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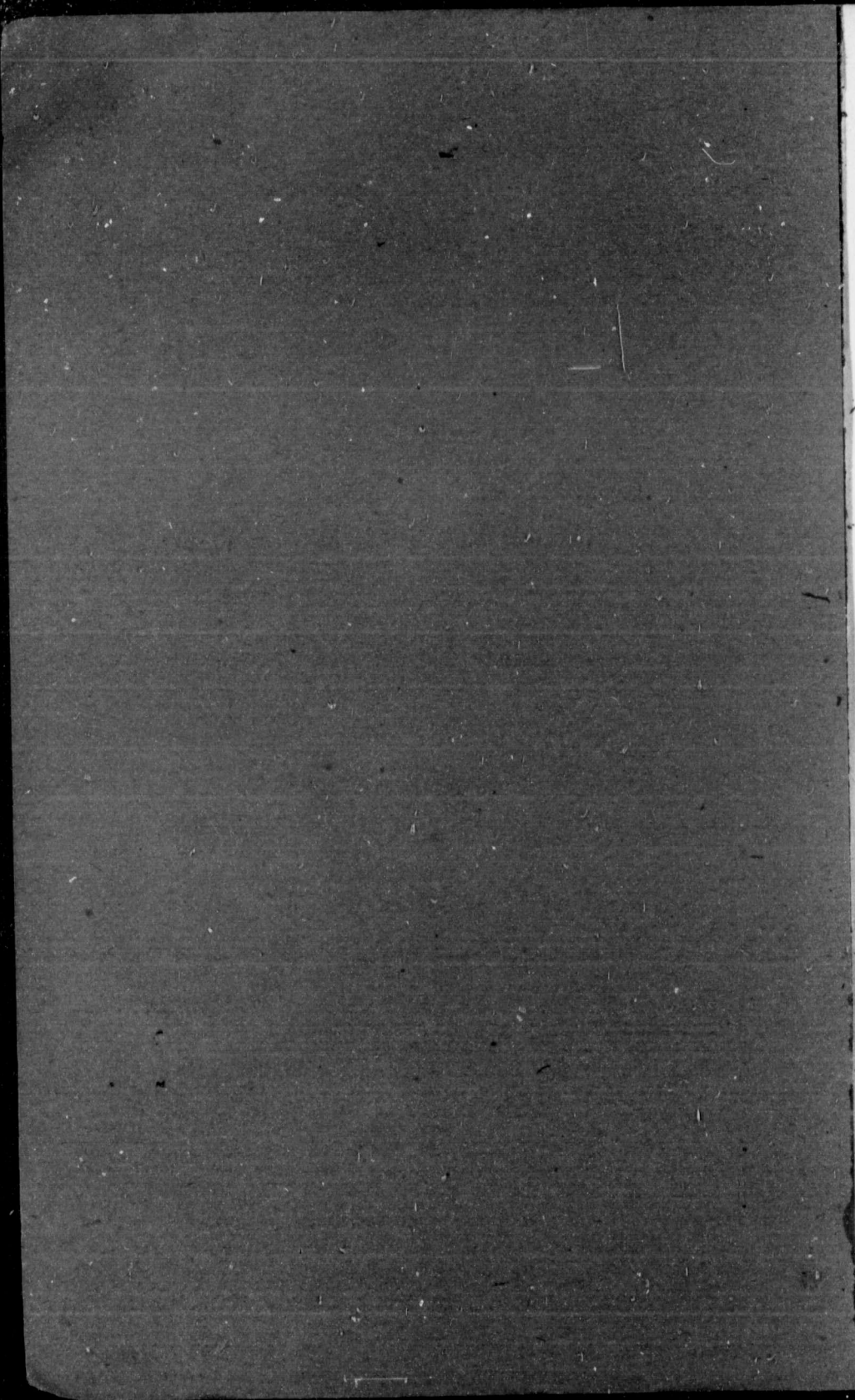


PREHISTORIC MAN IN UTAH

BY

HENRY MONTGOMERY

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PREHISTORIC MAN IN UTAH

(Illustrated)

BY

HENRY MONTGOMERY, PH.D., F.G.S.A.

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TORONTO, JANUARY, 1906

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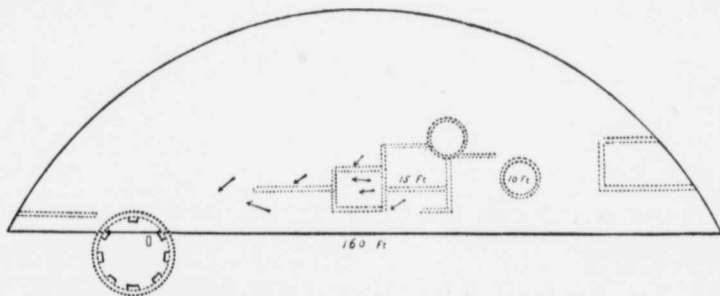
WATERLOO, INDIANA, AUGUST, 1894.

No. 8

PRE-HISTORIC MAN IN UTAH.

HENRY MONTGOMERY, M. A., B. SC.

THERE has recently been brought to Salt Lake City a rare collection of pre-historic remains, said to have been collected by Messrs. C. B. Lang and Neilsen during the past three months in San Juan County, Southeastern Utah. It consists, principally, of seven almost perfect, mummified or desiccated human bodies, and the head of another; one mummified turkey; two mummified field mice, several human skulls, wooden implements, sandals, cloth, tow or yucca fibre, mats, baskets, maize, axes, arrow-points, a wooden pail, gourd fruits, pipes, shell and bone beads. Besides the foregoing, there are a few vessels of pottery, some of which came from the Montezuma Valley in Colorado. There can be no reasonable doubt that the articles have been collected as alleged, in the caves of Southeastern Utah and vicinity.



Ground Plan of Cave No. 1, San Juan County, Utah.

The greater part of the collection is said to have been found in one cave in the face of a cliff, about fifty miles south of Moab and forty miles north of Bluff City. This cave is only some forty feet above the valley, and is readily accessible. Its mouth is about 160 feet in width by twenty feet in height, and the latter gradually decreases as it extends inwards towards its terminus, which is about fifty feet from the entrance. Within the cave were the dilapidated ruins of stone houses. These ruins contained earthen vessels, sandals and other relics, such as have been found in similar stone ruins

in the cliff caves of Colorado, Utah and Arizona. But when these houses had been completely cleared away and excavation made, at a depth of from three to five feet beneath the floors of the aforesaid stone houses, four mummies and other relics were found. These mummies consist of the dried



A Sandal of Yucca Fibre from Cave No. 1.

bodies of one large man about six feet in height, a woman of good size, and two young persons, the smaller of whom appears to have been about thirteen or fourteen years old at the time of death. They are all remarkably well preserved, and their heads are provided with coarse, black hair, particularly abundant on the man and the boy. Small portions of garments are present in the form of a robe made of yucca cloth and furs; and there are woven, well-made, yucca sandals upon the feet. The boy's feet, however, are furnished above with loose buckskin coverings, but have no sandals or soles of any kind. Two pairs of unworn sandals of superior workmanship, together with some bunches of yucca, or soapwort tow or fibre, of which the sandals were made, were found carefully wrapped in a tanned skin beside the body of the woman. A number of rude, stone arrow-points, with short, wooden (probably willow) handles tied to them by animal sinew; also one wooden pipe and several bone awls and skewers were found with the body of the man. The pipe is about an inch and one-eighth in diameter and two and one-half inches in length, including the stem. The latter consists of a short piece of bone, probably a part of the hollow ulna of a wing of a large bird. It is fastened into the bowl of the pipe by means of some sort of black cement or fire-proof material, which is also used to form a thick lining for the bowl. Large and small gourds were also with these four mummies. One of the gourds has a handle of yucca cord stretched across its circular mouth opening, thus forming a convenient vessel, which was found full of corn in good condition. Besides, there was a wooden implement over forty-six inches long, consisting of handle and blade or flat portion, as shown in the accompanying figure. This is made of very hard wood, and it was probably used as a flail for beating out the yucca or soap-

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BOY MUMMY AND RELICS FROM CAVE NO. 1.

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When these were made, at a size, and of whom thirteen or more of death. well provided particularly the boy. are preserved of yucca re woven, on the feet. furnished coverings, es of any sandals of other with soapwort sandals were wrapped in body of the stone arden (probably them by wooden pipe ewers were nan. The eighth in half inches em. The ce of bone, ow ulna of s fastened y means of fire-proof to form a Large and the gourds h opening, of corn in over forty- portion, as ard wood, ca or soap-

wort into tow or fibres, suitable for the manufacture of thread, cloth and sandals. Perhaps it may also have been used as a spade for digging herbs and for gardening. All the bodies were, and are still, in a crouching posture, the knees being drawn upwards close to the breast. In the same cave, in different parts of it, three other mum-

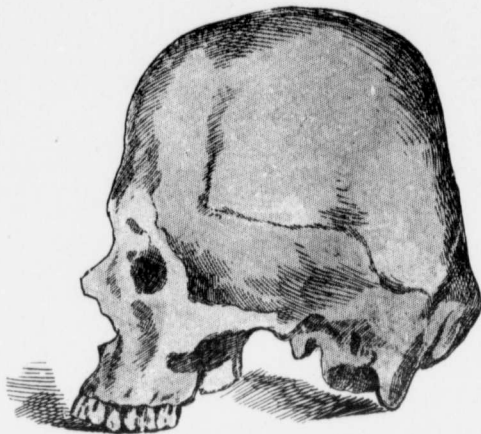


Boy Mummy and Relics from Cave No. 1.

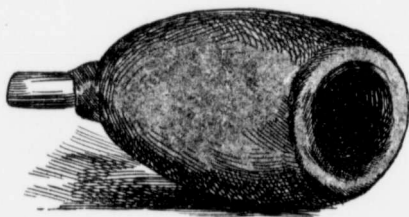
mies were found, one of which was two feet beneath the wall of a stone house, and had with him six rude, stone arrow-points with short, wooden handles, being in all respects similar to those previously described as found with the largest of the four mummies.

This mummy, which was two feet beneath the stone house, had the hair closely cut from the front half of the head, thus leaving the back hair only, which helped somewhat to give a resemblance to the face and head of a Chinese. Three human skulls were likewise dug up in other parts of this cave, but they were outside the limits of the houses.

A second large cave, about a mile distant from the first, was explored by the same party, and found to contain certain remains which are of great interest. Amongst these may be named the following: A large male mummy; the dried-up body of a turkey; one wooden spade or flail about forty-three inches in length; one wooden and rawhide *atlall*; one wooden pipe with short, bone stem, almost an exact counterpart of the one described from the first cave; one small bowl of a pipe made of catlinite or red "pipestone" from Minnesota, and forty-five artistically formed stone arrow-points of a different form and finish from those found in the cave previously described. This mummy is of special interest, no less because of its remarkably good state of preservation, than of its facial features. It is the extraordinarily well-preserved body of a large man of fifty or sixty years, with a rich supply of grayish, brown hair, that appears to have been cut, and a mustache and some whiskers upon the face. Like all the other mummies, this one has the knees drawn up to the breast. He is also clothed with woven yucca cloth and bearskin, and with a robe made of yucca cords and the skins of various animals. As he sits upright with his back against the wall, one feels a strong desire to speak to him and converse with him about the mysteries of the past, as well as the mysteries of his present. One would like to



Side View of Brachycephalic Skull showing artificial flattening. From a Cliff House in Grand Co., Utah.
(Mr. Saul's Collection.)



Wooden Pipe, from Cave No. 2, San Juan County, Utah.

learn from his lips something of the times in which he lived, and of the customs, extent and position of his race. He seems to differ from most of the others as to the face, hair and the shape of the head. His skin appears to indicate that he lived much within doors, and had not been greatly exposed to the action of the sun and the winds. His

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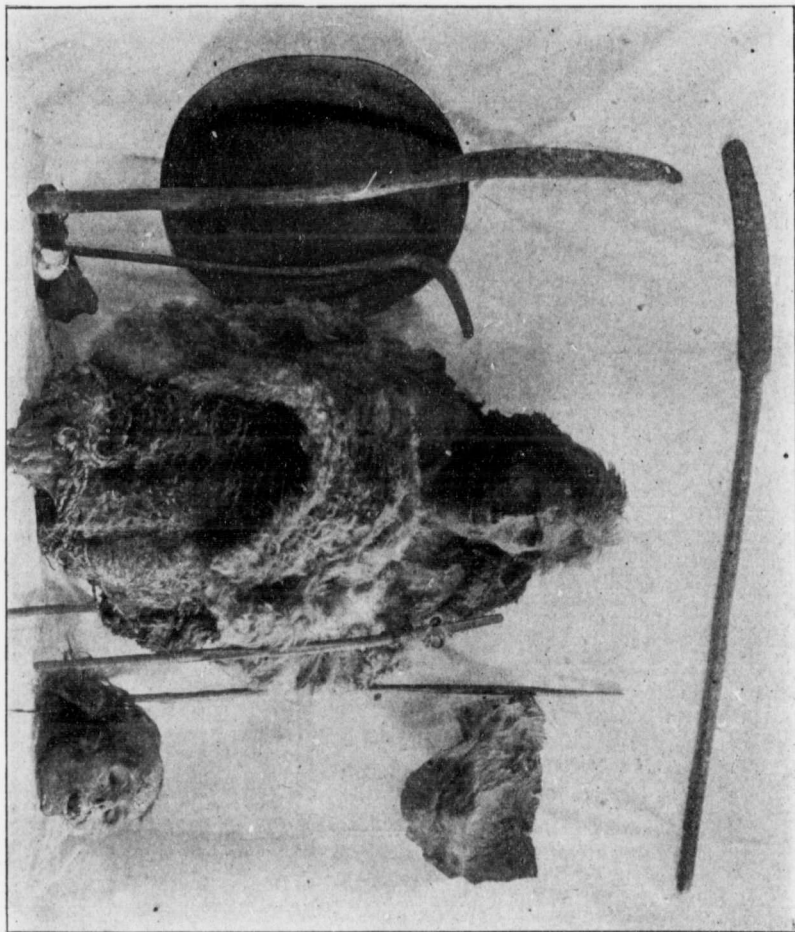
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head approaches that of a European or white, the cephalic index being almost seventy-nine. Yet, his clothing is similar to that of the other mummies, consisting of woven yucca cloth and skins, made in much the same manner. With him were found two small skin pouches or sacks containing herbaceous remains, and several sub-



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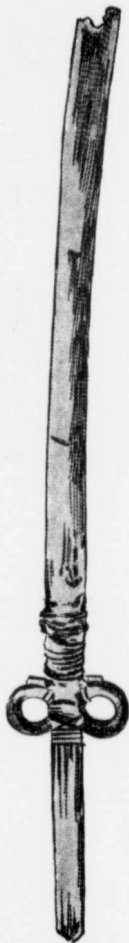
Adult Mummy and Accompanying Objects from Cave No. 2.

stances wrapped and tied very carefully. The latter are, as yet, undetermined; but they may, possibly, be medicinal in character. In one of the small sacks, which was made of bearskin, there was an article having some resemblance to a pipe, and made of a finely polished piece of onyx marble, and a piece of polished black material

closely resembling buffalo horn, both having a cement substance similar to that before mentioned in describing the two wooden pipes. When discovered, the face of this mummy was covered with a wide, shallow, circular basket, over which a portion of the robe had been drawn. The red stone pipe, the wooden pipe, *atlall*, turkey, well-formed arrow-points and wooden flail were dug up in different places in the second cave, and were, therefore, not very close to the mummy. It is worthy of note, that this small, straight, catlinite stone pipe is precisely similar to those which I have often found carefully buried

in the sepulture mounds of North Dakota and Minnesota, and, at the same time, it is the first specimen of the kind that I have ever known to be found in Utah. As the catlinite, or "red pipe-stone," is not known in this region, this particular specimen must have been brought from the vicinity of Minnesota. Its occurrence in Utah may, or may not, afford evidence of intercourse between these "cave-dwellers" and the Northeastern "mound-builders." It may, likewise, be worthy of mention, that the Utah wooden pipes have the same shape and size as the horn pipes found in the mounds of North Dakota. The *atlall*, or throwing stick, has the two loops of rawhide and the shallow gutter, and is, I think, the third of the kind ever found, and the first *atlall* reported from Utah.

With regard to the entire collection, its most striking feature is the high state of preservation of the bodies, and, indeed, of all the specimens. Skeletons of these pre-historic people are not very uncommon, and a few mummies have been found in Colorado and Utah. But these are in a better condition than usual. That they should be well preserved is not surprising to any one familiar with the climatic and other natural conditions of Southeastern Utah. A large part of this western country is generally known to be relatively dry, and also equable in temperature. But in San Juan County it is much less moist than in Salt Lake City or Denver. In fact, rain and snow are almost entirely unknown. When rain occurs, it is in a short, quick shower, which rapidly runs off the high ground and soon disappears. The atmosphere is intensely dry, and the interior of cliff caves usually may be said to be equally destitute of moisture. Again, the temperature of these caves is subject to very little change, practically none, throughout the entire year. I have kept the air-dried carcass of a bear for more than two years in Salt Lake City, and no offensive odor whatever was emitted from it. It is not wonderful, therefore, that human and other animal bodies should be easily preserved by desiccation in Southeastern Utah, especially when they are placed in a drying, absorbent soil, and in caves where the temperature is not subject to sudden, frequent or great changes.



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Medicine Stick
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It has been claimed that these pre-historic people differed very greatly from the people commonly known as cliff-dwellers. This I do not believe. They wore the same kind of clothing, made of skins and of woven yucca cloth and feathers, and had almost the same kind of sandals upon their feet. They also had similar wooden flails and spades, as well as baskets, gourds and corn; and, in addition to all



Flail, from Cave No. 2.

this, they were buried in much the same posture as many of the so-called cliff-dwellers. It is true their skulls are long or dolichocephalous and mesocephalous, while those of many cliff-dwellers are wide and short, or brachycephalous. This distinction is neither imaginary nor feeble, but it is most marked. Having made careful measurements of all the heads and skulls in this collection, I find the cranial index of each to be as follows: 73.5, 76, 73.6, 78, 75.8, 72.8, 78 and 78.8 for the mummies; and 71.6, 71.5, 73.7 and 70 for the skulls. Of course, owing to the presence of the hair and skin in the case of the mummies, the measurements cannot be regarded as very exact, yet they are very close to the actual dimensions of the skulls,



Flail, from Cave No. 3.

and for practical purposes may be relied upon, so far as there is any value to be attached to the relative lengths of the transverse and antero-posterior diameters of the cranium. The first four represent the heads of the mummies found together beneath the houses in cave No. 1. The last cranial index (78.8) is that of the male mummy from cave No. 2.

It may be noticed that their cranial index ranges from about seventy to seventy-eight, which is the same as in the average North American Indian, while many of the skulls found in or near the cliff-houses range from ninety-one to ninety-seven. But to this it must be said, that the latter results are due to artificial malformation produced during life. This extraordinary shortness is due to a flattening of the back of the skull. It is not a natural condition, but one which has resulted from a custom that may have been practiced by a few individuals or families, or, perhaps, at a slightly different period in the history of the same people. In this connection may be mentioned the Flathead Indians of the present time, who practice flattening of the top of the head during childhood. Moreover, I have myself, during explorations in Utah, personally unearthed skulls of both kinds, which had been buried together, and I have taken the

skulls with artificially flattened occiputs from graves five or six feet beneath the walls and floors of the houses. Although for several years seeking an explanation of this occurrence, I have not yet been able thoroughly to satisfy myself regarding it. There are many mysteries to be solved; many difficult questions to be answered. Nevertheless, much has already been learned about the civilization of these people. The facts are evident, that they were comparatively civilized; they were agriculturists; they raised corn, gourds of different kinds, and it is probable, also, potatoes and other vegetables and fruits; they practiced irrigation, both intelligently and extensively; they had architectural knowledge and skill; they made the best kind of pottery; they were people of large stature; were exceedingly numerous, and constituted a large nation in possession of Utah's valleys and mountains, and almost all the Southwestern portion of this Continent.

(To be continued.)

SOME ASPECTS OF INDIAN MUSIC AND OF ITS STUDY.

ALICE C. FLETCHER.

(Conclusion.)

INDIAN music, and I may add, all folk-music, can be studied in two ways: as music, that is, as an expression of human feeling in melodic form; or the physical peculiarities of its tones can be registered and analyzed. These two methods of study should not be confused or confounded, as they lie along different lines. The purely physical aspects of Indian Music lie outside the scope of this paper.

In my field work, while transcribing Indian songs, I made many experiments in notation, for I was at first a slave to my previous training, and the inaccuracies of pitch which I heard seemed to me a matter of importance so I invented signs, which I used when I wished to indicate a variation of a comma here, or a comma there, according as the singer flatted or sharpened a tone, with the result, that I had as many differing records of a song as the number of persons who sang it to me. This set me to thinking and to listening with more freedom. I sang often with the people, and sought to let myself be led by them. On my various returns from the field, I recorded the variations of untrained singers of my own race, and, to my surprise, I found them equally numerous. I came to the conclusion that were I to transcribe all the minute deviations from pitch of the average singer, I should present a caricature rather than a true picture of what was a familiar tune. This conviction sent me back to my note-books on Indian songs, and I sought to find what was common in my many-varied records, and thus I discerned what the Indians were aiming to sing. Having cleared the songs of these

in the kitchen middens of the ancient moa hunters, who were an early migration of the great Polynesian race which occupied this land many centuries before the arrival of the Maori in the historic canoes about the fourteenth century.

The two great fields for such antiquarian researches in Polynesia are, undoubtedly, Easter Island and the Caroline Group. The pre-historic remains of the former locality differ widely from those of any other part of the Pacific. Among other works of a non-Polynesian form are huge stone statutes of human shape, possessing features unlike those of any race of men now inhabiting the islands of the Pacific. Somewhat similar to these are the great stone monoliths of Summatra, which are attributed to mythical beings who wandered over the land and turned their enemies into stone.

OJIBWA IN THE SAGINAW VALLEY, MICHIGAN.

HARLAN I. SMITH.

IN the vicinity of Saginaw, Michigan, there are several settlements of Ojibwa Indians. These would hardly be called villages in the general sense of the word, but are mere collections of huts and houses. At one of the settlements about eighteen miles, by the road, south of Saginaw, these people have a church and also a burial ground, but they have no stores. At a settlement about eight miles northeast of Saginaw, one of the private houses is used three times each Sunday for religious services. Other than these meeting houses, which form *nuclei* for the settlements, they present few points in common with our villages, but resemble more nearly a cross-road collection of "small farm" houses.

These Indians shave out axe handles, whip-stocks and hoops for sale. They also make a large number of baskets of various kinds. These occupations, together with products of their small farming, day's labor, hunting, trapping and fishing, gain for them a fairly good livelihood.

Some of the forms of weaving and basket work which they once used, have become so neglected of late that but few of them remember the process, they having somewhat changed their basket work in order to cater to the taste of the whites, to whom most of these baskets are sold.

Their religious ideas are allied to the Methodist creed. Their services are extremely simple and sincere, and are attended by a large proportion of the individuals. They sing in a very pleasing manner hymns which have been put to their native tongue. Perhaps, on the whole, their morality is equal, if not better, than that of the average of their white neighbors. They are certainly much more polite and respectful than the ordinary woodsman living adjacent

ent to them. Many of the individuals, especially the younger people, wear the European costume; however, some of the older individuals still wear the moccasins and other apparel typical of the native American. The squaws usually carry their babies upon their backs, held in place by a shawl drawn tightly around the shoulders.

The little boys play with the bow and arrow, and some of them have become so adept in its use that they even go hunting ducks and other similar game with considerable success.

In the early summer these people sometimes examine the mud in the bottom of the ditches and streams with a sort of crude spear in search of turtles. It is not an uncommon sight to see dressed turtles hung up near their houses along with dog-fish and other game, while the turtle shell is rather an ordinary piece of rubbish about the settlements.

Some of their houses are very well made, and fully equal to the houses of the whites living in the country near them. Others are fairly comfortable log huts, and some are merely piles of logs and boards resembling a "lean to." Some of these houses have hung upon the wall mats made of rushes, while near at hand are bundles of large splint baskets ready to be carried to market.

An endeavor is being made to study the Ojibwa in the vicinity of Saginaw; to photograph them engaged in their various occupations and in groups, as well as to record their features by taking full face and profile views of them. They have many tales and traditions which relate to the early history and pre-historic earthworks of the Saginaw Valley, and it is hoped that a further study of these interesting people may lead to a better understanding of some of the remains in the valley. Here will also be an opportunity to note the influence of the missionary teachings upon the religious ideas and folks-lore of another race.

PRE-HISTORIC MAN IN UTAH.

HENRY MONTGOMERY, M. A., B. SC.

(Continued.)

OF the many aboriginal remains in the valleys, cliffs and mountains of Utah, up to the present time I have explored thirty-three cliff and peak structures and also many ruins of the people who occupied the valleys, and from them I have made collections of considerable magnitude and importance. There are altogether about five kinds of structures or enclosures, namely:

1. The rectangular adobe-walled house with simple or complex floor, rooms, wooden and adobe roof, and often plastered walls;
2. The adobe, stone and wooden house in a large, natural cave in the face of a cliff;

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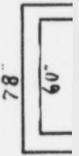


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3. The artificial cave house, consisting of a small cave artificially cut into the face of the cliff, and made to serve the purposes of a building;

4. The small, natural cave, either with or without artificial additions of adobe and stone; and

5. The circular or semicircular structure composed wholly of stones, and reared upon the summit of some lofty peak or other greatly exposed place. There are, of course, varieties of all; but the above named five classes of houses are quite marked. In some places the valley house-ruins are so numerous, and are situated so near one another, that they may be regarded as the ruins of towns or cities.

JUAB VALLEY RUINS.

One of these groups of remains was discovered by me in Juab valley not far from the foot of Mount Nebo, about eighty miles south of Salt Lake City, in the autumn of 1890. Since that time I have done considerable work in the way of opening and exploring this group of ruins, which I have named Mason City in honor of Prof. Otis T. Mason of the United States National Museum. There is here exhibited a photographic view and a ground plan of the walls of houses which I found beneath the surface of the

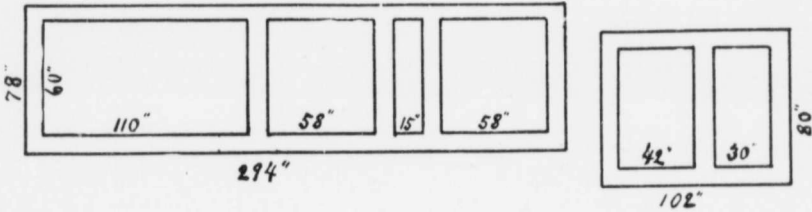


Fig. 2.—Plan of Houses in ancient Mason City, Utah.

ground in one heap of the aforesaid ruins in Juab valley during the months of May and June, 1892. These walls, when uncovered, were found to be perfect and unbroken, and although made of very large adobe bricks of irregular form, the walls themselves were smooth and regular throughout. They were utterly devoid of windows, doors or other openings. The floors consisted of two layers of adobe or mixed clay, separated by a layer of gravel, and the roofs, which had been made of poles overlaid by soft adobe or cement, had long ago fallen or been thrown down upon the floors, and since then the whole ruins had been buried beneath much wind-blown accumulations of dirt. One of these two houses was altogether about six and one-half feet wide and eight and one-half feet long, and it contained two compartments or rooms. The other house was six and one-half feet wide and

twenty-four and one half feet long, and contained four compartments, respectively nine feet, four feet ten inches, one foot three inches, and four feet ten inches, from east to west, both houses being placed nearly end to end, almost in a line with each other, and almost exactly in an east and west direction. The largest room was five feet wide by nine feet long; each of the other two rooms was four feet and ten inches wide by five feet long, and the remaining room was but fifteen inches wide by five feet long. So also in the smaller building the rooms or compartments were very small, being two and one-half by five feet, and three and one-half by five feet, respectively. These two structures or houses were completely covered over



Walls of house containing four rooms, in the ancient Mason City, Juab Valley, Utah.
Explored by H. MONTGOMERY, in June, 1892.

by one enormous heap of earthy deposits in the form of a mound about fifty feet in diameter and six feet high in the center, which was its highest part. Before the work of excavation was commenced this whole mound was nearly circular, and externally it bore a strong resemblance to the carefully built burial mounds of the Dakotas, Minnesota, and the adjacent "mound-building" country. This resemblance, however, was only external, as the exploration of its interior revealed the existence of two houses instead of burial chambers. The walls of these houses were about three feet in height, and all reached the same level. Many bone articles, chiefly

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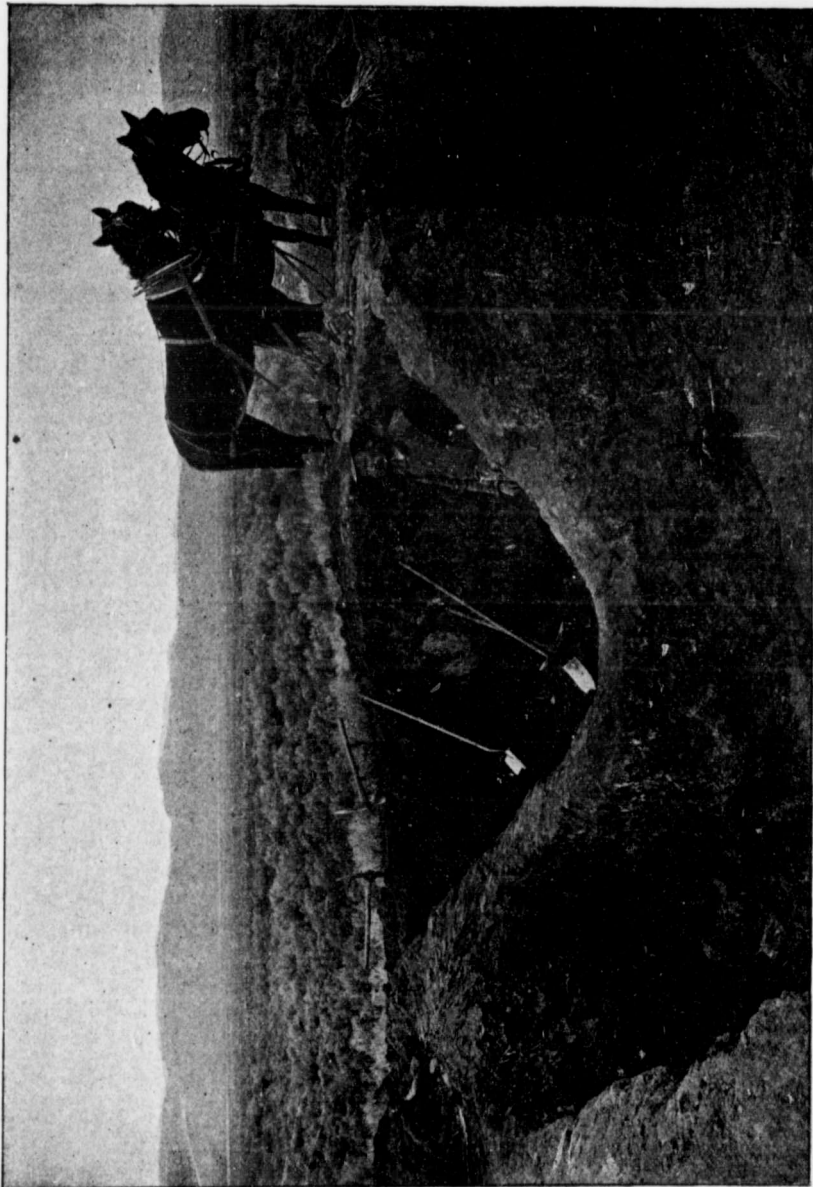
awls, and some charred corn cobs and charred wood were found in the rooms, as well as many pieces of broken pottery, and one perfect and well-formed jug of earthenware provided with a handle and an ornamented neck. This jug or pitcher was found in the largest room of the larger house. Among other things a large basalt stone *metale*, or corn-grinding mill and its grinding or rubbing stone, were taken out. This *metale* and its rubbing stone weigh about eighty pounds. A photograph of them is reproduced here. They are made of dark gray volcanic rock, which occurs in great abundance in Millard and other counties of southern and central Utah. Because of the porosity and roughness of this rock, the bottom of the *metale* is always rough enough for grinding purposes. It does not, therefore, need frequent picking with a pointed stone implement to keep its concave surface rough, as is the case with the sandstone, quartzite and other rocks employed as *metales*.

In the same city or series of ruins other similar structures have been uncovered and explored by me. One of them was more than forty-five feet long by eight and a half feet wide, and it constituted the central portion of a "mound" ninety feet in diameter. As a rule, both large and small rooms occur in each building, but often a building is found to contain small rooms alone. In many instances the compartments are extremely small, such, of course, having been intended for the storage of corn, meat, water and implements, as is shown by the character of the remains frequently found within them. The opening of each compartment must unquestionably have been in the roof, for I have never found an opening in the walls, although I have many times found the entire walls of the houses in a perfect condition. Stone corn mills or *metales*, complete or broken, were found in or beside all of them. Bone skewers in considerable numbers and arrow points were also found in every house ruin. More or less broken earthenware of good quality and of various designs occurred scattered within the ruins and upon and around them. Most of this earthenware had been glazed and much of it painted, mostly in black figures on the inside of the vessel. One house yielded two small trinkets of green aluminum phosphate, either variscite or inferior turquoise. The same house also yielded a small pipe of pottery, consisting merely of a straight, conical bowl, and in general form closely resembled the catlinite stone pipes of the burial mounds of North Dakota, and the solitary catlinite pipe from the cave in San Juan County, Utah, to which reference has previously been made. There were present several specimens of what may have served as pipe stems, having been cut in suitable lengths from the hollow wing bones of birds. Remains of bones of mammals were numerous. These were invariably broken in a similar manner, and appeared to be the bones left from pieces of meat, the flesh of deer, rabbits, Rocky Mountain sheep, antelopes, etc., that may have been used or stored away by the owners. A large number of these broken bones gathered from many house ruins formed an interesting collection, especially when compared with those gathered in the ruins of other

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Plastered walls of one-roomed house in ruins, near Paragonah, Iron Co., Utah. Explored by H. MONTGOMERY, in Jan'y, 1893.

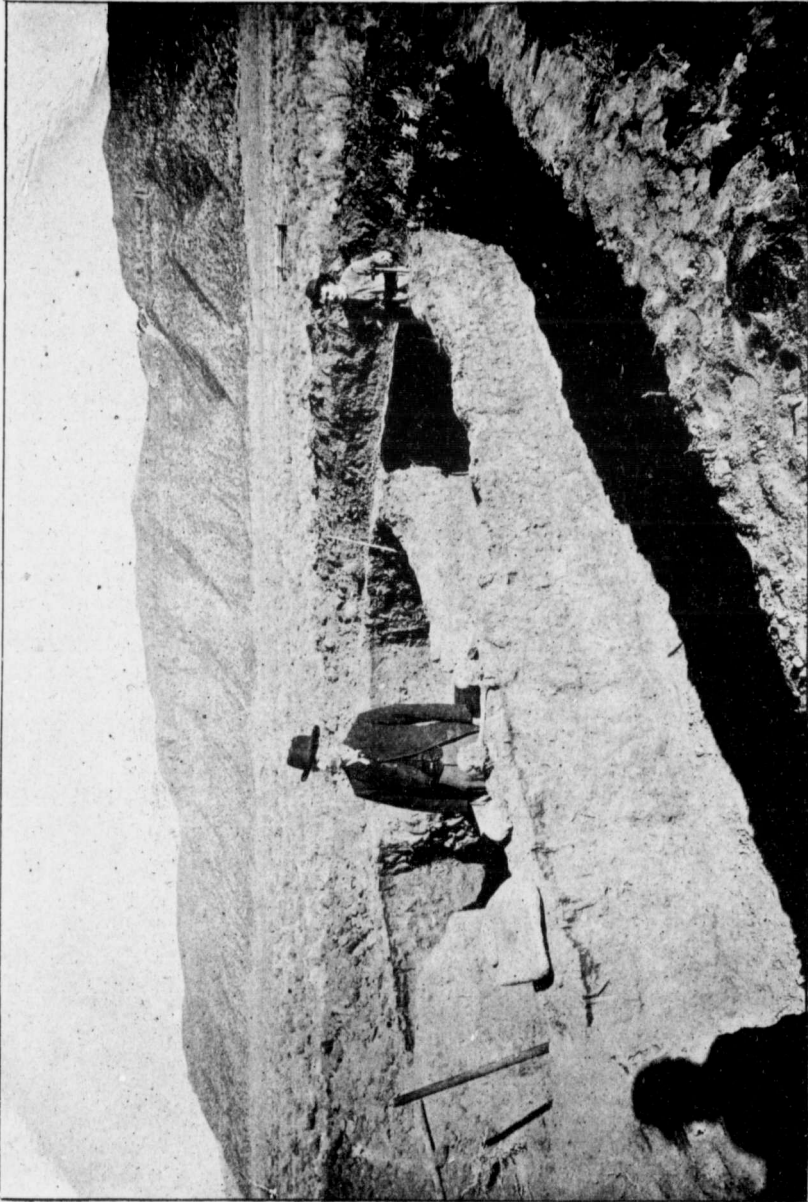
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parts of Utah. Human skulls and skeletons were found in Mason City, but they were not in a satisfactory condition of preservation. There is one thing, however, which deserves special mention here, namely, the composition of the adobe or mud walls. I use the word "adobe" because the lumps of which the walls were composed, usually contained two other things in addition to the mud. Numerous small particles of charcoal and pottery were generally found scattered throughout the mud, and giving every indication of having been mixed with the mud by the builders of the houses. Sometimes these lumps or bricks were too irregular to be easily traced; at other times they were so regular in form and size that the separate lumps standing in straight rows could be clearly and readily distinguished. In nearly every instance, continuing the excavation through and beneath the floor, showed the house to be situated upon a heap of earth mixed with ashes, charcoal and little pieces of broken pottery. Again and again I have cleaned off and fully uncovered the one-story houses in an almost complete state of preservation. Thus far, everything is plain; but my explorations beneath these houses have not been so satisfactory. There occur many fragments of bones, pottery and charcoal below the floors, but all seem in a state of confusion. In two instances I found a strong, upright cedar post or pillar with lumps of hardened mud built to make something like a flue or chimney, and all of these were under the houses.

PARAGOONAH RUINS, IRON COUNTY.

From January 9th to 14th, 1893, I visited and explored ruins beside the little village of Paragoonah in Iron County, some 250 miles south of Salt Lake City. Here were about 100 mounds of ruined structures, the largest of which was about 160 feet from north to south, 200 feet from east to west, and twelve feet in height. The "mounds" and the surface of the ground around them, as in Juab valley, Salt Lake valley, Utah valley, the valleys of Piute County, Emery County, and elsewhere in Utah, had numberless pieces of broken pottery, stone arrow points and chips of obsidian, chalcidony, opal and quartzite scattered over them. The largest ruins gave evidence of having been slightly disturbed at two places upon some former occasion, perhaps by Major Powell of the U. S. Geological Survey, or by Dr. Palmer, both of whom visited southern Utah several years ago. However, by far the larger portion of this heap of ruins remained unexplored, and I chose a favorable-looking elevation, which formed part of the north side of it, as the basis of my operations. Preferring not to use the plough and scraper which were at the same time being freely used by the Territorial World's Fair representatives on the south side of this mound, I set to work, aided by five men employed for the purpose, to excavate and open up the remains of the ancient buildings. As is my custom, I carefully removed, inch by inch, with shovel, trowel and brush, the debris, and soon uncovered perfect, upright walls of an independent




Walls of house containing four rooms, near Paragoonah, Utah. Explored by H. MONTGOMERY, in January, 1893.

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house containing four compartments entirely devoid of windows and doors. The walls were of cement adobe, as in other valleys, and were on an average about fourteen inches in thickness and three and one-half feet in height. The whole structure was about sixteen by twenty feet, outside measurement. The two west rooms were each six and one-half feet square, while the east rooms were a little larger, being respectively seven and one-half feet and nine feet eight inches in length. The following articles were found in this building: One bone awl or skewer, one bone bead, one perfect stone *metate* of the usual shape, and similar to those found by me in the cave and cliff houses of eastern Utah, several pieces of charred corn cob, and many pieces of broken earthenware of good quality and of the well-known varied patterns. The floors of all the four rooms were at the same level, and consisted of three layers, as follows: Adobe in the bottom, next a complete and carefully laid layer of smooth, water-worn, rounded stones (principally limestone) from three to five inches in diameter, and the latter layer of water-worn stones was in its turn overlaid by a firm layer of the adobe, which constituted the upper surface of the tolerably smooth and level floor. At my request the World's Fair photographer took a view of these rooms as uncovered by me, and that view is herein reproduced. On cutting through the floor and continuing the excavation for a depth of seven feet below the floor above described, I found a confused heap of earth containing scattered fragments of pottery, charred corn cobs and bones, but no evidence whatever of walls, floors or other parts of a building. This condition is of precisely the same character as that found in several of the Juab Valley ruins. The structure consisted of but one story, which rested on the heap of earth, ashes, broken pottery and other refuse.

During the exploration of this four-roomed house my attention was called by the World's Fair representative, Mr. Don Maguire, to his discovery of several human skeletons within a few yards of where I was working. These remains were lying about three feet beneath the floor of a house. With them were found charred thread and corn, and not far from them, also, were broken pottery and other relics of the usual kind. All were about eight feet beneath the original surface of the "mound" or house ruins. The floor itself was quite complex, having, in addition to the three layers previously mentioned, a layer of sand, and, what was new to me, a continuous, horizontal layer of small pieces of pottery, thus forming a floor of five distinct and complete layers. The skull of one of the skeletons had a greatly flattened occiput, and in all respects resembled the flattened skull of the "cliff-dweller," whilst the remaining skulls had naturally formed occiputs. Here, therefore, occurred, together and beneath the floor of a valley house, both kinds of skulls, of which a description was given in my account of Mr. Lang's collection from the caves of San Juan County. If, as some persons have claimed, they are of two distinct races and lived at different periods of time, how has it come that they have been found at Paragoonah in an



Walls of house containing four rooms, near Paragoonah, Utah. Explored by H. MONTGOMERY, in January, 1893.

equally good state of preservation, and buried together under the aforesaid conditions? To me it seems plain enough that they belong to the same race, and that the artificial flattening of the cranium was practised by only a portion of that race.

An account of my investigations in the pre-historic town near Marysvale in Piute County, and elsewhere in the valleys of Utah, would be almost a repetition of that just given of the investigations in Juab and Iron. I have examined similar structures and remains in Beaver, Tooele, Salt Lake, Emery, Utah, Millard and other counties of this territory, and, when I think of the labor, care and intelligence that must have been bestowed upon the construction of their buildings, as well as the manufacture of their excellent pottery, their ornaments and implements, I am surprised that the remains of their works occurring in widely separated districts should differ so little. A remarkably close union must, without doubt, have existed amongst the ancient people whose monuments are the subject of this writing. Marine shell beads have been taken from the house ruins in the so-called "mounds" or tumuli of the Sevier valley, and likewise in Emery County. I have a lump of lead bullion said to have been found in a "mound" of Millard County. A good, well-burnt brick of unusual size and shape has been discovered in house ruins near Willard on the northeast shore of the Great Salt Lake; pre-historic irrigation ditches occur with the Beaver County and some other valley ruins. But, everywhere the same permanent buildings, the same walls, roofs and floors are observed, the same wonderful pottery, and the same stone and bone implements, utensils and ornaments are presented to the eye of the explorer.

(To be continued.)

THE last mound located within the corporate limits of Columbus, Ohio, was opened in July and August. Originally there were six mounds and two village sites on the ground now covered by the city. In the mound were twenty-seven skeletons. Many beads, celts and flint implements lay alongside four of the remains. Three of the Crania were taken out whole. The work attracted general attention and from four to five hundred people visited the excavation each day.

MR. GERARD FOWKE, one of the best authorities on American chipped stone implements, will present three papers to readers of the ARCHÆOLOGIST in the November, December and January numbers. He will treat of the manufacture of stone relics, the distribution of the material, etc. Collectors should inform their friends of these important contributions to Archaeological literature. Extra copies may be had at the usual rates.

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There is some place in western Tennessee where there has been a great amount of ancient quarrying, and of a superior quality of flint for the manufacture of celts and other large implements. Some of the finest pieces of Indian workmanship in this material come from that vicinity, but no one seems yet to have ascertained the exact locality of the deposits. Implements made from it are found as far south as middle Mississippi, but their greater abundance in Tennessee points to some limited portion of that State as the source of the raw material.

The novaculite of central Arkansas has furnished the natives of that region with a high grade of stone, as it is easily chipped, has a clean fracture with sharp edges and keen points, and is easily mined. The color varies from a red or pink to a bluish-gray. A coarser variety of the same stone, familiar to us as the oil stone or hone-stone, which is pure white when first quarried, was much used for the manufacture of small celts and ornaments.

In the northeastern part of the Indian Territory are massive deposits of compact white chert that has been extensively quarried. It was used in the fabrication of large implements, worked pieces a foot long being not uncommon. The cores and flakes that result from splitting the massive rock with stone hammers, have a greater resemblance to those from France than is found among the refuse from any other American locality. The stone is not, however, susceptible of the delicate work that renders possible the small, well-executed arrow-heads of most of the nodular flint.

Many other localities could be given, but these are the principal, and are sufficient to prove that our copper-colored predecessor need give himself no uneasiness as to what he would do for weapons when he had shot away those he had; there was never any question as to how or where he could replenish his quiver.

NOTE.—The Editor of THE ARCHÆOLOGIST would be glad to receive communications from all into whose hands the Journal may come, concerning deposits of any character—flint, mica, steatite, in short, all the minerals that were made use of by the aborigines in the manufacture of implements or ornaments of any sort. A description of each mineral with its geological position should be given when practicable. Especially is it desired to have the localities of any flint quarries not mentioned in Mr. Fowke's paper.

PREHISTORIC MAN IN UTAH.

HENRY MONTGOMERY, M. A., B. SC.

(Concluded.)

HAVING dwelt for a brief space upon the character, condition and extent of the remains of prehistoric man in the valleys of Utah, let us now turn to the lofty peaks and perpendicular cliffs, and we shall find abundant evidence of the existence of the same race of human beings.



EMERY COUNTY RUINS.—Reference has already been made to the *allat*, mummies, skulls, flails, pipes, sandals and other relics of the cliff caves of San Juan County. Perhaps an account of some of the remains of the peaks and cliffs of Emery and Carbon Counties may also prove of interest. From Price, on the Rio Grande Western Railway in the summer of 1892, a drive of fifty miles over a dusty and uninhabited country, brought me to what is known as "Nine-mile" Cañon in Emery County, near Uintah. Nine-mile creek, a tributary of Green River, runs easterly through this cañon, with mountains and high cliffs on both sides of it. On the peaks and on and in the cliffs are numerous remains of prehistoric people. Although I am inclined to the opinion that they are all of one race, yet I think this has not been fully established. They consist in general of house ruins and rock carvings; but the latter are separate from the former, and usually occur high up on the faces of perpendicular cliffs and at some distance from the houses. There are likewise a few paintings of a character very different from that of the carvings. Tooele, Millard, Sevier, Iron, San Juan and other counties possess rock carvings of the same general character as those of Nine-mile Cañon, differing only

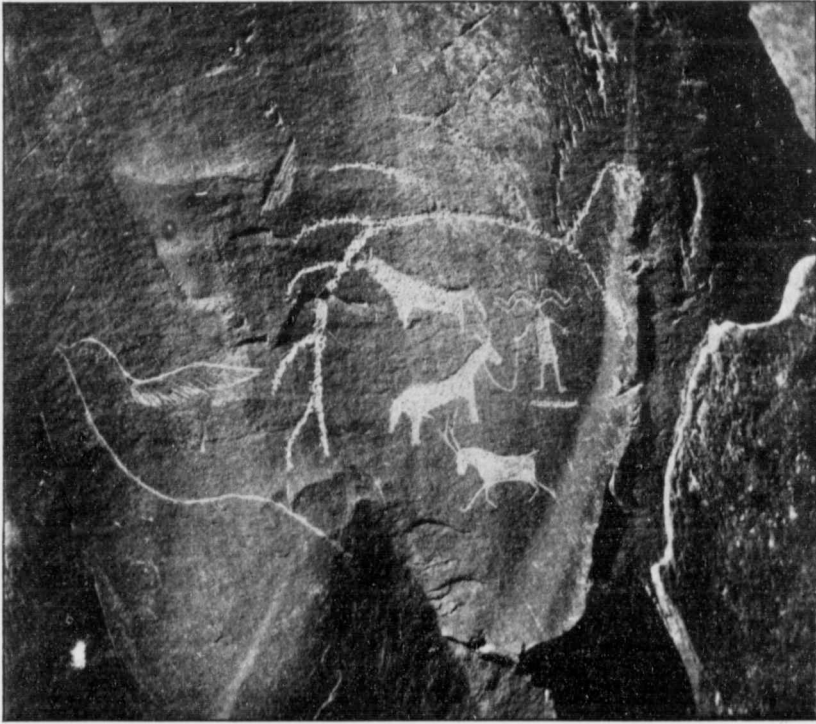
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in minor respects. Amongst the drawings made for me by Sergeant P. Bartsch, to whom I am indebted for assistance in my investigations in Nine-mile Cañon, may be seen those of human feet of various sizes, as well as some of the whole human body, all cut, at remote dates, in the vertical faces of the cliffs, and most of them at great heights above the present bed of the cañon. In Millard County have also been found carvings of human feet, some of which are larger than those that occur in Nine-mile Cañon, being each ten inches in length. At one spot they were discovered upon the upper surface of a large rock, and so close a likeness did they bear to the average human foot impression, that they were unhesitatingly reported as genuine human foot-prints that had been made ages gone by in the lava rock when the latter was in a molten condition. To dispel this idea, in addition to the fact that similar foot carvings occur high on the faces of the perpendicular cliffs of Emery County and elsewhere, it is necessary only to state that upon the surface of the same rock, side by side with the same so-called human "foot-prints," there have been found numerous carvings of the usual kind so common throughout Utah and vicinity. Having made careful examination of the Millard County "foot-prints" and associated carvings, and having several samples of them in my collection, I may be permitted to express my opinion on this question with some degree of confidence. In this instance all the carvings are greatly weathered, and the huge rock itself is but a boulder that has, at some distant period in the past, been removed from its original position and carried to a distance.

But I must return to Nine-mile Cañon. A majority of the remains are on the north side of the cañon, and have a pleasant, sunny, southeasterly exposure. Some of the ruins are those of dwelling houses, others are of storage bins, and others appear to have served the purposes of lookout and signal stations. A careful exploration of many of them afforded conclusive evidence of three classes of structures. The dwellings are distinguished by their situation, their large size, the fire-place and contents, and, as a rule, also their smoothly-finished interior. The bins or storage structures are too small for human occupation, and they contain stone corn mills, corn sacks, and often considerable quantities of corn, shelled and unshelled, as well as gourds and water tanks. The storage bin either forms a compartment of the dwelling house or it is separate, and at a convenient distance from the dwelling.

There is a most prominent peak, consisting of an overhanging, natural, hard rock tower situated upon the top of an exceedingly steep and rugged hill or mountain immediately to the south of "Taylor's Ranch," in Nine-mile Cañon, Emery County. It took Sergeant Bartsch and myself most of one forenoon to make the ascent of the hill, and the descent proved more difficult than the ascent. The rock tower is about fifty feet high, and standing in an almost inaccessible spot it commands a magnificent view of several cañons and mountains. On its very top, in an extremely dizzy situation, were the remains of three small stone circular structures, two of which were provided with roofs of heavy cedar logs and heavy, flat

stones. The logs and poles of these two structures would make about a cord of wood, and they possessed distinct marks of the rude stone axes with which they had been cut into suitable lengths. I obtained some heavy and well-made stone metates, some corn-cobs and fragments of other relics from these ruins. The metates were made of a kind of sandstone different from any to be seen upon the hill; therefore, it would seem that they must have been carried from a distance, and if so, it must have required a considerable effort to



Rock carvings on face of cliff in Nine-mile Cañon, Utah.

transport them up to the place in which we found them. One of these metates had been worn completely through by use in rubbing or grinding.

In the south side of the same rock-tower we found a fourth stone-house filled to the roof with the accumulations of the many years that must have passed since its owners ceased to use it. These accumulations consisted chiefly of the excrement of bats, along with some decayed Piñon pine leaves and nuts. As the whole heap was about four feet deep, it must have taken a long time for it to accumulate. I judged, also, that it must have been a long time since it became so full that not even a bat or a bird could find room within it. This

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structure was about four feet wide, five feet long and four and one-half feet high. Its careful working yielded a small quantity of interesting relics, such as corn-cobs, a portion of the horn of a buffalo, also some buffalo hide, pieces of glazed and painted pottery, and small articles manufactured from bone, all being found upon the floor of the house. One corn-cob was in good condition, and exhibited distinct marks of having had the corn removed from it by a knife in a manner similar to that in which it is frequently removed at the table of civilized man. There were also evidences of the existence of a fire-place, thus indicating that the building had formed at least a temporary dwelling house.



Stone structure on a peak in Nine-mile Cañon. Explored by H. Montgomery in June, 1892.

On the south side of the cañon, and about a mile from Brock's Post-office, I explored a strong and well-built stone structure, which stood upon a high and precipitous cliff. It formed about the two-thirds of a circle, being fourteen feet long, twelve feet wide and five and a half feet high, and was completed by a cliff in its rear. The wall was remarkably smooth and regular on its inner side, but was slightly irregular externally. It possessed a doorway or entrance on its eastern aspect thirty inches in height and twenty-seven inches in width, and a loose, flat stone slab served as a rude door. This wall

was thicker below than above, and externally it sloped gently inwards from the bottom up, its average thickness being about eighteen inches. Its situation and structure, together with the absence of a roof and of the remains of domestic articles, afford evidence that it served as a signal or military station.

At three o'clock in the morning of a long and bright summer's day, my saddle-horse and that of my assistant stood at the door of the ranch house in readiness to carry us to the top of a peak some two miles distant, and upon which was a natural column of rock bearing prehistoric ruins. We soon mounted our steeds, forded the stream, and began the toilsome and dangerous ascent of the mountain, stopping to rest our sure-footed animals more and more frequently as we ascended. At length, after about three hours' continuous climbing, we reached a spot where we were obliged to abandon the horses and make the remainder of the trip on foot. In a short time we came to the rock column, which, although hard and solid, was much disintegrated, and had been vertically cleft and separated, leaving a dangerous gap between its two inclined and overhanging portions. By the aid of cedar poles we succeeded in clambering to its summit, and there, in a situation that commanded a magnificent view of many cañons and hills, we found the ruins of four circular stone structures, which, in my opinion, had once formed a lookout and signal military station. They were arranged upon the flat top of the rock in such a manner that three smaller ones, each capable of holding but one man, occupied the front and most exposed places, one of them being in advance of the other two, which were nearer the sides of the rock. The fourth and largest stone structure held a place several yards in the rear of the three small ones, but from it a clear view of a wide and extended tract of country could also be obtained. They were all destitute of openings except at the top, and their walls sloped inwards from below, so that the opening in each of the three small structures was small, and only sufficient to allow the entrance or exit of one person. Utah, being on the outskirts of the country occupied by a great nation whose headquarters were probably in Mexico, might properly be expected to be provided with a considerable number of military posts or watch stations such as those herein described. There is no evidence that these structures were used as either dwellings or store-houses; but both of the latter occur at lower elevations, and in the neighborhood of the lookout stations.

Besides the ruins aforesaid, I explored many others in this cañon. One of them was simply a small natural cave in the face of the cliff, improvements having been effected by the addition of mixed mud in several parts of it. From another house ruin the skeleton of a typical Cliff Dweller with flattened occiput was taken at a depth of five feet beneath the floor.

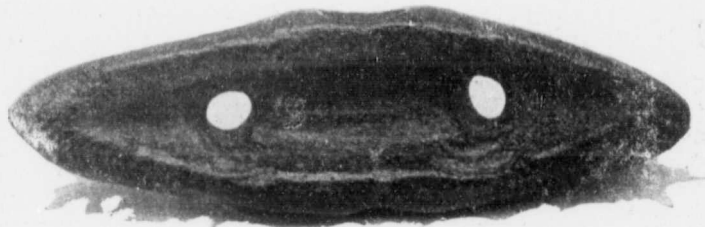
Some fifty miles southwest of Nine-mile Cañon, and within a few miles of the town of Price, there is a little stone and adobe house in a natural cave well up in the face of a high, perpendicular cliff. It was explored by me in June, 1892. This little building is nearly circular, and about three and a half feet in diameter and four feet in

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height. It may be seen towards the left of the observer and near the centre of the sloping bottom of the cave, and may well be likened to a large bee-hive or swallow's nest. A dark, irregular opening appears in the front of the house, but this was probably not made there originally. It seems to be a recent break in the front part of the semi-circular wall, the original opening in this bin or enclosure being about ten by fifteen inches in size, and still in a perfect state of preservation in the center of the roof. The top or roof is flat, and has the aforesaid rectangular small opening carefully built in it, the entire roof consisting of well-woven wooden poles and bark with a heavy covering of adobe or mixed mud, which shows undoubted evidence of having been in a plastic condition at the time it was placed upon the poles. Not only are the slender poles imbedded well within the overlying adobe, but the large finger marks of its builders are



Stone shuttle found on surface of ground near ruins from which thread was exhumed in Iron County, Utah. Actual size.

numerous and distinct upon the outer surface of this adobe. In this structure or bin were found two pieces of cast iron, evidently the feet or supports of what had once been a cast-iron pot or kettle. While this is an unusual "find," and may have an important significance, standing alone and without similar additional "finds," it is uncertain what value should be attached to this discovery. This structure is situated more than one hundred feet above the base of the cliff, and nearly two hundred feet from its summit. Besides this, there were the greatly dilapidated remains of two other small houses within the same natural cave, and one larger house, probably a dwelling, having metates and other remains. Near by in the same region, I discovered other caves which possessed remains of former houses that must have been very similar in character to the one just described. From these I obtained large stone metates or corn mills, as well as corn-cobs and other relics. Among other things a bag or sack-like basket was taken from one of them. It contained a small quantity of shelled corn, and with it was a heap of well-preserved corn-cobs, probably more than a bushel altogether. This sack is about twenty-two inches in length and seven inches in width, and is tied at each end by a bark cord. It is made of rushes and cedar bark, the fibres of the latter having been manufactured into a thick cord. Two ropes or cords of twisted cedar bark fibres pass around each rush stem, one on each

side of the rush, the latter extending lengthwise, while the cedar cords run transversely.

From the preceding account of my explorations in Utah the reader will, doubtless, experience little difficulty, if any, in reaching the conclusion that the human beings who formerly occupied the valleys of this region were of the same race as those who occupied the cliffs and peaks, and that the date of the occupation of the one must have been the same, or nearly the same, as that of the other. The Cliff Dwellers and valley residents were contemporary, or nearly so. The material and style of the pottery of the valley people, the opening and entire structure of the house roof, the finger marks, the metates and rubbing or grinding stones, bone awls, broken bones of animals, corn, gourds, skulls and small store-bins, are all similar to those found in and about the cliffs. That is to say, the buildings, articles of workmanship, and the human and animal remains of the valley ruins are in all essential respects similar to those of the cliff



Prehistoric carving on vertical cliff
in Nine-mile Cañon, Utah.

ruins. The similarity is indeed most striking. One is unable to distinguish the pottery, the stone grinding mills, the bone ornaments and tools, and the roof structures of the cliff and valley ruins. That they belong to the same people cannot for a moment be questioned. A person has but to glance at them to feel sure of this. The only differences noticeable are—the valley relics are more altered and decomposed than those of the cliffs, and the buildings nearly always consist of adobe and mud, while those of the cliffs and peaks consist very largely of stones. These differences are natural, and to be expected. The greater amount of moisture held by the valleys fully accounts for the greater alteration in their remains.

With regard to the second difference it may be observed that the higher one climbs, the more stones and the less mud and adobe are found in the cliff buildings. This is, of course, because of the difficulty of getting mud for these structures. And so with respect to the valleys. The building material is in the vicinity in each case. Stones occur in the cliffs and clay in the valleys. In many instances, however, mud was carried up to great heights and used in the construction of the walls and roofs of cliff houses in the same manner as in the valley houses. Both the cliff and the valley people erected permanent buildings, and in much the same manner; both manufactured pottery of similar material and patterns, and both of them planted, and by means of irrigation, raised crops of similar kinds. They were one and the same people, occupying the valleys and mountains of Utah, Arizona and Colorado during the same period of time, which was undoubtedly of long duration, adapting themselves to the surrounding and changing conditions of nature.