and sides are well lined with dry straw. Such caches contain from 20 to 30 bushels of corn and beans, which are thrown in loose and covered over with straw and earth. The ground is of such a dry, sandy nature, that grain stored in this way will keep for several years without injury. So numerous about the villages are these pits, which at this season of the year are mostly empty, that it is really dangerous for a stranger to stir out after dark, as the natives never take the precaution to cover them over when empty."

Boller who visited the Hidatsa many years after Henry and Thompson also describes this cache: "a hole is dug in the ground usually near the lodge, some six or eight feet in depth; small at the top, but widening as it deepens, much resembling a jug in shape. Hay is next strewn over the bottom and sides, and when the corn is thoroughly dried, it is taken down from the scaffolds and packed away. The cache is filled up with hay, dirt is then thrown on and firmly trodden down, and every sign carefully obliterated. Each family has one or more of these caches, and as they leave their summer village early in the fall for winter quarters, the corn remains undiscovered and undisturbed until their return in the spring." (120). Cf. Matthews, *ibid.*, 8-9.

See also Bradbury, 118, for a description of the Arikara cache, Maximilian (vol. 2, 273) for the Mandan, and Fletcher and La Flesche (98-99) for the Omaha.

²Closely integrated with the lodge structure, though not actually a part of it was the drying stage, without which no earthlodge was complete. See the description of these stages in the author's *Agriculture of the Hidatsa Indians*, 98-104.

³Doctor Wilson's notes contain no reference to the construction of the fireplace, but since most of the descriptions obtainable mention an excavation in the floor for this purpose, it is assumed that this was also the Hidatsa method.

Henry and Thompson describe the Mandan fireplace as follows: "In the center is the square fireplace, about five feet on each side, dug out about two feet below the surface of the ground flat." (vol. 1, 338). See also Maximilian, vol. 2, 266.

Catlin (vol. 1, 82) on the other hand, describes a circular fireplace, four or five feet in diameter and a foot or more in depth, the whole bordered with stones.

Brackenridge's information for the Arikara, though not as definite as the above, is still consistent with the idea of an excavated fireplace: "The fire is made in a hole in the ground directly under the aperture at the top." (142).

The Pawnee, according to Dunbar (273) excavated a space three feet in diameter and five inches deep for the fireplace and the earth thus removed was piled around the edges.

a constant supply in readiness for cooking and other uses was the task of the young girls. Usually water to fill the vessels was brought in heart-skin buckets, but frequently also rawhide thongs were tied around the rims of the pottery vessels to which carrying thongs were attached and water was transported in them.

The space in front of each woman's bed was considered her work-room. Here she sat when making baskets or pottery, embroidering quills, or sewing on clothing, moccasins, robes, etc. Her raw materials and implements for this work were stored under the bed towards the foot, wrapped in bundles or in envelope-shaped skin bags, and kept in a workbox which was placed on a board.

In winter, hides were often dried at the fireplace, sometimes in the space near the bed placed parallel with the partition (Figs. 24 and 27) and sometimes back of the fire at the point where the cowskin seat is indicated in the diagram (Fig. 27). An elkskin flesher was used for this winter skin-dressing. A drying frame about six by nine feet was constructed within the space defined by the four main posts by setting up three forked posts between which poles were strung at top and bottom. The hide, when fleshed, was split and stretched taut on the frame; usually half a hide was stretched at a time. When more than one frame was used the hides were stretched in each, tail to tail (not shown in the diagrams). They were left to dry two nights near a good fire. The skin-dressing tools were kept in a parfleche hung with the bags containing clothes from thongs pendent from the *ati-dútidu* poles (Fig. 25). Often also the parfleche of skin dressing tools was hung on the "root carrier" which stood at Post IX (Fig. 27).

Seats were placed around two sides of the central fire. Parallel with the partition and back of the fire was a seat made of roughly dressed hide, folded, and laid on the ground, or sometimes of a rush mat about two and a half feet wide and nine feet long. At right angles to this seat, and to the left of the fire as one entered the lodge was a backrest¹ woven of peeled sticks and four strands of sinew, the whole about nine feet long by two feet wide. This being a rectangle, as will be observed in the illustration, differed from the more usual shape of a backrest (Fig. 27).

¹Henry and Thompson describe the Mandan backrest as follows: "a mat made of small willows of equal size, fastened together by threads of their own manufacture, passed through each stick about a foot apart. These mats are about ten feet long and four broad; the two ends of about 2 feet are raised slanting from the ground, supported by a kind of sofa." (Vol. 1, 339-340).

Any one of the four spaces (Figs. 24-26) back of the fire was a possible and correct place for shrines¹ and these were therefore considered sacred and reserved for this purpose. All the area between the shrines and the fire was also considered sacred and was never used as a passageway. However, the remaining unallotted space about the fire was used for lounging, as a work place, or for meals. Except for the Two Skull bundle for which a scaffold was erected, most sacred objects were hung on posts with three or four forks. The sacred paraphernalia for each ceremony were tied up in bundles covered with a buffalo calfskin and hung on the forked posts. An examination of the four diagrams (Figs. 24-26) reveals some differences in the dimensions of the sacred place in the earthlodge; it seems clear, however, that the space back of the fire was extended as far as was necessary on either side to care for sacred objects. This area was never occupied for secular purposes and was always held inviolate. On ceremonial occasions a rawhide rope was often stretched entirely around the circumference of the lodge, and from this robes and blankets were hung as decoration.

Sometimes, also, if the lodge owner's fellow society members wished to use his earthlodge for any purpose, he would take his shrines to the roof so that they would not be desecrated. There he would ask permission of the shrines to use the lodge, addressing them as if they were humans, and explaining that "his children want to play." When the shrines were thus exposed on the roof, robes were also hung around the earthlodge, covering the shrine space so that the shrines would not be dishonored by exposure.

The places of honor for distinguished guests were at 3a and 4a in the diagram (Fig. 27); the position at 2a was considered merely a good place with no special distinction.

The sweatlodge also was an integral part of the earthlodge. Its usual position appears to have been to the right of the door as one entered, beyond the corral and between it and the mortar² (Fig. 26).

The horse corral,³ also customarily within the lodge, extended from the door to the first post to the right (Fig. 25) and was reserved for the mares and foals; the corral at the left of the door was for the stud horse

¹But in most myths and tales the sacred object is hung on the wall or rafters. I have seen only two shrines that seemed to copy the old custom. In these, the objects were in the rear with the buffalo skull offerings on boxes on the floor. The positions of the shrines as observed in the modern Hidatsa rectangular cabins varied: in one case, the shrine was in the right hand corner at the rear, as one entered; in the other, it was directly opposite the door.—G. L. W. See also, Pepper, George H., and Wilson, Gilbert L., *An Hidatsa Shrine and the Beliefs respecting It* (*Memoirs, American Anthropological Association*, vol. 2, pp. 275-328, Lancaster, 1907-1915). Cf. Brackenridge's description (143) of an Arikara shrine observed by him.

²"The corn is generally bruised or pounded in a wooden mortar, which is fixed firmly into the ground in one corner of the hut;" (Henry and Thompson, *ibid.*, vol. 1, 327).

³See also *this series*, vol. 15, 156, 159-160; Henry and Thompson, vol. 1, 325.

or horses. It was constructed with one fork in front and three at the rear (Fig. 25). Two rails along the *atúti* space prevented the horses from kicking and from backing into the poles, and thus damaging the lodge. A mean or dangerous horse was fenced off into a stall by itself (Fig. 25). The corral was carefully cleaned daily and sand sprinkled about to keep it fresh and clean. It was swept with a broom made of twigs and the sweepings carried out in bark or skin carrying baskets.

Diagonally across the fireplace and supported by two forked posts standing at the main posts, A and C, was strung a pole from which the cooking kettle was hung, in modern times, by a chain (Figs. 24, 25, 27). Often, when buffalo ribs were to be roasted these were skewered and also hung over the fire and then swung back and forth to roast both sides evenly.

As has been previously stated, clothing was stored in parfleches which were hung from rawhide loops or skin thongs tied to the rafters (Fig. 25). These parfleches were kept specially for clothing and were never used for meat or other food. Several parfleches were hung ordinarily from the same set of loops. A shield made of thick buffalo hide was looped on to the skin thongs by which the parfleches hung. A loop or end of thong was pulled through the hole in the shield, then this end was caught up over a rafter, and then through the shield and pulled down until even with the other end. This served to protect the clothes hung below it from mice or from a leaky roof.

Agricultural tools were kept near the supply of firewood behind the space *i* (Fig. 27). Additional firewood was stored also as indicated in Fig. 27k). In front of one of the poles (Fig. 27, IX) was often set the so-called root carrier previously mentioned. This was a box-alder post set into the ground, root end up, and with the roots cut off short. On the projections thus formed were hung rawhide or braided ropes, or sometimes saddles or baskets. The latter, were, however, often hung on corral posts since the horses were sheltered in the lodge only in extremely inclement weather, or for the protection of a mare that had just foaled.

Weapons, bows, quivers, arrows, etc., were hung on a stick thrust between the lodge ribs resting on the *atúti* stringer, and thus projected slightly into the room as they hung.

Buffalo robes or skins covered the lodge floor. However, these were laid on a foundation of willow mats made by stringing willow sticks on four strands of sinew. The lodges were swept out quite often so the robes would not become soiled; a brush broom was used first and then the finishing touches were put on with a buffalo broom or duster made from a piece of buffalo scalp or from the part of the hide between the horns.

WINTER EARTHLODGE¹

The standard form of earthlodge among the Hidatsa, appears, from all available accounts to have been the carefully constructed summer earthlodge² used in the permanent summer village. Variants of this form were built for the winter camp when, like the Mandan,³ the Hidatsa moved⁴ up the Missouri River to the more protected forested country, where they camped on both banks of the river, gathering wood and hunting buffalo. In its main features the winter lodge⁵ closely resembled that built in the summer, though it was quite likely to be smaller and built with less care, and might also have the rafters so arranged as to give it a conical form in contradistinction to the dome-like form of the typical earthlodge. Various reasons were given for building such a relatively rough structure. It was pointed out, for example, that the lodge was abandoned at the end of the season, that it was liable to be burned by any passing enemy, and moreover, that it was quite unlikely that the same camping place would be occupied in successive years. The winter earthlodges were invariably placed close together in the timber, presumably both for better protection and easy access to the available supply of wood. They might face south, east, or north; but never to the west, the direction of the coldest winds.

THE CAMP

According to Wolf-chief, his family camped one winter when he was fourteen, across the Missouri from Independence. The family consisted of his father, Small-ankle, and his two wives, Strikes-many-women and her sister, Red-blossom, Wolf-chief's half brother, Bear's-tail whose mother was dead, his sister Maxidiwiac and her husband, Magpie, Cold-medicine, Bear's-tail's fifteen year old sister, Bear's-tail's grandmother, a very old woman, and himself.

¹Data furnished by Buffalo-bird-woman in 1914 and 1918 and supplemented by Wolf-chief in 1914, as well as information from Hairy-coat, have been coordinated for the purposes of this paper.

²Mr. F. N. Wilson, whose judgment is based on a study of the modern lodges, coupled with information secured from the Hidatsa themselves and data printed in early accounts, is convinced that the twelve post lodge with the somewhat peaked roof, and about forty feet in diameter was the normal Hidatsa form. He believes all other lodge forms to have been variants of this standard.

³Cf. Henry and Thompson, vol. 1, 340.

⁴Apparently, according to Boller (*ibid.*, 32) the Arikara also customarily moved in the fall from their permanent spring and summer village to some wooded position which promised both game and feed for their horses. Cf. also Maximilian, vol. 2, 335, 368, 370.

In Matthews' time the Hidatsa, when occupying their winter village, appear to have built log cabins with mud and stick chimneys and holes in the roof, a structure which seems to have been a curious combination of the pioneer log cabin and the earthlodge (*ibid.*, 7).

⁵"They reside here (on Knife River) only during the summer. Early in the fall, when the cold weather begins, they decamp in a body for the Snake's Lodge, where they take up their residence for the winter in huts of the same construction . . ." (Henry and Thompson, vol. 1, 349).

The Mandan winter earthlodges were exact, but smaller, duplicates of the summer lodges, according to Maximilian (vol. 2, 272).

Wolf-chief's family and two or three Mandan who passed the winter with them camped at first in tipis. They camped in a tipi made of fourteen buffalo skins. The Mandan with a few Hidatsa wintered that year near what is now Fort Stevenson. It was not the customary procedure for the Mandan and Hidatsa to camp together, though they had done so the previous year for defense against their common enemy, the Sioux. That year the Arikara also camped nearby, though not in the same village. Wolf-chief gave various reasons why the Arikara did not camp with the Hidatsa, but somewhat apart from them: that the Arikara had stolen horses from them, that they had stolen offerings made by the Hidatsa, and finally that the Arikara stole and ate the Hidatsa dogs.

The winter camping place was selected in advance by the owner of a well-reputed sacred bundle. As soon as the Hidatsa arrived at the camping place in the woods on the left bank of the Missouri, they set up their

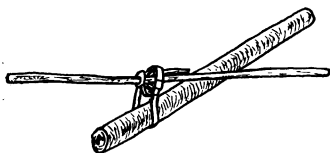


Fig. 32. Method used to transport a Log when carried by Two Women.

tipis. There was no camp circle. Of the permanent lodge furnishings only the mortar was taken to the winter camp.

Upon reaching the camp, some families, eager to build their winter lodges, began cutting the logs immediately. This was the task of the women, but some men helped their wives with the log cutting; others, less energetic, offered

no assistance. Posts, beams, rafters, and string pieces, were measured with a long stick, and cut as soon as found, no special order being followed. For the winter lodge the logs were not stripped of bark; they were all forked and smaller than those for the summer lodge. The wood cutting usually occupied three days. Then the logs were dragged to the site of the lodge by a saddled horse. If the log were a large one, or if it had to be hauled a long distance, a rope or thong was passed around the horse's breast like the collar of the dog travois and the thong held in place by being fastened to the belly band on either side below the saddle. For a small log, the rope was merely tied to the belly band.

Another method of transporting the beams to the camp was to lay two short sticks or poles athwart a beam near either end and lash each stick to the beam with a thong. Two women seized each pole, one at each end and thus carried the beam. The thong was always passed under the beam, tied loosely, and the short carrying pole then passed through the tied thong as shown in Fig. 32.

Buffalo-bird-woman who insisted that the men took no part in cutting and bringing in the wood stated that the women brought the short exterior posts, the beams or stringers, and the rafters to the lodge site one at a time, on their backs. Sometimes a pack strap was used; though for short distances the timbers were carried on the back (Fig. 33). Ordinarily, the rafters for a winter lodge were not heavy; sometimes, if a suitable pole were rather heavy, it was split and two rafters made from it.

The product of one day's wood cutting for a woman and her several assistants was said to have consisted of the four forked main posts, about

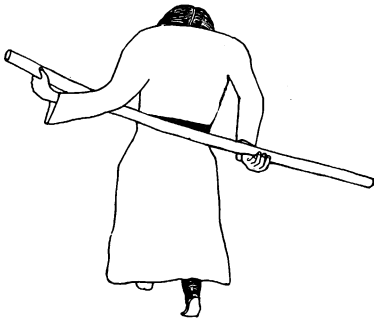


Fig. 33



Fig. 34

Fig. 33. The Correct Method of transporting a Log when carried by One Woman.

Fig. 34. Carrying off Débris in clearing an Earthlodge Site. The illustration is not entirely accurate. The bundle should be held close to the body and not away from it.

twelve shorter posts for supporting the outer periphery of the roof, and seventy or more poles for the rafters. The posts were about six inches and the overlying beams or stringers only about four and a half inches in diameter.

PREPARING THE LODGE SITE

At intervals during the three days devoted to cutting timber, the women cleared and leveled the lodge site (Buffalo-bird-woman, her sister, and her two mothers), cutting down the brush and small trees, and with a hoe, scraping away the dead leaves which were carried off in a skin basket, together with dead wood, and other débris. If the skin basket proved insufficient, a makeshift container was made from a piece of tipi skin into which the débris was raked. Holding the two corners of the

skin in each hand, and the bundle against her body, the women walked off to empty the skin of its contents (Fig. 34).

The lodge floor was not excavated principally because a site where the ground was well beaten down and hardened was preferred. Even a shallow excavation was likely to disclose loosened soil, so the usual procedure was merely to level off any protuberances and to cut close to the ground any small trees or bushes, as described above. (See p. 357.)

THE CENTRAL POSTS AND BEAMS

In the actual erection of the lodge the first step was to raise the four central posts and set them in holes dug to a depth measured by the length of a woman's forearm. Kneeling as they worked, the women dug the holes with long digging sticks at the angles of a rectangle. The floor diameter was ordinarily about eighteen or twenty feet¹; in practice, the size was in large part determined by the space necessary to house the horses.

The four forked central posts were about a foot in diameter and about eight or ten feet high. The branches were cut off square at the base of the forks; the center of the base was then gouged out to form two ears, thus forming a firm support for the heavy beams, with ends rounded, which rested on these posts. Trimming the beams and posts was the sacred duty of but a few women in the village, according to Buffalo-bird-woman (see p. 356), but Wolf-chief denied unconditionally that this restriction held in building the winter lodge. Two days were occupied in trimming the posts and beams.

Six or seven young men were called in to raise the beams on to the supporting posts. In the meantime, the women gathered wild beans which ripened in the fall, cooking them for a feast. If buffalo meat were available this also was prepared. Having been invited the preceding evening, the young men came at seven or eight the next morning. They brought no feast bowls with them, the women borrowing bowls from their neighbors for this purpose.

To raise the beams on to the central supporting posts, slings made of two crossed poles united by a short thong were used. A lariat was looped around one end of a beam and the free end thrown over the top of a post, between the two ears, and then wrapped several times around the body of the post to act as a brake. One or two men pulled on the lariat while

¹Information on this point is contradictory. All the informants are agreed that the winter lodge was smaller than the summer lodge; yet the estimates of the diameter vary, in our data, from eighteen to thirty feet, the maximum suggested by Buffalo-bird-woman, who stated that the winter lodge was the same size as Wolf-chief's (See Fig. 11 and diameters of other modern lodges, p. 382.)

the others lifted the beam. When one end had been thus raised out of reach the slings were used and the beam pushed into place. The rope tied to it was drawn taut and fastened to the post to steady the beam. Then the other end of the beam was raised in similar fashion. The staying rope was removed by loosening the noose with a long stick (Fig. 35).

Meanwhile the four central posts rested in the post holes, steadied by stakes set beside the butts of the posts. When the beams were in

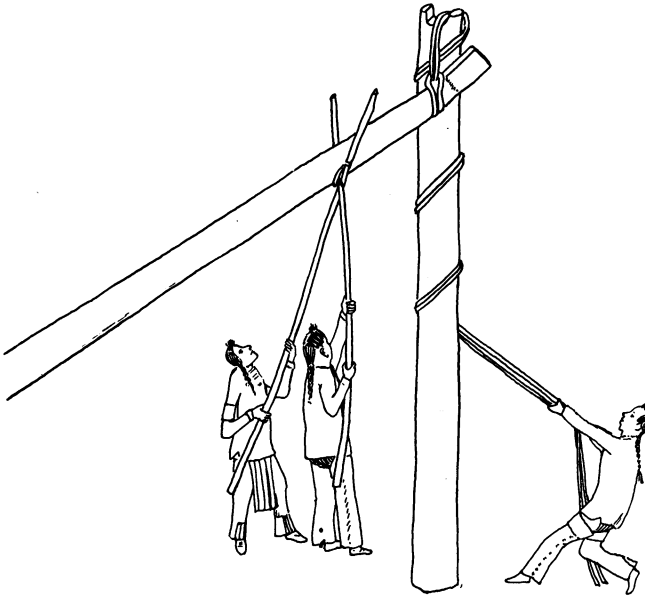


Fig. 35. Raising one of the Beams which rest on the Main Supporting Posts of the Winter Earthlodge.

place, the stakes were removed, and the posts adjusted to settle firmly in their respective holes which were then filled with earth tamped down with a short stick. If one of the posts appeared to swerve perceptibly from the perpendicular, a wooden pestle from a corn mortar was used as a ramrod to force the post to a vertical position. Sometimes a stake was also driven in at the base, for added firmness.

EXTERIOR POSTS AND RAFTERS

As may be observed in Fig. 36, the groundplan of the lodge was not a perfect circle, nor was this ever the objective when a lodge was in process of construction. Following the erection of the central foundation poles,

the correct position for the exterior posts, and incidentally the length of the rafters (*atí-dútídu*), was measured off. The woman stood in the approximate position at the circumference of the lodge where it was expected to set up the outer circle of posts. With a rafter resting on or over her shoulder, she raised the smaller end to its correct place on the beam above the central posts, and thus it was possible to estimate its proper length (Fig. 37). A string was tied to the rafter to mark the place

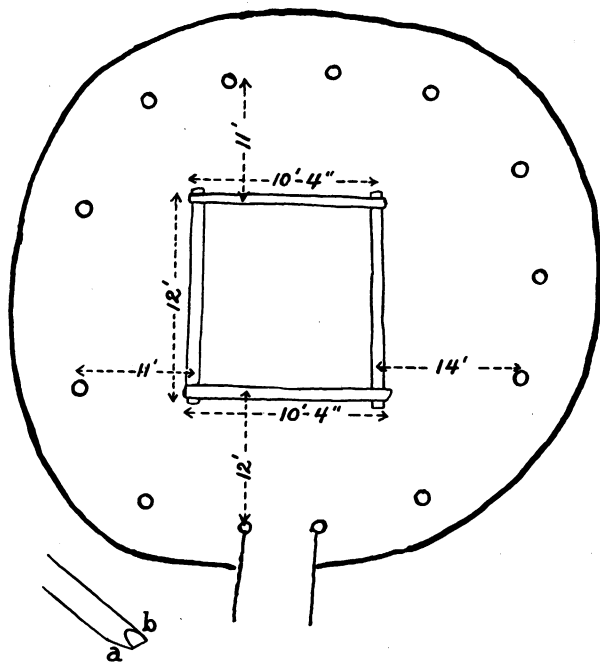


Fig. 36. Groundplan of the Winter Earthlodge, showing Position of Posts, and Distances between Them.

where it was to be cut and the position of the post hole indicated by a heel mark in the earth. The measurements were repeated in the same manner for all the rafters and posts and the post holes marked. The diagram in Fig. 36, illustrates the groundplan of the structure up to this point and gives, in addition, the correct measurements. The rafters were trimmed down to rest flatly on the exterior posts. For the side of the lodge containing the horse corral the rafters were two feet or more longer than the others. The *atúti* stringers were also longer. This

arrangement allowed more space for the horse corral which was inside the lodge during the winter. All of them were so placed that their smaller ends rested on the central beams.

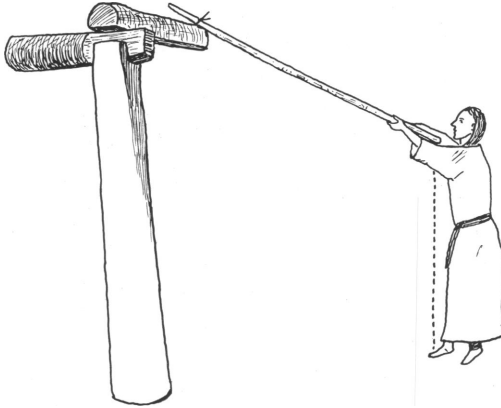


Fig. 37. Measuring the Length of the Rafters and the Proper Position of the Peripheral Posts.

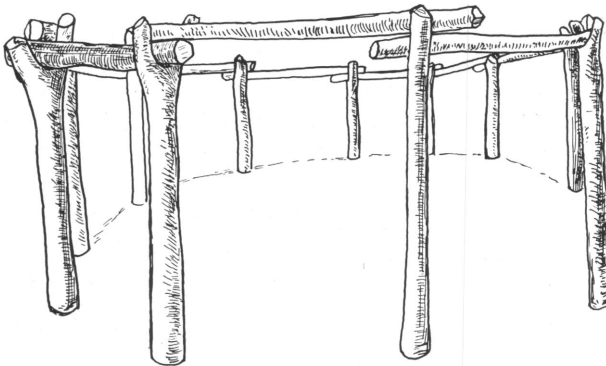


Fig. 38. The Forked Peripheral Posts of the Winter Earthlodge showing the Beams laid on Them.

The correct distances having been determined, the post holes were dug. The winter lodge being smaller than the summer earthlodge, only ten or twelve or even fewer, exterior posts were set up. These, in contrast to the summer lodge posts, which were level at the top, were forked. They were approximately six feet high. As shown in Fig. 38,

the stringers or beams were laid in the forks of the posts with overlapping ends, and no particular attempt made to fit them carefully. These were lighter than the central beams, being about nine inches in diameter. Beginning at either side of the entrance, the beams were laid in regular order toward the rear, the last one resting on the ends of the two beams that lay on either side. Finally, a beam was laid on the two entrance posts.

The outer circle of posts and beams having been completed, the rafters were laid out in a large circle around the fireplace on the lodge floor. Four women raised the rafters, one stood on each side of the central rectangle of posts and beams, inside the outer frame of posts and beams. The rafters were so measured and trimmed at the butt ends that sufficient space would be left for the smoke hole, those at the angles of the central posts being necessarily shorter. They were carefully selected; the straight rafters were placed on the four sides of the central rectangle; those that curved were set at the corners, convex side outward, thus assuring a roof that was rounded at the angles of the rectangle. It seems to have been an invariable rule that the rafters on the left¹ side of the central rectangle of posts be raised first.

THE EARTHLODGE WALLS

To facilitate the proper orientation of the smoke hole which was a two-foot opening, either square or round, the front and rear rafters were raised after those on the left and right sides were in position. The next step was the laying of the lean-to puncheons; this was begun at any point in the four sides of the lodge. The puncheons, some split and some round, for the left and right sides were somewhat shorter than those for the front and rear, since, as has been noted for the summer earthlodge, the beams over the entrance and the two exterior posts were somewhat higher than the remainder. It was feasible to reverse the order of construction and lay the lean-to puncheons before the rafters were raised, in which case it was necessary to carry them through the doorway and place them from the inside. However, the former was preferred as the better method.

After the lean-to puncheons were in place, the entrance way was built. The puncheons enclosing its sides were held in place by two poles, each of which was bound at one end to the beam over the exterior posts forming the doorway and at the other end to the beam resting over the front posts of the entrance way.

The four women then cut willow branches, and, having trimmed the tops, laid them in the interstices between the lean-to puncheons which

¹Left being reckoned as one faces the entrance from the fireplace.

were then covered with about six inches of slough grass laid like thatch, each bunch of grass overlapping the one immediately below it.

A series of forked poles supporting a horizontal railing was then set up to encircle the earthlodge and served to prevent the grass from slipping off. Standing on the railing the women reached up to the top of the lean-to slabs and athwart the lower ends of the roof rafters and laid a course of willows about a foot wide. As in the summer earthlodge the willows were then covered with long grass which was carefully bent over the tops of the lean-to poles and joints of the rafters as well as the tops of the posts (Fig. 39) to strengthen this weak spot in the structure. The green willows were laid across the rafters quite to the smoke hole.

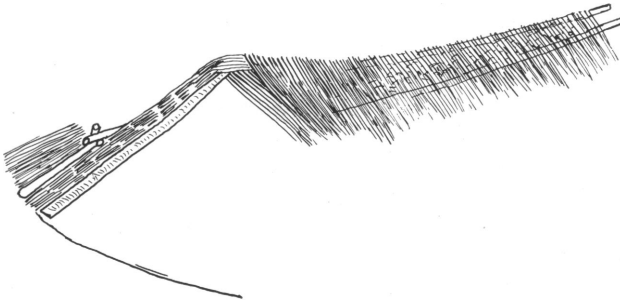


Fig. 39. Grass Covering of the Willows forming the First Layer of the Earthlodge Roof, showing Method of overlapping the Grass.

The next step was to pile dry or green grass, whichever was available, at the base of the lean-to slabs standing it on end as far as possible. Standing on the encircling rail, the women reached down, and grasping bunches of the grass, laid it crosswise and not like thatch, over the willows covering the rafters (Fig. 39), to within four or five feet of the smoke hole. Around the smoke hole, chips or roughly cut slabs were laid to avoid the danger of fire from sparks. Such chips were also used for the peaked roof of the summer earthlodge, but not for the flat-roofed type.

ROOFING

The framework having been completed, the next task was to earth over the roof. The young men of the household (or others) were sent out on a buffalo hunt, in preparation for a feast. The woman lodge builder invited the members of her age society to assist her, though women who did not belong to her group were not barred. They arrived

about seven or eight o'clock in the morning, bringing their baskets to carry the earth, their hoes, as well as their feast bowls, since they knew there would be an abundance of food to take away with them. The feast was ordinarily held in the middle of the afternoon after the work was completed. Usually about twenty women assisted in piling on the roof the loose earth dug in the woods. To prevent the earth covering from sliding off, the lodge was surrounded by an outer railing similar to that of the summer lodge.

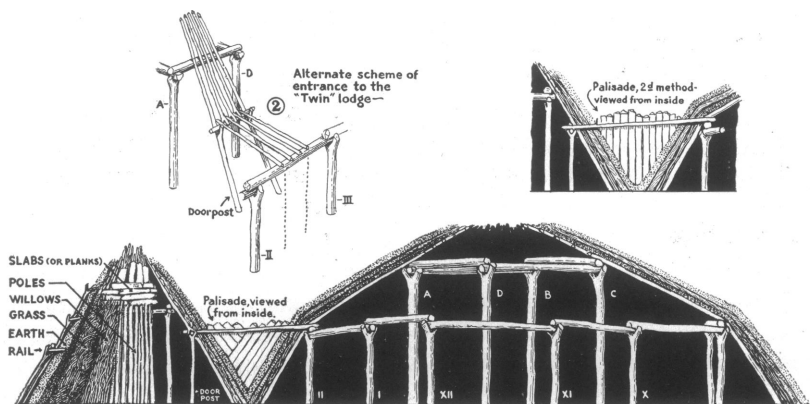
Usually it took a week to build a lodge.

TWIN LODGE

Very often a subsidiary smaller lodge was built by the Hidatsa and joined to the winter lodge by a connecting passageway. This structure was rather aptly termed by them, a twin lodge (*áti-idutskě*, lodge made twin). The name, however, was applied only to the annexed structure when united with a winter lodge and not to the two considered together. A twin lodge, built on a framework of four large posts which supported the cross beams, was called, *midi-átiĥě*, when standing alone; however, when the selfsame structure became an adjunct to the earthlodge it was designated, as noted above, *áti-idutskě*. The accompanying illustration (Fig. 40) was prepared by Mr. F. N. Wilson on the basis of photographs in his possession and independent descriptions recorded by him.

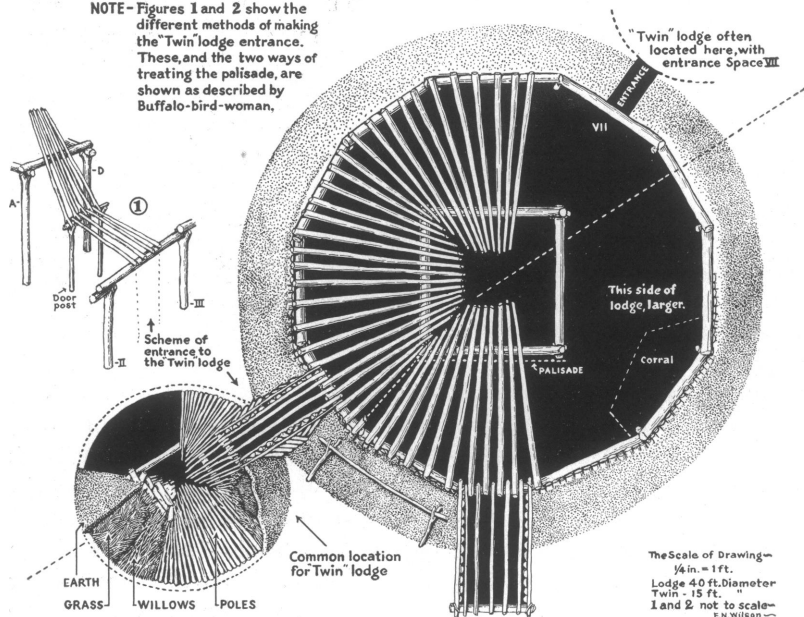
Frequently, this secondary lodge was erected by a young man as a dwelling place for his parents, or as a kind of play house for the favored daughter of the family. It was also put to use as an eating place for the whole family, in cold weather, since a fire burned continuously in its central fireplace. Being small it was more easily heated than the main lodge. Here too, a fire customarily burned constantly, though when the women were absent on a wood-gathering expedition, it was allowed to die down. Moreover, during a period of extreme cold the main lodge fire was not kept burning and the twin lodge became the chief gathering place for the occupants of the lodge. No young man ever used the twin lodge as his principal dwelling place, nor was a twin lodge ever built in the summer village. However, Hairy-coat intimated that the twin lodge might be used as a dwelling by a poor family in which case it had an entrance like any other lodge.

Buffalo-bird-woman, again the principal informant (1916), made a model of this type of lodge, but unfortunately only a few fragmentary statements as to the details of its construction appear to have been recorded. It seems to have been very similar in form to the winter lodge, though smaller; yet, several random and more or less vague statements indicate that the twin lodge may at times have taken the form of the conical hunting lodge described below (p. 411). Wolf-chief, an earlier informant (1914), stated that this secondary lodge had the usual four center posts, that these as well as the exterior posts, the number of which he was unable to name, were always made of forked tree trunks, and further, that they were all rather small, much smaller than those used in the summer earthlodge. Such an annexed lodge, also described as having been seen by Wolf-chief, did not have the usual smoke hole in the roof, but instead, had in the rear a fireplace and a chimney built of



B-Section through Lodges, taken at broken line in A. Nearer Atuti posts left in position - I-II -XI-XII etc.

NOTE—Figures 1 and 2 show the different methods of making the "Twin" lodge entrance. These, and the two ways of treating the palisade, are shown as described by Buffalo-bird-woman,



A - View looking down on large Winter Lodge with attached "Twin", after accounts by Buffalo-bird Woman and Hairy Coat. Covering partly removed to show construction.

Fig. 40. Structure of the Winter Lodge and attached Twin Lodge.

plaster made of mud and grass. The floor diameter was said to approximate that of a hunting lodge, or about twelve to fifteen feet, though Wolf-chief stated (1918) that the rear lodge was always smaller than the main lodge and was not over eighteen feet in diameter. Measuring from the fireplace to the poles above it, the twin lodge attained a height of ten feet. From these differing statements, it seems reasonably safe to assume that this subsidiary structure probably had no fixed form, but was built to fill some specific need.

The twin lodge itself had no outer entrance, but was entered always through the main lodge and the roofed passageway (Fig. 40).

The roofed passageway between the two lodges was built when the frame and rafter poles of the secondary lodge were in place. This was begun by laying a pole or small beam on the projecting stumps on two of the leaning poles of the twin lodge, on the side nearer to the main lodge. On this beam were laid two heavy poles which supported the roof of the passageway, with their opposite ends resting on the beam on the two rear outer posts of the earthlodge. These were bound down with rawhide thongs at both ends.

The puncheons enclosing the sides of the passageway were laid in two series; in the first, they were parallel to the lean-to puncheons of the earthlodge; in the second series, they were laid parallel with the pole rafters of the twin lodge. The two series of puncheons were held in place on each side by a pole, bound, at one end, to the beam on the two rear outer posts of the earthlodge and at the other to the beam forming the lintel of the entrance to the twin lodge. The second series of puncheons on either side rested with the butt ends of the puncheons against the lean-to puncheons of the larger earthlodge. This was the preferred way, as the puncheons did not then invade the *atúti* of the main lodge.

The roof of the passage was made like the flat roof of an earthlodge. Puncheons were laid across the rafters of the passage roof; on these was laid grass, which was, in turn, covered with a kind of clay brought to the lodge in baskets and carried up on the roof by means of a native notched log ladder. When the roof was completed, the side walls of the passage were covered with earth held in place by rails laid on forked sticks.

The first step was to stand willow branches upright against the puncheon walls. The branches served to hold the grass and leaves which were then heaped against them. Two sections about a foot in diameter were cut from a rotten log. One of these log sections was laid on the outside of the passage at the base of each wall. Earth was then banked over the logs and against the grass and willow leaves.

Against the wall, about halfway to the roof, was laid a rail or log, about six inches in diameter, resting on forked sticks which held it in place. Again, earth was piled on, until the walls were covered almost to the roof.¹ The rail and forked sticks held the earth covering in place, as they did for the main lodge previously described.

The passage was about six feet high. However, the beams forming the lintels at either end reduced this height at the entrance and exit by eight or nine inches, making it necessary for a man to stoop when entering by either doorway. Though the width of the passageway decreased somewhat at the twin lodge end, the floor and roof at any given point were consistently of the same width. Where it joined the main lodge the width of the passage was four feet or a trifle less.

The wall puncheons of the passage crossed in the middle, like a V, those at one end lying parallel with the lean-to puncheons of the main lodge, while those at the other end lay parallel with the poles of the twin lodge frame. This appears to have been the usual method of construction followed, but Buffalo-bird-woman described another covered passage the walls of which were built by standing lean-to poles against its roof rafters. These lean-to poles rested on the ground in the middle of the passage wall; but at either end of the passage, the poles were shorter and stood on the walls of either lodge. In this case the roofs of the lodges and the passage were covered with earth and then the wall puncheons were placed. To support them a pole was bound outside near the puncheon tops as was customary in the covered entrance to a summer earthlodge.

The door at the twin lodge end of the passage did not have the usual log or pole for a sill, since this was deemed unnecessary for an interior door. The lintels were forked poles, five to five and a half feet in height. In old times, doors were made either of buffalo bull or cowhide. The door into the covered passage was made of half a buffalo cowhide, with legs, tail, and head trimmed off, and cut narrower at the top than the bottom and hung with the tail end down. The hide swung on a thong tied through a hole in the middle of the upper edge and fell fur side in. A stick was bound horizontally across the middle of the skin and, on the outer or flesh side at either end, to its edge. As this was an inside door, no buffalo hoofs hung from it. The stick was used to raise the door. As one emerged from a lodge the left² side of the skin door was lifted; as

¹A statement by Wolf-chief describes a somewhat different method. He states the walls were plastered with a mixture of grass and mud, in such a way that only the interstices between the puncheons were filled, producing a ribbed appearance.

²Right and left were reckoned Hidatsa fashion, with the fireplace as the focal point.

one entered, the same side, which then became the right, was raised. The poles of the twin lodge leaned inward, as they all met at the top. The skin door, hanging outside the doorway, fell snugly over the door opening by its own weight. Such a door was made of an untanned skin.

The interior furnishings were meager, as might be expected, in a somewhat makeshift dwelling such as this. The corn mortar stood near the center posts. Two large platforms, constructed like food stages, of logs and planks were used as beds. Sometimes the beds were constructed of logs laid four square with the space filled in with hay.

ODD-SHAPED LODGE

What appears to have been a somewhat abnormal form of earth-lodge was also described (Buffalo-bird-woman, 1918), though with some reservations, as having been built by the Mandan when they first arrived at Like-a-fishhook village. This lodge was owned by a man named Tó'pa-wiapić, or Four-times-breeding. It did not conform with the standard, being oval in groundplan; instead of the usual four central posts, the lodge rested on a foundation of six. The roof, as in the summer lodge, was flat and laid with planks. Attached directly to the lodge at the rear, but lacking the typical connecting covered passageway between the two, was another lodge, with a smoke hole, but no fireplace. The beds were arranged around the walls. After a time the second lodge, which had been used as a storehouse, was dismantled and the oval-shaped one which was the dance house of the Goose Imitators and White-buffalo Society stood alone.

None of the descriptions of the so-called Mandan medicine lodge which stood in a central open space in the Mandan village, help in the identification of this aberrant form, for which we have no confirmatory data beyond the fact that Hairy-coat's wife remembered and had been in the lodge. Further, the Hidatsa themselves claim never to have built a six-post lodge.

HUNTING LODGES¹

On hunting trips, short journeys, and other occasions when more or less temporary shelter was needed, the Hidatsa did not build the elaborate earthlodge, but contented themselves with one of three impermanent structures.

For summer camping, a dome-shaped structure, consisting merely of half a "tent skin" stretched over a framework of arched poles seems to have sufficed. In this type of house the fireplace was outside. In cold weather, a conical skin covered tipi, with the shallow fireplace inside, was sometimes used as a temporary abode.

A third form of shelter, for semi-permanent use, as when a hunting party expected to be camped at one place for a month or more, was the conical hunting lodge (*midi-átihé*) built on a foundation of four forked poles the size of tipi poles and covered either with skins or with bark and earth. Sometimes a hunting lodge which had been used the previous year was cleaned and used again.

This conical earth-covered lodge, when built in summer or mild weather, was not so carefully constructed as one for winter use. In a circle around the four-pole foundation were placed other poles, set as closely together as possible. The forked foundation poles were usually cut green, principally because these were less liable to take fire; many of the shorter poles were of dry wood. Most of these poles were long and met at the top, but some were shorter and so placed as to fill the spaces between the longer poles, especially near the ground, making an almost windproof wall. If any of the longer poles had branches when first cut, the latter were trimmed to leave the stumps projecting on the pole so that they could be used to support horizontally laid sticks, and the earth laid on the roof as a final cover. Two of these stumps, larger than the others, were placed on opposite sides to project inside the lodge. From these a thong swung across the fireplace on which meat was hung for drying.

After the pole framework was completed, a row of buckbrush, chokecherry, elm, red willow or other green-cut branches, was laid around the outside of the lodge at the bottom and covered all the interstices between the poles. For this only the straighter branches were selected; they were set in upright, with stem or root end down.

¹Information on this subject was obtained in 1918 from Wolf-chief and Buffalo-bird-woman, and earlier, in 1915, from Goodbird. These three accounts have been collated and combined for convenience in presentation. Compare with this the description of the eagle hunting lodge as given in a previous publication, *this series*, vol. 30, 122, 134-135, 143-144, and Matthews, *ibid.*, 7-8.

Again beginning at the bottom, a long grass growing near ponds and streams was laid over the buckbrush and branches for a thickness of about four inches. The grass was laid against the buckbrush and branches, root end down, the work being done very carefully. This layer was partly for insulation and partly to prevent the covering earth from falling through into the lodge. Over the grass, earth was heaped to a depth of four inches. The first row of buckbrush, branches, grass, and earth carried the covering about four and a half feet up the sides of the lodge (Fig. 41). The process was repeated a second time, until branches, grass, and earth covered the lodge to a height of about eight feet. Above this no earth was laid. To cover the lodge with earth, a

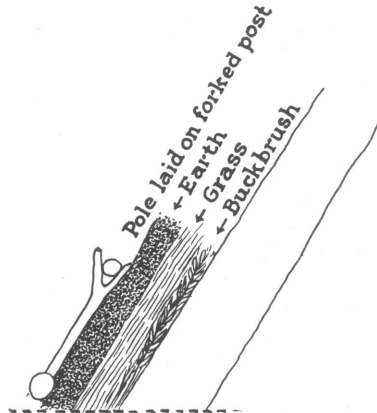


Fig. 41. A Cross-Section of the Covering for a Hunting Lodge.

wooden bowl containing earth was held in the hand; from this the earth was spread at the proper places and pressed down with the palms of the hands. After the earth covering was in place, the lodge was encircled by three (sometimes two) series of supporting rails, laid in short forked posts (Fig. 41). At the front, the railing immediately over the door was supported by two long forked posts which rested on the ground and passed under the lower railing, making a firm support of the doorway.

A section about two and a half feet above the earthed portion of the lodge was covered with bark, or if bark were not available, short puncheons were split and used. At the lower edge, for about four inches, the bark was thrust into the earth covering of the lodge, to hold it firmly. Elmbark, of which an abundance was found in the Bad Lands where the

Hidatsa built their hunting lodges, was chiefly used for this purpose. In the Missouri River timbered area, cottonwood bark was probably also used as lodge covering. The bark was laid on shingle fashion, but in reverse order, to prevent the sections from dropping off. It was not stripped, but was laid as it came from the tree, with the rough side exposed. No ladder was used in putting on the bark, instead, the encircling rails which held the earth covering on the lodge were mounted.

For about two feet above the bark to the crossing of the poles, they were not covered. This open space served to let in light, and as a smoke hole. A hunting lodge, however, did not get very smoky since the poles through which the smoke escaped, broke the force of any descending draft that might blow it back again.¹

An ordinary hunting lodge of this type had a floor diameter of about twelve feet. The poles averaged about three and one-half inches in diameter at the larger end; the height above the fireplace to the crossing of the poles was about ten feet.

In a hunting lodge the fireplace was about three feet across and about four inches deep. The ashes were carried out quite often. The Hidatsa had few iron tools in the days when hunting lodges were still built. Every morning the women cleaned out the fireplace before the fire was made. For this purpose, a shovel-like implement about two feet long and about six inches wide, made from part of an old rotten log from which the rotten core was removed leaving the shell, was used. The ashes were raked into this scoop with a hoe. Several of these hollowed planks or logs were invariable accompaniments of a hunting camp. They were utilized to hold fresh meat, for which purpose several could be laid side by side, with the convex side turned uppermost. It was a customary procedure to dry a great deal of meat in the hunting lodge.

The entrance to a lodge intended for only a short occupancy was about four and one-half feet high, two and one-half feet wide at the bottom, and ten inches at the top, where the lintel beam was bound across.

One hunting lodge described had a door of a black-tailed deerskin which hung, fur side in, from a thong run through a hole in the middle of the upper edge at the top and had a bracing stick horizontally across the middle. Doors were also made of a section of tipi skin. In this case, the skin had the usual bracing stick across the middle, and was attached by its two upper corners.

¹A model hunting lodge made by Owl-woman had small slabs of bark around the smoke hole in horizontal position. This, according to Buffalo-bird-woman, was an individual variation and did not follow the tribal pattern.

As soon as the first snow fell, a log reaching across the doorway and about four inches in diameter was set under the door to prevent snow from being blown into the lodge.¹ The log was held in place by wooden stakes driven into the ground. The skin door fell upon and over the outside.

More commonly a tough buffalo skin served as a hunting lodge door. A square skin, with the head removed, it was often hung from a pole placed horizontally above the doorway; if necessary, a second pole was fastened from foreleg to foreleg as an extension bar. A large skin did not require such a bar.

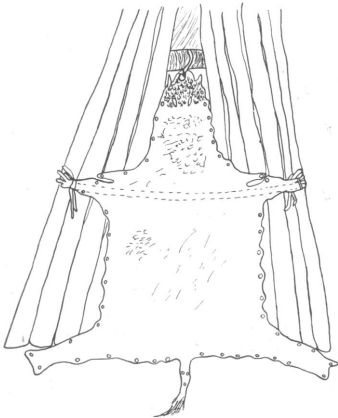


Fig. 42

Fig. 42. A Typical Hunting Lodge Door, showing how the Skin Door was brought Inside the Lodge on a Cold Night.

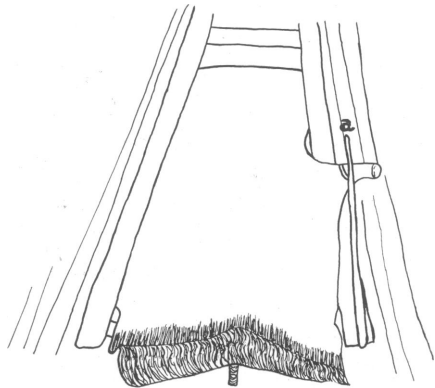


Fig. 43

Fig. 43. Details of the Hunting Lodge Door as seen from the Interior of the Lodge.

When camping in very cold weather, the door skin was commonly drawn inside at night, fastened to the lintel, and fitted snugly over the door opening, and the extension bar was fastened to the two lodge frame poles at either side of the door. To pass in and out it was necessary to stoop under the bar. If the night was extremely cold, a second skin was hung over the first for extra protection. If this was a small skin a bar was also attached to it from foreleg to foreleg; a large skin did not need the bar, its size permitting it to be fitted snugly over and around the first or outside skin. The sketch by Goodbird (Fig. 42) illustrates the method by which the door skin is brought inside the door. The details of a door

¹Cf. *this series*, vol. 30, 122, 134-135, 151.

viewed from within the hunting lodge may be seen in Fig. 43. On a windy day one end of the extension bar of the door skin was drawn inside and locked by being pushed down between the post (Fig. 43a) and the door frame.

If the lodge were smoky and it was desirable to create a draft, a small stake was driven into the earth floor, just within the doorway, to raise the skin somewhat from the floor.

THE TIPI

Though obviously lacking in completeness, the appended notes on the tipi,¹ obtained in the main from Buffalo-bird-woman in 1909 and 1910, are included here to round out the available information on Hidatsa dwelling types.

Like the preparation of the four central poles for the earthlodge, cutting a skin tipi cover to the correct shape and size was a special prerogative which no woman dared to exercise unless she owned the privilege, particularly since it was believed by the Hidatsa that some great misfortune would befall her or her friends. The right to trim a tipi cover was individually owned and was, in addition, salable. Buffalo-bird-woman related that her father's sister had purchased the right from another woman. Afterwards, she, in turn, bought the privilege from her clan aunt, paying for it a fine tanned buffalo robe; in return, she was taught the accepted method of preparing the skins so they would be soft and white.

The old-time tipi cover was made from well-tanned buffalo cowskins. The best time for securing the hides was the latter part of June. After the buffalo hunt, the hides were brought in for tanning by the woman of the household. Thirteen hides were required for an ordinary sized tipi, though the use of additional skins was not unusual. Tipis were said to have ranged in size from those requiring only seven skins for a cover to a maximum of as many as twenty skins. A seven, eleven, or thirteen skin tipi cover was relatively easy to fit properly; a ten-skin cover was more difficult.

A fresh skin, when brought in, was stretched and pegged out on the ground, toward evening, slightly dampened with water, and covered with dry hides until morning, when the flesh was completely scraped off with a flesher made of the hind leg bone of an elk. The flesher was toothed and sharpened at one end, and was manipulated with one hand, the movement being toward the worker. Elk bones were preferred for fleshers since deer bones were too soft. Fleshing two hides was considered a good day's work.

After a hide had been de-haired with an elkhorn scraper, fleshed, and dried it was laid on an old tipi cover. In using the iron-bladed scraper which early superseded the old flint-bladed type, the first and second finger were laid over the bend in the horn handle, the tips of the fingers resting almost on the blade. A concoction of three or four buffalo

¹Cf. with this section, the description of the construction of an Hidatsa tent, *this series*, vol. 15, 242-243, 291-292, 300.

brains, pieces of flesh from near the small ribs near the kidneys, and a buffalo horn spoon full of bone grease and gray sage was boiled together in a pottery or wooden vessel, and when ready, was thoroughly rubbed into both sides of the skin. After three or four days, in warm weather, the skin was well saturated with this brain and grease compound. The hide was then soaked in warm water and wrung out, ordinarily by two women, who by means of a short stick twisted it around a post set up-right in the ground.

The necessary thirteen hides having been tanned, they were taken to the privileged woman to measure and fit them, for which service she received a tanned robe and a large bowlful of food. In preparation for

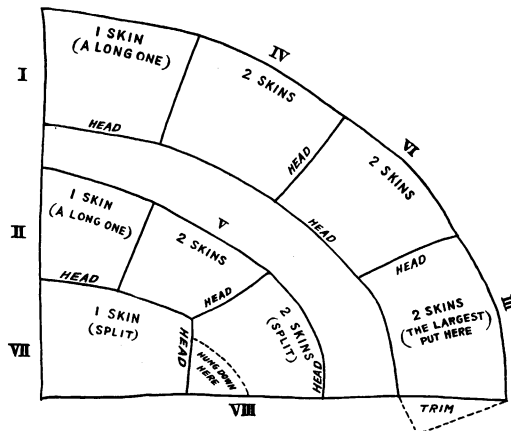


Fig. 44. Diagram showing the Method of laying out the Hides for a Thirteen Skin Tipi Cover.

the sewing a great quantity of sinew had also previously been collected. Many women were invited to assist in sewing the tipi cover and, in payment, a feast was provided.¹ The sinew was divided among them for shredding to the correct thickness.

An old tipi cover was spread out on the ground; on this, the thirteen hides were laid out in definite order and later the women sewers sat on it. Having prepared herself by heavily painting the part of her hair with dry red paint, the woman hide trimmer marked the hides for trimming with the tips of her fingers which had been colored by touching them to the red paint delineating the parting line of her hair. A dot here and there

¹Cf. *this series*, vol. 15, 292.

was a sufficient guide for trimming. This was the prescribed method; both wetting the finger before touching it to the paint and the use of charcoal instead of the red paint were absolutely prohibited and any violation of these restrictions was believed to be the inevitable cause of some calamity.

Fig. 44 illustrates diagrammatically the method of laying out the skins for a thirteen skin cover. One half a tipi cover is represented so that each section marked "two skins" represents one skin laid over another. Where the sections are marked "one skin," the hide is divided, half belonging to the upper half section and half to the lower. The hides marked I, II, III, in the diagram are first laid, then those marked IV, V, VI and finally, those designated as VII and VIII. The lower series (Fig. 44, II, V, VII, and VIII) was sewed separately as was the upper series (Fig. 44, I, IV, VI, III). The space thus left between the two series of skins was patched with the odd pieces trimmed from the hides. For a larger cover skins were added at the front and between the two series of skins. The two smoke flaps were called the arms of the tipi.

The skins having been trimmed, the woman basted them together temporarily, using an awl and sinew. The tipi cover was sewed flesh side in, in two large sections. To make these fit each other they were pieced with the trimmings left after cutting the hides. Usually these patches were at the right and left sides back of the door. The section of the cover directly over the doorway was made somewhat longer than the back of the tipi. This front part was often decorated with strips of bird-quill ornamentation which covered the seams where the section over the doorway was closed by lacing with wooden pegs. The parts to the right and left of the seam were called the legs of the tipi.

A newly completed tipi cover was soft and white, but after a year or two of exposure to the elements and to the smoke from the fire inside, the skin cover became discolored and soiled. Then it was commonly cut up for moccasins. When the Hidatsa lived in earthlodges for a large part of the year, the tipi cover when not in use was neatly folded and tied to the rafters of the sloping roof with a lariat.

Like the Blackfoot, Crow, Sarsi, Shoshoni, Ute, Comanche, and Omaha, the Hidatsa set up their tipis on a foundation framework of four poles.¹ This basic framework was supplemented by nine additional poles for the ordinary sized tipi, though the number of poles was said to have varied in proportion to the size of the cover. To erect the four-pole

¹See also *this series*, vol. 15, 268, 289-291, for an Hidatsa comparison of the Mandan and Hidatsa tipi ties.

foundation, the poles were laid on the ground and bound together with a thong lariat wrapped twice around the intersecting point and tied with a simple knot as in Fig. 45 so that the two front poles lay uppermost and projected a foot or more beyond the others. Usually the foot was placed

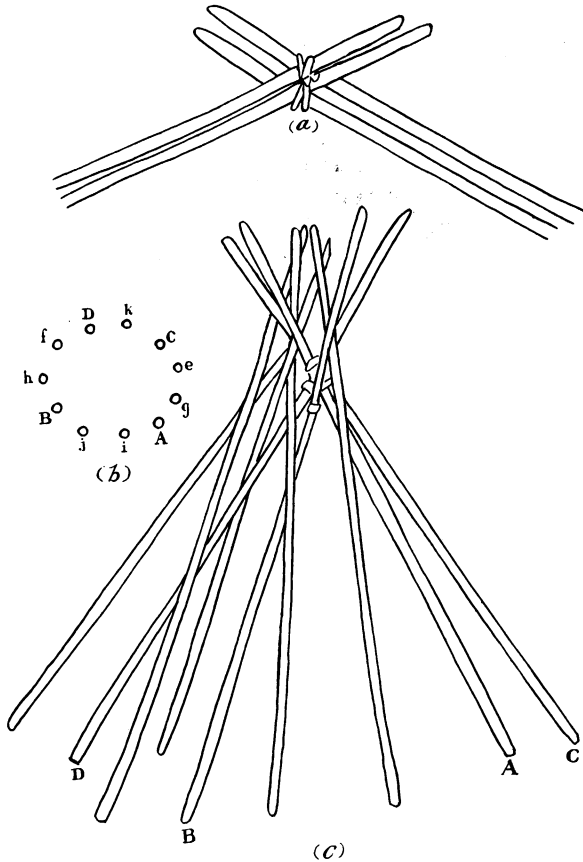


Fig. 45. The Tie for the Foundation Poles of the Tipi and their Position after the Remaining Poles have been set up.

on the poles at the point of intersection and the binding thong was thus drawn taut. After the poles were tied they were set up so that the two with longer projecting ends were at the rear to the left and the shorter poles to the right in front and spread apart more widely than the rear-

most poles. This arrangement of the four foundation poles resulted in placing the fireplace somewhat to the rear of the center, or, in other words, directly under the smoke hole. One of the rear poles lay over the other. The relative positions of the poles are indicated in the diagram (Fig. 45). A and B are the anterior and C and D the posterior foundation poles. The framework was then completed by laying in the remainder of the poles (Fig. 45) in the spaces between the foundation poles. The first, *e*, fell into place as shown in the diagram with its top projecting upward between C and D and lay upon B if it were underneath; if A was on the under side, the pole would be exactly on the opposite side. Pole *f* was between B and D and rested against *e*; pole *g* was between A and *e* and rested against *f*; pole *h* was between B and *f* and rested transversely against *g*; pole *i* rose between A and B, resting against *c*, the undermost of the two rear poles of the four-pole foundation; pole *j* was between B and *i*, resting transversely against it. To the rearmost pole, *k*, the skin tipi cover was bound by a thong which passed around a flap left for the purpose at the top of the tipi cover. This pole was always specially marked to show where the cover was to be tied to it. When this was done the pole was raised with the cover attached to it between C and D, the foundation poles, and rested transversely against *e*. The remaining poles supported the smoke flaps and were naturally outside the skin cover and were shifted with each change in the direction of the wind.

Except in very windy weather, the entire framework was not tied, as was customary among the Mandan who used a three-pole foundation and regularly bound all save the smoke flap poles at the top. Whenever it was necessary to secure the poles at the top, it was possible to extend the lariat which tied the four-pole foundation and carry it upward between C and D and over *k*, draw it tightly around all the poles, back again to the rear, and then once more between D and *k*, directly to the tipi floor, where it was anchored to a stout peg. This peg was shifted about and was always driven into the floor on the side nearest the wind.

When camping in a skin tipi, on cold nights it was customary to draw the door skin inside, as was described for a hunting lodge (p. 414). Such a door was commonly a buffalo skin with an extending bar attached. The whole skin was drawn inside and the top fastened to the first lacing pin above the door while the extending bar was slipped over the two tipi poles on either side of the door, but under the skin cover. As in the bark hunting lodge (p. 414) a second skin was often hung over the door on the inside. This supplementary door skin was also used in windy or stormy weather. Skins were also placed around the walls of the tipi between the poles and the skin cover for added warmth in cold weather.

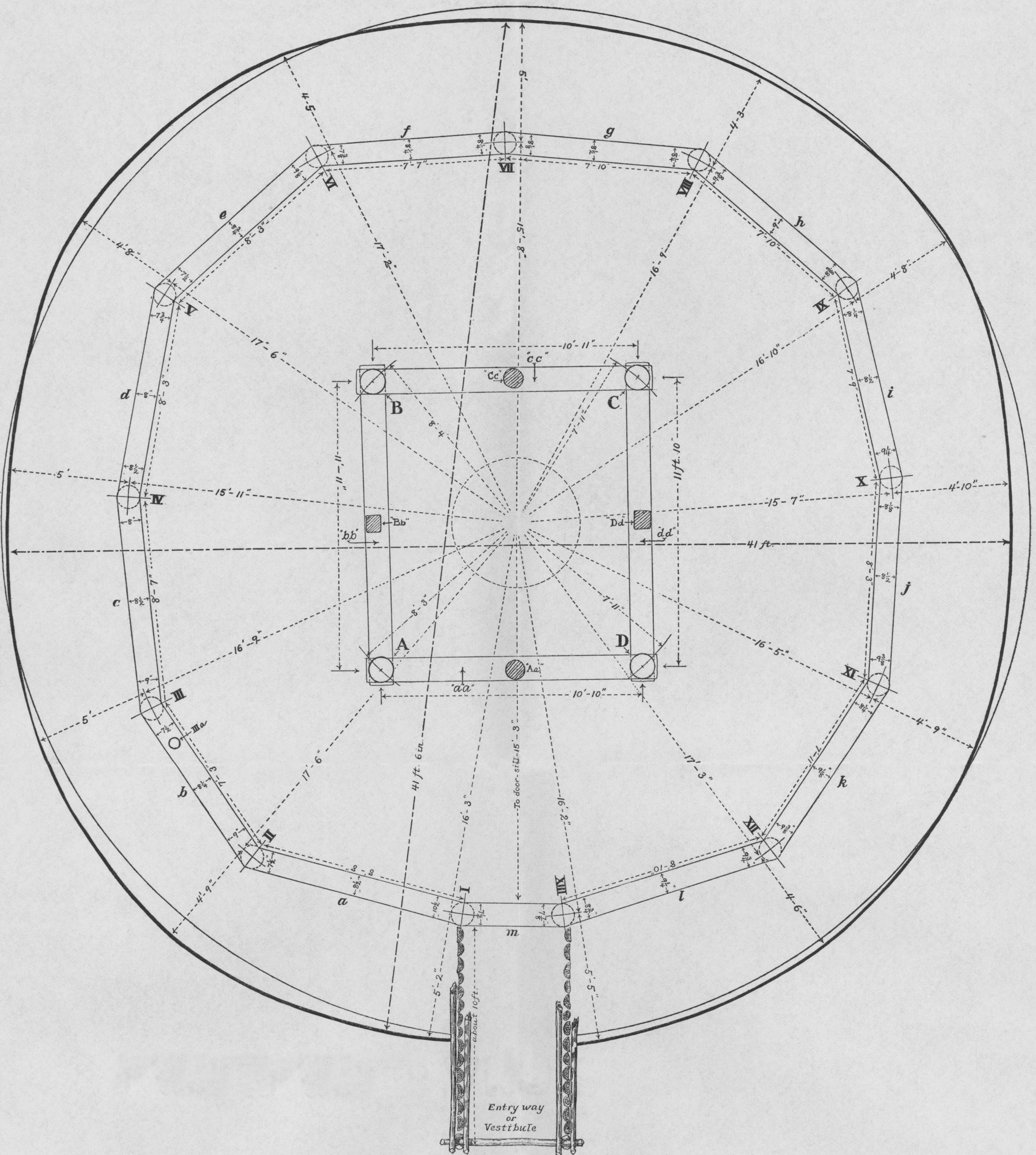


Fig. 11. Wolf-chief's Earthlodge, a Conventional Diagram to Carry the Groundplan Measurements. A, B, C, D, Main supporting posts; "aa"—"bb," Main stringer course; I-XIII, Outer supporting posts; a-m, Outer stringer course.

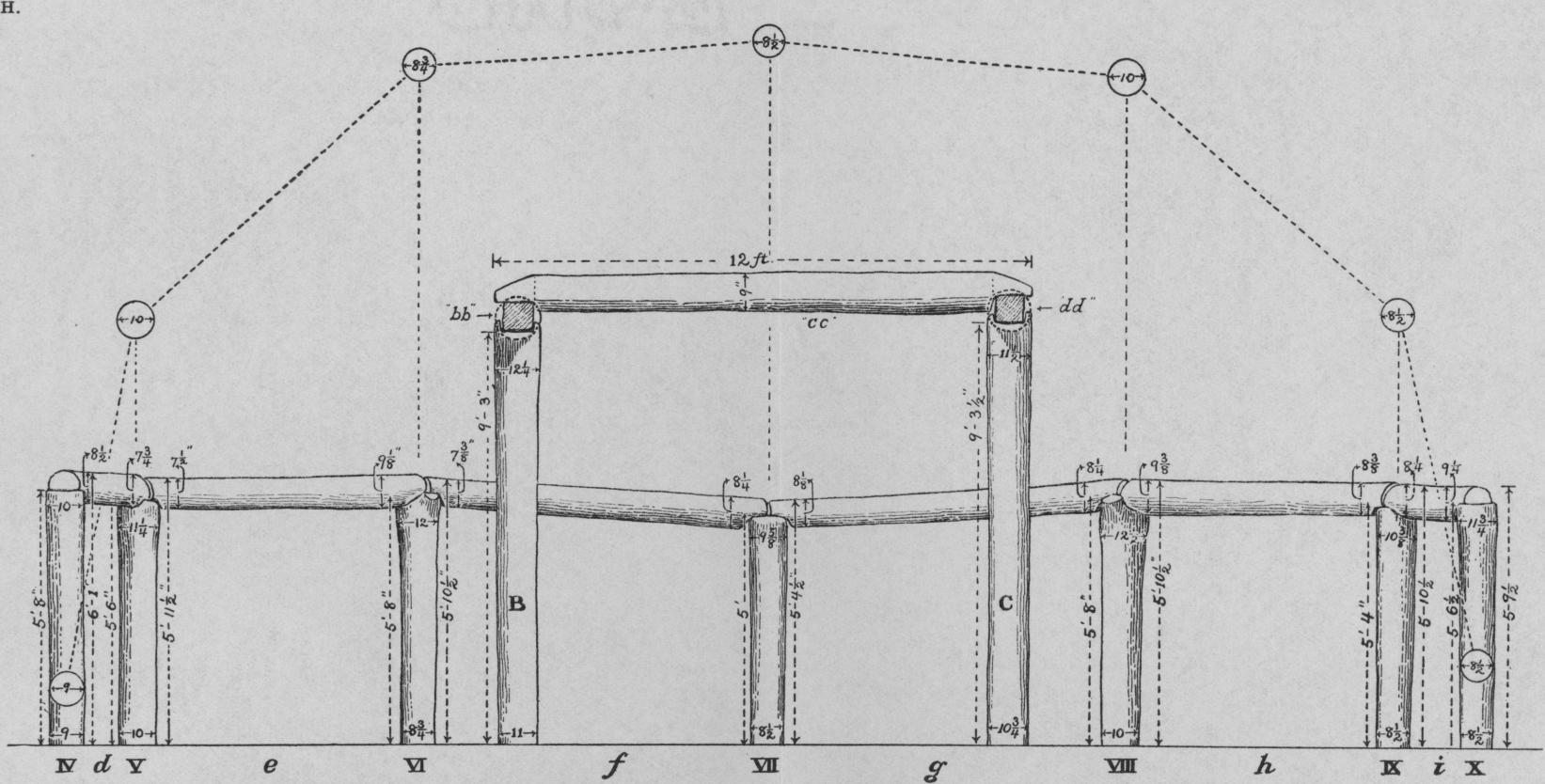


Fig. 12. A Section through the Center of Wolf-chief's Earthlodge, facing its Rear. IV, V, VI, etc., Outer series of posts; B, C, Main supporting posts; e, f, g, etc., The different sections and the stringers above them. Circles indicate position of posts in the perimeter of outer supporting series of posts. Measurements to left of posts give their height; those to the right indicate height of stringer from the ground. Measurements on posts and stringers refer to the diameter at each extremity.

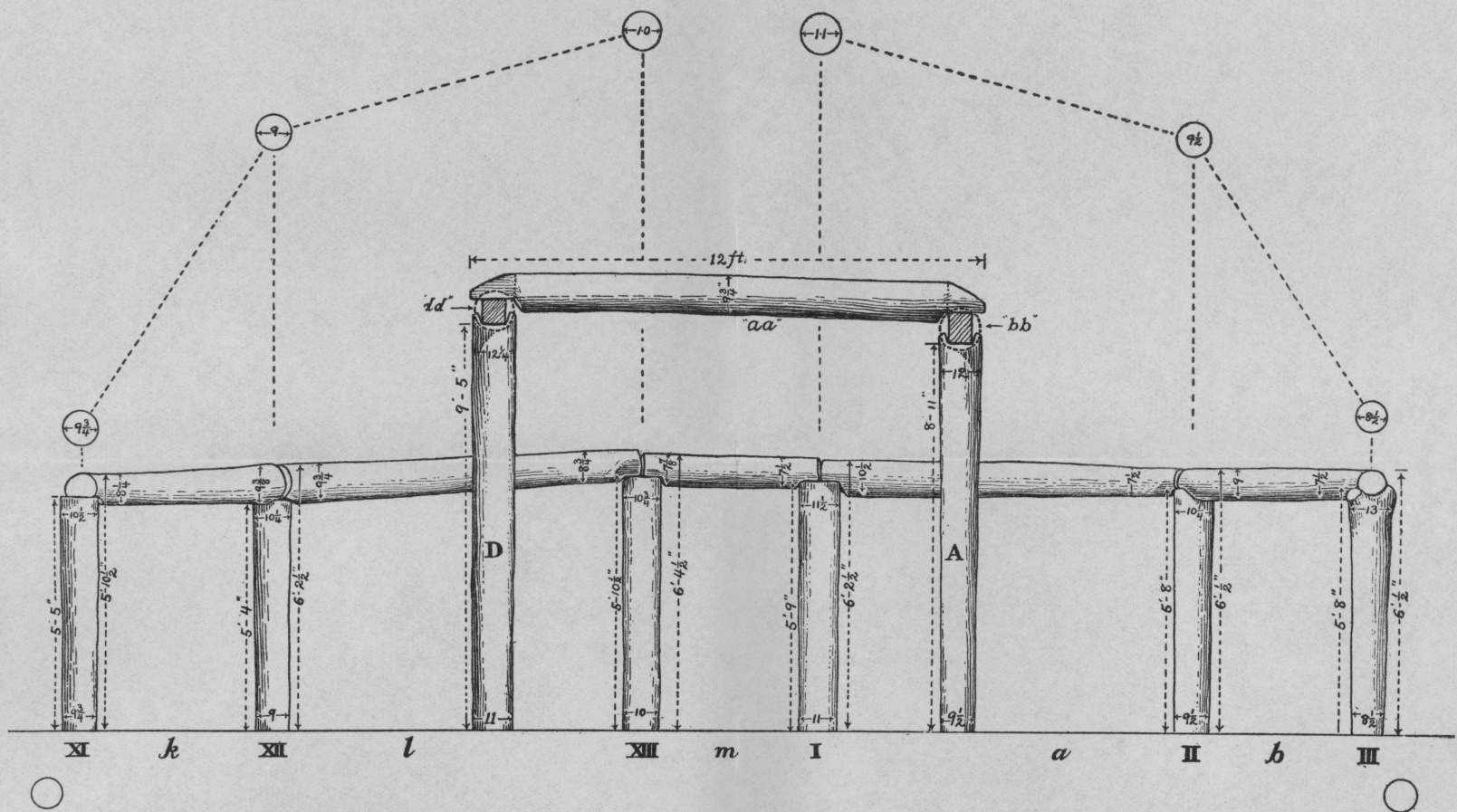


Fig. 13. A Section through the Center of Wolf-chief's Earthlodge, facing the Door. I, II, III, etc., Outer series of posts; A, D, Main supporting posts; k, l, m, etc., The different sections and the stringers above them. Circles indicate position of posts in the perimeter of outer supporting series of posts. Measurements to left of posts give their height; those to the right indicate height of stringer from the ground. Measurements on posts and stringers refer to the diameter at each extremity.

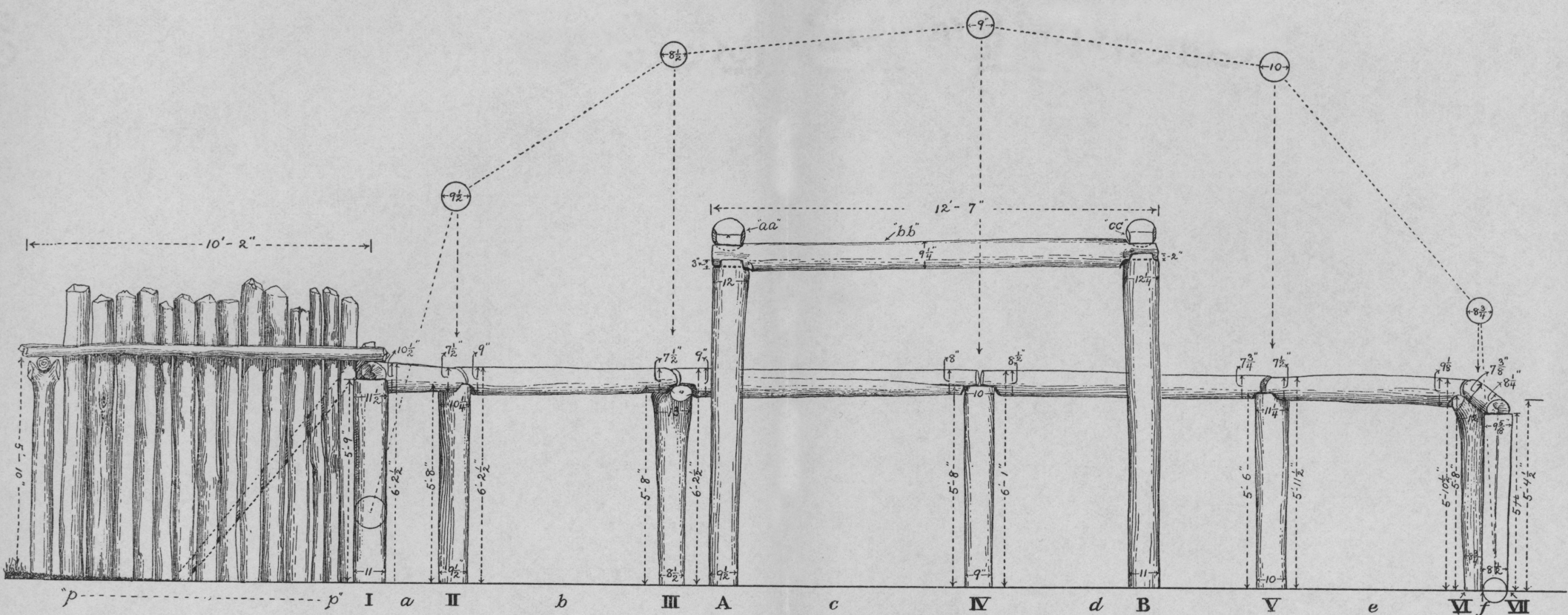


Fig. 14. A Section through Wolf-chief's Earthlodge from Front to Rear. Height of posts indicated by figures to left; height of stringer by figures to right of posts. Diameters of stringers indicated by figures above, diameters of posts by figures on posts. p-p, palisade of slabs or splitlogs either side of entrance way, from within. A, B, etc., indicate main posts; aa, bh, indicate main stringers; I, II, III, indicate outer posts; a, b, c, indicate outer stringers. Circles mark position of outer posts in perimeter.

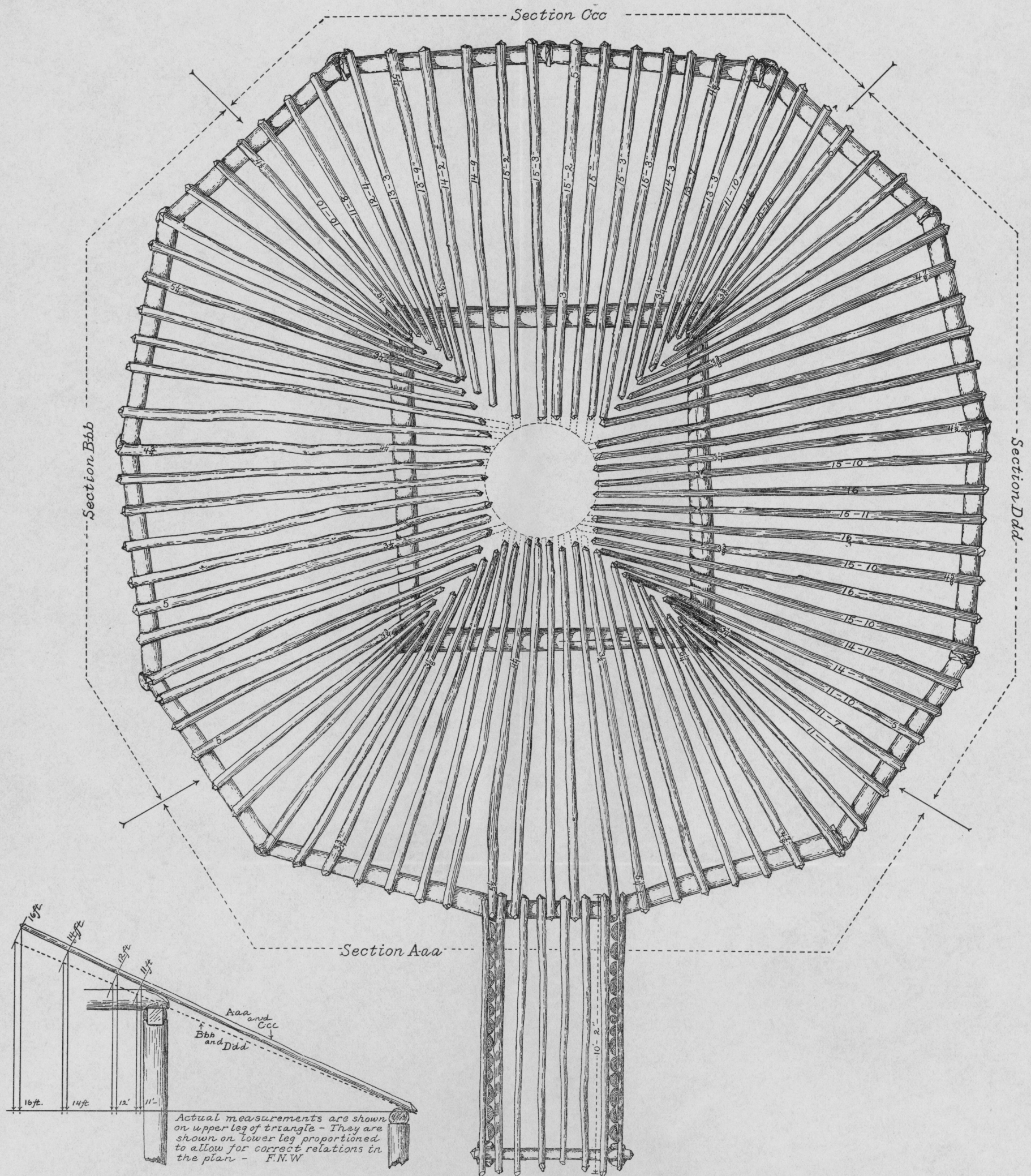
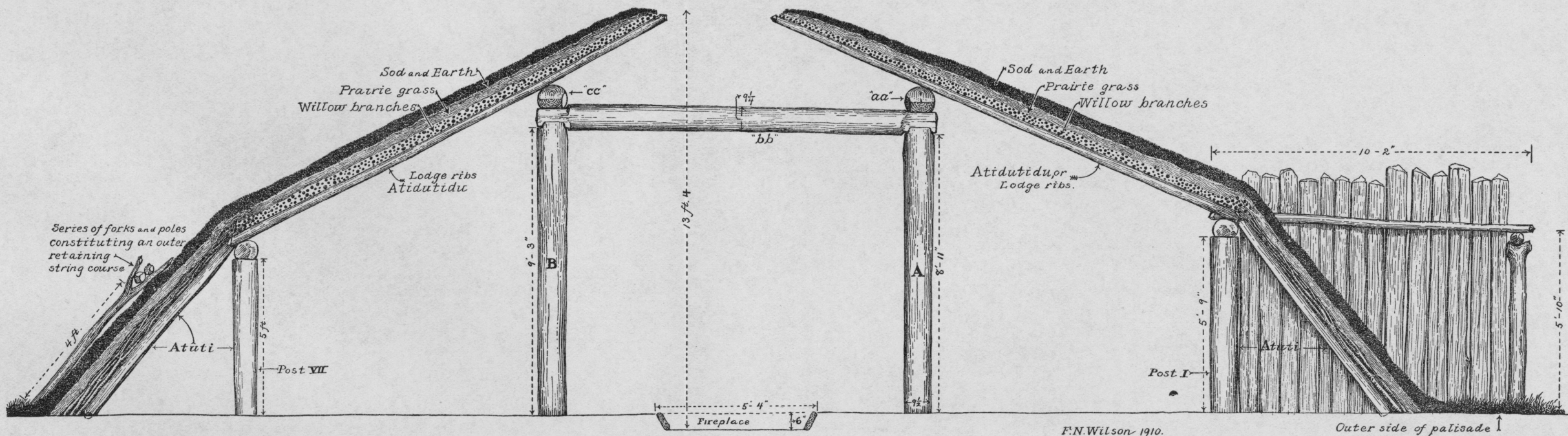


Fig. 15. Arrangement of Poles for Roof and Vestibule of Wolf-chief's Earthlodge. Rafters of section C-c-c were all measured as they were the most regular. The diameters of each pole at lower and upper stringers are indicated by figures on every fifth pole. The smoke hole is square, but the dotted lines indicate the method of making a round smoke hole.



F.N.Wilson 1910.

Outer side of palisade ↑

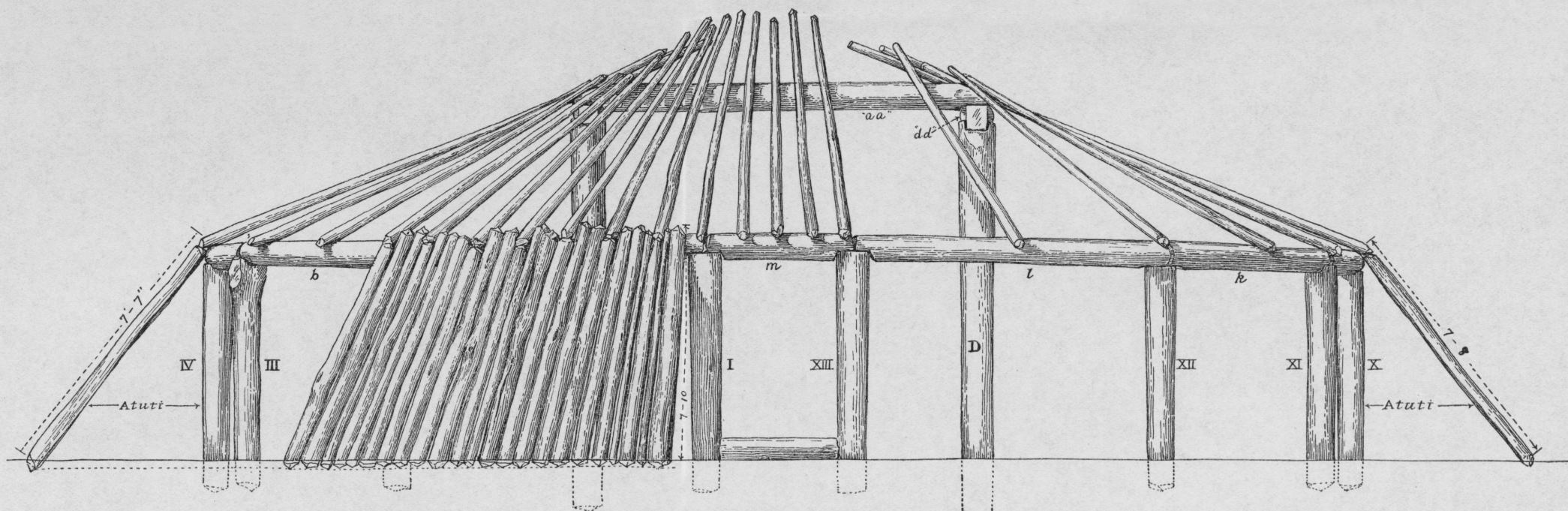
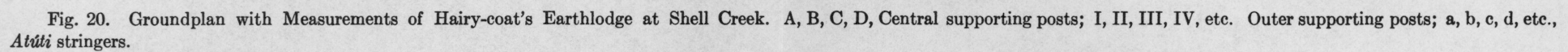
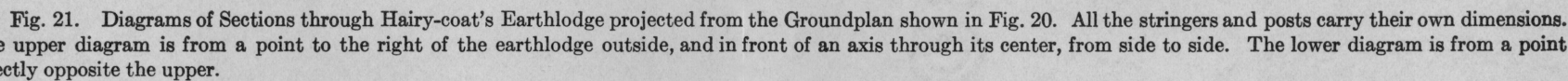
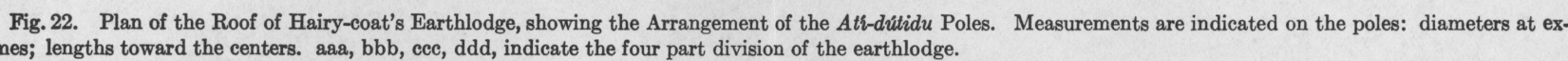
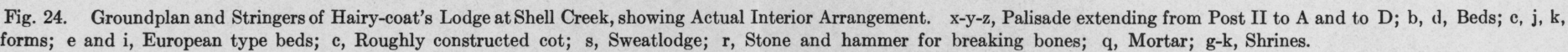


Fig. 16. Cross-section through Wolf-chief's Earthlodge at Left of Door and a Front Elevation. In the front elevation the *atuti* logs are shown in place between posts I and II, also the pitch all round as shown at extremes. The difference in pitch occasioned by the different levels of "aa-cc" and "bb-dd" is shown in the roof poles. The *atuti* lean-to poles were mostly split logs or poles, placed flat side in. Of the total of 288 poles, 222 were split and 66 round.









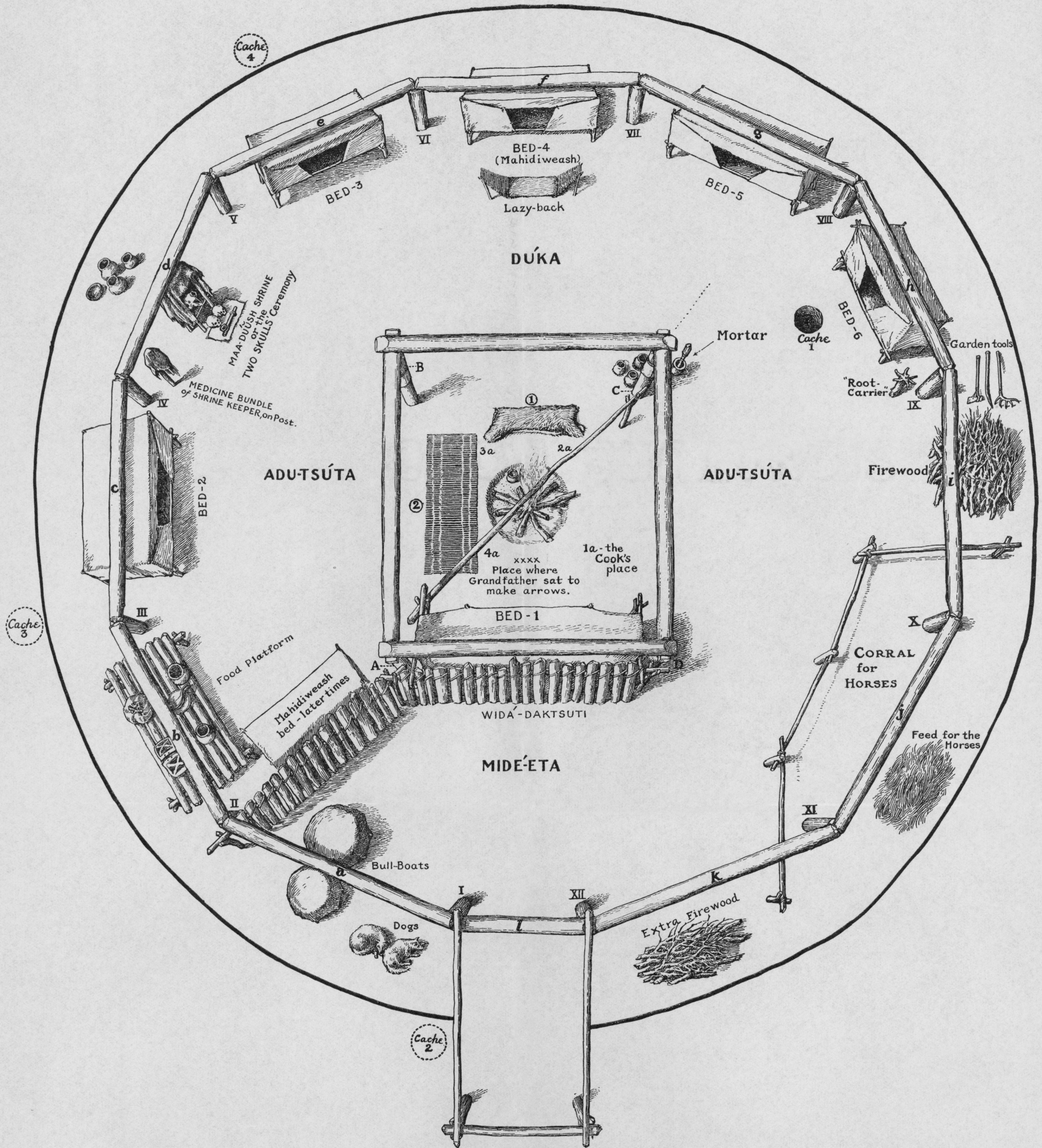


Fig. 27. A Twelve Post Earthlodge with the Roof removed to show its Equipment in Relation to the Timbers, as described by Buffalo-bird-woman. The lodge was that of Small-ankle, her father, as it appeared about the time of her own marriage.

