Bulletin of the Archaeological Society of Delaware

Vol. VII, Number 1 *December, 1955*

MEMBER OF EASTERN STATES ARCHEOLOGICAL FEDERATION

Officers of the Archaeological Society of Delaware

L. T. Alexander ..... *President*
John Swientochowski ..... *Vice-President, New Castle County*
Dr. H. V. Holloway ..... *Vice-President, Kent County*
Rodger Vandergrift ..... *Vice-President, Sussex County*
Irwin J. Kappes ..... *Corresponding Secretary*
Joseph P. Monigle ..... *Recording Secretary*
Marie Wilkins ..... *Treasurer*
Elwood Wilkins, Jr. ..... *Museum Advisor*
Allen G. Schiek ..... *Editor*

Board of Directors

Charles Kier
J. Alden Mason
Arthur Volkman
C. A. Weslager
Leon deValinger
James Ackerman

Contents

Introduction to
Tobacco Pipe Stem Hole Sizing - Factors of Proof & Certitude
by
L. T. Alexander

Clay tobacco pipes were manufactured in Europe and exported in great quantities to the Colonies during the 17th and 18th centuries. Consequently, they are recovered from many archaeological sites, both Colonial and Indian.

If these pipes could be dated it would help to date the sites from which they are recovered through archaeology. Realizing their possible importance, students in Europe and America have given increasing attention to methods for the reliable dating of pipes.

Considerable progress has been made in dating pipes by classifying the various characteristics of pipe bowls. However, until recently, little attention has been paid to the pipe stems.

J. C. Harrington prepared a paper "Dating Stem Fragments of 17th and 18th Century Tobacco Pipes" which appeared in the Quarterly Bulletin of the Archaeological Society of Virginia—Vol. 9, No. 1—September, 1954.

John F. Chalkley of London, England, submitted "A Critique and Rebuttal of the Harrington Paper." This was published in the Virginia Society's Bulletin Vol. 9. No. 4—June, 1955. In this same issue, Harrington comments on Chalkley's article.

Now, in answer to Harrington's "comments" Chalkley has prepared a second paper. However, because of prior commitments, the Virginia Society cannot publish Chalkley's second article for perhaps a year. Because it is desirable to publish Chalkley's second article without delay, the Archaeological Society of Delaware has agreed to publish it herein.

The writer of this introduction has observed over 3,000 pipe stem fragments and has found a significant number of them have oblate holes readily apparent, even to the naked eye. Therefore, it appears impractical to try to date fragments by their stem hole diameter. In the second place, a study of the methods employed in manufacturing clay pipes reveals that the holes were made by piercing the stem by hand. Such an unmechanical method cannot help

but create holes of various sizes, using the same instrument.

In studying pipe bowls there occasionally appear specimens with two holes in them caused by the piercer being run through the stem, partially withdrawn, and re-inserted to form the second hole. This inserting, withdrawing, and re-inserting would obviously affect the size of the stem hole. Therefore, this is another reason why dating pipes by stem holes could be unreliable.

It is hoped that the following article will create enough interest to encourage the readers of this Bulletin to obtain copies of the original articles and, after studying the problem, submit any information or knowledge which will help to solve this problem.

231 Pinehurst Rd.
Wilmington, Del.

L. T. Alexander

Tobacco Pipe Stem Hole Sizing– Factors of Proof and Certitude

by

John F. Chalkley

In my recent "Critique & Rebuttal" (1) of Dr. J. C. Harrington's attempted methodology which sought to relate pipe stem hole sizes to specific date periods, the mildest possible means of censure, the use of documented historical facts, was made for a specific purpose. His answering "Comment" (2) reveals that this purpose was achieved by:

1. An admission of his knowledge of the existence of "slight" oblateness at times.
2. An adherence to a fixed idea of "round" holes despite (a) 1. above, and (b) while giving no means whatsoever to establish or prove how he knows they are "round."
3. A new—and most specious—reason for his overt trick of raising (by doubling) his increment mean from (a) the *lowest possible,* and (b) *lowest available to larger,* (c) *less accurate* and (d) *even less truthful one.*
4. A request for "proofs," while providing only spurious tables, and none of "roundness" himself.

In recording the following data of gadgets, gauge types, and the outline of a practical test, all used by myself for studying and recording the oblateness of pipe stem holes, the "irrelevant" but actual sources of these and what results from their long continued use; a new appraisal of his methodology and its false results on more specific grounds must have a place.

Problems arising from the oblateness of pipe stem holes were first met by me during the winter of 1915-16, at 17 years of age, *as a technical by-product of cinematography:* The case was this. A friend of my own age and his father, both lens-grinders seeking betterments, began a spare-time objective study of edge-fadings, distortions, enlargement limits, etc., of light-projected images, as part of their everyday trade of repairing anything in which a lens was part of

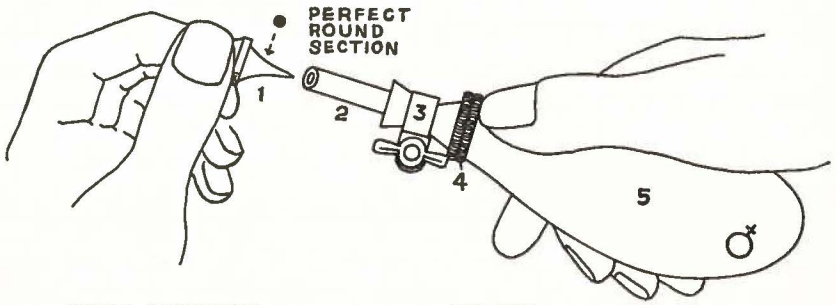
(1) Bulletin Archaeological Society of Virginia—Vol. 9, No. 4.
(2) Ibid.

the whole. As self-shadowing, three-dimensioned objects of small and tiny sizes, sizeable singly, or in multiples capable of forming set repeat patterns were demanded by some aspects of this study, pipe stem ends, which photograph as black dots with circles in triangulated piles (of 1 on 2 on 3 on 4 and so on when held together by rubber bands) were used in the making of some special "stills."

In practice, these piles were photographed *through* a 5 x 4 inch sized, one-twentieth inch graph screen, which was a glass (lantern-slide) positive photograph print of the 100 x 80 inch, one-inch, "photo-white" graph screen on to which the enlarged images were thrown. The "line-on-line" registration of both gave positive control of all enlargements, and by use of a further 10 x 8 inch sized hand screen (a further print from the 5 x 4 negative) *to lay on any image on the screen,* it was often possible to measure the nuances of the oblateness of the individual holes *at the level of .001 of an inch.* (one-thousandth).

So I early learned, with convincing proof that in pipe stem holes—

(a) some minute difference exists in any vertical to horizontal axis diameter in *well nigh all . . . certainly 99 — 99 +%;*
(b) that this difference can—and does—exist while remaining far too small to be seen, or realized, or measured (except by some extraordinary method).
(c) that the gauge of the nuances of these differences is infinite; and
(d) *—the most important of all—that any single pipe stem hole can—and does—have many.* As in a single stem of 16 inches a range of from .06 inch to .2 inch was found.



IDEA SKETCH
NOT TO SCALE

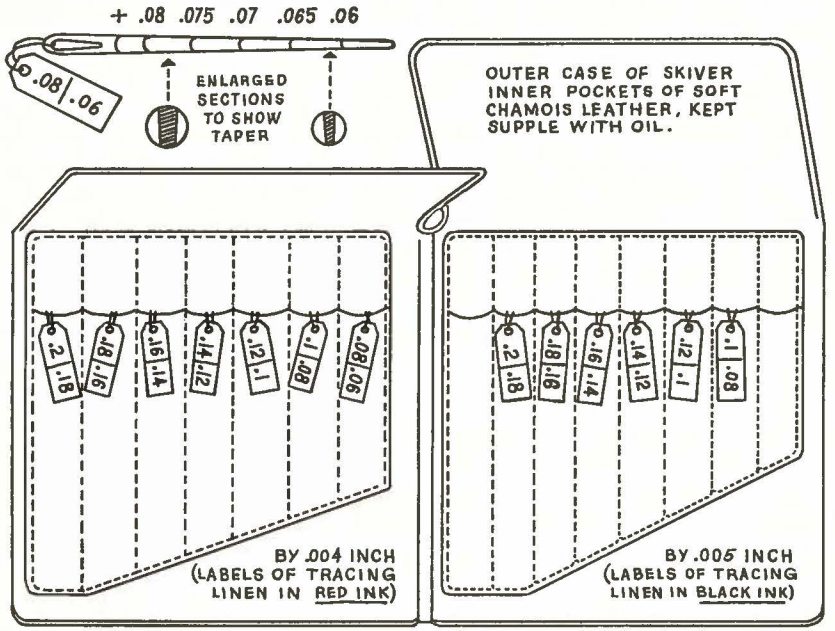
1. Concave Profiled Plug.
2. Tobacco Pipe Stem (under test).
3. Rubber tube with butterfly nut collar.
4. Vulcanized union.
5. Motor-cycle (or similar) horn bulb.

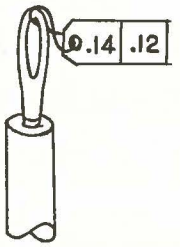
TO USE:
Fill bulb with water.
Insert pipe stem.
Tighten butterfly nut.
Insert plug in hole until it rests on edge of hole.
Hold gently in place and in upright position.
Squeeze bulb slowly and firmly.

Fig. 1

Of these things, we thought up and made the gadget of my Fig. 1. to find the nearly, and most perfectly "round" holes quickly and cheaply. So some two score years ago, two apparently irrelevant fields, simple hydraulics and the cinema-projector lens, produced the precise pre-testing gadget that Dr. Harrington's methodology lacks,—*but so very surely needs.* This *because he makes use of round carbon steel cutting tools (of a 7 plus hardness) within and upon irreplaceable pipe clay artifacts (of a minus 4 hardness) without a pre-testing for actual roundness.*

Some twenty years later, in 1935, a need arose to *accurately measurenoblatenesses,* when the tiny bore, ultra light gauge copper





INTERIOR "FEELER-GAUGES'
(as pocket kit)

TO USE:
1. Hold stem upright.
2. Insert gauge.
3. Allow it to rest *gently* by its own weight on the edges of hole.
4. Read by subtraction from largest size.
5. *Always measure 3 (or more) axises.*
6. Add all & divide for mean.
7. *Use only on clean artifacts.*

Fig. 2

tubes of a pressure oil feed of a tiny high-speed I.C. engine, became dilated by pressure and heat tensions. By using old knowledge, and thinking in what can be called "a two-axis way," *(i.e., accepting the fact that when oblateness occurs by natural law, it follows that any nuance of the axis–differentials can exist)* there evolved the small, flat sectioned, and round-edged "interior feeler-gauge" type of my Fig. 2. For metals, these are useable with practice at the level's of .002 inch, or less if the user is expert and the gauges supremely well made. They demand much practice in use, gentle handling, good keeping, a fine sense of touch, and periodic micrometer re-testings. They may be made from the larger needles of the sailmakers' and saddlers' "roung" ranges. For the measuring of pipe stem holes the increment levels of .005. (one-two hundredth) and/or .004 (one-two hundred and fiftieth) of an inch appear to be the lowest possible, unless the pipes are extra hard and partially vitrified by re-burnings. The ideal range is from .06 of an inch to .2 (one-fifth) of an inch. Note, that in U.S.A. larger sizes may be needed for native Indian made pipes in which an actual grass or reed stem, possibly left in the clay to be consumed in the firing, may take the place of a metal wire "piercer."

My making and use of such gauges began with a wish to note the stem hole sizes, in oblateness, as an item of each individual artifacts record. Many thousands have been actually measured and noted, and there was once a constant check and re-check to establish what co-relationships–if any–these sizes bore to the researched facts of wire gauge sizes of both England and European countries, specific localities, and-even-individual and dateable makers. *None were ever expected to evolve. None ever have. And, it is quite important to note that these have an actual direct impact, whereas "date periods" have none except by one remove by these things of direct impact.*

At these factually accurate low levels of increment, *which alone reflect the actual sizes and the truth, there exists a complete and unending chaos.*

At the end of much effort, no illusion born of any wishful thinking remains. But the tiring exercise does give three rewards. They are–

First, all precisions that truly reflect the precise and actual sizes only add to this chaos.

Second, that this chaos of sizes is the essential truth of the artifacts, and is right and proper.

Third, a clear idea of the "how" of the only way by which the

actual truths of this chaos can be twisted, or amended, or broken; by any one at any time; by inaccuracies, accident, and/or pervert design, by use of the two factors which, in combination, make this possible.

All this knowledge was held when Dr. Harrington's text and chart were published and brought to my notice by both English and American students of merit. Together and singly, his text and chart revealed that the two factors were in use, and that he had amended and broken the truth of the chaos, as he was bound to do by the limitations of his imprecise measuring tools and method. *But whether the whole of it was entirely by accident, ignorance, and inaccuracy–or pervert design was not clear, because its most startling perversion was an adoption!*

So to establish what was foolish and what was fell, my "Critique & Rebuttal" took the mildest form of using a sister chaos (one of a trio, in fact) of the historical and craft chiaroscuro for him to "Comment" upon. I gave a hint of the other (third) sister chaos, just as I do in this.

The four factors named earlier in this, plus the fact that he was not in ignorance of the historical chaos confirm his use of these two factors of mistruths to be deliberate and purposeful. And without doubt.

So, in my turn, it becomes my duty to show how and why.

The two factors that break or amend the truth to fill a purpose are:-

1. *Use of an ultra-small number of artifacts from a far larger–but actually available group.*
2. *Use of an adopted increment mean which is NOT the lowest possible and available to a method or means of measuring, but a larger, speciously plausible, and so acceptable one, i.e., to be non-scientific, to simplify tables and charts, and–mark well–so to inflate all the percentages of any such larger adopted (or chosen) sizes by actual imprecisions.*

Both are demonstrably present in Dr. Harrington's text and chart in this way. For the first–

He charts a piddling total of 330 artifacts, for a period of 180 years. The equations of the total artifacts to the total of years are:-

(a) Less than 2 represent each year.
(b) Less than 60 represent each 30 year generation of several thousand constantly working pipemakers.
(c) Less than 2 to represent each year in which the (averaged)

outturn per annum was 750,000 *gross* or more of pipes, i.e., 2 for 108,000,000.

(d) Less than 2 hours of work for any skilled moulder of pipes, as the standard "moulding" rate outturn was a minimum of a gross of 150 (six for breaks) per hour.

But let us remember his text reports his holding of 5,000 bowls and part bowls, and 50,000 pipe stem fragments. So much for the presence and use of the first factor.

Of the second factor. Here actual perversions and falsehoods can—and do—occur, all of which ask some explanation and exampling. But it is a very simple trick. In modern mass production of parts of things in many mechanical fields (automobiles, aircraft, bicycles, sewing machines, etc.), the metal parts that are made on automatic and other machines have fixed "oversize" limits for obvious reasons. These are always being constantly inspected to make sure that this limit (called a "tolerance," and, coloquially, a "let") is not exceeded. In this phase the raising of a mean works like this . . . . with a "let" of only .002 (two thousandths) of an inch, laid upon a batch of parts, some 25% may often exceed it, fail the acceptance standard, and the useful "production" drops to 45 of each 100 made. As this shows a financial loss on the 100 made, if it is possible, the "let" is raised to .003 inch, the rejected parts are retested and a gain of 15 per 100 is now useable, i.e., an increase of 20% in "production" by 75 plus 15. If the "let" could be raised once more to .004. inch, the rejects are less than 1%. So by doubling the "let" the "production chart" in the executive's office can increase the "production" by 33%, (on paper).

Let us now call this "let" an "increment mean" and apply this knowledge to Dr. Harrington's chart, like this.

1. *His 128th increment is (a) the lowest possible and most exact by his method; it comes closer to the truth of the artifact sizes. It is also, (b) the always lowest available to him, and can be used BUT . . . . it is deliberately dropped with the plausible but quite specious reason of being non-scientific, and its causing a complexity of facts, which are themselves the truths or near-truths of the artifacts sizes.*

Therefore he makes an exact and exacting claim upon results that have no exactness regarding what is there in the artifacts, but only "an exactness that is not there." (to use his own words.)

But, statistical applications and such specialized jargon apart,

what,—in fact—does his chart of results gain, as did the "production chart" of my example? The gains are:- He is enabled to

1. Eliminate all the 128th columns;
2. Eliminate all records of any of actual 128th increment size that he found;
3. Eliminate thereby their actual percentages;
4. Able to record all these somewhere and elsewhere to create a set of "essentially" false and untruthful percentages of (a) the precise and actual sizes of the artifacts, and (b) the methods which he extolls and belauds.
5. As all the tabulated percentages of his chart are directly amended by—and only by—this adoption of a factual in precision that is twice as large as that inherent to his method at its very best . . . the chart tables, at his wish, only those inflated percentages that its author desires, by subterfuge.

So much for the presence and use of the second factor. Of all these things he therefore makes a claim for a date-pipe stem-hole correlation that does not exist, in fact, in the artifacts, or in truthfulness.

Lastly, to slake his thirst for proofs. Here is one that uses no charts, cyphers, quotes, or words. It is a job of practical pipemaking.

Take any old 12 inch piece of pipestem, oil it, and make a two-piece (pipe mould type) casting of it in "Herculite" or similar non-contracting plaster. When hard and dry (24 hours at least), roll out three rolls of pipe clay (vary, if possible). Fill the mould with the first, en-vise it, using wood slats to protect the mould from the vise-jaws. Now pierce the clay stem with a 12½ to 13 inch handled wire piercer of one-sixteenth inch diameter. *Rotate the wire in the stem when full through.* Withdraw the piercer, take out the mould from the vise, remove a half, mark with a single nick as No. 1. Remove stem and set to air-dry. Refill the mould, en-vise again, push through the piercer again, but this time without rotation of any kind; while in the clay, mark the upper center of the handle and withdraw on the same line. Now treat as No. 1, using 2 nicks to identify it as No. 2.

Refill the mould, en-vise again, but—this time— push the piercer through with the mark on the handle at the underside and central. Draw out on the same line, treat as before but with 3 nicks.

Air-dry for 30 hours, then fire in any electric oven at highest—approximately 750° for 24 hours. Allow to remain in the oven until cool. Next mark No. 1 lengthwise with a blue-black ink line; No. 2, scarlet, No. 3, green. Now saw all into 1½ inch lengths, and

measure with "feeler-gauges" of the type of my Fig. 2. I shall abide with all that he finds, as I know very well that all will have oblateness, and that No. 1, will, in a single stem, produce all the range of 64th of his methodology's dates and table. But then, Dr. Harrington's illusions will have vanished.

John F. Chalkley

Aug. 5-6, 1955
London

The Problem of Early Man in the Delaware Valley

by

Eugene Lutes, Jr.

With an unbelievable number of archeological reports coming out each year describing new finds in almost every quarter of the globe, some old problems have been pigeon-holed in libraries and musty museum storage rooms.

The discoveries of Folsom, Yuma, San Jon and similar finds shifted attention of American archeologists, interested in the earliest evidences of man in America, from the Delaware Valley to points west. After digesting the available information concerning these spectacular associations of human artifacts with extinct animals, areal specialists searched artifact collections from their areas in quest of fluted and oblique flaked points. A typological set of criteria was seen which could place the stamp of antiquity on many artifacts which had been acquired by professional archeologists and amateur collectors. This method of classification, based solely on the appearance of projectile points, to some is the only determining attribute required to assign sites or individual points distant niches in time. If those who hold this viewpoint are correct, then the major part of the continental United States, parts of Mexico, and Canada can boast of a fairly early occupation by hunters using the requisite points, since their distribution is wide in North America.

Bearing this in mind let us review another series of discoveries which led to faulty and incorrect conclusions and hope that we are not again on the road to error.

The conflicts relating to the antiquity of man in the New World were legion and scientific journals of the last century and this century prior to 1927 were filled with arguments for and against any substantial time depth for human occupation in the Americas.

One such issue was that of early man inhabiting the Delaware Valley during or shortly after the last glaciation. To set the stage for this controversy we must go back to the 1860's when American archeology was in its infancy. The discoveries of the European lithic cultures were well received by American antiquarians who were eager

to make American soil yield artifacts which could be given French names. However, this was difficult even to those persons endowed with well developed imaginations. But these early antiquarians were a determined lot—they were able to recognize American Paleolithic and Neolithic artifact types. The following diagnosis of Wilson (1889) is typical of the insistence of a correlation being present between Europe and America.

"Palaeolithic implements from the District of Columbia, indeed from all over the United States are always chipped, never polished, are almond shaped, oval, or sometimes approaching a circle, the cutting edge is at or towards the broad end. They are freqently made of pebbles, the original surface being sometimes unworked in places."

Eventually two schools of thought evolved concerning early man in the New World: the Paleolithic man school, represented by Abbott, Volk, Putnam, etc., and the Recent or Neolithic man school, spear-headed by Holmes and Hrdlicka.

The Paleolithic man school based almost all of its arguments on finds made in northern Delaware and the area around Trenton, New Jersey. In this paper I shall attempt to sketch some of the points of evidence about which the storm of controversy raged, namely, the discoveries of Cresson in Delaware and of Abbott and Volk in New Jersey.

The finds of Hilborne T. Cresson, a resident of Germantown, Pennsylvania, made in the vicinity of Claymont, Delaware gained much scientific attention during the late 1800's. The first of his spectacular finds was that of a large shell pendant on which was incised a crude but obvious mammoth. Peat diggers had shovelled this important object from a deep hole near Holly Oak Station, Delaware. Cresson and a companion retrieved it from the debris and noted that the shell was encrusted with patination indicating a long burial. (Weslager 1944:30-32). This specimen is on display at the Smithsonian Institution, Washington, D. C.

Here I must point out one important fact—the incised mammoth was not seen by the peat diggers or Cresson's friend at the time of discovery. After taking the pendant home and washing away the dirt, Cresson discovered the animal (Weslager 1944:31).

In reference to Cresson's mammoth, we should also consider the fact that his find was made in 1864 and previous to this in the 1840's, the first incised bones bearing representations of glacial fauna were found in Europe, while in the early 1860's depictions of animals engraved on cave walls were first seen in Europe.

Perhaps the implications of these comments seem strong but as we shall see Cresson's finds seem too extraordinary and today there is no way to check the sites where they were made.

Cresson's next revelation was that of the wooden piles driven into the old bed of Naaman's Creek near Claymont. Associated with the piles were a large number of argillite artifacts such as scrapers, points, and flakes. His assemblage ultimately was composed of stone sinkers, projectile points, knives, hammer stones, and potsherds. He first believed that the piles represented a pile village similar to those found in the Swiss lakes., (Cresson 1887:363-65). But after being questioned by informed persons he later changed his opinion from pile village to fish wier. (Cresson1892) He sent some of the rotten piles, some of the associated peat, and about 600 artifacts to Putnam at Harvard. This collection is still retained by the Peabody Museum and since the site has since been destroyed, represents the only vestige of the piles.

Another important excavation undertaken by Cresson in 1866 and 1867 proved beyond the shadow of a doubt, he said, that an early pre-Indian man had his home in the Delaware Valley. (Cresson 1888-89) His discovery of a rock shelter near Claymont, showing three occupation levels, yielded more than a thousand artifacts. In the report Cresson (1888-89) indicated that the three distinct artifact bearing strata were similar to the three strata reported in New Jersey by Abbott which we will mention later.

As usual, no one of any scientific standing observed the excavation and the position of the artifacts in the ground was known only to Cresson.

The ultimate value of Cresson's discoveries and their bearings on the problems of ancient man was well stated by Mercer (1897) when he wrote that they "have been eliminated from the discussion by the writer on the doubts current at Claymont and elsewhere on the accuracy of the observations."

Let us now turn from Delaware and Cresson to New Jersey and Abbott. Dr. Charles C. Abbott became interested in archaeology right in his own back yard. The site of the Abbott farm, near Trenton, once was a rather large Indian Village and the doctor enjoyed collecting Indian relics which were liberally scattered about the premises. As his relic collection swelled, Abbott claimed that three distinct cultural horizons were manifest at his farm: the black humus or historic Lenni Lenape; the yellow sand or argillite culture; and the Trenton gravel, or Paleolithic man culture. (Abbott 1872)

In his numerous wordy writings Abbott maintained that the Trenton gravel, the deepest deposit, represented debris from the last glaciation which terminated above Trenton, and that the odd-shaped stones found associated with the deposit represented the artifacts of a pre-Indian or glacial man.

The middle stratum, composed chiefly of a yellow sand contained a predominance of artifacts made from argillite, a tough shaley rock, but no traces of pottery. Fairly large pebbles were reported found in association with the artifacts. Abbott termed this assemblage the "Argillite culture" and believed it to be much older than the overlying Lenni Lenape horizon.

The upper layer, composed of humus soil, contained burials, fire hearths, pottery, and other objects of the Lenape Indians including trade articles of European and/or Colonial manufacture.

Putnam of Harvard became extremely interested in the discoveries at Trenton and encouraged Abbott to continue his work.

Abbott produced several reports in which he proclaimed a great antiquity for man in the Delaware Valley. He was a very persuasive writer who could build a rather profound sounding treatise on evidence which today would be considered incomplete, negligible, and irrelevant. His field technique was that of random relic hunting with little or no attempt to document or accurately describe the conditions under which his objects were found. It is unfortunate for us today that most of his material is virtually useless as data for establishing the true circumstances of human occupation in the Trenton area.

With the advent of Ernest Volk, an elderly gentleman of leisure, some semblance of systematic procedure was initiated at Trenton. Volk was commissioned by Putnam to examine new excavations around Trenton for more evidence of early man. He was responsible for adding more color to the already bizarre archaeology of the Delaware Valley in the form of a musk-ox bone and fragments of human skeletons.

The excavation of Lalor Field, a bluff about a mile northwest of Abbott's farm, was undertaken by Volk in 1889 and continued to the latter part of 1910. This excavation and inspections of cemetery diggings, railroad cuts, and sewer trenches led Volk to conclude that there was strong evidence of a well defined "Argillite culture," thus corroborating Abbott's contention.

Volk stirred up much interest by discovering a musk-ox bone (Bos moschatus) in a sand pit near Trenton which he assigned to

the Trenton gravel. The animal bone was reported found ten feet below the present surface. In the same pit Volk also found a fragmentary human femur seven feet seven inches from the surface and twenty-four inches from this, part of a human parietal. Volk took the presence of the musk-ox bone to mean two things: since the animal bone was preserved, human bones could also be preserved; and the depth of the human bones indicated that man and the musk-ox must have lived together during glacial times. (Volk 1911)

After critically reading Volk's account, I submit that the association of the musk-ox bone with the Trenton gravel under these circumstances be dismissed as irrelevant to the problem of early man in the Delaware Valley. The bone was not found in situ by Volk, but by a laborer digging in the pit who reported his find to Volk. There was no direct association of the animal bone with any evidence of man either skeletally or artifactually. The human bone fragments, found in another part of the pit, might have been washed down from a higher level, since it had rained the previous night. Yet, Volk stated that he strongly doubted this possibility. (Volk 1911) The whole tenor of these discoveries is that of uncertainty and their significance should not be used in any valid appraisal of New Jersey archaeology.

Volk was a persistent investigator but there was much lacking in his procedure and reporting. He seemed determined to make his observations and finds fit the three-strata scheme of Abbott and he may have distorted some facts in an effort to emphasize the application of some data. We must, however, recall that Volk was an early worker in a science which had not yet developed any true standards of procedure.

Abbott, in an attempt to quell the controversy, which increased with each discovery, invited Alanson Skinner of the American Museum of Natural History to excavate on his farm in 1914. Skinner, assisted by Leslie Spier, investigated the implications of the "Argillite culture." Their findings seemed to verify Volk's observation that this culture was relatively simple, lacked poetry, and was distinct from the Lenape culture of the overlying black humus. (Spier 1918)

In 1915 Hawkes and Linton excavated a site near Medford, New Jersey and found argillite blades, banner stones, and animal bones associated with a yellow sand deposit. (Hawkes and Linton 1916)

In the conclusion of her extensive report of New Jersey archeology, Cross (1941) states that there seems to be little evidence of an "Argillite culture" separated in time or content from the Lenape

manifestations. She also feels that if the original inhabitants of the state were without pottery, they quickly acquired its use.

Since Abbott and Volk based their three culture horizons mainly on the geologic strata in which the artifacts were found, let us consider some of the modern geologic studies of the Trenton gravels and the yellow sand deposits. Abbott was convinced that the Trenton gravel represented a glacial deposition. But the studies of New Jersey geology made by MacClintock and Richards (1936) indicate that the Trenton gravels are post glacial. If radiocarbon dating is reliable, that would give us a lower limit of about 10,000 years for this deposit.

The origin of the yellow sand is not altogether clear but it may have been formed in part by the deposition of aeolian or wind-blown sand. (Richards 1939)

Although geology has moved the Trenton gravels up in time the artifacts found in them must be reckoned. I suggest that an analogous situation which prevails in Europe, the problem of eoliths, may be a partial answer. Many so called eoliths probably are works of nature which have been accepted by some students of early man as human artifacts. Some of the glacial artifacts found by Abbott may be quarry blanks of later Indians such as those mentioned by Holmes (1897). At present there is no evidence of early American man evolving a stone culture from a lower Paleolithic technology. The superb techniques of the Folsom and Yuma complexes show that early man in the New World possessed a highly developed lithic technology far removed from crude hand-axes and the like.

The problem of the "Argillite culture" cannot be brushed away quite so easily. There seem to be three possible answers to the evidences on hand.

1. An early (pre-Lenape) hunting and gathering people without pottery occupied parts of Delaware and New Jersey well after the deposition of the yellow sand. They used argillite and shale as raw materials for implements since these minerals were readily available in southern and central New Jersey. Since they lacked pottery they cooked game and shell fish (coastal areas) in pits excavated into the underlying yellow sand. Cooking was accomplished by heating rocks in fires on the surface of the ground and tossing them into the pits. Food was then placed over the hot stones and moist sand was pushed in over the stones and food. The cooked food was recovered and the fire heated stones left in the pit. This may explain the presence of stones in the otherwise homogeneous sand, particularly in site areas. Due to the slumping nature of the sand, the leaching effect of water, and the absence of fire contact there would be little evidence of a pit outline, thus giving the appearance of the stones being part of the yellow sand deposit. Broken or lost stone implements, perhaps used in preparing the food and stray pieces of hunting equipment would eventually fall into the excavations and also seem to be part of the yellow sand. We should also consider the Indian practice of seasoning blanks in caches, which if done in the yellow sand would give the appearance of an association of artifacts in this deposit.
2. There were two distinct Lenape site types—the village site and the hunting party site. The village site would contain the complete stone assemblage plus pottery since every phase of material culture would be present. Hunting parties on the other hand, would necessarily travel light leaving bulky, fragile pottery at the village. Cooking may have been done by the previously mentioned hot stone method. A camp site of this nature would lack pottery, and contain an assemblage very similar to that reported by Hawkes and Linton (1916).

Studies of seasonal migrations and occupations may help to affirm the existence of hunting and other semi-permanent Lenape camp sites. For example, the Minsis, who lived on the Delaware River in northwestern New Jersey, made seasonal treks via the Minsi trail to the Atlantic coast to obtain shell fish. It therefore seems reasonable to assume that fairly long range hunting ventures were also undertaken.

3. A combination of the two preceding postulations occurred separately in time and we are not yet able to distinguish the first group from the Lenapes.

In relation to these theories it should be mentioned that Weslager (1944:102-103) described pits on the coast of Delaware where evidence strongly points to the use of hot stones for cooking oysters in pits. Regarding pits found in New Jersey, Cross (1944:210) writes that "Considerable leaching has occurred in the pits and with the exception of those containing large quantities of charcoal or decayed vegetable matter, the outlines were barely discernable."

Perhaps one of the most disturbing features of the archeology of the Delaware Valley is the conservatism of the Indians. Stone working techniques changed very gradually and no convenient innovations of technique or form are apparent enough to warrant even a relative chronology based on typology. We would not expect this relative homogeneity in time if we were dealing with any great temporal depth.

Even with a comparatively short duration of a thousand years we should be able to distinguish a transition from hunting and gathering to horticulture and the use of pottery. Yet, these innovations are not at all clear.

Therefore the only conclusion we can draw at this time is that the Delaware Valley was not occupied until fairly recently, probably only a few centuries before white contact, with the possibility that previously stray bands of ancient hunters of extinct animals roamed the area sporadically but left little evidence of their visits.

Thus we see a strange paradox in the Delaware Valley—recent archeology has vindicated the occurrence of early man in the New World, but has negated his existence in the Delaware Valley, once thought to hold the solution of this important problem.

The archeology of the Delaware Valley is still not well known and future work may completely change our present viewpoints. Even the origin of the Lenapes is shrouded in mystery. But with new techniques becoming available to archeology and higher standards of reporting required for excavations, our knowledge of Delaware Valley archeology should be greatly enriched in the near future.

391 Gilbert St.
Ridgewood, N. J.

Eugene Lutes, Jr.

BIBLIOGRAPHY

Abbott, Charles C.

1872 The Stone Age in New Jersey. American Naturalist, Vol. 6:144-160, 199-229. Boston.

Cresson, Hilborne T.

1887 River Dwellings In The Mud Flats of the Delaware River. American Antiquarian, Vol. 9, No. 6.

1888-89 Early Man In The Delaware Valley. Proceedings Boston Society of Natural History, Vol. 14, Pt. 2.

1892 Report Upon A Pile Structure in Naaman's Creek near Claymont, Delaware. Archaeological and Ethnological Papers of the Peabody Museum, Vol. 1, No. 4.

Cross, Dorothy

1941 The Archaelogy of New Jersey, Vol. 1. Trenton.

Hawkes, E. W. and *Ralph Linton*

1916 A Pre-Lenape Site In New Jersey. Anthropological Publications of the University Museum, University of Pennsylvania, Vol. 6, No. 3, Philadelphia.

Holmes, William H.

1897 Stone Implements of the Potomac-Chesapeake Tidewater Province. Bureau of American Ethnology, 15th Annual Report. Washington.

MacClintock, Paul and *H. G. Richards*

1936 Correlation of Late Pleistocene Marine and Glacial Deposits of New Jersey and New York. Proceedings of the Geologic Society of America, Vol. 47:289-338.

Mercer, Henry C.

1897 Researches Upon Antiquity of Man In The Valley of Delaware. Publications of the University of Pennsylvania series on Philology, Literature and Archaeology, Vol. 6. Philadelphia.

Richards, H. G.

1939 Reconsideraton of the Dating of the Abbott Farm site at Trenton, N. J. American Journal of Science, Vol. 23:716-754.

Spier, Leslie

1918 The Trenton Argillite Culture. Anthropological Papers of the American Museum of Natural History, Vol. 22:167-226. New York.

Volk, Ernest

1911 The Archaeology of the Delaware Valley. Papers of the Peabody Museum of American Archaeology and Ethnology, Vol. 5. Boston.

Weslager, C. A.

1944 Delaware's Buried Past. University of Pennsylvania Press. Philadelphia.

Wilson, Thomas

1889 The Palaeolithic Period in the District of Columbia. Proceedings, U. S National Museum for 1889, Vol. 12:371-76.

Eleutherian Mills – Hagley Foundation

by

Joseph P. Monigle

In recent years a considerable amount of public interest has been generated by the increasing number of restorations of notable early American buildings and historic sites. Where as even as late as the opening of the 20th century only a few structures associated with outstanding individuals and events from the American past could be pointed out as examples of authentic, painstaking restorations by patriotic groups and individuals, today many homes and even whole reconstructed villages may be seen. The best known of the larger projects, the rebuilding of Williamsburg, Virginia, which was begun in 1927, added tremendous impetus to the movement to save America's irreplaceable heritage.

With this widening interest in professional restoration, the archaeologist's job grew apace. A field of investigations which had hitherto seemed too recent to merit serious attention was found in actuality to be demanding of the most careful study.

The most recent restoration of major importance was dedicated this past summer at Saugus, Massachusetts. Costing almost two million dollars, this 17th century iron works, the first to be established in Colonial America, has been faithfully reproduced down to the last detail. Locally, the State of Delaware is currently engaged in bringing back the handsome Dickinson mansion near Dover to a condition commensurate with the importance of its builder. Many interested citizens are greatly concerned also with the condition of the Old Court House in New Castle, and are organizing an attempt to have the State finance the same sort of reconstruction there; an architectural survey of the ancient structure has already been accomplished through private funds.

Another related project of this nature is located just outside Wilmington on Brandywine Creek. Here the Eleutherian Mills-Hagley Foundation has begun work on restoring the site of the first duPont powder mills, an operation which is slated to take some years to accomplish.

Created and endowed by the duPont Company following that

organization's 150th Anniversary in 1952, the Eleutherian Mills-Hagley Foundation was chartered under Delaware law as a non-profit, charitable, educational institution. The Foundation was donated 168 acres of land along the Brandywine which encompass the original area of powder manufacture, and which had been divided and sold to various members of the family following the close of the yards in 1921.

Since the two sections of the powder yards had always been known as the Eleutherian Mills and the Hagley Yard, it was felt appropriate that the names be perpetuated in that of the new Foundation. A Director of Research and Interpretation was named in April, 1954. He is Dr. Walter J. Heacock, who came to this post from Colonial Williamsburg where he was Director of Exhibition Buildings.

As the first step in its program the Foundation undertook to adapt as a museum the large stone Henry Clay Factory building which has a long history of varied usage by the duPonts and tenants since its erection in 1814. When completed this building will be known as the Hagley Museum. It will tell through the media of models, dioramas, and display of artifacts and other material the story of early industrial activity along the Brandywine, with particular attention, of course, to the story of the duPont family enterprise which began here in 1802.

Of the approximately one hundred buildings which dotted the area at its manufacturing peak, about thirty survive today; most of these are of the native Brandywine granite. They range in size from the Henry Clay building which is the largest, down to small stone outbuildings used in the manufacture of black powder. The finest building is "Eleutherian Mills," the mansion built in 1802 by Eleuthere Irenee duPont as his home and place of accommodating business guests. Also remaining are the original office building of the same date, and the small home where the duPonts lived while their larger quarters were under construction.

Twenty-two powder mills, stripped of their heavy cast-iron rollers during a World War II scrap drive, still stand on the banks of the Creek. Despite their unusually massive construction, most of them have been damaged severely and rebuilt time and again as a result of explosions. (In seeking to minimize blast damage the mills were constructed with heavy stone walls on three sides but with flimsy wooden roofs and facades. Through this design it was intended that in an explosion the building would act something like a mortar, directing the violent force harmlessly across the stream.)

The Eagle Mill, the first mill constructed by E. I. duPont on the

Brandywine in 1802, was razed in the 1920's, but its sturdy granite foundation survives. Eventual reconstruction is planned on the original site. Fortunately, the excellent working drawings made by E. I. duPont himself a century and a half ago remain and will be the basis for an identical restoration.

Oldest of the remaining mills still standing are a pair which have been called traditionally "The Birkenhead." (It is thought that possibly the Brandywine at this site reminded some of the workmen of the Birkenhead River, in England.) These twin mills, which date from 1822-24, are slated to be the first to be restored in the Hagley Yard. Their mammoth wooden waterwheel will be reconstructed, and visitors will be able to witness an elemental force of nature once again furnishing motive power to industrial machinery as it did for centuries in America.

In its long-range plan the Eleutherian Mills-Hagley Foundation hopes to re-create the mood and some of the physical plant of an unusual industry. To accomplish this satisfactorily a considerable amount of research by staff members will be required. Company records from 1802 to the first years of the 20th century have been made available to the Foundation for this purpose. Also a specialized library dealing with the industrial history of this nation is being assembled for the use of the staff and interested students.

It is obvious that any accurate restoration project such as this must be concerned likewise with the unearthing of relevant artifacts which will cast additional light upon details. The preliminary excavations at Saugus are an outstanding example of the sort of working cooperation between archaeologist and historian which can result in an authentic restoration. At this site a tremendous amount of early industrial paraphernalia was discovered when a modern street was re-routed to enable the iron works area to be worked.

There can be little doubt that the area on the Brandywine is similarly rich in undiscovered relics. In the basement excavations at the Henry Clay Building, for instance, several dozen interesting iron gears, tools, and other material were brought to light. At several as yet un-pinpointed areas other mills were in operation on the property before the coming of the duPonts. Included among these areas which the Foundation hopes eventually to explore is the site of what is said to be the first real cotton factory in Delaware, dating from 1795. An 18th century slitting mill and saw mill are also known to have existed here. Staff research will be directed to locating the exact sites.

Understandably there are purists among archaeologists to whom anything later than Indian material is anathema. However, an increasing awareness exists among professional and amateur archaeologists alike that recovering objects which can shed more light on how our own ancestors lived and worked in Colonial times and even later properly falls under the responsibility of the archaeologist. The recent fruitful excavations at the Dickinson Mansion by members of this Society is a timely example of the valuable aid which the amateur archaeologist imbued with this spirit can offer the restoration expert. The Eleutherian Mills-Hagley Foundation is hopeful that the same sort of interest on the part of the Delware Archaeological Society will apply to their industrial sites on the Brandywine.

26 The Strand *Joseph P. Monigle*
New Castle, Del.

Notes from the Travel Log of the Sedwicks Peru, 1950

People in Lima never have to worry about rain when planning picnics or outings during the summer months of December, January and February; but during the winter they have weeks when a heavy overcast or mist hangs over the city constantly and the sun shines at rare intervals. Twenty miles away the sun shines brightly all winter.

At very rare intervals a stray cloud happens to wander down from the mountains and a few drops of light rain surprise the "Limenos" as residents of Lima are called. Back in 1925 a very exceptional downpour upset everyones calculations and did much damage in Peru—particularly to some of the old pre-Inca ruins which had been so well preserved for centuries in that rainless land.

Lima is a large city of nearly one million inhabitants, and ever since its founding by Francisco Pizarro in 1535 has been one of the leading cities on the west coast of South America. It is both a modern city and an ancient one—a busy metropolis of wide boulevards and stunning homes built side by side with the old, narrow Spanish streets and shacks of the crudest type imaginable inhabited by primative Indians who still wear their hair in braids and carry their babies in blankets on their backs. Almost 50% of Peru's population are Indians, and one can't travel many blocks in Lima without meeting several, often barefoot and clad in brightly colored garments.

Pizzarro chose the site of Lima because of the wide Rimac River valley and the excellent port nearby—Pizzarro called Lima the "City of the Kings," because he chose the location of it on the Day of the Kings (Epiphany), January 6, 1535. This day is celebrated as one of Peru's many national or religious holidays each year.

Time will not permit delving into history, but all of us at one time studied the conquest of Peru by Pizarro and his small band of Spanish Conquistadores who came to get gold under the pretense of bringing religion to the natives—and of the struggle and violence which ensued. His conquest can be characterized by the three words—Greed, Gold, and God. After realizing what an unique civilization the Incas had before he so ruthlessly destroyed and looted

its treasures, one cannot help wondering what would have been the result today if the Incas had been allowed to progress unmolested. There were in addition the pre-Inca tribes who lived so long ago that nobody can ascertain their exact epochs, but we do know that the Inca tribes later came along and built many of their buildings on the ancient foundations they found standing. Neither the pre-Inca nor the Incas left written records of any kind so students of archaeology and history have had to interpret their civilization from the walls of the amazing cities left standing and treasures unearthed from old burying grounds and other sources which did not happen to be destroyed by the Spaniards. Their origin seems to be unknown and unknowable.

Not far from Lima are two large ruins of ancient cities which we marveled at and found intriguing. The first is known as "Pachacamac" with its huge Temple of the Sun, believed to have been the Holy of Holies as a place of worship for early pre-Inca peoples; and not far away is a so-called Temple of the Moon, which is in the process of reconstruction so that people may have a better idea of what it may have looked like in earlier times. This city was located beside a green valley and only a stone's throw from the Pacific and covered quite a large territory. Some of the walls left standing still show the original red decorations, and there are steps leading to various levels of the adobe brick temple.. Many valuable relics have been recovered from the burial mounds and ruins and are on display in the various museums in Lima.

The ruins of the other ancient city are called Cajamarquiia, and are a maze of adobe walls, cisterns, etc. No serious attempts seem to have been made to unearth treasures here or to study the ruins to any considerable extent. It covers many acres at the foot of the Andes not far from the Rimac River, and must have housed hundreds of families.

Another trip to an old Inca burying ground near Ancon (north of Lima) turned into a digging expedition. Digging into this dry sandy dirt for treasures from 1,000 to 3,000 years old was a thrilling experience. The remarkable preservation is due to the lack of moisture, and we found numerous interesting artifacts.

While on the subject of old ruins, this seems like a good place to touch upon our trip to northern Peru and the visit to the old ruins of Chan Chan near the town of Trujillo. These ruins were in an excellent state of preservation prior to the unprecedented rains of 1925, we were told, although of great antiquity and covering an area of great size. Many great, thick walls of adobe are still well preserved,

and the University of Trujillo is doing some interesting excavation work on the grounds and in some of the old "Huacas," (burial mounds).

One of the interesting places to visit in the vicinity of Trujillo is the Chiclin Hacienda and sugar plantation where the owners Senor Rafael Larco Herrera and son, have one of the most remarkable collections of old Inca pottery, textiles and other relics in the whole country of Peru. We went through room after room of the most interesting specimens, all carefully catalogued and arranged in a systematic order. Students of archaeology come from all over the world to see and to study this remarkable collection, which the owners generously share with anyone really interested. One has to see this collection to appreciate it—the exquisite weaving, combining wool and feathers still in perfect condition, the gold and silver articles, old toilet articles, bottles, mirrors, jugs of all shapes and descriptions.

Returning to Lima we visited the well known Archeology Museum, which contains innumerable interesting specimens and historical sketches of the various ancient Peruvian peoples, where one could spend hours learning about the customs of these primitive tribes. At the Natural History Museum and the Historical Museum we gained much information that was later useful.

Later we visited Cuzco the historical capital city of the ancient Incas, located in a beautiful mountain circled valley at an altitude of over 11,000 feet. Cuzco is known as the archeological Capital of South America. The name Cuzco means "navel" signifying the vital center of the Inca empire which extended all the way from Quito, Ecuador, to Bolivia and parts of Chile, Argentina, and Brazil during the height of its splendor. Four roads led to the four corners of the empire and still do. After flying over the extremely mountainous terrain one better realizes the tremendous task it must have been to build these roads without any of the machinery or other aids we consider essential today. The old pre-Inca and Inca stone foundations and buildings which remain after many centuries are still architectural marvels, yet no trace of any knowledge of the wheel or arch, iron or steel, and no written records have ever been found. Students of archeology have had to piece out the story of these people and their remarkable civilization from the remnants of many artifacts which have been found.

Cuzco was pitifully damaged by a severe earthquake in May, 1950, and there is still evidence of the disaster, which can never be entirely repaired.

How thrilling it would be if one could turn back the pages of

history to about 1,100 A.D. during the reign of the Incas and see what was happening! There are many legends about the founding of Cuzco, but the favorite one concerns the Inca Manco Capac and his sister-wife, Moma Ocllo, who were "Children of the Sun." They are said to have been placed on an island in Lake Titicaca and given a golden staff and told to go forth and thrust it into the earth. When it disappeared at the first thrust, it would be a sign of fertility. At the spot so indicated they were told to erect a Temple of the Sun, collect the tribes of the surrounding country and found a capital. The staff chose the site of Cuzco in this manner and the Temple of the Sun was built, with its remarkable foundations still standing in the heart of the city.

It is one of the most famous of the many examples of old Inca (or probably pre-Inca) stone work, put together without mortar and fitted and locked so closely together that neither earthquake nor time have caused them to become loose enough to even insert a pin between the various stones. Many of the streets in Cuzco are very narrow with houses built on the old Inca foundations, just as the Spaniards built them after the conquest. In some places one can see where attempts have been made to rebuild the old Inca walls, and the original stones have been numbered for restoration purposes, but the completed job lacks much of the original perfection. Spanish influence is much in evidence, superimposed on the Inca work.

Being the important capital of such a vast empire, Cuzco needed strong protection from enemies; and the ruins of several massive forts are not far away.

High upon the hilltop near Cuzco stands the remains of the pre-Inca ruin of Fort Sacsahuaman. It is truly a marvelous piece of masonary work, with its colossal stone ramparts which could have been placed only with the greatest human labor. Soldiers and architects consider this fort amazing and almost unbelievable. One just about gives up trying to figure out how it was ever built. The Spaniards later used the fort as a quarry utilizing the stones which they were able to loosen to build in Cuzco.

In the vicinity are many other foundations of interest, such as the Inca's Bath, the Inca's Throne and many hidden passages and stairways. Kencko ruins not far away contains the most unusual rock carving and another nearby fort called Puca-Bucara contains many interesting features.

From Cuzco we went to Machu Picchu for a two day visit. Machu Picchu is a village located in the beautiful valley of the

Urubanba River. This valley is known as the Sacred Valley of the Incas, 2,000 feet above this valley on Machu Picchu mountain are the phantom ruins, which was to be the high spot of our entire South American trip.

For more than three centuries the jungle had covered these ruins, and not until 1911 were they finally discovered by Hiram Bingham. From his various studies he had come to believe that there was an old city in this vicinity, and offered rewards to the natives if they could give him information which would help him locate it. At last he was successful, but when one sees the strange location he marvels that it was ever found. It was on a narrow saddle of ground between the steep sides of Machu Picchu and the smaller Huayno Picchu mountain not far awawy. In 1913 The National Geographic Society sent Mr. Bingham to Peru with an expedition of experts to reclaim and clear the site which had been discovered two years before. The ruins exceeded even their fondest dreams, and they did a masterful job of "finding" this strange lost city covered with centuries of jungle growth. Evidently the Spaniards never found it, so that it had not been demolished.

Some believe it may have been one of a series of forts built along the Urubanba River to protect Cuzco, and it was ideally located for this purpose with three sides surrounded by the river at the foot of the mountain far below and the fourth side protected by a steep, rocky mountain. Others seem to prefer the theory that it was a refuge for the Inca and some of his precious Maidens of the Sun, who served him. Portions of the ruins seem to indicate that there were rooms for various ceremonials and for the purification ceremonies of these Maidens among the maze of walls, stairways, aqueducts and living rooms left standing. On one side of a central cleared space, it is believed that the Inca had his domain, and on the other side was the domain of the Maidens. One very interesting round tower-like building built on a natural rock seems to have been the center of some unusual ceremonies. Further on seems to be a main altar, with a huge marble monolith and exceptionally fine stone work. Leading up from this altar is a long flight of stairs to the great sundial where it appears they made astronomical calculations.

Many steps and terraces lead from the various levels of the ruin, and leading down from the center is a curious series of seventeen fountains with ingenious means of controlling the flow of water. We counted 85 steps in one of the main flights and were told that there were some 3,200 steps in the entire area.

The same kind of masterful stone work seen in Cuzco is found

in these buildings. Here they quarried their own stone on the premises out of native rock, but how they cut and fitted them with such perfection without mortar of any kind is a mystery. There is nothing like this old stone work anywhere in South America and probably in the world, and the secret of it all is locked within these great stone walls.

Two distinct kinds of stone work can be readily seen in the old walls, and this has puzzled archeologists for years. They have tried to piece together the true story, but lack the necessary records of these prehistoric times to do so. Superimposed on this exquisitely constructed stone work is a much more carelessly done kind of stone work using small stones put together without the locked angles and closely fitted joints. Some students believe the exceptionally fine work must have been done by still earlier pre-Inca tribes, and that the Incas found these foundations still standing and used them to build upon.

* * * * *

The above article is made up of excerpts concerning archeology from The South American Travel Log written by Mrs. Helen Sedwick, a member of the Archeology Society of Delaware.

The Delaware Indians – Their Gods – Their Religious Ceremonies

by

C. A. Weslager

(Abstract of paper read before the Unitarian Forum, Wilmington, Delaware, March 27, 1955)

Religion, by broad definition, is the quest for the values of an ideal life. Most religious beliefs embrace a recognition on the part of man of a controlling super-human power entitled to obedience, reverence, and worship. Today, all forms of religion practised in our civilization are founded on certain fundamental beliefs and concepts which can be explained by the devout. Even our popular magazines present articles outlining the tenets of this or that religion.

In dealing with the religion of a pre-literate people like the Lenni Lenape, or Delaware Indians, we have incomplete data, and, at best only a partial understanding of their original beliefs. During the period when the native religion flourished uninterrupted and unmodified by European influence, the Delawares had no written language nor were there any trained scholars hovering in the background to record and analyze the principles of their theosophy.

We should first emphasize that, according to our standards, Delaware Indian culture was very primitive. They could not read nor write—were unfamiliar with the use of metals in tools and weapons—knew nothing of the wheel or gunpowder. They were truly a stone-age people, and prior to the time of written history, which began in the Delaware area about 1600, they may properly be termed prehistoric.

Regrettably, the first white men thrown into contact with the Delaware Indians had little interest in studying their beliefs or showing a sympathetic understanding toward their religion. If they had done so our knowledge today would be more complete. Essentially, the first Europeans in the Delaware Valley had three objectives in their contacts with the native (a) in acquring their lands—which they did in a successful, if ruthless fashion (b) in obtaining animal pelts from them to sell in the European market—which they did with such success that in a few short years the Delaware area was practically

devoid of beaver and otter (c) in teaching them denominational Christianity—which required many years to accomplish but was equally successful when we realize that the Delaware Indian religion is now, for all practical purposes, a thing of the past.

The Swedish Governor Printz, as early as 1642, was instructed "at every opportunity to exert himself that the same wild people may gradually be instructed in the *true Christian religion* and worship, and in other ways brought to civility and good public manner as though led by the hand."

The "true Christian religion" to this 300-pound autocrat was Swedish Lutheran—the true religion of the contemporary Dutch in the Delaware Valley was the Reformed Church of Holland—to the English it was the Church of England—to the Jesuit fathers it was the Roman Catholic faith. These separate forces, to say nothing of the Quakers and the Moravian Church of the United Brethern were all brought to bear on Delaware Indian society. As a result many Delaware Indians were baptized into Christianity, and as time went on certain elements of Christianity became intermingled with the native religion, eventually breaking it down completely. Today in trying to piece it together we have only the reports of unskilled and intolerant white scribes of the contact period and the later-day accounts of modern ethnologists working among the much acculturated tribal survivors in Oklahoma and Canada. Nevertheless, we can with certainty explain some—if not all of the Delaware Indian concepts of God and the universe.

To the ancient Delaware Indian all the phenomena of nature, all the affairs of mankind, all parts of nature—the entire world and its component parts—were under the control of invisible beings or spirits. Some were great and powerful, others less so. In some of these invisible beings good seemed to dominate; in others, evil, but most of the spirits were a mixture of desirable and undesirable qualities.

The supreme power or leader of all these lesser gods or spirits was the Great Manito, whose goodness was acknowledged, and who was thanked for past blessings and petitioned for their continuance. His lesser agents were known as Manitowuk, the pluralized form of Manito. The Great Manito assisted by the Manitowuk created the earth and everything in it. Thus, when praying, or in other forms of worship, the Indian addressed himself not merely to the supreme Spirit Force but also to the lesser agents with whom he had close, daily relations. These lesser gods controlled such happenings as the sunrise, the sunset, thunder, winds, and snows.

Twelve was a sacred number among the Delawares, occurring

often in their ceremonial life. This had its origin in the turtle where the number twelve is repeated in the 12+1 dorsal (costal and vertebral) scale plates and the twelve marginal scales on each side of the animal's carapace and the twelve plastron scales. The number coincides also with the twelve to thirteen lunation periods in Delaware folk-astronomy. The turtle played an important allegorical role in Delaware religion as a symbol of life, of perseverance, longevity and steadfastness. The turtle was believed more ancient than the earth; in fact, he carried the earth on his back. In typifying the earth-bearer symbolically, the turtle's shell, filled with pebbles, was used ritualistically as a rattle in certain ceremonies. Face paint patterns, used by certain male participants in the annual Delaware Big House Ceremony (to be described later) were fashioned after the yellow color-pattern on the upper shell of the turtle..

As early as 1670 a Delaware informant declared to a white friend that all things came from the turtle, as the following quotation indicates:

> We asked him, where he believed he came from? He answered from his father. "And where did your father come from?" we said, "and your grandfather and great-grandfather, and so on to the first of the race?" He was silent for a little while, either as if unable to climb up at once so high with his thoughts, or to express them without help, and then took a piece of coal out of the fire where he sat, and began to write upon the floor. He first drew a circle, a little oval, to which he made four paws or feet, a head and a tail. "This," said he, "is a tortoise, lying in the water around it," and he moved his hand round the figure continuing, "this was or is all water, and so at first was the world or the earth, when the tortoise gradually raised its round back up high, and the water ran off of it, and thus the earth became dry."
>
> He then took a little straw and placed it on end in the middle of the figure and proceeded, "the earth was now dry, and there grew a tree in the middle of the earth, and the root of this tree sent forth a sprout beside it and there grew upon it a man, who was the first male. This man was then alone, and would have remained alone; but the tree bent over until its top touched the earth, and there shot therein another root, from which came forth another sprout, and there grew upon it the woman, and from these two are all men produced." (1)

The Great Manito lived in the twelfth or highest heaven above

(1) Jaspar Dankers & Peter Sluyter, *Journal of a Voyage to New York in 1679-80,* Memoirs L. I. Historical Society, 1867, p. 151

the earth; thus it required twelve shouts or prayers to reach him. Lesser Manitowuk were stationed in each of the lesser heavens and each repeated the Indian's prayer until it was finally relayed to the Almighty.

Although certain Manitowuk in ancient times were supposed to work evil, there was no concept then of the Devil. Like whiskey and smallpox, the Devil was purely a white man's product.

After the Great Manito created the earth, he gave the four quarters to four Manitowuk whose duty was to care for these regions: our Grandfather where daylight begins, our Grandfather where it is warm, our Grandfather where the sun goes down, and our Grandfather where it is cold. Similar kinship terms were applied to other spirit forces. The Sun was an Elder Brother charged with providing light to the world. His face was always handsomely painted and he wore red feathers in his hair. Every day he travelled across the heavens from east to west, and at night he came back under the earth. The Moon, another Elder Brother, was addressed as the Night Sun. Thunder Beings were subordinate Manitowuk assigned the duty of watering the earth. They always carried bows and arrows to use in shattering trees. The Living Solid Face was in charge of the wild animals that lived in the forests. Mother Corn was another Manitowuk in charge of the earth's plants. Individual animals and plants all had their own spirits, and these were frequently appeased. For example, when he cut down a tree a Delaware would sprinkle tobacco at the trunk as a tribute to the tree's spirit. The tobacco plant had a sacred character, and it was offered in propitiation of angry waters, to allay destructive winds, and to protect travellers. On ceremonial occasions twelve pinches of tobacco were cast into a fire.

The survival of the human spirit after death was a part of Delaware Indian religious belief. The spirit departed the body at the time of death, but it hovered near for eleven days, and on the twelfth day ascended to the twelfth heaven there to live indefinitely in a beautiful country where there was no sorrow, pain or sickness. There he met all the people who had died before him, and the blind, crippled and injured were all perfect. During the twelve days the spirit lingered on earth, the mourners offered it food and other gifts, placing them beside the corpse.

Visions and guardian spirits were an integral part of the religious concepts, and a dream or vision was the principal channel of communication between man and the supernatural world. At about the age of twelve or thirteen a boy was encouraged by his parents to seek supernatural aid in the form of a personal guardian. They pretended

to drive him into the forest to shift for himself in the hope that a sympathetic Manito would take pity on him and grant him a power or blessing. If he were lucky enough, he might dream or receive a vision in which a guardian spirit would appear in the shape of an animal, bird, or other natural thing. This object became his guardian spirit a sort of personal protector on whom he depended throughout his life for strength and assistance, and whom, on ceremonial occasion, he acknowledged in recitation or song. On his person it was permissible to carry a symbol of the guardian, either in miniature or the thing itself. Everyone was not blessed with a guardian spirit—visions visited only those worthy of receiving them, and those so favored became the spiritual leaders in the ceremonial complex, although retaining laymen character in the social life.

In 1654 the Swedish engineer Peter Lindestrom gave a much garbled interpretation of this guardian spirit concept, but I quote it as an example of its antiquity among the Delawares:

> "With reference to the religion of the Indians [it is to be observed] that they adopt their Paahra or idol when they are about 15 years old. Thus the one makes for himself a child of skin with head, body, arms, hands, legs and feet to believe in. The other selects a lion claw, that one, a bear claw, this one an eagle claw, that one a lion tooth, this one a bear tooth, this one, a bird bill, etc. In fine, whatever limb of any animal, bird, fish or other [living thing] they desire to choose for their god or Paahra, as they call it, which is hung on a chain of their money on their breast, they consider this their god, so sacred that no one is allowed to touch it—the one who attempts it, he becomes his chief enemy. In this their god they have such a strong faith that the night he dreams about him he will at once the following day be able to shoot as much game and catch as much fish as ever he wants to—the evil one, undoubtedly helps him to it." (2)

From time to time during the year ceremonial dances and feasts were held such as the Bear Ceremony, Otter Ceremony, Mask Dance, Opposum Dance, Corn Harvest, and others. Although each had a separate function, the general objectives were either to satisfy certain benificent spirits, or to propitiate some animal or thing to prevent it causing trouble. Paraphernalia for such ceremonies included the turtle shell rattles, deer hide drums, wood masks, and wampum strings or beads used in the sense of a covenant.

Here is how Governor Printz in 1643, measuring heathen custom

(2) Peter Lindestrom, *Geographia Americae,* trans. Amandus Johnson, 1925, p. 207.

against his own "true" religion, described these ceremonies without bothering to make an effort at understanding:

". . . they are also good and quick shots with their arrows, but have no knowledge of God, but place their hope in the devils, whom they wish to serve with their Kintekaija, vulgarly dancing, howling and shouting; and they sacrifice to him in order that they shall be lucky in their hunts or other sustenance of theirs, as also therefore that he should do them harm or any evil. And to convert them or admonish them to a knowledge of God, that no one has tried with them. But what may be accomplished hereafter, we shall, with God's help, try." (3)

The German Mennonite, Francis Daniel Pastorius, who founded Germantown in 1683, and who was more tolerant than Printz of Indian religion, saw the Indian celebrants thusly:

"They know of no idols, but they worship a single, all powerful and merciful God who limits the power of the Devil. They also believe in the immortality of the soul, which, after the course of life is finished, has suitable recompense from the all-powerful hand of God awaiting it. They accompany their own worship of God with songs during which they make strange gestures and motions with the hands and feet, and when they recall the death of their parents and friends, they begin to weep and wail most pitifully." (4)

Let us see one of the minor ceremonies, the Doll Dance, through the eyes of the ethnologist who, working carefully and patiently with Delaware Indian descendants obtained the true facts about the ceremony and its purpose. The ritual embodied the idea of appeasing the latent ill-will of the Spirit of the Corn and illustrates the general ceremonial pattern. It was forbidden anciently, according to a Delaware legend, for humans, especially children, to play with corn husks and other parts of the sacred grain. As the tale narrates, certain children did so, and their families were advised that the sanctity of Mother Corn had been violated. Since corn was the principal food provided by the Great Manito, the consequences of this act of sacrilege would be tragic unless amends were made. It was deemed neecssary to conciliate the corn spirit in a ceremony in which dolls representing the Spirit of the Corn were feasted and danced periodically by the families descended from the wayward children.

(3) *The Instruction For Johan Printz,* trans. Amandus Johnson, 1930. pp. 150-151

(4) Francis Daniel Pastorius, *Circumstantial Geographical Description of Pennsylvania,* in *Narratives of Early Pennsylvania,* etc. ed. Albert Cook Myers, 1912, p. 384

To enact the ceremony, two men were selected to gather firewood and clean up the dance ground. They engaged a speaker and two singers, paying each of them a yard of wampum—not in the sense of money, but as a purifying gift and a protection against spiritual infection. Around the dance ground, log seats were arranged for the audience. A deer and kettle of hominy were prepared on the dance ground and cooked for use during the ceremony.

The ceremony started with a speaker explaining the story of the origin of the Doll Dance. The doll, which had been fastened to a long pole, is addressed as "Grandmother" by the speaker and notified that the dance is being held in her honor and to insure good health of the family who owned the doll. Then a dance leader took the pole with the doll fastened to it, danced around the ground. Drummers in the center of the ground began to beat on deer skin drums, and the singers started to chant a song to the Doll asking for her blessing. The others fell in line behind the dance leader, forming two circles, one of men and the other of women. When the leader finished his dance, he passed the long pole with the doll on it to the man behind him who repeated the process. This was done six times by the men and six times by the women, making twelve the sacred number. As the procedure continued into the night, the fire was lighted in the center of the ground. When the twelfth set of dances was finished, the speaker announced, "The Doll Dance is over," and everyone, participants and audience, partook of venison and hominy. The Corn Spirit had been appeased, and everyone was happy. The dancers amused themselves with various social dances until they grew too tired for further play. The doll was then put in hiding for another year.

The greatest and most significant Delaware Indian religious event was the Big House Ceremony held when the leaves turn yellow in the fall, and continuing for twelve consecutive evenings. The Big House where the ceremony was held represented the universe—its center pole was the staff in the hands of the Great Manito reaching from heaven to earth—its four sides the four directions—its floor the earth—the wood masks placed at prescribed points within the structure were representative of the lesser Manitowuk.

During the long and religiously complicated ceremony, there was dancing, recitation, and rhythmic music. Those who had received visions in the past, or were blessed with guardian spirits, chanted of their experience to the accompaniment of a turtle shell rattle. Other participants repeated the words of each chant. Much has been written about this soul-stirring celebration and I can add little to what has already been said and must be reviewed in all its

detail for complete understanding. Suffice it to say that it was limitless in its scope and boundless in its supplications. The participants sought health, immunity from pestilence and catastrophe, purity of mind, and blessings for everyone and everything. (5)

Throughout the twelve nights of the ceremony they expressed gratitude for all the benefits of nature, of life and health. When the ceremony was completed they felt they had worshipped all the spirits, including the Great Manito and the lesser Manitowuk, and their passion would benefit everyone and every thing in the whole, wide world.

In the Delaware Indian religion there was no founder of doctrines, no creeds, and no messiah who appeared on earth to teach men the sacred rituals or rules of conduct. Basically it consisted of a native philosophy embedded in nature, and was almost pantheistic in character. The annual religious cycle included rites and ceremonies, a belief in visions and spirit forces, with a consummation of religious fervor reached in the annual Big House Ceremony.

(5) Frank G. Specks well-known *Delaware Big House Ceremony* and *Oklahoma Delaware Feasts, Ceremonies and Dances,* as well as M. R. Harrington's *Religion And Ceremonies Of The Lenape,* describe the Big House ritual in painstaking detail.

601 S. Maryland Ave.
Wilmington, Del.

C. A. Weslager

STEPHEN MOYLAN PRESS