

Grain Smuts," by M. Rich Porter, Salt Lake City.

"The Value of Gaseous Ionization in Hydrogen," by Professor Carl F. Eyring, B. Y. U.

"A New Count Method of Measuring the Elementary Electric Charge," by Dr. Harvey Fletcher, B. Y. U.

"Our National Awakening to the Importance of Science," by Dr. W. C. Ebaugh, Salt Lake City.

A. O. GARRETT,

*Permanent Secretary*

## ANTHROPOLOGY AT THE WASHINGTON MEETING<sup>1</sup>

THE annual meeting of the American Anthropological Association was held December 27-31, 1915, at the United States National Museum, Washington, D. C., its scientific sessions being in affiliation with Section I of the Second Pan-American Scientific Congress, the Nineteenth International Congress of Americanists, the American Folk-Lore Society, the American Historical Association, and the Archeological Institute of America. By virtue of this affiliation the attendance was large and the list of papers presented bearing on anthropology was unusually long.

In honor of the occasion, the United States National Museum made provision for special exhibits. These included: (1) Physical Anthropology, by Dr. A. Hrdlicka; (2) Indian Treaties of Historical Importance; (3) Economic Plants and Plant Products, by W. E. Safford; (4) Archeological Exhibits, by W. K. Moorehead, A. V. Kidder, and Julio Tello, and (5) Photographs, by Frederick Monsen and the Rodman Wanamaker Expedition.

Interwoven with the scientific sessions there was an elaborate social program, comprising a reception by the Secretary of State and the United States delegation, and one by the governing board of the Pan-American Union, both held in the Pan-American building; a reception by the regents and secretary of the Smithsonian Institution; a luncheon by the National Geographic Society; a reception by the trustees of the Carnegie Institution of Washington; a dinner and reception by the Cosmos Club; and finally after the close of the meetings, the reception at the White House by the President and Mrs. Woodrow Wilson.

A number of important resolutions were adopted; some of these were in the nature of joint resolutions, others concerned only the American Anthropological Association, as will be seen from the contexts:

<sup>1</sup> Report prepared by George Grant MacCurdy at the request of the General Secretary, A. Hrdlicka.

## RESOLUTION RELATING TO THE DESIRABILITY OF UNIFORM LAWS CONCERNING ARCHEOLOGICAL EXPLORATION

### Section I

WHEREAS, many parts of the American continent are rich in archeological remains, such as ruins, monuments and burial sites, containing many examples of industry and art of the aborigines.

AND WHEREAS, scientific explorations of these remains with the study of resulting finds are objects of utmost importance, for on their basis only will it be once possible to reconstruct the lost history of the American race.

AND WHEREAS, in order that such remains may be saved to science and not be wantonly exploited or destroyed before they could be studied, it is essential that proper laws and regulations be adopted by the various countries where such remains exist, the object of such laws and regulations being to hinder or prevent as far as possible the digging or other destruction of such remains by unqualified persons; to prevent trade in pottery and other articles recovered from the ruins and graves, and at the same time not only to enable properly qualified scientific men both indigenous and of other countries to undertake and carry on scientific explorations and collections.

AND WHEREAS, the majority of the American republics have now some laws relating to antiquities, although these laws are unlike in the different countries and in some instances are such that they have resulted more in restraining than in advancing properly qualified research.

*Therefore it is hereby Resolved* by the Second Pan-American Congress, that it is highly desirable that the various American republics arrange by the appointment of suitable delegates, possibly from among their official representatives at Washington, for joint action on this important subject, with the view of formulating generally acceptable and substantially uniform laws relating to the conservation, exploration and study of archeological remains in their several jurisdictions; laws which on one side will effectively safeguard these remains from wanton destruction or exploitation, and on the other will aid and stimulate properly organized and accredited research in these directions.

## RESOLUTION RELATING TO THE ADVANCE OF ANTHROPOLOGICAL RESEARCH IN THE VARIOUS AMERICAN REPUBLICS

WHEREAS, in various parts of the American continent there are remnants of the aboriginal popu-

lation, a study of which is of great importance to science.

AND WHEREAS, many of these remnants are very imperfectly known and are rapidly disappearing.

AND WHEREAS, properly made and preserved collections, ethnological and physical, are among the most precious scientific and educational assets of a nation.

*Therefore be it Resolved* by the Second Pan-American Congress, that delegates to the congress be urged to use every opportunity to impress upon their respective governments, institutions and people the importance of promoting research in this field, of organizing surveys for the study of the primitive tribes, and of building up national and local museums for the preservation of the data and materials collected.

The two foregoing resolutions were passed not only by the American Anthropological Association, but also by the International Congress of Americanists, the latter providing for an intermediary local bureau in Washington consisting of W. H. Holmes, F. W. Hodge and A. Hrdlicka.

#### RESOLUTION ON THE DEATH OF PROFESSOR FREDERIC WARD PUTNAM

(Prepared by Alfred M. Tozzer and Marshall H. Saville.)

WHEREAS, by the death of Professor Frederic Ward Putnam, the American Anthropological Association has lost one of its most eminent founders, one of its most eminent supporters, and one of its most lovable characters;

*Be it Resolved*, that the Association here express the sense of this great loss to American anthropology, a loss that is felt not only by the many pupils of Professor Putnam in the several institutions throughout the country, but also by those who have long been connected with Professor Putnam through all the years of struggle to make anthropology a recognized field of scientific endeavor; and

*Be it further Resolved*, that these minutes be spread upon the records of the association and also be sent to the members of Professor Putnam's family.

#### RESOLUTION OF THE AMERICAN ANTHROPOLOGICAL ASSOCIATION RELATING TO THE DESIRABILITY OF RESUMING THE OPERATIONS OF THE ETHNOLOGICAL SURVEY OF THE PHILIPPINE ISLANDS

(Prepared by Edward Sapir and R. H. Lowie.)

The members of the American Anthropological Association have learned with great regret of the decision to suspend the operations of the Ethnological Survey of the Philippine Islands. The native populations of the Philippine Islands are among the most interesting of the globe from a scientific point of view. They include a pygmy race whose study will shed light on the physical anthropology and culture of one of the most primitive divisions of mankind. On a higher level a host of Malay tribes require investigation for the purpose of determining their relations with one another and with alien groups. In short, the Philippines offer an unusually rich field for important research which should not be left to the accident of private interest.

It is therefore respectfully urged by the American Anthropological Association that the proper authorities authorize the resumption of anthropological research in the Philippine Islands at the earliest opportunity.

On January 19, 1916, the secretary received a reply from Mr. J. L. Hunt, assistant to the chief of the Bureau of Insular Affairs (War Department), from which the following is taken:

"Anthropological work which has been carried on in the Philippine Islands has not been done by the federal government or maintained at federal expense, but has been carried on by the Philippine government through its Bureau of Science. Some months ago the Philippine government found it necessary greatly to curtail its expenses on account of a considerable falling off in its revenues, and among other activities of the Philippine government which had to be suspended or discontinued were those in connection with anthropology.

"A copy of your letter is being transmitted with its inclosure to the governor-general of the Philippine Islands at Manila for consideration by the proper authorities there."

#### RESOLUTION FAVORING BILL TO DISCONTINUE THE USE OF THE FAHRENHEIT THERMOMETER SCALE IN GOVERNMENT PUBLICATIONS

WHEREAS, there is now pending in congress a bill, known as H. R. No. 528, to discontinue the use of the Fahrenheit thermometer scale in government publications:

*Be it Resolved*, that said bill have the support of the American Anthropological Association.

A vote of thanks to the regents and secretary of the Smithsonian Institution for the facilities so generously placed at the disposal of the association and for the reception at the National Museum was unanimously carried.

On invitation from Dr. P. E. Goddard, it was voted to hold the next regular meeting of the Association at the American Museum of Natural History, New York City, on December 27-30, 1916, in affiliation with Section H of the American Association for the Advancement of Science.

Nearly one hundred titles were offered in the joint program; with but few exceptions the author was present and read his paper. A large majority of the abstracts were presented through the International Congress of Americanists.

*The Place of Archeology in Human History:* W. H. HOLMES.

The term history as applied to the human race is a comprehensive designation corresponding with the term anthropology, which is defined as the science of man. The sources of information to be drawn upon in these researches are comprised under two principal heads: (1) intentional or purposeful records, and (2) non-intentional or fortuitous records. The intentional records are of five forms, as follows: (1) Pictorial, as in pictures and pictographs; (2) major objective, as in commemorative, monumental works; (3) minor objective, as in *quipu* and *wampum*; (4) oral, as in tradition and lore; (5) written, as in glyphic and alphabetic characters. With each of these categories goes necessarily a mnemonic element—a very considerable dependence upon memory. Fortuitous records take numerous forms: (1) The great body of products of human handicraft to which no mnemonic significance has ever been attached; (2) the non-material results of human activity as embodied in language, beliefs, customs, music, philosophy, etc.; (3) the ever-existing unpremeditated body of memories which accrue to each generation and are in part transmitted adventitiously; (4) the record embodied in the physical constitution of man which, when properly read, aids in telling the history of his development from lower forms; (5) the records of intellectual growth and powers to be sought in the constitution of the mind; (6) the environments which may be made to assist in revealing the story of the nurture and upbuilding of race and culture throughout the past.

It is from these diversified records, present and past, that the story of the race must be derived. Archeology stands quite apart from this classification of the science of man, since it traverses in its own way the entire field of research; howbeit, it claims for its own more especially that which is old or ancient in this vast body of data. It is

even called on to pick up the lost lines of the earlier written records, as in the shadowy beginnings of glyphic and phonetic writing, and restore them to history. It must recover the secrets of the commemorative monuments—the tombs, temples and sculptures intended to immortalize the now long-forgotten great. It must follow back the obscure trails of tradition and substantiate or discredit the lore of the fathers. It must interpret in its way, so far as interpretation is possible, the pictorial records inscribed by the ancients on rock faces and cavern walls, these being among the most lasting and purposeful records. All that archeology retrieves from this wide field is restored to human knowledge and added to the volume of written history. Archeology is thus the great retriever of history.

*The Origin and Destruction of a National Indian Portrait Gallery:* F. W. HODGE.

Description of the efforts made in the early years of the last century to establish at Washington a national gallery of Indian portraits, particularly the part taken therein by Thomas L. McKenney, superintendent of Indian trade and later in charge of the Office of Indian Affairs. The growth of the collection; the artists engaged in the task; the use of the portraits in illustrating McKenney and Hall's elaborate and expensive work on the Indians; the transfer of the collection to the National Institute and later to the Smithsonian Institution; the addition of the loan collection of Indian paintings by J. M. Stanley, and the final destruction of almost the entire collection by fire in 1865.

*Indications of Visits of White Men to America before Columbus:* WILLIAM H. BABCOCK.

Ancient writers and voyagers knew the Atlantic as far west as Corvo and the Saragossa Sea, approximately half-way to America, and some of them describe or mention a continent on the western side of that ocean; but these statements lack distinctive touches which might serve as tests of reality.

Medieval maps and Norse sagas give reason to surmise that early Irish mariners reached the northeastern outjutting elbow of America surrounding the Gulf of St. Lawrence, which they called Brazil. This would probably be considerably before the Norse arrival in Iceland near the close of the ninth century, for the Norsemen found that Irish monks had preceded them there.

About 985 Eric the Ruddy of Iceland planted a colony in Greenland, which survived for 450 or

500 years. In the year 1000, according to the more credible form of the saga, his son Lief discovered Vinland or Wineland, otherwise the mainland of America. His sister-in-law, Gudrid, and her husband, Thorfinn Karlsefni, explored a part of the American coastline, about the years 1003 to 1006, but failed in the attempt to establish a permanent settlement. Mainland America was probably repeatedly visited from Greenland and Iceland. One such visit is recorded positively as occurring in 1347.

Before 1367 a Breton expedition met with partial disaster at an island farther south and west than the Brazil before referred to. It would naturally be some point on or off the lower American Atlantic coast line, possibly Cape Cod or the Bermudas. Many maps show this more remote island, usually of crescent form, and most often having the name Man (Mam) or Mayda.

Probably Behaim's globe of 1492 is substantially right in stating that a Spanish (Portuguese?) vessel sailed to Antillia in 1414. Becaria's map of 1435 presents as "Newly reported islands" an insular group of four—Antillia, Salvagio, Reylla and I in Mar. These are repeated more or less completely on the maps of Bianco, 1436; Pareto, 1455; Roselli, 1648, the Weimar map sometimes credited to 1424, but probably Freducei's about 1481, Benincasa, 1482, and the Laon globe of 1493. They must be what Justin Martyr (1511) calls "The Islands of Antillia." Apparently the latter island was Cuba.

The 1448 map of Bianco shows a long coast line on the edge of the parchment opposite Cape Verde, with an inscription in a Venetian dialect, variously read as stating 1,500 miles for the interval or the length of shore. It would seem that some one may have anticipated the experience of Cabral in reaching South America by this route. The discussion of this point before the Geographical Society brought out an elaborate review of the Portuguese records of westward discovery by J. Batalho Reis, which presents many valuable items of western discovery. But there seems nothing in them clearly to indicate voyages to America before Columbus. Divers other claims have been made for Normans, Poles, Basques and Orkney-men, but are hardly to be trusted.

*Vineland—Its Probable Location:* A. GAGNON.

In what part of North America was Vineland located? The author attempts to throw some light on the question through the help of the sagas, which date from the twelfth to the fourteenth

century, and which recount the earliest voyages to Greenland and Vineland.

*Pan-American Topic:* ADRIAN RECINOS.

The author considers of prime necessity the conservation of architectural monuments and of all objects belonging to the domain of archeology and anthropology, in order to be able to arrive at a clear notion of the pre-Columbian history of the Western Hemisphere. He believes it entirely feasible that the different American countries should pass uniform laws for the protection of antiquities, since the laws on this subject show great similarity in the different countries to-day. What he thinks has been lacking up to the present time in the different countries is a special legislation aimed to encourage systematic investigations in the field of archeology and anthropology. He believes it advisable that the American governments should agree that the existing museums and libraries in the respective countries should harmonize their work and exchange duplicate objects which they may possess.

*Anthropology in the Museum of the Buffalo Society of Natural Sciences:* HENRY R. HOWLAND.

From its organization in 1861 the Buffalo Society has been active in the collection and study of anthropological and ethnological material, in which direction its collections and publications are especially noteworthy. In late years its activities have been greatly increased and its archeological collections materially augmented by systematic field work and careful study of results. Mr. Howland's paper calls attention to the richness of materials for such investigation and study in western New York, where, in pre-historic and early historic days, the aboriginal inhabitants were notably the Indians of the Neutral Nation, the Wenrohonons, and southward and westward of the Niagara frontier, the people called by the Jesuits the "Nation of the Cat." All of these ancient sites, burial places, etc., have been critically examined and studied by the Buffalo Society, and the results, with maps, etc., published in a bulletin of 150 pages in 1909.

A later bulletin described by Mr. Howland covers rich results of field work carried on further eastward where those large Seneca towns were destroyed by the French Governor Denonville in 1687. Another bulletin is now ready for the press in which are traced the early migrations of the Seneca before their discovery by white men.

Mr. Howland briefly calls attention to the large educational work which has been carried on by the

society for many years, correlating its work directly with the public school system of Buffalo to an extent not attempted elsewhere, and predicts for the future extended work in anthropology as well as in other branches of natural science.

*Excavation of a Pre-Lenape Site in New Jersey:*

E. W. HAWKES.

Few regions in North America are of greater interest archeologically than the north Atlantic seaboard as throwing light on the possible antiquity of man in America. Particularly in the Trenton area we find evidence of two culture levels—that of the modern Delaware Indians and an argillite culture which has been the subject of much dispute. During last summer the author and his colleague, Mr. Ralph Linton, made an excavation of an Indian site near Moorestown, New Jersey, which promises to throw some light on the comparative age of the two cultures.

Modern Indian implements were found in the upper stratum of leaf mold, six inches deep; argillite implements of an intermediate type in the center of the next stratum, a layer of yellow sand, five to seven feet deep; and, at the juncture of the yellow sand with a stratum of white glacial sand, extensive remains of a ceremonial site were uncovered, which consists of caches of argillite points and bannerstones grouped in three more or less parallel rows around a great central fire-pit. The fire-pit had blackened the layer of white sand for two feet down, but showed no trace above, thus proving conclusively that the material of the two layers was clearly separate.

The probable age of the levels rests in the geologic formation of the site, which was in the shape of a mound. If laid down in water, which is geologically probable, the points from the lowest level would belong to glacial times; if wind-blown, which is more probable, the argillite implements would be comparatively recent. The presence of bannerstones among them would appear to be an argument against any great antiquity. The number of types of argillite implements found extends the limits of this culture, but raises the broader question of whether it was continued into a more modern era than has been supposed to date.

*Excavations on the Abbott Farm at Trenton, New Jersey:* CLARK WISSLER, C. A. REEDS, and LESLIE SPIER.

This report is on one phase of a systematic investigation of the chronological relations of Coastal Algonkin culture. Mr. Alanson Skinner will re-

port separately on another aspect of the problem. In the course of their local field-work the writers encountered traces of what seemed to be the argillite culture described by Volk and Abbott as found in the yellow drift at Trenton. Artifacts were found in the yellow drift at a few other points near the terminal moraine, sites that will be excavated in the near future. For the sake of comparative data, and since the Trenton site is about to be destroyed by railway extension, considerable attention was given to it. The problem for the next few years will be the study of the yellow drift deposits farther north. This report will deal almost entirely with the site on Dr. Abbott's farm at Trenton.

*A. Archeological Report*, by Leslie Spier.—Data are offered in support of the following: The excavations so far made in the yellow drift of the Trenton district have yielded artifacts in quantity sufficient to warrant the conclusion that typical conditions are here represented. The artifacts are culturally distinct from those of the Delaware Indians found in the surface soil. They are distributed throughout the site, lying in a characteristic manner in the upper portion of the yellow drift, and entirely separate from the artifacts in the surface soil. They have not penetrated the yellow drift from the surface soil above, but bear an intimate relation to the geological structure of the drift.

*B. The Application of Statistical Methods to the Preceding Data*, by Clark Wissler.—It is shown that the tabulations of artifacts and pebbles from the several trenches give typical frequency curves. Also that they are in each case component parts of a single series. There is here the suggestion of a new departure in archeological method, or rather the introduction of the methods of precision used in many other sciences.

*C. Geological Report*, by Chester A. Reeds.—The geologic history of the Trenton district is long and varied. The triassic overlap on the rocks of Cambrian and pre-Cambrian age extends from Trenton northwestward. The marine beds of the Cretaceous, Tertiary, and early Pleistocene periods overlap on the Triassic rocks along a line from Trenton to New York. During late Glacial and post-Glacial times the drainage was in part normal to and in part parallel to this line. The streams of to-day occupy the same relative positions as they did in late Pleistocene times, but their valleys have been modified somewhat by subsequent corrosion and aggradation. In the comparatively recent geological past deposits containing artifacts

were made on the delta of Assanpink creek. At the present time these deposits occupy a position about sixty feet above the flood plain of Delaware river. Most of the artifacts which have been collected come from the Lalor and Abbott farms just to the south of Trenton. In the Trenton Folio of the U. S. Geological Survey the bed containing the artifacts, referred to locally as the "yellow drift," has been mapped with the Cape May formation. The geologic development of the Trenton district is treated briefly and is followed by a discussion of the topography, drainage, valley sculpturing, and geologic age of the terrace deposits. The petrologic character of the material from the trenches is also considered, as well as the red band deposits which have been found in the artifact-bearing sands.

*Archeological Work in Northern Nova Scotia:*

HARLAN I. SMITH.

The archeological work in northern Nova Scotia, carried on for the Geological Survey of Canada, was chiefly in the shell-heaps of Merigomish harbor, and resulted in obtaining perhaps the most complete and detailed data thus far secured regarding the archeology of Nova Scotia, as well as one of the three largest collections of Nova-Scotian specimens. No burials were discovered. These shell-heaps are situated usually in the most sheltered places, generally on southern shores; and on islands rather than the mainland, although there are some small heaps on the latter. The sites are above high tide, but usually on low places sheltered from the wind by bluffs. They are probably the remains of Micmac villages. Chipped points of stone for arrows, celts of stone, pottery, and sharpened bones were very numerous. Little knives or chisels, made from beaver teeth, harpoon points of bone, and other artifacts were frequently found. Gouges were entirely absent, although common enough from Nova Scotia, and represented in some collections by about as many specimens as there are of celts. On the whole the quantity of specimens found in the shell-heaps was much less than would be found in some village sites in southern Ontario.

*Remarkable Stone Sculptures From Yale, British Columbia:* HARLAN I. SMITH.

Several remarkable stone sculptures, found near Yale, British Columbia, are kept in private collections, but have been photographed for the Geological Survey of Canada. They are among the most striking archeological sculptures known from Canada.

*The Culture of a Prehistoric Iroquoian Site in Eastern Ontario:* W. J. WINTENBERG.

The inhabitants of the Roebuck site, a prehistoric Iroquoian palisaded village site in Grenville county, Ontario, explored for the Geological Survey of Canada in 1912 and 1915, appear to have been a peaceful agricultural people. Most of the artifacts are those usually found on Iroquoian sites in Ontario and New York state. Chipped stone points for arrows and spears are scarce, although those made of bone and antler are common. Unilaterally and bilaterally barbed bone and antler points for harpoons, and barbed fish-hooks made of bone, were found. Some of the pottery vessels had handles. Awls are the most numerous objects made of bone. A perforated wooden disk was found in the muck surrounding a spring. Pieces of carbonized rope or cord and a carbonized coarse fabric are the only textiles recovered. Beads are of bone, shell, stone, and pottery. Pieces of human skull were fashioned into perforated round gorgets. A few pieces of stone gorgets were also found. Rubbed and also hollowed phalanx bones of the deer, and disks rubbed and chipped from stone and potsherds, were used probably in playing games. Some large awls or daggers were made of human ulnæ. Fragments of pottery pipes, some having modeled human faces and animal heads on the bowls, are numerous. Stone pipes are scarce. Some pipes are made from deer scapula. A phallus carved from antler was also found. Eighty-three skeletons were exhumed. Judging from the condition of stray human bones, ceremonial cannibalism may have been practised.

*Prehistoric Sites in Maine:* WARREN K. MOORE-HEAD.

The department of archeology of Phillips Academy spent five seasons in the exploration of ancient and modern Indian sites in Maine and New Brunswick. The maps covering the regions visited record more than three hundred places where former aboriginal occupancy is in evidence. The purpose of the work in Maine was to indicate the evidence of aboriginal occupancy and to determine whether the sites represent more than one culture. Sites occupied by various divisions of the Algonquian stock appear to be common, and range from those indicating contact with Europeans to others which appear to be prehistoric.

Occupying an area of approximately one hundred and fifty by one hundred kilometers in the central southern portion of the state are certain cemeteries or deposits of peculiar artifacts, accompanied by large quantities of brilliant red ochre or

hematite. As there is no historical reference to the people responsible for this culture, the term "Red Paint People" is offered. Nineteen of these deposits or cemeteries have been found—three by Harvard University, six by citizens of Maine, and ten by the Phillips Academy survey. The contents of these Red Paint cemeteries or deposits represent limited and fixed types, most of which do not occur on the surface of village sites, and are absent from the shellheaps on the coast of Maine. The ochre or hematite occurs in large quantities in central Maine at the Katahdin Iron Works, where there is an iron outcrop.

In the Red Paint deposits occur no pottery, pipes, crude axes, or hammers. Adz blades, gouges, long, heavy perforated stones, "plum-mets," slender slate spears, and kindred types predominate. The persistence of these seven or eight types is remarkable, and differentiates these graves from all others in Maine. Twenty per cent. of the stone implements show disintegration, which may be due to chemical action of the ochre in contact with the tools.

While it has been thought that this culture extends toward the east, the exploration conducted in the summer of 1915 indicates that there is a gradual change in the types on Georges river, which is the westernmost point the survey has reached. The author, therefore, gives it as his opinion that the types will be found to merge with the Algonquian in western Maine.

Brief comparative reference is made to the shellheaps along the Maine coast. In conclusion, the author refers to the Beothuk traditions and descriptions cited by early voyagers in Newfoundland. Whether the sites of the Red Paint people will be found east of the mouth of St. John River in New Brunswick will be determined after that region has been explored. The author shares with the late Professor F. W. Putnam and Mr. C. C. Willoughby the belief that the Red Paint culture is one of the oldest in the United States.

*Explorations of the Mounds and Caverns of Tennessee:* W. E. MYER.

An extensive Indian town at Castalian Springs, Tennessee, was explored. This settlement covered about fifty acres and consisted of five mounds, a line of embankment, and a large stone-grave cemetery. One of the smaller mounds contained more than one hundred stone-grave burials and yields many examples of aboriginal workmanship. Many of the ornaments, while of local make, seem to show the influence of Mexican culture. The graves

yielded many traces of curious and unique customs, such as the burial of two or more bodies in one coffin; the raking to one side of the bones of a former burial and placing a new body in the coffin; the burial of fleshless bones in bundles; the burial of crania unaccompanied by other bones, in small stone boxes; the burial of children with adults in such positions as to arouse suspicion that the child may have been placed in the grave alive. One author explored many of the caverns and rock-shelters of the Cumberland valley, which will be described and illustrated.

*The Wesleyan University Collection of Antiquities from Tennessee:* GEORGE GRANT MACCURDY.

The collection in question was gathered by the late George D. Barnes in the vicinity of Chattanooga, prior to and during 1895. It is said to have come almost wholly from Williams island, in the Tennessee river, and largely from a single mound. The collection, which numbers several thousand specimens, was bought for Wesleyan University, Middletown, Connecticut, by Mr. A. R. Crittenden of that city; and with the exception of the small portion sold to the Natural History Society of Marion, Massachusetts, is now in the Judd Museum.

Among the notable specimens are the shell gorgets. A large majority of these belong to the class in which representations of the rattlesnake play an important rôle. There are several so-called scalloped disks, one gorget depicting the human form, and a few mask-like shell ornaments.

Of special interest are the button-shaped ornaments of shell with two holes for fastening or suspension in the center of a squarish field. Similar objects were found by Mr. Clarence B. Moore in a burial urn from the grave of an infant at Durand Bend, Dallas county, Alabama. They were near the neck of the child as if they might have formed a necklace or been attached to a garment.

Wesleyan University is to be congratulated on having secured so many important antiquities from a given locality in Tennessee. It is, however, unfortunate that a prehistory of Williams Island could not have been written during the lifetime of Barnes (and of Loper, late curator of the Judd Museum). The case of this collection thus illustrates anew not only the desirability of expert scientific control in archeological excavations, but also the duty imposed on the collector to see that the results are published promptly.

*Some Mounds of Eastern Tennessee:* GEORGE GRANT MACCURDY.

About forty-five years ago the Rev. E. O. Dunning, of New Haven, spent two or three seasons in excavating certain ancient mounds of eastern Tennessee. Part of this work was under the auspices of Peabody Museum of Yale University, and part under those of Peabody Museum of American Archeology and Ethnology at Harvard University.

Brief mention of Mr. Dunning's explorations and the collections he obtained is made in the Fifth Annual Report of the Sheffield Scientific School of Yale College; and in the Third, Fourth, and Fifth Annual Reports of Peabody Museum at Harvard. Dunning does not seem to have left any notebooks or drawings and plans as a result of his field-work. The original documents bearing thereon are thus confined to the specimens and to his letters preserved in the Yale and Harvard museums. Dunning's explorations covered parts of Knox, Jefferson, Hamblen, Greene, Marion, and Cocke counties, but were limited chiefly to the Brakebill, McBee, Lisle, Lick Creek, and Turner's mounds. Only the first three of these are represented in the collections at Yale; and to them the present paper is confined.

A comparative study of the gorgets found by Dunning in the aforementioned mounds, and those in the Wesleyan University collection, leads the author to the conclusion that the so-called scalloped disks and the gorgets representing the cross are but conventionalized varieties of the realistic rattlesnake gorget. The kinship would be even more apparent were it not for the incompleteness of the record, and the gradual exaggeration and stereotyping of small differences due to conventionalism.

*The Archeology of the Ozark Region of the United States:* CHARLES PEABODY.

Throughout the region of the "Ozark Uplift" in the states of Missouri and Arkansas are many caves of which a great number have been occupied by prehistoric man.

In the soft deposits (occasionally brecciated) within, are found projectile points and knives, scrapers, perforators, nuclei, and other specimens in stone, pins and awls of bone, rare fragments of pottery, and in a few instances human bones; animal bones are abundant.

The culture as a whole is distinguished from that of the supposedly contemporaneous occupations in surrounding regions by the lack of problematical forms, of elaborate pottery and of careful burials.

The reason for this is not yet clear; the time

of occupation of the caves must have been long; whether the occupants were the same tribes as those surrounding, or different, has not yet been determined; neither the theory of "summer resorts" for the lowland Indians nor that of a quite independent occupation seems adequate.

*Early Pueblo Indian Missions in New Mexico:*

L. BRANFORD PRINCE.

The fame of the Franciscan mission churches in California has obscured the history and description of those in New Mexico, and yet the latter are in many respects the more interesting and important. They are very much older and there is far more variety in their history. The earliest California mission was built in 1769, and the story of one is practically the story of all. In New Mexico each mission has its individuality; the first mission was built in 1598, immediately after the colonization, and at least twenty-five were established before 1630. The massive mission structures, whose remains are seen at Abo, Cuara and Tabira, and constitute the most striking historic ruins in the United States, were built, had fulfilled their religious mission, and were finally deserted, before 1679. The peculiar feature of the heavy walls, composed of small, thin stones, is essentially aboriginal and similar to that of a number of the great prehistoric ruins in the Pueblo Bonito and San Juan regions. One remarkable circumstance connected with these massive walls is that they were constructed entirely by the Indian women, in accordance with the then uniform Pueblo custom, as distinctly stated by Benavides in his memorial to the King in 1630.

*Archeology of the Tano District, New Mexico:*

N. C. NELSON.

The American Museum's Southwest Archeological Expedition, which entered the field in 1912, has just finished its contemplated work in the Taño Pueblo district of New Mexico. The region under investigation lies between the Río Grande and Pecos River, with Santa Fé on its northern border, and covers an area of about 1,600 square miles. Within these limits were located 46 pueblo ruins, some small and some very large, besides numerous small houses and minor sites of archeological interest. Twenty-six of the most important sites were tried out by excavation, about 2,000 rooms being cleared, in addition to a very considerable amount of trenching in refuse heaps and burial grounds.

The results have been gratifying in several respects. About 3,500 artifacts of stone, bone, shell,



wood or fiber, and clay have been added to the Museum collections; and twice that number of common objects, such as mealing stones and the like, were left on the field. Comprehensively stated, the data obtained are of such a character as to warrant the separation of the various ruins into six successive chronological groups, the last two of which are of historic date.

*Prehistoric Cultures of the San Juan Drainage:*  
A. V. KIDDER.

Omitting non-sedentary tribes, the remains are divisible into three groups. (1) *The Kiva Culture* is the latest; to it belong majority of cliff-dwellings and pueblos of the region. The kiva is a constant feature of the ruins. The problem of interrelation of the ruins and chronological sequence is complicated and best approached by preliminary classification of the remains at present known. There are several well-defined groups: Mesa Verde, Montezuma Creek, Chaco Cañon, Chinlee, Kayenta; also numerous ruins both in and outside these groups which can not yet be classified. Each group is characterized by peculiarities in pottery, architecture, and kiva construction.

(2) *The Slab-house Culture*; closely allied to the kiva culture and may belong to same. Range is not known; so far definitely recorded from but a single locality in northeastern Arizona, where it underlies kiva culture group. Rooms semi-subterranean, of slabs and adobe; apparently no true kivas, and pottery distinct from that of the later ruins of the region.

(3) *The Basket-maker Culture*; probably the earliest of the three. First reported from southeastern Utah. The basket-makers were cave-dwellers, built no stone houses and made little pottery. The textile arts were very highly developed, and they appear to have had several implements not used by the later inhabitants.

The interrelationship of these three cultures can not be determined without much more field work.

*Notes on Certain Prehistoric Habitations of Western Utah:* NEIL M. JUDD.

During May and June, 1915, an archeological reconnaissance of several valleys in western Utah was made under instructions from the Bureau of American Ethnology. Limited excavations at a number of widely-separated localities revealed the structural characteristics of the house remains at each site and gave some indication of the cultural attainments of their ancient inhabitants.

An examination of several mounds near Willard, on the northeastern shore of Great Salt Lake, disclosed the ruins of dwellings which must have resembled very closely the well-known winter hogan of the Navaho Indian. Other shelters of the same type were found at Beaver City, in close proximity to rectangular dwellings of adobe; mounds at Paragonah, in Iron County, covered walled habitations similar to the larger structure near Beaver. At the two last-named localities a majority of the ancient dwellings had been single-roomed houses, more or less closely associated with each other. Near Kanab, in Kane County, photographs and measurements of a small cliff-village, consisting of a kiva and four unconnected rooms, were made.

Excavations at these several localities resulted in small collections of archeological material that, like the structures from which they were obtained, seem to point to a cultural relationship between the builders of the three types of primitive dwellings here mentioned.

*Notes on the Orientation of Ancient Pueblos, Reservoirs and Shrines in New Mexico:* WILLIAM BOONE DOUGLASS.

Description of the ruin area around the communal building known as Puye, on the Jemez plateau, which was carefully surveyed, and the various buildings mapped to show their orientation and grouping. The orientation of Tshirege and Tyuonyi (communal houses of the Jemez plateau) and of their accompanying antiquities is given and a comparison made with the orientation of a Tewa pueblo of the historic period.

*Notes on Shrines of the Tewa and other Pueblo Indians of New Mexico:* WILLIAM BOONE DOUGLASS.

(1) A detailed description of the "World Center shrine" on Tsikomo peak of the Jemez Mountains, with a reconstruction of the shrine, in which are used the offerings taken from it. (2) A full description of the shrines of La Sierra del Ballo, and the exhibition of a silver ornament taken from one of them. (3) A brief description of the nine shrines of Tonyo, the sacred mountain of the San Ildefonso Indians, to which they retreated and successfully resisted the Spanish invaders during the Pueblo rebellion of 1680-1692. (4) The Cloud shrine and the War God shrine will be briefly described, with reference to the offerings found in them.

GEORGE GRANT MACCURDY

(To be continued)