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SMITHSONIAN INSTITUTION
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 76

ARCHEOLOGICAL INVESTIGATIONS

I. CAVE EXPLORATIONS IN THE OZARK REGION OF CENTRAL MISSOURI
II. CAVE EXPLORATIONS IN OTHER STATES
III. EXPLORATIONS ALONG THE MISSOURI RIVER BLUFFS IN KANSAS AND NEBRASKA
IV. ABORIGINAL HOUSE MOUNDS
V. ARCHEOLOGICAL WORK IN HAWAII

BY
GERARD FOWKE

WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

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LETTER OF TRANSMITTAL

SMITHSONIAN INSTITUTION,
BUREAU OF AMERICAN ETHNOLOGY,
Washington, D.C., February 17, 1920.

SIR: I have the honor to transmit the accompanying manuscript, entitled "Archeological Investigations," by Gerard Fowke, and to recommend its publication, subject to your approval, as a bulletin of this bureau.

Very respectfully,

J. WALTER FEWKES,
Chief.

DR. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

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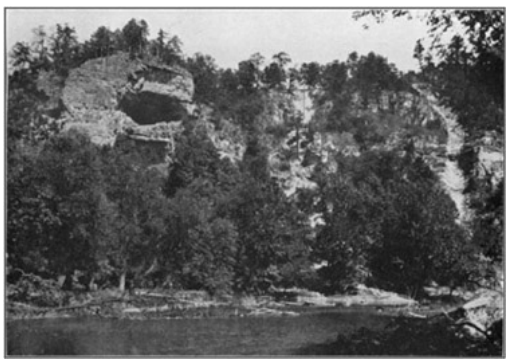

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(Courtesy of Dr. P.J. Heuer, St. Louis) ToList

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(Courtesy of Dr. P.J. Heuer, St. Louis) ToList

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(Courtesy of Dr. P.J. Heuer, St. Louis) ToList

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ARCHEOLOGICAL INVESTIGATIONS

I. EXPLORATIONS IN THE OZARK REGION OF CENTRAL MISSOURI ToC

By Gerard Fowke

INTRODUCTION

The geological structure of that portion of southern Missouri which lies to the westward of the Archean rocks near the Mississippi River is peculiarly suitable for the development of caverns. The Ozark uplift produced far-reaching undulations, and there seem to have been no violent disturbances which would result in extensive faults, considerable displacements, or a pronounced inclination of the strata. Jointing and pressure cleavage, however, gave rise to innumerable crevices in the limestone, through which percolating surface water found its way into all parts of the formations. By its solvent power this water gradually enlarged the crevices into passages which, multiplying and uniting, drained constantly increasing areas until they formed subterranean streams with a perpetual flow. Thus began caverns; and these grew in depth, width, and height as the rock was eroded and dissolved. Tributary crevices were subject to the same action; and there was finally created by each of these water systems a network of cavities whose ramifications sometimes extend throughout several townships. In time, sections of the roof, here and there, became so thin from the combined erosion taking place both above and below as to be unable to sustain their own weight; the overlying strata fell into the cave, and the volume of water flowing through it was augmented by drainage which had previously been disposed of on the surface. All this had to seek an outlet somewhere, except in those rare instances where it maintains its downward course until, below the level of any open stream it can reach, it encounters an impervious stratum and must lose itself in the deep rocks. Usually, however, it emerges in the face of a bluff or on the side of a hill; and the opening becomes "the mouth of a cave." Occasionally, in such situations, the water continues to flow out; but usually it finds a way to reach a lower level, and so the cave in time becomes dry except for such water as seeps through from the earth [14] immediately above. Sometimes, too, the point of discharge is at or perhaps somewhat below the level of a stream into which it passes; in the Ozarks are numerous very large springs or fountains which by inverted siphon or artesian action are forced up from subterranean streams lying at a greater depth.

Few large caverns have the floor entirely dry, even when they are well above the bottom of the valley. Deposits in the front portion may be dry, perhaps dusty on the surface; but toward the interior moisture usually accumulates until they are muddy or until the water stands in pools or puddles. When this is the case there is sometimes a little stream making its way to the front through a channel which it has cut; or seepage may dampen, possibly saturate, the lowermost portions of the otherwise dry earth. These details are controlled principally by the direction and degree of slopes and by side openings which allow more or less of the water to escape at some part of its journey.

When a cavern is fairly lighted and has a dry floor, whether of rock or earth, it forms an excellent abode for a small community unable or not disposed to construct shelters more comfortable or convenient; and there is abundant evidence that many caves in the Ozarks were utilized as habitations by the aborigines. It must be remembered, however, that in the centuries which have elapsed since hunters or permanent occupants first entered this region, many superficial changes have taken place, not only about the entrances but within the caverns as well. Very probably these alterations have converted caves once occupied into

places which at present are quite unfit for such purposes. Talus has accumulated in front of the openings or partially filled the front chambers; it may well be the case that this conceals much refuse. Caves which, from similar deposits, are now difficult to enter and dark to the doorway, may have been open and convenient. Furthermore, caves with wet or muddy bottoms may owe such condition to causes which have recently come into operation; or if they always contained more or less water, the primitive dwellers could in many cases have overcome such disadvantages by digging drains which have since become choked and obliterated. Very small cavities, such as deep rock-shelters; or caverns with a great thickness of earth on the floors, now showing no trace of remains; or those with entrances so small that it is necessary to crawl through—any of these, if cleared out to the bottoms, might disclose material dating back to very early times.

It might seem that the air in a cave constantly occupied would grow stale and close; while smoke from the fires would in time become annoying. But Indians used for fuel only dry wood and bark, the smoke from which would be a negligible factor. The varying pressure of [15] the atmosphere outside creates a current of air in or out which is usually imperceptible but which penetrates to the deepest recesses and insures ventilation.

In view of the very primitive conditions under which cave dwellers lived, as denoted by the artificial objects which they left, and the low mentality indicated by the skulls, Mr. W.H. Holmes suggests that a careful and extended study of these abodes may disclose a culture lower than that prevailing among out-door dwellers in the same localities. As no effort would be required to secure warmth and shelter, and as food was abundant and easily procured, the people may never have advanced from savagery, or may have retrograded.

None of these possibilities are taken into account when reporting upon the caves described in the following pages; the information offered is based entirely upon the present appearance of the places mentioned. To attempt more would be merely offering guesses.

If "Cave Man"—using this term to designate the predecessor of any race or tribe known to history—ever existed in the Mississippi Valley he would not find in any part of it natural features better adapted for his requirements than in the Ozark hills. But, so far, not the slightest trace of his presence has been revealed. Products of human industry have been reported as occurring at great depths under other conditions, even at the bottom of the loess; though in all such cases there is some uncertainty as to the correctness of the observations. No similar reports have been made in regard to any cave yet explored. On the contrary, whatever may be the depth of the deposit containing them, the artificial objects exhumed are uniform in character from top to bottom; the specimens found on the clay or solid rock floor are of the same class as those barely covered by the surface earth. Moreover, when they cease to appear they cease absolutely; the rock was swept bare, or the clay was deposited, by the stream to which the cave owes its existence, and each is a part of the original formation. In these circumstances habitation would be out of the question.

By careful search in the caves and rock-shelters of which the Indian known to history availed himself, extensive and interesting museum collections can be made. To find an earlier man it will be necessary to investigate caverns which he found suitable for occupancy and in which the accumulation of detritus, from whatever source, has been sufficient to cover his remains so deeply that they can not be confused with those of a later period; and it may be

necessary, also, to discover with them bones of extinct animals. Should such a place exist, it is extremely probable that there will be no outward indication of the fact.

No examination of a cavern is complete or is to be deemed satisfactory unless a depth is reached where the geological deposits are undeniably of such age as to antedate the possible appearance of man upon the scene. This is not assured until the excavation has reached the original floor, which may be either the bed-rock or the clay left by the eroding stream when its volume had become so diminished from any cause that it was no longer able to keep its channel cleared out. Unless a cave is almost perfectly dry—and few of them are —the bottom can not be reached until all standing or soil water has been drained off. [16]

Notwithstanding the most explicit directions, a stranger without a guide is frequently unable to find a cave unless its position is plainly visible from some well-defined spot. The winding valleys and the multitude of ravines sometimes bewilder even those living among them.

A few definitions of terms, or explanations of statements in the report, may prevent misunderstanding.

"Refuse," "signs," "indications," "evidence," referring to habitation or occupancy, mean mussel shells; animal bones; burned or worked stones; broken pottery; wrought objects of bone or shell; flint implements, chips, or spalls; ashes; charcoal; in short, the material ordinarily found on the site of an Indian village, some or all of which are to be seen where the caverns have been used for shelter.

"Daylight" or "in daylight" is the greatest distance within the entrance to a cavern at which common print may be easily read or the nature of small objects lying on the floor determined with certainty.

"Drip rock," "cave rock," or "cave formation" are general terms including stalactite or stalagmite; also deposits of similar origin coating the walls. Not all of these may be present in the same cavern.

"Roof dust" is a substance, literally "lime sand," produced by the superficial disintegration of the roof or walls. This process is greatly accelerated where lichen or rock moss has gained a root hold on the stone. Roof dust in a dry cavern is the equivalent of stalagmite in a wet one.

"Cave earth" is the loose, loamy material usually found in the front chambers of large caverns. It is made up of roof dust, sand, and silt washed from the interior, outside dust and vegetable matter blown in by the wind, with minute amounts of clay or soil carried in by animals.

"Gravel" in a cavern is seldom noticeably water-worn, but is the angular débris resulting from the continued fragmentation of chert nodules released by erosion of the limestone.

A "rock shelter," or "shelter cave," is a room or recess formed by atmospheric erosion in the face, usually at the base, of a cliff. The depth from front to back, under the projecting or overhanging unremoved bedrock above, is generally much less than the length as measured along the face of the bluff. They are nearly always dry, more or less protected from storms, and when of suitable size and in a favorable location were much used as camping places. [17]

They are rather rare in limestone formations but frequent in massive sandstone.

"House mounds" are small, low piles of earth, similar in all respects to those so numerous in southeastern Missouri and southward. Although they are usually described as "standing in regular rows," they are in fact irregularly placed, though seldom as much as 100 feet apart in the same group.

Measurements of caverns explored were made with a tape line; others were estimated by stepping, or in the case of elevations, by sighting, consequently are only approximate, but the figures given will in no case exceed the actual distance.

Specimens reported from caves not excavated were found on the floor, sometimes in situations where no addition of cave earth had taken place since the objects were left there; at other times where they were brought from below by burrowing animals; and, again, where they are exposed in the bed or banks of a drainage channel.

In no cave so far examined has any evidence been found to show that the aborigines occupied any part of it beyond such point as was adequately illuminated from the entrance. No doubt they may, at times, have retreated beyond the reach of daylight and been compelled to dispel the darkness by means of fires; but such instances were rare and of short duration. Statements are sometimes made that specimens, usually flint implements, have been found far, possibly several hundred yards, within the cavern. Such objects do not predicate habitation at that distance; primitive explorers may have lost them. It has been pointed out, too, by Mr. De Lancey Gill, that a wounded animal, taking refuge in a cave and instinctively seeking its dark recesses, may carry in an arrow or spear whose point remains when the shaft has decayed. In the case of a large mammal, such as a bear or a panther, a number of arrow or spear heads might be carried in and be found close together long after the death of the victim.

Cairns or stone-covered graves are of common occurrence; but with a single exception the rocks in all those visited or reported are more or less displaced. This is due to hunters digging out small wild animals making a den in them; to treasure seekers who believe that "money" is concealed in them; and most of all to persons who are curious to know "what there is in there."

The record of the investigations will be given by counties, beginning at the south and proceeding northward. Descriptions and notes of the sites mentioned will follow as closely as possible the same arrangement. A number following the name of a cave refers to its position as denoted by a corresponding number on the map (pl. 3). [18]

THE UPPER CURRENT RIVER

A number of well-known caverns, some of them quite extensive, exist along the head streams forming the Current River. As originally planned, the work included a thorough survey of this region, but owing to various causes it was only partially examined. Several large caves were reported as being along the river and its tributaries farther down than these researches were carried. Notable is one opposite the mouth of Sinkin Creek, which was