BULLETIN

THE ARCHAEOLOGICAL SOCIETY OF DELAWARE

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Commemorating the first meeting in Delaware of the Eastern States Archaeological Federation.

VOL. 4, No. 4 NOVEMBER, 1947

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C. A. WESLAGER, *Editor*—23 Champlain Ave., Wilmington, Del.

EASTERN STATES ARCHAEOLOGICAL FEDERATION

This number of the *Bulletin* is being issued simultaneously with the annual meeting of the Eastern States Archaeological Federation, November 8 and 9 in Wilmington and Newark, Delaware. This is the first time that the Federation has assembled in Delaware, and the Delaware Society extends a cordial welcome to its guests.

We are very proud to play host to the delegates from our member societies, and are hopeful that they will find the program instructive and that all will derive pleasure and fellowship from the sessions. The Saturday meeting is being held in Wilmington because of the ready accessibility of the city to railroad and bus lines and the metropolitan facilities that are offered to visiting families. The Sunday meeting is being held in the Delaware Society's Museum Room at the University of Delaware to give all guests an opportunity to examine representative artifactual material from the peninsula and to visit the beautiful campus of the University of Delaware.

For the benefit of newcomers, we are outlining below the background history of the Eastern States Archaeological Federation.

The Federation had its inception on March 27, 1933 when members of four state archaeological societies, Delaware, New Jersey, New York and Pennsylvania, met in Trenton to discuss plans for inter-state cooperation. It was decided to continue such meetings under the name of the Northeastern States Conference of Archaeological Societies. On February 17, 1934 members of the same four societies met in Philadelphia, and at that time decided to broaden their scope by forming the Eastern States Archaeological Federation. On February 3, 1935 at Rochester, N. Y. a constitution was adopted. The charter members of the Federation were: Connecticut, Delaware, Maryland, New Jersey, New York, North Carolina and Pennsylvania.

The Federation's first aim was to encourage the establishment of archaeological societies in the eastern states, construed to include only those which have an Atlantic watershed. Subsequently, the states of Rhode Island, Vermont, Georgia, Massachusetts, Maine and Virginia joined the Federation. In 1946 it was estimated that the Federation represented some 1700 individual supporters of archaeology in the thirteen member states.

Another aim of the group has been inter-state cooperation in archaeological research. This has been accomplished primarily through the annual meetings where papers are presented and exhibits allow visual comparisons

to be made. Following is a tabulation of the annual meetings that have been held to date:

May 27, 1933.....State Museum, Trenton, N. J.

February 17, 1934.....University Museum, Philadelphia, Pa.

February 3, 1935.....Rochester Museum of Arts and Sciences, Rochester, N. Y.

October 19, 1935.....Maryland Academy of Natural Sciences, Baltimore, Md.

October 16-17, 1936.....American Museum of Natural History, New York City.

March 17-20, 1937.....The Academy of Sciences, Philadelphia, Pa.

October 29-30, 1937.....United States National Museum, Washington, D. C.

November 11-12, 1938.....Peabody Museum, Yale University, New Haven, Conn.

October 20-21, 1939.....American Museum of Natural History, New York City.

November 8-9, 1940.....New Jersey State Museum, Trenton, N. J.

November 7-8, 1941.....The University Museum, Philadelphia, Pa.

November 7, 1942.....New Jersey State Museum, Trenton, N. J. (one day meeting because of war).

October 28, 1943.....Executive Committee Meeting only. Philadelphia, Pa. (because of war travel restrictions)

January 27, 1945.....New Jersey State Museum, Trenton, N. J. (Executive Committee Meeting).

November 9-10, 1945.....Attleboro Museum of Art and History, Attleboro, Mass.

November 9-10, 1946.....Rochester Museum of Arts and Sciences, Rochester, N. Y.

November 8-9, 1947.....Wilmington and Newark, Delaware.

The Presidents of the Federation and the dates of their elections:

February 17, 1934.....Col. Leigh M. Pearsall, Westfield, N. J.

October 17, 1936.....The Hon. Frederic A. Godcharles, Milton, Pa.

November 11, 1938.....Dr. Cornelius Osgood, New Haven, Conn.

November 7, 1942.....Dr. J. Alden Mason, Phila, Pa.

November 9, 1946.....Dr. Irving Rouse, New Haven, Conn.

THE ANTHROPOLOGICAL POSITION OF THE INDIAN TRIBES OF THE DELMARVA PENINSULA

By C. A. WESLAGER

If we have learned anything about the anthropological problems of Delaware, it is that the state is inseparable from the Delmarva Peninsula, and that the peninsula itself is part of a larger cultural sphere. The larger area, characterized by a cultural unity having within it minor variants, includes not only the Delmarva Peninsula, but seems to take in the southern stretches of New Jersey, Maryland, the District of Columbia, Virginia, and parts of North Carolina. In this tidewater region, or Middle Atlantic Coastal Plain, aboriginal tribal and culture trait distribution appear to be related to physiographic factors.

Whether this Middle Atlantic Coastal Plain does or does not represent a true culture area is still a moot question, and one is aware of the dangers expressed by McKern of arbitrarily selecting an area for the purpose of subject delimitation rather than on a purely cultural basis.[1] To determine whether we do or do not have a culture area suggests a meeting of minds of investigators working throughout the area. That is a project for the immediate future, and one which has already been suggested by the writer as a worthy symposium.[2]

Having of necessity localized our endeavors, we in Delaware have long been guided by sound advice; namely: "An archaeologist should first of all be well grounded in the ethnology and history of the region in which he is working."[3] Certainly, the most important immediate archaeological objective on the Delmarva Peninsula is the establishment of historic criteria for the material culture complexes of the known tribal groups. This simple statement of fact has posed many questions, of which the following have seemed most important:

(a) Who were the known tribal groups?

(b) What specific regions did they occupy?

(c) Where were their historically documented villages?

(d) What did contemporary white observers say of them?

(e) Are there tribal survivors? If so can native informants be utilized as sources of information?

(f) How were the members of the several tribal groups related linguistically and culturally with neighboring Indians?

In resolving these questions, employing both historical and ethnographical sources, we have gradually developed a starting point for an historic approach to the archaeological problems.

The identification of tribes posed in (a) occupying the Delmarva Peninsula has not been an easy task, but it has finally been attempted.[4] The most important were the Accomac and Accohannock who lived in the southern extremity; the Pocomoke-Assateague and their affiliates; the Nanticoke; Wiccomiss; Choptank; and finally the Unami and Unalachtigo Delaware.

In ascertaining the respective areas under the jurisdiction of each tribe, three significant new facts have been established:

(1) Contrary to the belief of many historians, the Nanticoke lived

in a restricted geographical area, and the term must be delimited to a certain tribe who dwelled along the Nanticoke River and its tributaries, and not elsewhere.

(2) The Delaware, whose sphere of influence was formerly thought to have extended only as far south as Duck Creek in Delaware, actually controlled land extending from Philadelphia down the west side of the Delaware River to Lewes, Delaware. There is now reason to believe that the occupants of a historically documented village (*Checonnessex*) at Lewes, Delaware, whose identity has long been a mystery, were Unalachtigo Delaware.

(3) The Unalachtigo Delaware living in southern New Jersey also owned land on the opposite side of the Delaware River, where they presumably came to hunt on family hunting territories.

In the quest for data to answer the questions above marked (b), (c), and (d), there has been uncovered a wealth of material in journals, diaries, official land records, letters and other scattered documentary sources. Without now reviewing these primary sources, it may be said that Marye has used them to advantage in his significant contributions to knowledge of the Choptank[6], the Assateague[6] and the Wiccomiss[7]. The present writer's monograph on the Nanticoke, also based on documentary sources, is intended as a comprehensive account of that tribe.[8]

There is still need for a monograph on the Delaware and their role in the Delmarva Peninsula, although a number of recent papers have clarified issues that were previously obscure. Among these, de Valinger's study of Indian deed records is outstanding.[9]

Wise has given us an account of the Accomac and Accohannock, based largely on Beverly, John Smith, and the Virginia documents.[10] However, as in the case of the Delaware, a monograph is indicated inasmuch as there still remain documentary sources to be explored before the Accomac and Accohannock, and allied bands, can be seen in full perspective.

In answering question (e) above, it is to be regretted that of all of the former Delmarva tribes, there remains but one surviving remnant to maintain a tribal entity, the so-called Nanticoke of Indian River Hundred, Delaware. Although acculturation has erased their native tongue and ceremonial patterns, they have proved to be a source of useful ethnic data. Speck has worked intermittently over a period of 25 years with the group, and his findings stand as a monument to his ability to discern aboriginality among acculturated peoples.[11]

Moving now to the complex problems raised in question (f), we are of the opinion that the entire native population of the Delmarva Peninsula was part of the great eastern family of Algonkian-speaking peoples. The Delmarva Algonkian were related linguistically, with some dialectic differences, to their near neighbors in New Jersey, Pennsylvania and Maryland; and to the Virginia Indians on the opposite side of Chesapeake Bay.

From the viewpoint of recorded aboriginal customs, the Delaware groups on the Delmarva Peninsula (Unami and Unalachtigo) seems to have been closely related to the Delaware of New Jersey and Pennsylvania. The Nanticoke and Choptank had closer affinities with the Conoy on the Maryland mainland, who were, in turn, under the influence of the Powhatan tribes. The Accomac and Accohannock, as well as the Pocomoke-Assateague, were related culturally to the Powhatan groups of the Virginia mainland. Mook discerned this relationship when he noted of the Accomac

and Accohannock that "culturally the affiliation was westward toward the tribes of the Virginia mainland rather than northward toward the Algonkian of the Middle Atlantic States."[12]

Thus, it does not seem premature to postulate an arbitrary division of the Delmarva Peninsula into two sub-sections. Each of these sub-sections in a sub-area, points to a different direction for its direct cultural tie, e. g., to the immediate north, east and west. It should be emphasized that we are not suggesting the differences within the sub-sections were major. They were differences of degree rather than kind.

The limited archaeological work that has been conducted to date on the Delmarva Peninsula also points to these differences. The typology of the artifactual material originating on that part of the Delmarva Peninsula known to have been under Unami influence is similar to materials from northern New Jersey and southeastern Pennsylvania. On the other hand, archaeological materials from sites along the southern Delaware littoral compare favorably with materials from presumable Unalachtigo sites in southern New Jersey. Pottery and stone artifacts from the historic Nanticoke and Choptank areas are typologically similar to artifactual materials recorded for the Maryland mainland.[13] Little is known of the archaeology of the Pocomoke-Assateague and the Accomac and Accohannock, but it can be assumed that their affinities are also with the Virginia and Maryland mainland.

These comparisons are suggestive rather than systematic, and still lack confirmation in complete trait lists. Indeed, as pointed out earlier in this paper, one of the principal objects of archaeology, is the establishment of historic criteria for the material culture complexes. We speak at present of a Coastal Aspect of the Woodland Pattern as applied to the entire peninsula, but within it there are variants seemingly related on one side[14] to New Jersey and Pennsylvania and on the other to Virginia and Maryland. Once again it becomes clear that the larger cultural sphere must be seen in full perspective before one can postulate subdivisions of it.

The archaeological material culture trait list of the northern parts of the Delmarva Peninsula (New Castle and Kent Counties, Delaware) specifically includes the grooved axe, cylindrical pestle, mortar, stone and clay smoking pipes, net sinkers, abrading stones, bannerstones of divers types, gorgets with from two to five holes, thumbnail scrapers, stemmed scrapers made of broken and reworked arrowheads. Arrowheads, spearheads, drills and knives are abundantly represented in a wide range of lithic materials in which quartz, quartzite, jasper, argillite, chert and rhyolite dominate. Pottery is present, but not in appreciable quantities. Bone implements to date have not been uncovered. Shell detritus is absent.

In the middle part of the peninsula (Sussex County, Delaware is representative) the trait list differs in some respects. The grooved axe is found less often than the celt. Arrowheads are smaller, most fabricated from jasper pebbles. Bone implements were in use. The sites are rich in pottery, and shell detritus is usually present in quantity.

Linked traits from this middle section, recorded at Slaughter Creek, the Moore Shell Heap, Cedar Creek, and more recently at Sharptown on the Nanticoke River are as follows: Bone awls (both split and joint), bone gorges, worked antler tines, flat perforated bodkins, bi-pitted hammerstones, small celts, stemmed and equilateral projectile points of pebble jasper, fragments of clay pottery pipes. The outstanding cermaic type is

a vessel with a conoidal bottom, rimless or having a slightly everted rim, tempered with shells or quartz, impressed with nets or cords, and decorated at the throat with design elements consisting of parallel lines, triangular and chevron designs.

We have no archaeological data of any consequence from the extreme southern areas of the peninsula, and comments must be withheld at this time.

One of the most interesting archaeological traits on the peninsula is the burial custom involving disarticulation, bone scraping and burial in ossuaries. In a previous paper[15] the writer charted six recorded ossuaries, and since that paper was written, a seventh has been uncovered, containing approximately 18 disarticulated skeletons.[16]

Reference to another ossuary, recorded in a little-known source, has recently been located by Seal T. Brooks, and is quoted below in its entirety:

"The union of Trippe's Creek with the Tred Avon forms a strip of land, whose terminus is but a few yards wide ending in Ship Point, and which is also the extreme end of Bailey's Neck. Not long ago, some farm hands at work on the Tred Avon shore, about fifty yards from Ship Point, discovered human teeth and bones in the sand, and further investigation soon revealed as many as nine skulls, which were clearly identified as Indian remains.

"These bodies must have been buried originally about three feet deep, and in one hole, body upon body. A confused mass of bones was presented, ribs and vertebrae, arm, and leg bones so that the identification could hardly have been made, had it not been for the decidedly characteristic skulls. They were so close together that a large tub might have covered the lot. The bones were so friable from age, that a knife passing through the soil could have cut the bones and clay alike, which made it no easy matter to rescue an entire skull, or large bone even from the surrounding clay. Such as were removed entire soon became dry and strong enough to bear handling. Some jaw bones had teeth worn down, indicating middle life to their owner, others showed the perfect and unworn teeth of youth. What these remains could tell of prehistoric Talbot is left to imagination.

"The land there about is somewhat prolific of relics of the Stone Age, arrow and spearheads, hatchets, celts, hammer stones, etc., while beds of shell show that oysters were appreciated then as now. Judging by the stone relics already found, it takes but a little stretch of the imagination to picture the dusky hunters pressing the game onward, to the slaughter at this point. And but a little more to see a band of human game, similarly pressed on until retreat ended with a final stand, hemmed in by the river, whose surface may have been cut by swiftly paddling canoemen, eagerly alert for a swimming refuge from a desperate conflict. To some such scene, these remains, now in possession of Mr. James L. Banning are probably the silent witness.[17] In years long passed human bones were found in close proximity to these, if stories handed down are to be accredited. Their history, as mythical then as now, probably antedates a period of two centuries."*

To date there has been an appalling lack of physical anthropological data from the area due to the fact that osteological material, when found in ossuaries, has been fragmentary and difficult to measure. Examination of bones found at Slaughter Creek and Rehoboth, when compared with ossuary material uncovered by Mercer at Cambridge and by Stewart on

* *Land of Legendary Lore*—by Prentiss Ingraham, The Gazette Publishing House, Easton, Md., 1898, p. 126.

Whitehall Creek, indicates that the physical traits come within the range of eastern Indian skeletal material examined by Hrdlicka. Stewart points out that the remains he examined from Rehoboth were indistinguishable from those of Virginia.[18]

Throughout the Delmarva Peninsula, there are evidences of southern conditioning, stronger perhaps in the lower parts than in the north. Among these historically recorded traits, which Speck has indicated are of southern provenience are splint basketry, woven fiber fabrics, mat-covered rectangular houses, feather working techniques, and autocratic power vested in the hands of an hereditary chief.[19] The mortuary practices of southern derivation include the ossuary burials, so conspicuous in peninsular archaeology. It would seem that a collection of southern traits had been adopted by the Powhatan tribes, were in turn conveyed to the Delmarva Peninsula, and were in process of being diffused into the northern hunting areas by these intermediate Algonkian groups when the Europeans appeared on the scene to disrupt native society.

In summation, the anthropological position of the Indians of the Delmarva Peninsula, based on our limited knowledge to date, may be tentatively said to be as follows: (a) culturally they exhibit a basic Algonkian substratum with over-deposits of southern influences (b) linguistically they are a division of the Algonkian family (c) physically they are of the northeastern type.

(1) W. C. McKern, "A Cultural Perspective of Northeastern Area Archaeology," *Man in Northeastern North America*, Phillips Academy, Andover, Mass., 1946, p. 35.

(2) In a letter dated April 4, 1947 addressed to the Chief of the Bureau of American Ethnology the writer proposed that the Smithsonian Institution sponsor such a project.

(3) Matthew W. Stirling, "The Historic Method as Applied to Southeastern Archaeology," *Smithsonion Miscell. Coll.*, Vol. 100, 1940, p. 118.

(4) C. A. Weslager, "Indian Tribes of the Delarva Peninsula," *Bulletin* Arch. Soc. of Del., Vol. 3, No. 5, May, 1942, pp. 25-36.

(5) Wm. B. Marye, *The Choptank Indians*, Bulletin, Arch. Soc. of Del., Vol. 2, No. 5, Oct. 1937.

(6) Wm. B. Marye, *Indian Tribes of the Southeastern Part of Sussex County, Delaware*, Wilmington, 1941.

(7) Wm. B. Marye, "The Wiccomiss Indians of Maryland," *American Antiquity*, Vol. 4, No. 2, 1938, pp. 146 ff.; second part *op. cit.* Vol. 5, No. 1, 1939, pp. 51-52.

(8) C. A. Weslager, *An Early History of the Nanticocke Indians*, now awaiting publication.

(9) Leon de Valinger, Jr., *Indian Land Sales In Delaware*, Wilmington, 1941. Two papers by the present writer deal with the Delaware Indians on the peninsula; "Delaware Indian Villages," *Penna. Archaeologist*, Vol. 12, No. 13, 1942, pp. 53-56; "The Minquas And Their Early Relations With the Delaware Indians," *Bulletin*, Arch. Soc. of Del., Vol. 4, No. 1, May 1943, pp. 14-23.

(10) Jennings Cropper Wise, *The Early History of the Eastern Shore of Virginia*, Richmond, 1911.

(11) Frank G. Speck, *The Nanticoke Community of Delaware*, Heye Foundation, Museum of the American Indian, N. Y. 1915; *Indians of the Eastern Shore of Maryland*, Eastern Shore Society, Baltimore, 1922; *The Nanticoke and Conoy Indians*, Society of Colonial Dames, Wilmington, 1927; "Back To Indian River, Its People And Their Games," *Bulletin*, Arch. Soc. of Del., Vol. 3, No. 5, May 1942, pp. 17-24; "The Frolic Among the Nanticoke of Indian River Hundred," *op. cit*, Vol. 4, No. 1, May 1943, pp. 2-4; "Cudgeling Rabbits, An Old Nanticoke Hunting Tradition," *op. cit.* Vol. 4, No. 3, Feb., 1946, pp. 9-12.

(12) Maurice Mook, "The Anthropological Position of the Indian Tribes of Tidewater Virginia," *Wm. & Mary Quarterly Historical Magazine*, Vol. 23, No. 1, n. s., Jan. 1943, pp. 27-40.

(13) Richard Stearns, *The Hughes Site*, Proceeding No. 6, The Natural Hist. Soc. of Md., Balt., Jan. 1940; *Some Indian Village Sites Of Tidewater Maryland* Proceeding No. 9, July, 1943.

(14) C. A. Weslager, *The Coastal Aspect of the Woodland Pattern As Represented In Delaware*, Paper No. 1, Arch. Soc. of Del., 1939.

(15) C. A. Weslager, "Ossuaries On The Delmarva Peninsula," *American Antiquity*, Vol. 8, No. 2, Oct. 1942, pp. 142-151.

(16) C. A. Weslager, *Delaware's Buried Past*, Phila. 1944, pp. 88-92.

(17) These artifacts were presented to the Archaeological Society of Delaware by James Latimer Banning, and are now on display in the Museum at Newark, Del.

(18) T. D. Stewart, "Skeletal Remains from the Rehoboth Bay Ossuary," *Bulletin*, Arch. Soc. of Del., Vol. 4, No. 2, May 1945, pp. 24-27. Measurements of other physical remains from the Delmarva Peninsula may be found in H. C. Mercer, "Explorations of an Indian Ossuary on the Choptank River in Dorchester County, Maryland," with addendum by Cope, in Research Upon The Antiquity of Man in the Valley of the Delaware, *Publications of the University of Pennsylvania in Philology, Literature and Archaeology*, Vol. 6, Phila. 1847; see also John Noon, *Skeletal Remains From Slaughter Creek*, Bulletin Arch. Soc. of Del., Vol. 2, No. 1, March 1935, pp. 1-38; see fn. 28 in C. A. Weslager, "Ossuaries, etc.," *op. cit.* for measurements by T. D. Stewart of four skulls found in an ossuary near Cambridge; for discussion of Eastern Indian types, see A. Hrdlicka, *Physical Anthropology of the Lenape*," Bulletin, American Ethnology, No. 62, 1916; Catalogue of Human *Crania In The U. S. National Museum Collections*, Proceedings, U. S. Natl. Museum, Vol. 69, No. 5, 1927.

(19) Frank G. Speck, *Chapters On The Ethnology Of The Powhatan Tribes of Virginia*, Museum of the American Indian, Heye Foundation, N. Y. 1928.

THE INDIAN AND THE COMMON INSECTS

By ARTHUR G. VOLKMAN[1]

In the picture that archaeologists and ethnologists have reconstructed of aboriginal life on the Delmarva Peninsula, one part is conspicuously missing—a description of the Insect Fauna. Notwithstanding the seeming unimportance to us of this aspect of Indian life it is probable that the American Indian, living most of his time out-of-doors and close to the earth, was far more conscious than we of the common insects. Insect pests during the warmer months certainly caused physical discomfort and misery to the almost naked Indians.

In addition to the physical suffering there was also an economic factor involved, which unfortunately at this late date it is impossible to evaluate properly. I refer to the effect of insect depredations on Indian crops. That insects ravaged the Indians' crops before the coming of the white men there can be no doubt. We are familiar with the story of the locusts descending in a cloud on the first Mormon crop, only in turn to be attacked and eaten by seagulls. Strange as was this episode to the Mormons it must have been a scene that had been re-enacted in the Salt Lake country many times previously. A similar occurrence in Indian times, without the arrival of the gulls, would have probably spelled disaster—the difference between feast and famine. It may be interesting to observe, however, that under analogous circumstances the Indians might have turned the tables on their unwelcome guests and made a meal of them. At least Verrill is authority for the statement "that our own North American Indians considered grasshoppers a most delicious and nourishing food,"[2] and Hesselius writing of the Delaware and Chesapeake Bay Indians said that they "counted the seventeen-year cicadas their daintiest food, tossing them in heaps in the hot ashes to roast and eat them without any preparation whatever."[3] Other insect attacks on Indian provender were not always accompanied by compensatory rewards. Emily C. Davis tells of weevily red Lima beans found in ancient graves in Peru. These beans were later examined by Prof. E. O. Essig, Entomologist, University of California and found to have been infested with bean weevils "anatomically similar to the bean weevil of today."[4] The graves from which these beans were taken antedate the Spanish Conquest. Nor did maize or Indian corn (the most staple crop of the American Indian) possess insect-resistant qualities superior to that of beans. Again quoting Verrill, "On some of their [Mayan] ancient sculpture the corn god is shown being attacked by birds, on another he is represented as sleeping with huge worms nibbling at him. Doubtless these were to show the need of vigilance in protecting the corn from bird and insect pests."[5] The "thief ant" (*Solenopsis molesta* Say), the only native North American domiciliary ant of temperate regions, has also been recorded as attacking the sprouting kernals of Indian corn.[6]

It is improbable that the Indians knew of any insecticides with which to combat their insect foes but we have records to indicate they made use of insect repellants to protect their bodies. James Adair, an early Indian trader in Florida, reports that Muskohge (Muskhogean) Indians, in order to ward off the swarms of mosquitoes, "anointed their bodies with rank fish oil, mixed with juice or ashes of indigo. This perfume, and its effluvia, kept off from them every kind of insect."[7] The Reverend Johannes Megapolensi, Jr., affirms that bear grease was put on the hair by the Indians "to prevent having lice."[8] Kalm writes that travelers between Albany and Canada "besmear their faces with butter or grease for the gnats do not

like to settle on greasy places."[9] These travelers were undoubtedly following an old Indian practice in using grease as an insect "dope." Needless to say smoke from Indian campfires also helped to keep insects away, and fires were lighted during summer evenings for that purpose.

Considering these manifestations of definite insect influence on the environmental pattern of the American Indians it is strange that the first English voyagers to America made such few references to its insects. The presence of strange and unusual insects in the New World surely attracted the attention of early adventurers, but apparently in their ignorance of entomology they elected to treat the unknown species of American insects with quiet disdain. This attitude on the part of its original explorers makes the problem of determining what insects were present in America when they arrived, and those which they brought with them, an exceedingly difficult, and in some instances, an impossible one. Dr. F. M. Jones stressed the intricacy of the puzzle when he pointed out to the writer (in archaeological parlance) that insects rarely leave skeletical evidence of their existence. Under these circumstances our principal source of information concerning the insect fauna of pre-historic America as related to the Indians, must be obtained from the journals and diaries of contemporary observers and colonists who followed in the wake of the first visitors. Of these observers—especially in the southeastern Pennsylvania and Delaware areas—members of the Lutheran clergy were the first to have paid serious attention to the Indians, and to these clergymen we are likewise indebted for much of our knowledge of the Natural History at that time.

Among this contemporaneous group of clergymen-chroniclers was one, who though not an ordained Lutheran minister, had originally been intended for that profession, and even during his two-year sojourn in America sometimes substituted for his brethern in the pulpit—Peter Kalm. Kalm's name is not entirely unfamiliar to members of this Society for our Paper No. 3 is devoted entirely to Kalm's description of American Indian life compiled from his book *Travels in North America*. Consequently, when in search of material for the present article, I consulted Kalm's *Travels*, and was delighted to find it abounded in references pertaining to common insects of aboriginal and Colonial America. So replete was the *Travels* in this respect that it at first appeared further research would be unwarranted and my purpose could be accomplished by simply making a digest of its contents relating to insects. Closer scrutiny, however, precluded that possibility. Although Kalm was one of the first visiting Europeans who could properly be considered a Naturalist, his knowledge of the Natural Sciences was naturally limited to that of his age. Kalm's early training was in part as a student of the classificationist and perfectionist of binomial nomenclature, Linnaeus. This experience gave Kalm a distinct advantage over other individuals, who, at the same time, were attempting to describe the Natural History of New Sweden. On the other hand the confidence it inspired led Kalm into scientific blunders, one of which was the common mistake of applying European names to American insects, which, while resembling their European prototypes, in reality belonged to a different genus. For example, he erroneously identified the indigenous American butterfly *Brenthis myrina* as the European *Papilio euphrosyne*.[10] This misidentification can be attributed to the fact that both butterflies are strikingly alike in appearance. Other mistakes of this or a like nature on Kalm's part could be cited and explains the necessity of regarding his speculations and conclusions with skepticism and subjecting them to rigid examination. However, despite its taxonomic errors Kalm's *Travels* constitutes the most

reliable and concise work on the subject of native insects that can be located up to his time. We feel this is sufficient justification for using the context of the *Travels* (with proper respect for its inaccuracies) as the principal basis of our study.

Aboard the ship *Mary Gally,* while it was still in the mouth of the Delaware Bay, on September 14, 1748, Kalm notes that "Some common flies were in our cabin during the whole voyage and it cannot therefore be determined whether they were originally in America or whether they came over with the Europeans."[11] Nearly a year later on a trip to Montreal Kalm again ponders the question of the origin of flies in America and is told by inhabitants that ". . . common houseflies were observed in this country one hundred fifty years ago . . . . All the Indians assert the same thing, and are of the opinion that the common flies first came over here with the Europeans and their ships, which were stranded on this coast."[12] Present-day entomologists are in accord with Kalm's original conclusion —it cannot be determined if houseflies are native or were introduced into America.

Of all the New World insects none astonished the colonists more than the common fire-flies or lightning bugs. Coming, as many of the Delaware pioneers did, from the cold Scandinavian countries, the phenomena of the lightning bugs was to them a great mystery.

Lindestrom narrates the details of "a ludicrous occurrence" involving lightning bugs. One night a sentry at Fort Christina upon seeing lightning bugs for the first time mistook their luminosity for torches in the hands of enemies, and cried for the drummer to beat the alarm. Investigation disclosed the actual cause of the excitement.[13] Since Lindestrom tells this story in the first person it may well be true but Campanius' description of lightning bugs in New Sweden can hardly be given like credit. "There is also a kind of fly," he writes, "which the Indians call *Cucuyo,* which in the night gives so strong a light, that it is sufficient, when a man is traveling, to show him the way. One may also write and read the smallest print by the light which they give. When the Indians go in the night and hunting, they fasten these insects to their hands and feet, by which means they can see their way as well as in the daytime."[14] It should not be overlooked that the memoranda of the elder Campanius were revised and republished by his grandson who had never visited America and whose remarks may be exaggerations.

Kalm refrains from repeating any preposterous stories concerning lightning bugs, although he makes a number of allusions to these insects. He records the dates of their first appearance in the spring, the location and topography of the country in which he finds them together with a comparative analysis of the density of their numbers in the separate localities. Kalm accepts the species of lightning bugs found on the Delmarva Peninsula as indigenous—the belief of scientists to-day.

Apart from the lightning bug no other native insect aroused more wonder among the settlers than the seventeen-year cicada. Credit has been given the Puritans for making the discovery of its life cycle in 1633.[15] Hesselius gives a detailed account of the habits and appearance of the seventeen-year cicada including the observation previously quoted to the effect that the Indians esteemed them highly as a food.[16] Kalm was also visiting in America during a "locust year" and did not neglect the opportunity of making the seventeen-year cicada a subject of study.[17] While

in this study Kalm makes no reference to the problem, authorities are agreed that the seventeen-year cicada is an insect native to America.

Adair, discoursing on the dietary habits of the Indians with whom he came in contact, states they ". . . . believe that swallowing flies, musketoes [sic] or ants, always breeds sickness or worms . . ."[18] This is a short but by no means insignificant phrase. It indicates that Indian medicine lore allied certain insects with diseases and also testifies to the existence of these same insects being present in pre-Columbian America. It is hardly likely that the Indians evolved the peculiar conception of insects being disease carriers only after white intrusion. Since Adair does not specify the kind of fly the Indians feared swallowing we can only surmise it was the one now commonly known as the housefly, that has already been dwelt upon.

Kalm paints a vivid picture of the great throngs of mosquitoes around Philadelphia, both day and night, and infers that they were of a different species, smaller and far more venomous than those of Sweden.[19] Kalm resorts to the dangerous practice of identifying mosquitoes by size and further adds to the complication by using the terms "gnat" and "mosquito" interchangeably, making positive identification now impossible.

In disposing of the problem as to whether mosquitoes (and incidentally ants) are indigenous to America, we can only say that while some new species may have been imported by Europeans, there were already present in America a number of native species at the time of discovery.[20]

One familiar insect in the United States, supposed to have been an English or German emigrant, is the honey bee. Kalm was told by both English and Swedish farmers that honey bees were assumed to have been brought to America by the English. As a matter of fact, he claims the Indians called the honey bees "English Flies," because they had no other word in their language for them.[21] Lutz substantiates Kalm's report and elaborates upon it.[22] This, of course, does not apply to such species of bees as the "bumble" and "carpenter," which are generally conceded to be native.[23]

Kalm also discusses another genera of stinging insects—wasps. However, his description of the habits of wasps seems to include those of the common species of hornets and yellow jackets and is therefore of little value scientifically. Kalm does not hazard a guess as to the origin of "wasps" in America but it is thought pretty certain that all of the small common species of wasps, hornets and yellow jackets were here when the white men arrived.

Another insect which is usually acknowledged as an American immigrant is the House or Domestic Cricket (*Gryllus domesticus*). Unlike the complexity of "wasps" Kalm recognized the distinction between the House Cricket (*Gryllus domesticus*) and the native Black Cricket (*G. assimilus*) commonly found in the woods and fields, and describes the habits of both.[25] He notes the absence of the House Cricket in Pennsylvania and New Jersey and its presence in Canada. The out-door crickets are customarily admitted to be natives of America while the House or Domestic Cricket is an emigrant from England.[26]

Cockroaches, like crickets, are to-day represented in America by both native and foreign species. Kalm reports nearly every house in the city of New York invested with House Cockroaches.[27] He points out that Dr. Colden[28] was of the opinion that cockroaches entered the United States

from the West Indies,[29] basing his argument on the number that were in cargoes of arriving ships. Kalm believed cockroaches were here from time immemorial[30] and his conclusion was no doubt correct in so far as the Field and Wood Cockroaches are concerned. He failed, however, to make an exception of the House Cockroach, though apparently acquainted with the differences between House and Field Cockroaches. House Cockroaches are of African or Oriental derivation; many species of Woods and Field Cockroaches were probably present in America before the arrival of Europeans. It is unlikely that Indian habitations were ever plagued by House Cockroaches.[31]

The bed bug is also suspected by Lutz of having been carried to America by the "English and other colonists."[32] Kalm, on the other hand, after carefully considering the question of the origin of bed bugs in America confesses he cannot definitely answer.[33] Zeisberger, who came to America following Kalm's visit, writes that "bed bugs are to be found in the Indian huts at any time" and adds "and fleas in the summer not a few."[34] Lawson, traveling about young America, also refers to the "fleas and vermin" about Southern Indian dwellings.[35] Kalm voices the opinion that while some fleas were already here, white men brought in additional numbers when they arrived. This is very likely true and it is probable that the American Indians admitted fleas into their homes when they domesticated the dog. Zeisberger confirms this when comparing sanitary conditions of the Mingoes (Iroquois) with those of the Delawares, ". . . and since the dogs are constantly in the house or lying about the fires there are generally many fleas and other insects."[36]

Unlike some other insects we have been considering there is little doubt that the Tent Caterpillar is native to America. Its thick, white webs, spun in the lower branches of trees and bushes, are as familiar to modern Delawareans as they were to our Indian predecessors. Kalm mentions several kinds of caterpillar pests, whose names were unknown to him. His description of one species, however, destructive to fruit trees and so repulsive that even birds and chickens would not eat them, fits exactly the habits of the Tent Caterpillar.[37]

Kalm's interest in American Natural History was prompted by his desire to improve Swedish husbandry and it was from this angle that he studied the life history of the Pea Pest (*Bruchus Pisi*), still a source of annoyance to American gardeners and truckers. He tells of its great destruction of the colonists' pea crops. Kalm considered the Pea Pest an indigenous American insect and after learning of its assaults upon pea crops greatly feared the consequences of its introduction into Sweden. He relates his consternation on finding several grubs in a package of peas that he had taken back to Sweden, thereby, ironically enough, coming very close to perpetrating the calamity he dreaded.[38] It does not appear that Kalm was acquainted with the fact that even while he was studying the pea pest in Eastern America it was already solidly intrenched in countries of Southern Europe.[39] While several early authors mention a native variety of wild pea to be found in North America[40] (which may have served as host to the Pea Pest), there is nothing to indicate that the Pea Pest was carried to the Old World in the ships of Europeans returning from America.

Johann Printz, Governor of New Sweden, submitting a report to the "Noble West Indies Company in Old Sweden," 1644, explaining the reason for the slow departure of the ship *Fama* from the Colony, alludes to ". . .

the danger of the goods on it being eaten and destroyed by moths, mice, and other vermin (which are very plentiful and destructive) . . ."[41] We are therefore certain that clothes-eating moths were present on the shores of the Christina Creek in the year (1644) this report was made.

Kalm, a hundred years later, testifies to the abundance of clothes-eating moths then in America and volunteers the information that he "is not certain, however, whether these insects were originally in the country, or whether they were brought over from Europe."[42] Notwithstanding Kalm's hesitancy to express an opinion on the question Lutz writes, "There are two kinds of 'common' clothes moths in America. Each came from Europe, probably in the *Mayflower* as well as in less advertised vessels; but Europe was not their original home. The Old Testament mentions clothes moths and that was long ago in Asia."[43] In this instance, as in the question of the origin of bed bugs in America, we have the positive statement of the authoritative Lutz against the dubious opinion of the conservative Kalm. It would, therefore, appear that Lutz offers the stronger evidence.

In writing of what appears to be the common wood tick Kalm[44] uses the terms "ticks" and "woodlice" loosely and interchangeably, with resultant confusion to the reader. We must therefore take the liberty of assuming that it was the common wood tick Kalm had in mind when speaking of either "ticks" or "woodlice." From Kalm's description of the number of ticks he encountered one is led to the conclusion that there were a great many more of these insects in Eastern America then, than there are now. This is not surprising in view of the razing of our forests to make way for cities. It may further be deduced from Kalm's numerous references to ticks that he was unacquainted with them before his arrival in America, which may lead to the inference that wood ticks are indigenous American insects. This line of reasoning, we are told, is correct in its application to the *Acarus Americanus* L., frequently mentioned by Kalm, but there are also a number of other species in the United States that are of foreign origin. The *A. Americanus,* by the way, is not a carrier of the Rocky Mountain spotted fever.

If the term "common insect" can be applied to the termite it is one of the few currently publicized American insects which Kalm fails to mention. It is impossible to perceive why or how Kalm missed this particular insect but we have the assurance of Lutz that, "The species that is here now was here before Europeans, whatever their nationality may have been, first sighted American shores. Indeed the same kind of termite was probably here long before there were human beings."[45]

Earth-worms likewise failed to gain Kalm's attention although it is likely that many of them were impaled as bait on the bone fish-hooks of numberless red-skinned Isaac Waltons. Grasshoppers and associated genera were no doubt also utilized as fish bait by the Indians. As a matter of interest there is an Indian legend to the effect that a war was provoked between two tribes, formerly amicable, as the result of a childrens' quarrel over a grasshopper. Since the alleged incidents related in the story occurred along the shores of a creek it might be conjectured that the altercation ensued over the use of the grasshopper as fish bait. Such speculation, however, is exploded by Speck's interpretation of the tale as being an Algonkian proverbial myth with a moralistic tendency "to portray the consequences of grown-ups taking over the disputes of children, the curse of partisanship in disputes of a trivial nature, the abomination of giving way to emotional impulses."[46]

No less than other undomesticated but not uncommon creatures, insects, too, are occasionally represented in Indian folk beliefs and medicine practice. From the Moors of Cheswold, Delaware, Weslager[47] gleaned the following illustrations, some of which may be of pure Indian origin:

LAMENESS

Catch some fishing worms and put them in a can. Then heat them until they are all exolved [dissolved]. The worms all dry up and leave an oil that should be rubbed on your leg. It's like linament. I used it many a time and can sign a sisstificate that it's good.

If you bite off a butterfly's head, you will get a suit of clothes bearing the pattern of his wings.

If a measuring worm crawls up your leg, he is measuring you for a suit of clothes which you will shortly receive.

TO HEAL INSECT BITES

Take a little bit of wax out of your ear with your finger. Then rub it on the bite and it will take the sting out. You can also rub ear-wax on to a fever blister on your lips. It will cure it right away.

Gladys Tantaquidgeon, in a similar study of the Delawares,[48] elicited additional items of folk lore involving insects from Indians informants. A few of them are:

A spider web applied to a flesh wound will stop the flow of blood.

One method of treating whooping cough involved securing as many coackroaches as there are children affected, and naming one after each child. Then each child placed a roach into a bottle which was then tightly corked. The sickness is believed to pass with the death of the insect. During this period it is necessary, however, to keep the child's bowels open, else the charm may react and kill him.

A person living in the city is advised to put a cockroach in a thimble, tie it up in a cloth and wear it around the neck. "You will never whoop after wearing it."

A spider hanging from the ceiling announces the approach of a stranger.

In addition to the common insects enumerated in this paper, Kalm variously described many others under the title of "beetles." However, Kalm's description of these "beetles" are generally so vague and the generic terms which he applied to them have been changed so frequently and split by refinements and fractionisms since Kalm's day that exact identifications are impossible without considerable investigation. The writer does not feel qualified to undertake a task of this magnitude and must leave it to a keener scholar.

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1. The author is greatly indebted to C. A. Weslager for suggesting the theme of this paper and both he and Dr. Frank Morton Jones for other assistance.
2. A. Hyatt Verrill, *Strange Insects and Their Stories*, Boston, 1937, p. 15. In a personal letter Mr. Verrill also informs me that he has eaten Sioux grasshopper bread and found it palatable.
3. Andrew Hesselius, *Anmarkningar Om Amerika*, 1711-1724, *Ett Delawareminne*, Av Nils Jacobsson, Upsala, 1938, p. 28. (Quotations translated by Mr. & Mrs. Haakon Abildso, Wilmington, Del.)

4. Emily C. Davis, *Ancient Americans*, New York, 1931, p. 244.
5. A. Hyatt Verrill, *Foods America Gave the World, Boston*, 1937, p. 13.
6. C. L. Marlatt, *House Ants*, Farmers Bulletin 740, U. S. Dept. of Agriculture, Washington, 1930, p. 9.
7. James Adair, *History of the American Indians*, originally published in London, 1775—republished Johnson City, Tenn., 1930, p. 137.
8. Rev. Johannes Megapolensi, Jr., "A Short Account of the Mohawk Indians," *Narratives of New Netherland*, 1609-1644, J. F. Jameson, Editor, New York, 1909, p. 173. Bear grease found favor among the Indians in many ways besides that of serving as an insect repellant which probably accounts for the reason that more prominence was not accorded it as such by better known authors.
9. Peter Kalm, *Travels in North America*, Adolph B. Benson, Editor, New York, 1937, Vol. I, p. 236.
10. *Ibid.*, Vol. 1, p. 264.
11. *Ibid.*, Vol. 1, p. 10.
12. *Ibid.*, Vol. 2, p. 405.
13. Peter Lindestrom, *Geographia Americae*, translated by Amandus Johnson, Phila., 1935, p. 133.
14. Thomas Campanius Holm, "A Short Description of the Province of New Sweden," translated by P. S. DuPonceau in *Pennsylvania Historical Society Memoirs*, Phila., 1834, Vol. 3, p. 162.
15. Verrill, *op. cit., Strange Insects*, etc., p. 46.
16. Hesselius, *op. cit.*, p. 27.
17. Kalm, *op. cit.*, Vol. 1, p. 213.
18. Adair, *op. cit.*, p. 137.
19. Kalm, *op. cit.*, Vol. 1, pp. 76-77.
20. Vol. 1, No. 4, *Bulletin of the Archaeological Society of Delaware*, carries a reprint from the *Wilmington Daily Commercial*, September 13, 1872, entitled "Mosquitoes, The Indian Legend of Their Origin," an Indian myth which seems to lend credence to the antiquity of mosquitoes in America.
21. Kalm, *op. cit.*, Vol. 1, p. 151.
22. Frank E. Lutz, *A Lot of Insects*, New York, 1931, p. 98.
23. *Ibid.*, p. 124.
24. Kalm, *op. cit.*, Vol. 1, p. 280.
25. *Ibid.*, Vol. 1, p. 215.
26. Lutz, *op. cit.*, p. 60.
27. Kalm, *op. cit.*, Vol. 1, p. 217.
28. Cadwallader Colden, 1688-1776, born in Scotland and migrated to Philadelphia in 1708; thence moved to New York City in 1718. He was a prominent Physician, Scientist and Politician of the day.
29. See foot-note 31.
30. Kalm, *op. cit.*, Vol. 1, p. 216.
31. For a scholarly disquisition on the origin of cock roaches in America see "Man's Uninvited Fellow Traveler—The Cockroach" by James A. G. Rehn, *The Scientific Monthly*, October, 1945, Vol. LXI, pp. 265-276.
32. Lutz, *op. cit.*, p. 45.
33. Kalm, *op. cit.*, Vol. 1, p. 215.
34. David Zeisberger, *History of the North American Indians*, edited by Hulbert and Schwarze, Ohio Archaeological & Historical Publications, 1910, Vol. 19, p. 75.
35. John Lawson, *History of The Carolinas*, London, 1718, p. 23.
36. Zeisberger, *op. cit.*, p. 17.
37. Kalm, *op. cit.*, Vol. 1, p. 213.
38. *Ibid.*, Vol. 1, pp. 91-92.
39. *Ibid.*, Vol. 1, f. n. p. 92.
40. *Narratives of Early Pennsylvania, West New Jersey and Delaware*, 1630-1707, C. A. Meyers, Editor, New York, 1912, pp. 73, 232, 323.
41. *Ibid.*, p. 95.
42. Kalm, *op. cit.*, Vol. 1, p. 214.
43. Lutz, *op. cit.*, p. 186.
44. Kalm, *op. cit.*, Vol. 1, pp. 218, 274, 363.
45. Lutz, *op. cit.*, p. 154.
46. Frank G. Speck, "The Grasshopper War in Pennsylvania . . ." *The Pennsylvania Archaeologist*, Vol. XII, No. 2, April, 1942.
47. C. A. Weslager, *Delaware's Forgotten Folk*, Phila., 1943, pp. 170, 178.
48. Gladys Tantaquidgeon, *A Study of Delaware Indian Medicine Practice and Folk Beliefs*, Harrisburg, 1942, pp. 33, 54, 60.

FISHING METHODS OF THE INDIANS OF THE DELMARVA REGION

By A. CROZIER

All the early writers agree concerning the abundance of fish in the territory occupied by the Lenni Lenape Indians, and their neighbors. While these people were hunters to a considerable extent, and carried on a crude form of agriculture, they seem to have put their main dependance on fish as a food supply. Depending so largely on fish, they became expert in the various ways of catching them. They were very proficient in the use of seines and set lines, as well as expert in the construction of wiers and traps. A good description of these wiers is given by Lindestrom the Swedish geographer:

"The savages do not know the use of seines, nets, trolling rods or trolling-line; but far up the kills or creeks emptying into the river, they arrange their fishing, either where the kills stop, or at the falls. There they close in the kills right across, leaving only a little opening or entrance for the fish right above like a kassenoor. Now when the river rises and the water is highest they close up the opening, but when the water is run out and the ebb is lowest, then the fish remain behind in the low water, where they either catch it with their hands or shoot it. Otherwise, they also shoot it in deep water, where they can find it, and thus they obtain fish of all kinds, that are found there in abundance, spending nothing on either seines, nets or any fishing implements."[1]

Henry Seidel Canby,[2] has vividly reconstructed a fishing party by the Lenape on the Brandywine. M. R. Harrington[3] has also written very entertainingly of the Lenape methods of fishing.

Lindestrom's statement that the savages did not use nets or seines is certainly not correct, as many of the early writers describe their use of nets. Peter Kalm[4] describes the material used in making their nets as follows:

"Apocynum Cannabinum was called by the Swedes Hemp of the Indians, and grew plentifully in old corn fields, in woods, on the hills, and in high glades. The Swedes have given it the name of Indian Hemp, because the Indians formerly, and even now, 1749, apply it to the same purposes as the Europeans do hemp; for the stalls may be divided into filaments, and is easily prepared. When the Indians were settled among the Swedes in Pennsylvania and New Jersey, they made ropes of this Apocynum, which the Swedes bought and employed them as bridles and for nets. These ropes were stronger and kept longer in water, than such as were made of common hemp. On my journey through the country of the Iroquese, I saw the women employed in the manufacture of this hemp. They made use neither of spinning-wheels or distaffs, but rolled the filaments upon their bare thighs, and made thread and strings of them. Sometimes the fishing tackle of the Indians consists entirely of this hemp."

These threads were probably treated with grease or wax, and drawn through the grooves of an artifact which we designate as sinew dressers. These are made of very hard stone and are deeply grooved, resembling the deep grooves in a cake of bees wax as used by housewives for the same purpose today. I have a very fine one from Chestertown, Md., which has a neat hole drilled through the top of it probably for suspension. This must indeed have been a prized possession of some Indian squaw, and is

one of the most interesting pieces in my collection. Dr. Abbott[5] figures and describes a similar specimen, as does Brunner.[6]

Proof of the manufacture of nets by the Indians is found on every village site by the presence of pot sherds bearing the imprint of fish nets. In connection with the use of seines and gill nets, the Indians used small flat stones, notched on the edges as sinkers, and bits of wood as floats. Many of these notched sinkers have been found in our territory.

In addition to the stone fish wiers described above, our Indians used wiers made of brush, as we learn from a letter written in 1680 by Mahlon Stacy to his brother, and quoted by Smith,[7] as follows: "Fish in their season are very plentiful. My cousin Revel and I, with some of my men, went last third month into the river (the Delaware) to catch herrings, for at that time they came in great shoals into the shallows. We had neither rod nor net, but after the Indian fashion, made a round pin-fold, about two yards over and a foot high, but left a gap for the fish to go in at, and made a bush to lay in the gap to keep the fish in; and when that was done, we took two long birches and tied their tops together, and went about a stone's cast above the pin-fold; then hauling these birch boughs down the stream, where we drove thousands before us, but so many got into our trap as it would hold. And then we began to haul them on shore as fast as three or four of us could, and after this manner, in half an hour we could have filled a half bushel sack of as good large herring as I ever saw."

A very fine example of a stone wier was recently located by H. B. Guest of Chadd's Ford, in the bed of the Brandywine about half a mile below that village. The wier is shaped in the form of a large V, and is built of heavy boulders. One arm of the V is about a hundred yards long, while the other is considerably shorter, and there is an opening where the two arms converge. At the side of this opening, there is a very large boulder where the Indians could have stood to spear the fish that were trapped in the wier. Most of the wiers in the Brandywine have been destroyed by freshets, but the boulders of which this one is built are so heavy that it is almost intact. The wier is located not far from the site of the Indian village of Queonemsyng, located in "the Great Bend" of the Brandywine near the Delaware state line. Another stone wier is reported by C. A. Weslager[8] in the bed of Doe Run, a tributary of the Brandywine, near Embreeville, Pa.

The remains of a probable fish wier are described very fully by Dr. Cresson,[9] which had evidently been constructed of posts driven into the mud, and interwoven with wattles or vines to more readily bar the passage of fish from Naaman's Creek to the Delaware River.

The presence of such vast numbers of shad and herring that came up the Brandywine in the Spring to spawn, caused the Swedes to give it the name of Fish Kill, and as such is shown on Lindestrom's map.

The great purchase by William Penn included the Brandywine Valley, with the exception of a mile on each side of the stream, which the Indians reserved for hunting and fishing. This reservation was not respected by the settlers after the death of Penn, and the early history of the Delaware County courts are replete with bitter complaints of the Indians on account of the encroachments of the whites. The whites apparently paid little attention to the complaints, and proceeded to take up the lands, also to construct mill dams in many places on the Brandywine and its tributaries.

The dams very effectually stopped the migratory fish from coming up the streams to spawn, and the consequent loss of their fishing grounds was a real tragedy to the Lenape. It was the beginning of the end for them in this part of Delaware and Pennsylvania.

In addition to the use of wiers the early writers tell of the Indians using spears and gigs in taking the larger fish. We find many long slender spear points that may have been used for this purpose, and they are usually designated as fish spears. The use of bone and shell fish hooks is also mentioned, but I have not met with such artifacts in my many years of collecting.

In further reference to the use of nets in this area De Vries[10] tells us: "Striped bass are caught in great numbers by the Indians, and dried. Sometimes they catch them with seines from seventy to eighty fathoms in length, which they braid themselves, and on which, in place of lead, they hang stones; and instead of corks which we put on to float them, they fasten small sticks. They catch great quantities of this fish, which they also catch in set nets, six or seven fathoms long, braided like a herring net. They set them on sticks in the river, one and one half fathoms deep."

The Indian method of cooking fish is described by Harriot[11] as follows: "After they have taken store of fishe, they gett them vnto a place fitt to dress yt. There they stick upe in the grounde four stakes in a square room and lay four posts vpon them and others ouer thwart them, the same like vnto an hurdle of sufficient heighte, and laying their fish on this hurdle, they make a fire vnderneathe to broile the same. And when as the hurdle can not hold all the fishes, they hang the reste by the fyrres on sticks sett vpp in the grounde against the fyres, and then they finish the reste of theire cookerye. They take good heede that they bee not burntt. When the first are broyled they lay others on that weare newlye brought, continuing the dressing of their meate in this sorte vntil they thincke they haue sufficient."

In addition to catching fish in the fresh water streams, the Indians made annual visits to the seashore, and gathered great quantities of shell-fish, such as oysters, clams and conchs. These were not only eaten at the camp-sites, but were smoked and dried for Winter use. Their method of preparing them was similar to Harriot's description of cooking fish, as previously referred to.

The debris from these shell-fishing stations produced what are the most interesting aboriginal phenomena of our eastern coast, as the accumulations of shells in time produced mounds of such tremendous proportions that are to this day a feature of many sites along the shores of the many bays that line the shore-line. Professor Holmes[12] in 1907, estimated that in the Maryland-Virginia area alone these shell deposits covered an area of nearly one hundred thousand acres, and that a single midden at Pope's Creek, Md., had yielded upwards of five hundred thousand cubic feet of shells which were calcined and used as fertilizer.

Francis Jordan[13] described a shell mound on Egg Harbor Bay, N. J. which he stated was the largest on the North Atlantic coast. He also described a visit to the Delaware Bay about 1861, and stated that at that time they could see from the deck of their vessel a line of shell heaps that extended for over a mile along the strand from Lewes, Del., toward Cape Henlopen. Mr. Jordan made extensive excavations in these shell heaps, but the results were rather meagre as far as artifacts were concerned, which tallies with the experiences of many of us who have made investiga-

tions in various places near Rehoboth and Lewes. A feature of these deposits is the quantity of broken pottery recovered from them. In very few instances have enough sherds been found to permit complete restoration, but they are invaluable in furnishing us information as to the construction and ornamentation of the vessels. All that our members have recovered indicate typical Algonquin culture, and they range in size from small cups to pots of a gallon or more in capacity.

Mr. Jordan also described a very large shell heap near Still Pond, Md., on the Eastern Shore. Vast quantities of shells have also been taken from this deposit for commercial purposes.

Many of these shell heaps have been destroyed by the encroachment of tidal waters, and by cultivation of the sites. One such mound is mentioned by N. H. Bishop,[14] which he described as an Indian mound of oyster shells called locally "The Hommack," which rose about seven feet above the marsh on the West side entrance of Sinnepuxent Bay, Md. This would place it near "Geneazer," a locality which has been extensively explored by our fellow member H. Geiger Omwake of Lewes, Del., who has recovered much interesting material, especially trade goods, much of which is on display in our museum at Newark, Del.

The complete subject of aboriginal shell heaps is too lengthy for a paper of this kind, but my references give a list of publications which may be profitably studied by any one interested in this phase of Indian lore.

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(12) *Aboriginal Shell Heaps of the Middle Atlantic Tidewater Region*, William H. Holmes, Lancaster, Pa., 1907.

(13) *Aboriginal Fishing Stations on the Coast of the Middle Atlantic States*, Francis Jordan, Jr., Phila., Pa., 1906.

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DELAWARE INDIANS IN THE FAR WEST

By H. GEIGER OMWAKE

Recently I ran across an account of a military expedition from Fort Leavenworth, Missouri, to San Diego, California, which took place in 1846 and '47.[1] The object of the expedition was the elimination of Mexican control in the vast territory extending westward from Missouri to the Pacific. The account gives an extremely detailed dscription of the country, its topography, its flora, its fauna, its natural resources, and its people. It would not seem that such a story would be likely to be of much interest to students of Delaware archaeology. Yet on two occasions I found mention of the Delaware Indians.

The story of the dramatic exodus of the Delawares from their ancient land is well known. After 1740 few remained in the country which had, for perhaps many centuries, been their homeland. We have been told that the migrants dispersed and went to several parts of the country. Commonly we accept the stories which tell us that the Delawares finally found new homes in Ohio, Missouri, Oklahoma, and Canada, and we fall into the error of thinking that these destinations were the final ones for the people whose ancestors painstakingly manufactured the fine pottery vessels, the beautiful bone needles, and the finely serrated arrowpoints we so diligently search out and cherish.

On October 6, 1846, after having "marched one thousand miles without fleshing a sabre," a military expedition, an important part of the advanced guard of the "Army of the West," encamped on the banks of the Rio Grande del Norte, near the little settlement of Socoro in the territory of New Mexico. The expedition had passed through the land of the Navajoes and was now entering the territory of the Apaches.

That the descriptions of the Delawares handed down to us by Penn[2]—"For their persons, they are generally tall, straight, well-built, and of singular Proportion; they tread strong and clever, and mostly walk with a lofty chin" and by Loskiel[3]—"The men are moftly flender, middle-fized, handfome, and ftrait.—The women are fhort, not fo handfome, and rather clumfier in appearance than the men," may be accepted by us as very accurate is borne out by the following words of the topographical engineer who wrote the chronicle of the expedition:

> I saw some objects perched on the hills to the west, which were at first mistaken for large cedars, but dwindled by distance to a shrub. Chaboneau (one of our guides) exclaimed "Indians! there are the Apaches." His more practised eye detected human figures in my shrubbery. They came in and held a council, swore eternal friendship, as usual, no doubt with the mental reservation to rob the first American or Mexican they should meet unprotected.
>
> The women of this tribe rode a la Duchesse de Berri, and one of them had an infant, about two months old, swung in a wicker basket at her back. Their features were flat, and much more negro-like than those of our frontier Indians; a few Dela-

> wares in camp preosented a strong contrast, in personal appearance and intelligence, with the smirking, deceitful-looking Apache. Some of them had firearms, but the greater part were armed with lance and bow. They were generally small-legged, big-bellied and broad-shouldered.

What a paradox that the long, long, and bitter trail from their homeland had led these fine and handsome Delawares to a destination in the territory of the marauding and treacherous Apaches, a thousand miles beyond the Missouri frontier!

Three weeks later and three hundred miles farther westward, still in the country of the Apaches, the expedition made camp on October 31 on the Gila River at the base of Mount Turnbull, a week's forced march from the settlement at Sonora and the fort at Tucson. Here again was the Delaware!

Let us return to the words of the chronicler.

> The day passed but no Indians came; treacherous themselves, they expect treachery in others. At everlasting war with the rest of mankind, they kill at sight all who fall in their power. The conduct of the Mexicans to them is equally bad, for they decoy and kill the Apaches whenever they can. The former governor of Sonora employed a bold and intrepid Irishman, named Kirker, to hunt the Apaches. He had in his employment whites and Delaware Indians, and was allowed, besides a per diem, $100 per scalp, and $25 for a prisoner.

The thing which interests us most is not the indication that these descendants of the once peaceable people who roamed the land of Pennsylvania, Delaware, and New Jersey and who roasted the clams and oysters we dig from their refuse pits had degenerated to a condition of barbarous head-hunting in order to eke out a subsistence. The less distasteful thing for us to note is the fact that the Delawares, once a mighty and noble nation, had become homeless nomads, wandering shiftlessly through the Southwest Territory. Our common information has led us to believe that they had found a refuge of sorts in Oklahoma and Missouri, yet here we find them roaming murderously through the deserts and the mountains less than five hundred miles from the Pacific.

A trek which began on the quiet shores of the Atlantic saw no end until almost an entire continent had passed beneath the sandaled feet of a homeless people.

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THE JASPER QUARRIES AT VERA CRUZ, PENNSYLVANIA

By CHARLES F. KIER, JR.

In May and again in December of 1946, members of The Archaeological Society of Delaware participated in two interesting field trips to some of the aboriginal quarries and workshop sites of Lehigh County, Pennsylvania. This series of sites extends from Kutztown, east to the Delaware River, and has been visited by innumerable collectors over a period of many years. Probably the widest read and most authoritative article was compiled by H. C. Mercer in 1894.[1] Max Schrabisch wrote briefly on the jasper after a single visit to the quarries in 1934.[2] W. H. Hayes, President of the Newark (New Jersey) Mineralogical Society, has long been interested in the aboriginal workshops of New Jersey and Pennsylvania, and has written extensively on the jasper quarries. Unfortunately, however, Hayes' articles have never been submitted for publication, but the writer has had access to his manuscript material.

Sponsored by the University of Pennsylvania in 1891-92, H. C. Mercer thoroughly explored the quarry sites in Bucks, Berks and Lehigh Counties. He lists the quarry sites, and the pits contained in each site, as follows: nine pits at Rattlesnake Hill, one mile from the Delaware River; twenty pits on the Weider Farm along the Saucon Creek, two miles west of Limeport; ten pits on the Mast Farm, one and one-half miles south of Limeport; sixty pits on a farm (Stoudt Farm) at Vera Cruz; one hundred thirty-eight pits on the Miller Farm at Macungie; five pits at Feuersteinberg, near Bowers Station; two pits near Coopersburg, Bucks County; twenty pits at Leinbach's Mills in Berks County and an unlisted number of pits in Long Swamp.[3]

The jasper quarries to be considered, are located on a semi-wooded hillside, just north of the tiny farming town of Vera Cruz, in Lehigh County, Pennsylvania. Vera Cruz, in the heart of the rugged "Pennsylvania Dutch" country is situated about two and one-half miles south of Emmaus and seven miles west of Coopersburg, and has long been a mecca for collectors of Indian artifacts. The writer, in company with nine amateur archaeologists and mineralogists from New Jersey, visited Vera Cruz on a brisk November morning in 1946. Needless to say, even though fields adjacent to the quarries were badly overgrown, we were amazed at the quantities of jasper still visable from prehistoric activities. How on earth could anything but chips be found in that mass of chips! To answer the question, I dropped to my knees, pushed aside the previous season's cornstalks and weeds, and tried to examine the mass, chip by chip. Perhaps this was the hard way, but it paid off to the tune of twenty-two complete, classifiable artifacts. More about that later.

Upon arriving home, I determined to learn what I could about jasper —what it was; where it came from; what it was used for, etc. My research proved to be quite interesting, and I shall endeavour to present it to you as interestingly as possible.

Jasper is a member of the quartz family (Cryptocrystalline, Sio_2), and can be found almost universally in one form or another. The jasper, as we know it, was probably formed during the Cambrian and Ordivician Age (early Paleozoic Era). As to how it was formed, W. H. Hayes suggests that a shifting of the earth's crust or by glacial action, boulders were deposited, mixed with sand and gravel in their present location.[4] James R. Frorer, a trained geologist, advances a most plausable theory[5]:—

"You will recall that the jasper location is a hog back which separates the sandstone from the limestone. You will recall that just to the north of the last pit, a diabase intrusion cuts this hog back at right angles. Undoubtedly, when the diabase came in, tremendous heat was generated over the entire area and to my mind, this must have fused the quartz at the junction with the limestone. Jasper, as you know, is nothing but 'anealed quartz' and is almost always found where the anealing could be done in limestone, making this an ideal location for the jasper. The hog back stood out as the soft rocks eroded, making it a perfectly logical place for the Indian to uncover the jasper without any difficulty. This theory has been discussed among geologists and, generally speaking, they concur with it in substance. About the only point of difference being as to whether it was accomplished by super-heated steam occasioned by the diabase intrusion. This matter of detail could be proved by a study of the hydrothermal relationships of the actual rocks at the place."

A most interesting theory is advanced by Mercer as to the origin of the pits occurring in this area. Ordinarily it would be assumed that the pits were formed exclusively through aboriginal activities. Mercer's excavations, and subsequent conclusions, indicate that many of the pits may be nothing more than ancient sink-holes. He explaines this fact by concluding that where there is jasper, there is limestone; and where there is limestone, there are sink-holes. Rain water with its carbonic acid, trickling through the jasper-bearing, clay bedded magnesium limestone, created subterranean caves, with the roofs eventually capsizing. The jasper nodules strewn on the slopes of the sink-holes, were pried loose from the soil by the aborigine by the use of sharpened sticks. Oftimes the nodules were too large to be removed from the pits by ordinary methods. Evidence indicates that these large chunks were shattered by means of fire. Fire-reddened blocks were noted frequently throughout Mercer's excavations.[6]*

Jasper occurs in nearly every color imaginable, including shades of red, brown and yellow (stained with hematite), black, purple, etc. It is evident that the aborigine was quick to adopt this stone to his means. As a general rule, pure jasper fractures conchoidally; perfect cones resulting from the fracture are quite commonly associated with the rejectage. Minerals that are fine grained, or homogenous, such as flint, obsidian, chert, jasper, chalcedony, plasma, agate, basanite, quartz and quartzite, fracture conchoidally. That is to say, a shell or cone-shaped fracture occurs in chipping, and is readily controlled by the pressure-flaking method, thereby greatly reducing the amount of labor required in the manufacture of the artifact.[7]

Quoting Hayes in his description of the jasper,[8] "In some blocks of this jasper, several colors may be mixed together. There are many combinations of varieties and colors to make them more interesting, with new ones turning up at every visit. One quite frequent combination is that of botryoidal chalcedony on compact jasper in which the chalcedony is either white or pale blue. Another is that of drusy quartz crystals on jasper, and in frequent cases, there is a layer of chalcedony on jasper with quartz crystals topping the chalcedony"—additional specimens have shown "a thin coating of blue chalcedony on black jasper; a coating of delicately shaded pink crystals on pastel grey and pink altered jasper; beautiful reddish translucent chalcedony resembling carnelian; a coating of what appears to be red drusy quartz crystals on altered jasper but what probably is

* A note of interest pertinent to the labor involved in exploring the pits at Macungie; Mercer estimated that one million cubic feet of earth was examined.

transparent crystals on a red undercoating; a somewhat rough purplish chalcedony coating on brown jasper and pink quartz, which is not vitreous in appearance."

While wandering through the wooded section atop the hill at Vera Cruz, I noted the large characteristic depressions scattered at random throughout the underbrush. It is from these pits that the aborigine extracted chunks of jasper for the purpose of hammering them into convenient blanks, and in many cases transported them elsewhere for fabrication. In the centers and on the slopes of these pits, are huge trees of undoubted antiquity, and many appear to be well over a hundred years

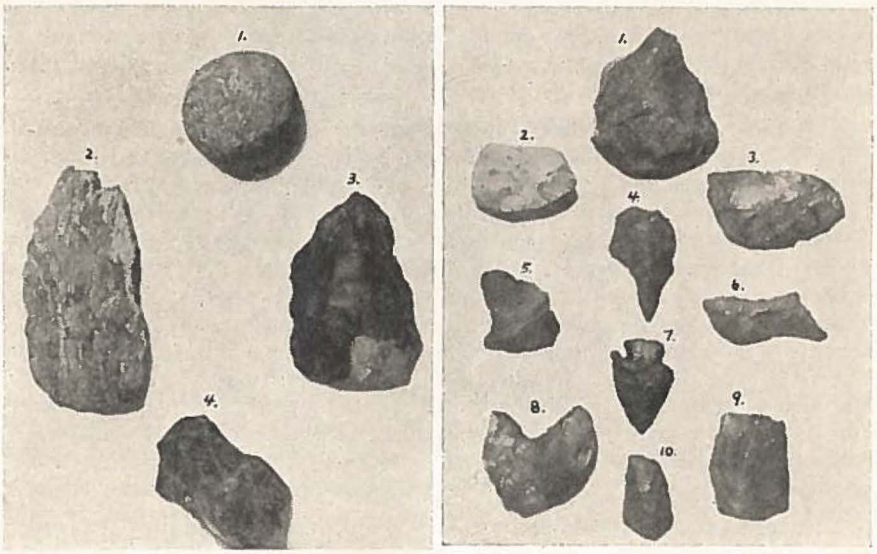

Fig. 1 (left)—Small, well-worn, fine-grained, quartzite hammerstone; (1 5/8" diameter).
Fig. 2 (left)—Blank. Yellow and Yellow-green striped jasper; (3 5/8" x 1 7/8").
Fig. 3 (left)—Blank. Dark red and black jasper; (2 3/4" x 2").
Fig. 4 (left)—Chunk, displaying nearly perfect cone of conchoidal fracture.
Figs. 1, 5 (right)—Utilized flake scrapers.
1—Finely graular, grey-black and olive jasper (2 1/4" x 2 1/4").
5—Medium brown jasper, (1 3/8" x 1 3/8").

Figs. 2, 3, 6 (right)—Utilized flake knives.
2—Light-yellow jasper (1 1/8" x 1 3/4").
3—Dark red and yellow, waxy jasper (1 1/4" x 2 1/8").
6—Dark brown jasper (3/4" x 2 1/16").
Fig. 4 (right)—Irregular flake drill or perforator. Dark brown jasper, (1 7/8" long).
Fig. 7 (right)—Oblique-notched arrowpoint. Dark red jasper, (1 1/2" x 1 1/8").
Fig. 8 (right)—Notched scraper; finely chpped around edge of notch. Medium-brown jasper, (2" x 2").
Fig. 9 (right)—Rectangular scraper. Medium brown jasper, (1 11/16" x 1 3/8").
Fig. 10 (right)—Snub-nosed scraper. Dark brown jasper, (1 5/16" x 7/8").

old. Several of the pits are at least twenty feet deep and sixty feet across at the mouth. Upon removing leaves, moss and rotted vegetation, I saw innumerable quantities of small chunks of weathered jasper, lying where they had fallen, hundreds of years ago.

Upon close examination of the myriad of chips and refuse in the fields adjacent to the quarry pits, it is easy to discern minute chipping where the redman applied his knowledge of pressure flaking to investigate by trial and error the workability of the samples.

It is a well-known fact that one rarely expects to find finished artifacts at a quarry site. This assumption did not apply in our case, nor with previous visitors. Perhaps an outstanding find, which may or may not, have bearing on the antiquity of Vera Cruz quarries, was the recovery of not just one, but several pieces of a type resembling the famous Folsom Culture.[9] In 1939, Norman Tapley of Westfield, New Jersey, found one perfect and one broken arrowpoints, as true-to-type as Folsom points reported from the Southwest.[10] The perfect point was made from a glossy dark-red jasper, 1½ inches long, complete to the typical longitudinal grooves and the ridged cross section. The broken arrow was made of chert and about the size of the perfect arrowhead. In addition to the Folsom-type arrowpoints, snub-nosed scrapers ranging from small pieces ¾ of an inch long, upward to two inches, tapering back from the cutting edge, with an inward-curving flat under-surface, are not rare. The notched scraper, apparently peculiar to the Vera Cruz area, is also a Folsom feature. With neatly chipped notches, these scrapers are made from a very thin flake, and could easily have been used for trimming buds from twigs in the process of making arrowshafts.[11]

The arrowpoints and scrapers mentioned, were submitted to the American Museum of Natural History for type-verification. Ernest Nielsen unhesitatingly identified the two tapley points as Folsom-type, type 5, base C,[12] and the scrapers, snub-nosed and notched, identical with those found in the Folsom Level of the Sandia Cave of New Mexico.[13] Plaster casts were made of the artifacts, and the replicas are now on exhibit at the Museum. Inasmuch as sporadic traces of the Folsom complex are reported from western Pennsylvania and from New York, this further presence of Folsom-type material is worthy of note.[14]

Flake knives and cores are classed among the more scarce pieces to be found on the workshop site. Due to the quantities of stone refuse, it requires more than usual diligence to find specimens with the finely chipped edges.

Mention should also be made of the many small, battered, tough, quartzite hammerstones found at the quarry. Usually showing use around the periphery of the stone, the hammers vary from the common half-pound size to those of more than five pounds in weight.[15] Deductions arrived at, after only one visit to the quarries, reveal that the heavier hammers appear to predominate in the vicinity of the pits, while the small hammers are found among the chips and rejectage; always badly battered from use. It is difficult to realize how such crude, unwieldly implements could be applied to fashioning of the exquisite jasper artifacts. Of course, the larger hammers, or mauls, were used only to break off chunks from the boulders, and for striking off flakes from the chunks for ultimate shaping, by means of flaking tools, into finished artifacts.

As to the length of time that the sites were occupied, my opinion is that a great number of aborigines occupied the area for countless years, probably as early as man reached this section of the country; coming and going in an endless stream. Schrabisch writes,[16] "Taking into account the number and size of the pits, as well as the fact that he (the aborigine) was sorely hampered because of the crude tools at his disposal, making

work slow and laborious, we doubt not that he continued toiling at the quarries for a long period of time, to be reckoned, maybe, by centuries."

An argument against any long occupation is the absolute absence of pottery. To the best of my knowledge, none has been found in the immediate vicinity of the quarry. In my estimation this could be explained by the fact that the redman alone visited the quarry, remaining only long enough to obtain a convenient quantity of blanks, returning directly to his village—possibly many miles away. It is also possible that the Indians coming from a great distance, completely finished his artifacts for the purpose of convenience in transportation. The shallowness of the stone refuse deposits, precludes any theory that the quarries were worked on by a pre-pottery, archaic people.

On prehistoric sites throughout Delaware, Pennsylvania and New Jersey, one to-day can find artifacts made of jasper that originated at Vera Cruz; particularly the large blades and spearheads, too large to have originated from local pebbles. Local New Jersey jasper (derived from pebbles) is easily distinguished from the imported variety, because it is lusterless. The Newark jasperite, with its iron content, of the Delaware workshops, is illustrative of a typical local type which lacks the gemy quality of the Vera Cruz material.

In conclusion, I list below the artifacts that were found by the writer on a single trip to the quarry site:

1—oblique-notched, bright red jasper arrowpoint; 1—snub-nosed scraper, 1⅛ inch long; 5—utilized flake scrapers; 3—single-notched scrapers; 1—double-notched scraper; 2—knives (1 chert and 1 yellow jasper); 4—flat, quarry blanks or blades; 3—cones (chunks revealing a perfect conchoidal fracture); 2—small, quartzite hammerstones; 22—classifiable artifacts.

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THE QUESTION OF A MINQUAS INDIAN FORT ON IRON HILL

By SEAL T. BROOKS

During the period 1931-1933, the Historic Markers Commission of Delaware erected a number of highway markers and tablets throughout the state to mark sites of historic importance. One of these markers was placed at the foot of Iron Hill, near Newark, Delaware, bearing the following legend:

IRON HILL

> Indian names, Marettico, meaning hill of hard stone, and Suquasehum, meaning iron. Minqua Indians had a fort on hill which the Senecas attacked, 1663. British troops encamped on hill, 1777, and American troops, under Caesar A. Rodney, 1814. Iron discovered prior to 1661. Mined until 1891. Largest ore pit one mile north.[1]

Since the erection of this marker, Crozier[2] and Weslager,[3] both recognized authorities of Indian life on the Delmarva peninsula, have denied the existence of a fort on Iron Hill. If this fort did exist, it is the only documented fort site in northern Delaware. If it were a Minquas fort, it indicates a penetration of the tribe more easterly than has hitherto been known. The presence of a Minquas fort so close to the Delaware River might well cast a different aspect on the economic and social life of the Indians who lived along that river.

While investigating the documented Minquas forts along the lower Susquehanna River, the writer's attention was directed to the alleged fort site on Iron Hill, and he had occasion to examine thoroughly all the documentation relative to the location and to reconnoitre on the hill itself. This paper presents his findings.

It should be made clear that the term Indian fort was used by the English to describe an Indian village, consisting of a number of huts surrounded by log palisades. Marye has already pointed out that a village without palisades was not known as a fort, while the same one with a palisade was usually so considered.[4] In the area of Iroquois concentration, the palisaded villages were often known to the whites as "castles," and indeed, as Flannery has pointed out, the Iroquois were greater practitioneers in the erection of palisades than were their Algonkian-speaking neighbors.[5]

Among the tribes of the Atlantic Coastal Plain, the erection of palisades, or forts, was a common trait, believed by Speck to have been of southern origin, which diffused into the north.[6] In the area which now comprises the state of Delaware, however, it would appear that palisaded villages were rare or completely non-existent. In any event, we have the testimony of Lindestrom, who explored and mapped the Delaware River area in 1654, that the "river Indians," i.e. Delawares did not palisade, while their neighbors along the Susquehanna River, the so-called Susquehanna-Minquas,[7] were known by their forts. Lindestrom wrote:

"But these savages [Minquas] are somewhat cleverer in building than our own river Indians [Delawares] who live closer to us, *using palisades* around their dwellings."[8]

Without laboring the question as to why the Delawares did not palisade their villages to the extent that the Minquas used this protective device,

the fact remains that the former had long been subject to enemy attack. In fact, the Delawares in 1697 seem to have been subject to two masters as the following quotation indicates:

"That the Delaware Indians live at Minguannan about nine miles from the head of Elk River and fifteen miles from Christeen and thirty miles from Susquehanna and are about Three hundred red men & are tributary to the Senecars and Susquehannahs fifty of them living at Minguhanan and the rest upon Brandywine and Upland Creeks."[9]

This village of Minguannan is one of the few documented Delaware villages in the entire area south of Philadelphia on the western shore of the Delaware River, and is located within a few miles of Iron Hill, New Castle County, Delaware. However, this site is in Pennsylvania, not within the present confines of Delaware. Except for surface indications in the form of artifacts, proof is lacking that any extensive Indian occupation occurred in northern Delaware. More likely it was an area used primarily for hunting and fishing.[10]

The earliest reference to a Minquas fort that is to be found in the records of the colonists, who settled along the Delaware River, appears in Thomas Campanius Holm's account of the Swedish colony.[1] Campanius used as his primary source of information the notes made by his grandfather, John Campanius,[12] who lived in New Sweden from 1642 to 1648. To these notes he added excerpts from accounts written by various observers who had visited the settlement after Campanius, the elder.

Undoubtedly the elder Campanius while living along the river had occasion to observe the Indian in his yet unspoiled state of primitiveness. He familiarized himself with their language[13] and much of their social and economic life. In general the accuracy of his notes, as translated, are acceptable to present day historians. Because his reference to a "fort on a high mountain" has so often been misquoted, and because this quotation apparently served the Historic Markers Commission as the principal basis upon which they have presented the state of Delaware with an Indian fort, a direct quotation is in order. The italics are mine:

"Besides the Americans whom we have already spoken of and described, there were found when the Swedes first came to this country, within 18 miles circumference 10 or 11 other Indian nations, who spoke different languages and had their own sachems or chiefs over them. Among these, the Minques, or Minkus were the principal, and were renowned for their warlike character, *These Indians lived at the distance of twelve miles from New Sweden,* where they daily came to trade with us. The way to their land was very bad, being stony, full of sharp gray stones, with hills and morasses; so that the Swedes, when they went to them, which happened, generally once or twice a year, had to walk in water up to their armpits. *They live on a high mountain; very steep and difficult to climb; there they have a fort, or square building, surrounded with palisades, in which they reside.*"[14]

It would be difficult to locate the fort from the above description, although the outstanding clue is the distance of 12 miles between New Sweden and the high mountain. Campanius, a Swede, would not likely indicate a unit of measure in terms of another country, unless identifying the unit with the country to which it belonged. Since the Swedish mile is equivalent to 6.64 English miles,[15] Campanius undoubtedly places this fort, not twelve English miles, but twelve Swedish, or *eighty English miles* from New Sweden. Nevertheless, several historians have arbitrarily select-

ed the highest hill 12 miles distant from Wilmington, known today as Iron Hill, as the supposed site of the Minquas fort. Among those who have fallen into this error were Vincent, 1870;[16] Johnson, 1881;[7] Scharf, 1888;[18] Historic Markers Commission, 1933; and Cooch, 1946.[9]

The habitat of the Minquas, commonly referred to as "Minquas country" by early observers and cartographers is clearly defined in records of the early colonization period.[20] These accounts locate the historic Minquas along the lower Susquehanna river, from northern Pennsylvania south to northern Maryland. With this in mind, would not the fort in question be more likely located along the Susquehanna possibly near the point where Campanius' eighty mile radius crosses this river? There were several Minquas forts along the Susquehanna, although their specific locations is debatable, there is little doubt as to their general locations.[21]

Before closing the question of the geographical location of the fort, there is an early reference which, although circumstantial, has a direct bearing on our subject. By implication we are led to believe that in 1654 there was no place convenient to both the Swedes and the Minquas where they could carry on their trade. If Iron Hill were occupied by Minquas, it would have been an ideal meeting place for barter.

In 1654, Johan Classon Rising, then governor of the Swedish colony, submitted a report to the Swedish Commercial College.[22] In this report Rising fathered the idea of a passage to join the waters of the Delaware River and the Chesapeake Bay, and in doing so speaks of trading with the Minquas. An excerpt from this report reads as follows:

"Hereafter it would be well worth while to settle Christina Kill, in order that one might be more secure against Virginia, and besides to carry on trade with them; making a passage from their river [Elk] into the said kill. If we could buy Sakakitqz and Amisackan from the Minquas, then this could well be brought about, and we could also carry on the best trade with them [Minquas] there."[23]

In Rising's report of 1655 we are given more evidence of his project to find a suitable trading place:

"The Minquas, who are yet faithful to us and call themselves our protectors, were recently here and presented me with a very beautiful piece of land beyond the English River, namely, all the way from Chakahilque to Amisackan, which we have long desired, and it is said to be very suitable for drawing to us the trade with the Minquas. But the Minquas stipulated that we should soon build there and keep there all sorts of cargoes for as good price as others give them."[24]

Amandus Johnson, who translated these reports into English, identifies this grant to the Swedes as extending from the "fall line" on Big Elk Creek in Cecil County, Maryland, well up into Pennsylvania, and Chakahilque or Chakakitque Fall as being probably the first stoppage of navigation at what is now the town of Elkton, Maryland and Amisackan Fall as possibly being in a creek of nearly the same name entering Cobbs Creek, in Philadelphia County, Pennsylvania.[25]

We learn from these two reports that by making this grant of land to the Swedes, the Minquas in return were assured that a trading post would be established at either Sakakitqz or Amisackan. It is evident that the place where trade was being carried on in 1654-1655 was neither convenient to the Minquas or the Swedes, and subsequently could not have been on Iron Hill.

It should be remembered that the authorities[26] who have misinterpreted Campanius claim that the alleged fort on Iron Hill was, not only contemporary with Campanius (1648), but also that it was attacked by Senecas in 1663. A careful search of all known records reveals no proof that the Senecas ever made such an attack in Delaware.

The Iroquois or Seneca war with the Minquas was first noted by Captain John Smith in 1608.[27] This war was continued in a desultory manner for the next fifty-five years and terminated about 1675 when the Minquas, reduced in strength by smallpox, betrayed by the whites, and invaded by their enemies, were forced to evacuate their homes and seek refuge in Maryland. During the course of this war the Minquas were credited with many brilliant victories, the most notable being the defeat of a force of Senecas who were besieging one of their forts.

Andries Hudde, writing from Altena [Wilmington] to Peter Stuyvesant in May 1663 reported the Seneca invaders:

"News have been brought from the English by one Harman Reyndersen, living in the Colony of New-Amstel. They were there communicated to him by Jocob my Friend [a trader] to inform us here, that the Sinnecus, 1600 men strong, with wives and children are on a march to the Minquas and they were at that time only 2 days' marches from the Minquas' fort."[28]

In June of the same year William Beekman wrote the following to Peter Stuyvesant giving him the details of the engagement:

"Upon the arrival of the Sinnecus 3 or 4 men were sent into the Minquas' fort with presents and offers to make peace and the whole force kept concealed at a distance; but a Minqua returning from hunting tracked the Sinnecus and thus they were discovered and the next days they of the fort went out and met troops of 20 or 30 men and finally the Minquas made a sally in force, drove away and pursued the Sinnecus for 2 days, capturing 10 prisoners and killing a number according to the report of 2 Minquas."[29]

The above two references to the fort and the Seneca attack do not specify the location of the fort. However the historians previously quoted, without any documentary proof, place the scene of this battle on Iron Hill, Delaware.

For the clue to the location of this fort, and for conclusive proof that it was *not* on Iron Hill, one need only read the Relation of 1662-1663 written by Pere Lalemant, a Jesuit missionary. Lalemant writing in 1663 describes the action that took place at the Minquas fort:

"The three other Iroquois nations had no better success in an expedition undertaken by them against the Andastogueronnons, Savages of new Sweden with whom war broke out some years ago. Raising, accordingly, an army of eight hundred men, they embarked on Lake Ontario toward the beginning of last April, and directed their course toward the extremity of that beautiful Lake, to a great river, very much like our Saint Lawrence, leading without rapids and without falls to the very gates of the Village of Andastogue. There our warriors arrived, after journeying more than a hundred leagues on that beautiful river. Camping in the most advantageous positions, they prepared to make a general assault, planning, as is their wont, to sack the whole village and return home at the earliest moment, loaded with glory and with captives. *But they saw that this village was defended on one side by the stream, on whose banks it was situated, and on the opposite by a double curtain of large trees, flanked by two bastions*

erected in the European manner, and even supplied with some pieces of Artillery. Surprised at finding defenses so well-planned, the Iroquois abandoned their projected assault, and, after some light skirmishes, resorted to their customary subtlety, in order to gain by trickery what they could not accomplish by force. Making, then, overtures for a parley, they offered to enter the besieged town to the number of twenty-five, partly to treat for peace, as they declared, and partly to buy provisions for their return journey. The gates were opened to them and they went in, but were immediately seized and, without further delay, made to mount on scaffolds where, in sight of their own army, they were burned alive."[30]

In a few instances the details of this account vary with that of the Dutch, but undoubtedly it was the same expedition reported by Hudde and Beekman, as the chronology and general details are in accord. Thus we learn that this fort attacked by the Senecas was situated on a river bank and not on a high hill. The river described by Lalemant was unquestionably the Susquehanna River as it furnished the only direct water route from the Seneca country to that of the Minquas.

In the early documentary records there is only one authentic association of Indians with Iron Hill. This can be found in the correspondence between Governor Calvert of Maryland and Alexander D'Hinoyossa. The correspondence was prompted in 1661 when four Englishman were murdered by Delaware Indians. The crime took place "four leagues" from New Amstel, present New Castle, Delaware. William Hollingsworth, an Englishman living in New Amstel, had informed the Maryland authorities of the murders and that it had been done by Delaware Indians, and that the bodies lay at a place called *Saquasehum.* Calvert immediately wrote D'Hinoyossa demanding satisfaction and an explanation. D'Hinoyossa, who seems to have been very casual about the affair, wrote to Calvert as follows:

"Out of which we have seen that, upon the advise of Mr. Hollingsworth, you are come to the islands of Nathaniel Utie for to examine the lamentable murder done by the Sanhican [Delaware] Indians unto four Englishman. (It is thus): For as much as hath appeared to us that how have been four persons, out of the province of Maryland, which after two day's stay; departed from hence to their plantation, as they said, and by the way are met by the said Indians, by whom they are murdered. *And on Marettico, or the Iron Hill, met them two Indians coming from the Minquas country;* to one of them did give a hat and nothing else, to the other they gave nothing. The same two Indians came to the town, imagining noe thing, but the Murderers which killed the men did very secretly and speedily pas this place up to the River—."[31]

D'Hinoyossa does not say that the murders were committed on Iron Hill. He implies that *after* killing the whites the Indians met, on Iron Hill, two Indians coming from the Minquas country. This is further supported by Hollingsworth when he reported that the bodies lay at Saquasehum, Saquasehum and Marettico apparently being two different places.[32] The phrase "two Indians *coming from* the Minquas country" is further proof that Iron Hill was not in Minquas country. It is, indeed, difficult to imagine a war party of Delawares killing whites under the shadow of a Minquas fort.

We cannot move the location of a Minquas fort to another area without historical justification, neither can we invent an occupational site within

the boundaries of Delaware without having definite proof of its occurence. The references cited in this report may be summarized as follows:

1. Iron Hill, known by the Indians as Marettico, was familiar to both the Delaware and the Minquas, but neither tribe had established a village or fort on the hill.

2. The Minquas, living along the lower Susquehanna River valley, frequently palisaded their towns, probably against the incursions of the Iroquois. This custom of palisading was not practiced by the Delawares living along the Delaware River, according to Lindestrom.

3. Campanius was undoubtedly correct in his reference to the location of the Minquas fort. His unit of distance was merely misinterpreted by later historians.

4. The fur trade with the Minquas, so important to the Swedes and Dutch, was hampered because of the lack of a convenient place to do the trading. If there had been a Minquas village or fort on Iron Hill, it would have facilitated the trade.

5. In 1663 the Senecas attacked a Minquas fort which was situated on the banks of the Susquehanna River, not on Iron Hill. There is no evidence that this fort is the same one spoken of by Campanius.

6. On the strength of the existing records, the writer cannot respect any claim that there was a fortified Minquas village on Iron Hill.

7. The marker erected by the Historic Markers Commission at the foot of Iron Hill locating the supposed Minquas fort is incorrectly placed and should be reworded or removed.

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1. For a complete list of markers in Delaware see: *A Guide to Historic Markers in Delaware*, Historic Markers Commission of Delaware, 1933.
2. Archibald Crozier, "Notes on the Archaeology of New Castle County, Delaware," *Bulletin Arch. Soc. of Del.*, Vol. 1, No. 1, May 1934, p. 2.
3. C. A. Weslager, "The Minquas and Their Early Relations with the Delaware Indians," *Bulletin Arch. Soc. of Del.*, Vol. 4, No. 1, May 1943, p. 14.
4. William B. Marye, "Piscattaway," *Maryland Historical Magazine*, Vol. 30.
5. Regina Flannery, *An Analysis of Coastal Algonquian Culture*, Washington, D. C., 1939, pp. 64-66.
6. Frank G. Speck, *Chapters of the Ethnology of the Powhatan Tribes of Virginia*, New York, 1928, p. 229.
7. A name used by the Swedes to identify a tribe of Indians living along the lower Susquehanna River. They were also known as Andastes, Andastogherons, Andastiguez, Antastouais, Canastogues, Carantouais, Conestoga, Gandastogues, Minquaas, Minquesser, Minqaos, Mynkussar, Sasquahan, Sasquesahanoughs, Sasquesahannocks, Susquehannocks, etc. In this paper the term Minqua is used to denote this tribe.
8. Peter Lindestrom, *Geographia Americae*, trans. by Amandus Johnson, Phila., 1925, p. 241.
9. *Maryland Archives*, Vol. 16, p. 520.
10. C. A. Weslager, "Delaware Indian Villages," *Penna. Archaeologist*, Vol. 12, No. 3, 1942, pp. 53-56.
11. Thomas Campanius, *A Short Description, etc.*, trans. by Du Ponceau, Phila., 1884.
12. For an excellent biographical sketch of John Campanius, see Amandus Johnson's, *The Swedish Settlements on the Delaware*, Vol. 2, Phila., 1911.
13. John Campanius translated Luther's Catechism into the Algonkian tongue and edited a vocabulary of the Minquas language called *Vocabula Mahakuassica*.
14. Campanius, *op. cit.* p. 157.
15. According to Webster's *New International Unabridged Dictionary*, the old Swedish mile, or mil (pronounced Mel), was 6.64 English miles.
16. Francis Vincent, *A History of the State of Delaware*, Phila., 1870, p. 70.
17. George Johnson, *History of Cecil County, Maryland*, Elkton, 1881, p. 48.
18. J. Thomas Scharf, *History of Delaware*, Phila., 1888, p. 15.
19. Edward W. Cooch, *Delaware Historic Events*, 1946, p. 107. Oddly enough, Mr. Cooch, who was a member of the Historic Markers Commission (1931-1932), sponsored *Delaware, A Guide to the First State*, Federal Writers Project, New York 1938. This publication includes a refutation of the theory of a Minquas fort on Iron Hill.
20. The geographical position of the Minquas is discussed at length in the following publications: George P. Donehoo, *Indian Villages and Place Names in Pennsylvania*, Harrisburg, 1928, pp. 215-219; Donald A. Cadzow, *Safe Harbor Report No. 2*, Harrisburg, 1936, pp. 18-22; H. Frank Eshleman, *Annals of the Susquehannocks*, Lancaster, 1909; C. A. Weslager, "Indian Tribes of the Delmarva Peninsula," *Bulletin Arch. Soc. of Del.*, Vol. 3, No. 5, May 1942, p. 33.

21. References cited in f. n. 20 and those following contain dozens of accounts of Indian forts along the Susquehanna: *Maryland Archives;* B. Fernow, *Documents Relating to the History, etc.,* Albany, 1877; John L. Bozman, *History of Maryland,* Balto., 1837.
22. Albert C. Meyers, ed., *Narratives of Early Pennsylvania, West New Jersey and Delaware,* New York, 1912, pp. 136-165.
23. *Op. cit.,* pp. 139-140.
24. *Op. cit.,* pp. 159-160.
25. *Op. cit.,* f. n. p. 159.
26. Particularly the Commission responsible for the marker which states that there was a Minquas fort on Iron Hill.
27. E. Arbar, ed., *Travels and Works of Captain John Smith,* Vol. 2, Edinburg, 1910, p. 422.
28. B. Fernow, *Op. cit.,* p. 430.
29. *Op. cit.,* p. 431.
30. Reuben G. Thwaites, ed., *Travels and Explorations of the Jesuit Missionaries in New France,* Vol. 48, Cleveland, 1899, pp. 77-78.
31. *Maryland Archives,* Vol. 3, p. 415.
32. Frank G. Speck, noted anthropologist and Indian linguist, has the following to say about these two place names: "I have thought over Marettico with no results. There are suspicions but no clues worth mentioning. Saquasehum has the look of *sukaxsun,* meaning blackstone or iron if you want to imagine that your word is a corruption of the Delaware term."—Personal letter, May 5, 1947.
33. The writer wishes to acknowledge the assistance of C. A. Weslager in the preparation of this paper, and A. Crozier for making available source material.

ACTIVITIES OF DELAWARE SOCIETY

The Federation meeting is the highlight on the Delaware Society's 1947 program, the final event on a calendar that has been interesting and varied.

Three lecture meetings were held in Wilmington where we were privileged to be addressed by Theodore Stern, Edmund Carpenter, and Matthew W. Stirling. The former two speakers are younger members of the Department of Anthropology, University of Pennsylvania, and Mr. Stirling is Chief of the Bureau of Ethnology, Smithsonian Institution.

On may 10 an all-day meeting and field trip was held at Lewes, Delaware and well attended. Papers were read by two of our own members: A. Crozier and C. A. Weslager.

A field trip was made to the aboriginal jasper quarries near Vera Cruz, Pennsylvania, and on the May 30 weekend the Excavating and Field Trip Committees sponsored a dig at Sharptown, Md. where new data and artifactual material were obtained.

As a crowning achievement, the Society's roster was increased to 100 members.

Various members have also made contributions to anthropological literature and others have participated in the quest for Indian materials on an individual basis.

The Officers take real pride in the accomplishments that have been made during the past year and are grateful to the membership for their support and cooperation.

BOOK REVIEWS

Bulletin Number 3, Volume IV, Part 1, *Indian Knoll, Site Oh 2, Ohio County,* Kentucky, August, 1946. By William S. Webb. Published by the Department of Anthropology and Archaeology, University of Kentucky, Lexington. 252 pages, 58 pages illustrated, $1.00.

Weslager, nearly ten years ago in an informative article on Bannerstones in general and Delaware Bannerstones in particular, expressed the opinion that work then being done by Webb on Bannerstones (but yet unpublished) "brings us nearer to a possible use for the early forms of Bannerstone . . . ." And also that Webb's work "may result in a very significant contribution to archaeological knowledge." The results of Webb's labors in this and kindred fields have since been published, the latest of which are contained in the above report.

Webb devotes part of this report to buttress further his theory that bannerstones are in reality atlatl weights. Webb first publicly advanced this thesis in his report on the excavation of the Chiggerville Site in 1939 (Bulletin Number 1, Volume IV, *The Chiggerville Site, Site* 1, *Ohio County, Kentucky,* March, 1939, published by the University of Kentucky, Lexington), and the material pertaining to bannerstones as atlatl weights appearing in the present volume may therefore be considered supplementary to that in the Chiggerville report. Webb's report on his excavation of Indian Knoll now affords opportunity for a critical appraisal of his theory on the functional use of bannerstones. However, a book review is hardly the proper vehicle for such an estimate, aside from repeating that naturally Webb gives the subject of bannerstone-atlatl weights a prominent place in the report. But even apart from the controversial subject of atlatl weights the report is a significant and valuable contribution to archaeological literature, including some features that are of particular interest to students of Eastern archaeology.

The site at Indian Knoll was first (but by no means thoroughly) excavated by C. B. Moore in 1915 and his findings reported by the Philadelphia Academy of Natural Sciences in 1916. In addition to many bone, shell and stone artifacts Moore uncovered the remarkable number of 298 aboriginal skeletons at Indian Knoll. Moore's report indicated the site as being unique since the people who originally inhabited it were apparently non-pottery making and practiced unusual mortuary customs. Moore's subsequent failure, according to Webb, to present sufficient data upon which a trait list defining this cultural complex could be prepared, prompted the recent investigation. Testimony to his success in this respect is Webb's well arranged and well illustrated report.

Befitting Webb's sensational discovery of 880 additional burials at Indian Knoll, approximately one half of the report is descriptive of burials and burial associations; also included were twenty-one dog burials. Many of the human burials were in irregularly shaped graves and positions. Odd burial offerings such an antler hooks and stone weights, shell and bone artifacts were found in peculiarly formed as well as ordinary graves. Webb accords a number of the more uncommon burials individual treatment, while later tabulating statistics covering each and every one of the entire 880 burials in detail! This wealth of data on physical anthropology is then charted and summarized.

Artifacts associated with the burials in toto consisted of shell, miscellaneous bone, heavy stone, atlatl combinations, flint, unusual bone and

shell. Following an account of these articles appears a complete list of the total artifacts and field specimens recovered (55,280 objects in all of flint, ground stone, copper, bone, antler, shell and miscellaneous). Finally a material and cultural trait list of all the objects excavated (with frequency of occurrence) is presented under the headings of General, Burial, Flint, Copper, Bone, Antler and Shell. The value of this trait list is greatly enhanced by Webb's lucid explanations and scholarly interpretations of the 156 separate traits enumerated. The report is so extensive that to comprehend it fully one is frequently obliged to refer to passages other than at the point where engaged and at such times feels that an index would be a very welcome addition.

The report concludes with special chapters on the dog burials, pottery sherds (believed to be intrusive) and a discussion of the chemical analysis of stain on skeletal bones, all written by contributory authors other than Webb, viz., Opal Skaggs, William G. Hagg and Joseph H. Gardner.

Studying the report with knowledge of the circumstances responsible for its existence, one is aware of the feeling that it ulteriorly emphasizes the importance of completely investigating all aspects of a project or excavation when once undertaken. Moore's partial excavation—useful as it was in focusing attention on Indian Knoll—might actually have occasioned some loss to archaeological sciences through misinterpretation of its incomplete data had not Webb the perspicacity to make another excavation when opportunity presented.

A. G. Volkman

Rappahannock Taking Devices: Traps, Hunting, and Fishing. By Frank G. Speck, Royal B. Hassrick and Edmund S. Carpenter, Joint Publications of the Museum of the University of Pennsylvania and The Philadelphia Anthropological Society, Philadelphia, Pennsylvania, No. 1, 1946, 19 pages, illustrated, $.50.

Catawba Hunting, Trapping and Fishing. By Frank G. Speck, Joint Publications of the Museum of the University of Pennsylvania and The Philadelphia Anthropological Society, Philadelphia, Pennsylvania, No. 2, 1946, 33 pages, illustrated, $.75.

Rappahannock Taking Devices: Traps, Hunting and Fishing. The subject of taking devices has long been one of particular interest to Dr. Speck, and there is little doubt that he is unsurpassed in his ethnological studies of such economic survivals, particularly among tribes of the eastern coastal region. This report, although it has the particular styling of Dr. Specks' work, is the culmination of the efforts of four student-group visits to the Rappahannock settlement in Virginia, and the collaboration, in the writing, with Hassrick and Carpenter. It will be interesting to those who have studied the former works of Dr. Speck, to see how the master has influenced the pupil. The report in itself is a self-contained document recording for future comparison the hunting, fishing, and trapping functions of the Rappahannock. The clear and understandable text offer the reader the opportunity to accompany the field workers in quest of knowledge of the Rappahannock. The description of the communal rabbit drive will recall to every student the many reported occurrences of the use of the throwing club in the eastern area, and to every reader, who, as a boy, searched for the elusive cottontail, a certain nostalgia and longing for the open fields. The reviewer was amazed to learn that each hunter carried a jug of spirits in his *hapsack* and was nevertheless still able to hit a running

rabbit with a throwing stick, the group killing forty-five to sixty rabbits in three hours.

A description of the annual economic cycle makes a very interesting addition to the report. This serves to give the reader a general background of the people and their quest for food. Although traditional methods of hunting, fishing, and trapping are still practiced successfully, they have been relegated to a secondary position in the procurement of food. Scarcity of game and conservation laws have made this necessary. The usages and mechanisms of each taking device is explained in detail and further supplemented by drawings and photographs. The photographs of the trap-sets and the hunting and fishing methods are all taken in their natural environments, which greatly contribute to their descriptiveness.

Catawba Hunting, Trapping and Fishing. After several years of observing and studying the remnants of the once powerful Catawba nation, Dr. Speck has given us another interesting report on a phase of their culture. Unlike the more general ethnological reports, this treats exclusively with food procurement methods and devices. As the report deals with the Catawbas of recent years, no mention is made of earlier tribal history, as such. The reader is provided with a background of Catawba economic and social life, and the author delves deeply into the circumstances contributing to the breakdown of Catawba culture and their subsequent decadence as a tribal organization. Soil exhaustion, over-exploitation of forests, white intrusion, and finally the exodus of the Indians themselves to the cities are all contributing factors to the breakdown of native cultural patterns. A gloomy picture, indeed, is painted of a nation which was at one time the ranking foe of the powerful Iroquois. In 1931 the Catawbas comprised a group of only 270 persons, of whom, only four were in any degree capable of furnishing information on their cultural past through the medium of the Catawba language. These four informants have since died and left only Dr. Speck as *the keeper of the keys,* with the task of giving them their proper recognition from an ethnological viewpoint. Thus, the importance of the report is brought into clear perspective.

The general reader will be interested in the methods of hunting, trapping and fishing used by the historic Catawba, and the weapons and devices which are still in use today. The scarcity of game and the lack of interest on the part of the hunter make the list of devices used today in hunting very small. Only five killing weapons, five trap mechanisms for warm blooded animals and six material means of securing fish are listed. Each of these methods employed to take game and fish are covered separately. The structure of the weapon or trap, its usage, and notes concerning it, not only familiarize the reader with the subject, but also serve to impress us again with Dr. Speck's remarkable ability to observe, interpret and record facts about a cultural group in their native habitat.

To summarize the report, two tables have been compiled, which arrange the findings so comparisons may be made against hunting and fishing traits of other tribes. Several drawings and photographs of the implements and the people serve to complete this very excellent report.

Seal T. Brooks