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# CONCEPTIONS OF TIME IN EASTERN UNITED STATES ARCHAEOLOGY:

# PART III

# AUBREY W. WILLIAMS, JR.

# NEW APPROACHES TO AMERICAN PREHISTORY

The study of prehistory in America from after the Civil War to the beginning of the twentieth century was guided principally by the research and inspiration of three men. These men, Lewis Henry Morgan, John Wesley Powell, and Frederick W. Putnam, were no doubt influenced by archaeological studies in Europe, but saw in America a chance to "study their archaeology alive." The interest of the United States government in studying the inhabitants and resources in the western areas of its country allowed many "frontier scientists" to have at least the Government's blessing in studying the American Indians. In addition, the Government promoted the study of Indians through its Department of Indian Affairs and encouraged research through the Smithsonian Institution.

The scope of anthropological study of Lewis Henry Morgan was all encompassing. It is generally agreed that, of all his articles, papers and books, Ancient Society, published in 1871, was most important. In this work he not only utilized the comparative approach, but he treated the details empirically. His object was to formulate tentative laws of social and cultural evolution. Morgan theorized stages of cultural development for all mankind, and envisioned developmental stages of culture which eventually led to a highly complex stage called civilization.<sup>1</sup> Morgan's stages of culture were unilineal in the sense that mankind as a whole had at one time lived in a state of savagery, barbarism, etc., and via development of industrial arts, agriculture, architecture, and social and political organizations had moved up the scale toward civilization.<sup>2</sup>

Morgan's concept of culture, which he did not define, seems to have been in terms of wholes or units that were composed of

<sup>1.</sup> South, 1955, pp. 10-32. 2. Ibid., pp. 13-14.

many interrelated social, technological, and ideological elements. He recognized that the material uncovered by the archaeologists represented but a fraction of a total cultural system, and that the study of contemporary ethnic groups could reveal many cultural patterns that would give clues to prehistoric cultural traditions.

John Wesley Powell was also interested in a broad study of culture. Powell, a trained geologist, spent many years in the western part of the United States, studying geologic formations and the aboriginal inhabitants. As the first director of the Bureau of Ethnology, Powell stated in the first annual report that the study of archaeology should seek to discover the character and mode of the life of the American Indians, and that to write a history of their industrial arts seemed the most promising approach. He felt that, while the study of the mound-builder's origins was a legitimate study, the limitations on knowledge of the various divisions of people would make it yield a meager harvest. Instead, a study of "the origins and developments of arts and industries is in itself a vast and profoundly interesting theme of study, and when North American archaeology is pursued with this end in view, the results will be instructive."3 Powell's contributions to anthropology in America include his ability to organize and inspire other scholars working on various projects. A partial list of men who worked under Powell includes McGee. Thomas, Holmes, Fewkes, Mason, and Mooney. These men's names occur frequently in the list of publications of the Bureau of Ethnology, while that of Powell is seen rather infrequently;4 yet it is doubtful that any of them would deny Powell a place in the front rank of American anthropologists.

The importance of Frederick W. Putnam can only be hinted at in this paper, as over four hundred articles, papers, and books published under his name, his work in building up scientific collections at the Peabody Museum and the American Museum of Natural History in New York, his extensive field work on the burial mounds of the Ohio Valley, and his direction of field work projects in thirty-seven states are all outstanding achievements in archaeology and ethnology. Putnam inaugurated a regular graduate course in anthropology at Harvard, a study that included physical anthropology, comparative archaeology, and ethnology. The lectures for these courses were under the direction and sponsorship of the Peabody Museum. He also organized

Powell, 1879-80, p. 74.
 Mitra, 1933, p. 122.

the American Anthropological Association in 1902. Putnam, interested in validating his belief that America was inhabited by human beings during the last glacial period, supported and encouraged excavations and research on the Abbott farm in New Jersey for thirty years in search of evidences of a Glacial man in gravel beds thought to be deposited during the recession of the Wisconsin glaciation.

Toward the end of the nineteenth century a great many sites had been discovered and studied,<sup>5</sup> and a beginning was being made in the classification and organization of information from the earlier explorations. Otis T. Mason and William Henry Holmes were among the first to organize the eastern part of the United States into areas or provinces that contained more cultural similarities than dissimilarities. In 1903, W. H. Holmes published a monograph on the types of pottery found in the eastern United States which divided it into eleven geographic provinces,6 and in 1910 Warren K. Morehead employed a similar classification of stone implements in North America.7 At the same time that these publications were being written and published another movement within archaeological circles was taking place. This was the compilation and publication of archaeological articles by various state societies. One of the most notable of these publications on prehistoric sites within the boundaries of a state was the two-volume work of A. C. Parker about New York. In fact, the rivalry that developed over which state could exhibit the most ancient and thoroughly studied aboriginal habitation sites frequently impeded regional studies of prehistory.

On the national level the interest in the origins of the American Indian had been increased by many discoveries of human remains with animals of antiquity, such as the mastodon, camel, and bison. Many claims were made that the human remains were similar to those found in Europe, such as the Neanderthal skull; but, without exception, the leading authority in physical anthropology, Alex Hrdlicka, stated over and over again that the prehistoric men that had inhabited the American continents were physically as modern as Columbus and his crew. Interest in the origins of the American aborigines led twelve leading anthro-

<sup>5.</sup> Much of the research done during this period is considered gross and inadequate in the light of new techniques, but nevertheless its objectivity and deductions are the foundations of archaeology today.

<sup>6.</sup> Holmes, 1903. 7. Moorehead 1910

<sup>7.</sup> Moorehead, 1910.

pologists to write a symposium of their views about the problem in the 1912 American Anthropologist.8 The authors included Roland Dixon, Alex Hrdlicka, J. Walter Fewkes, and William H. Holmes. The agreement of these men is remarkable, in that without exception the twelve stated that the most probable route to America was via the Bering Strait, and that there was but one race of men in America, thus repudiating all the theories that the Mound-builders were an extinct prehistoric race. Thus, the chronology of the eastern United States was developing the concept of various cultural traditions and sequences whose distinctiveness was measured on a cultural-technological basis. The culture-area, age-area concept of Clark Wissler was considerably reinforced by discoveries by state archaeological societies as they continued to publish their research. By 1922, so much diversified information was being published that the American Anthropologist saw fit to start a series of annual summaries of the archaeological field work being done in the United States. This was followed in 1923 with a compilation by Clark Wissler of the aims and methods most applicable to state archaeological research projects.9

These early surveys of the state of archaeological knowledge in the United States revealed that many gaps existed in a general cultural sequence for the area as a whole. Some apparent gaps were later found to be the result of using different names for the same culture, and other gaps appeared because one state would not accept the findings of another as valid. There were reasons for one state archaeological society to suspect another, as many were (so it seems) attempting mainly to find habitation sites of greater antiquity, sites with more mounds, sites with higher mounds, sites of a greater cultural development, etc. Jealousy even reached such a point that one state was not willing to have another's archaeologists know about its plans or most recent findings. It was hoped that the increasing use of stratigraphy, as outlined by N. C. Nelson and reaffirmed by A. V. Kidder in 1924,10 by archaeologists in the eastern part of the United States would eventually begin to clear up some of the confusion over the diversity of cultural traditions in the East. The use of stratigraphy would first allow for sequences to be determined on a

<sup>8.</sup> Fewkes, et al., 1912.

The compilation by Wissler was first mimeographed, and later published by the State Historical Society of Iowa in 1923 (cited in Guthe, 1952, pp. 1-2.
 Kidder 1924 - 1925

<sup>10.</sup> Kidder, 1924, p. 135.

local level, and next it would provide a basis for cross-dating using typological criteria within a region.

However, the archaeologists interested in the aboriginal cultural periods of the eastern United States encountered many difficulties applying the stratigraphic techniques outlined by N. C. Nelson for the Southwest, and the classifications used in European archaeology to define the Paleolithic, Mesolithic, and Neolithic were much too general for use in the East. The biggest problem facing the archaeologists trying to establish a chronology for the various cultural periods was that they could not tell if their sites were the product of a single cultural period or the result of two or more distinct periods. In addition, many of the aboriginal cultural objects were found on the surface, and thus provided a mixture of various types of artifacts and cultural remains that could only occasionally be distinguished typologically.

Frederick Putnam's "Editorial Note" to Earnest Volk's paper "The Archaeology of the Delaware Valley" of 1911 reveals one of the main trends of thought concerning archaeological investigations in the eastern area: in part it reads:

For twenty-two years Mr. Earnest Volk, working under my direction, has been engaged in archaeological researches in the Delaware Valley at Trenton and vicinity. It has not been the purpose of Mr. Volk to enter into any controversy as to the age of the Trenton gravel . . . but simply to ascertain if there are unquestionable evidences of man's occupation at the time contemporary with the deposits during any portion of the glacial period and its immediate close.11

However, the facts obtained by Volk indicated that the Trenton area had at least two distinct cultural horizons. Putnam felt Volk had succeeded in finding cultural manifestations of a "glacier man," and while the time of the gravel deposition was in doubt, there was no doubt that the objects deposited in the black soil (surface) were quite distinct from the artifacts<sup>12</sup> found in the lower drift or yellow soil underneath the black soil. Yet the finds of Volk were not sufficient to identify a cultural period and no time determination could be made concerning the gravel deposits.

Other archaeological investigations also promised to produce stratigraphic cultural sequences. Nelson's work in Mammoth

Volk, 1911, p. v.
 Earnest Volk found chipped pieces of quartz and a few other chipped stones in the gravel, but none that could be called projectile points, knives, scrapers, drills, etc., with any certainty.

Cave in Kentucky in 1916 indicated two cultural periods;13 Spier's in the Trenton, N. J. area in 1916 indicated three:14 Stern's in eastern Nebraska was claimed to have uncovered two cultural strata;<sup>15</sup> and Parker's in New York tentatively demonstrated an older cultural period under the historic Iroquoian culture.<sup>16</sup> These were all described by Clark Wissler in his 1917 edition of the American Indian as, though less than an overall picture of archaeology in the eastern United States, nevertheless promising for future archaeological work and revealing "some sequential development in richness and complexity."17 The early attempts to locate stratified sites in the eastern United States were summarized by Wissler in 1917:

In concluding this brief survey of the as yet under-developed chronology of the New World culture, we note one or two points of general interest. In the main, the stratigraphic chronologies have been determined by pottery alone, suggesting that the ceramic art as a whole should receive the very closest attention, not as an end in itself, but for the sake of the culture sequence of which it is the most convenient index. Another is that our subject is essentially an historical one, the only rational approach to which is backward through the cross-section made in it by the discovery of America.18

In the light of present day knowledge and hindsight, these archaeological investigations overlooked some important things, including the fact that various cultural sites found in the East did not contain pottery, or at least contained very little. These sites with little or no pottery probably represented earlier cultural periods, rather than sites to be excluded from a cultural area because they lacked certain objects. What they actually did represent was a distinctive culture located side-by-side with another distinctive one. These two distinctive cultures may or may not have existed at different times. For example, the Archaic cultural tradition existed in the East from before the birth of Christ until 1492, as did the Woodland cultural tradition. Either the cultural areas contained pockets of different cultures existing at the same time, or the cultures existed at different times. It seems that Wissler placed them in different time periods.

In the preface of the 1922 edition of the American Indian Clark Wissler stated that "the chapter on chronology has been

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<sup>13.</sup> Nelson, 1917.

Netson, 1917.
 Spier, 1916, pp. 181-189.
 Sterns, 1915, pp. 121-127.
 Parker, 1916, pp. 479-507.
 Wissler, 1917, pp. 274-275.
 Ibid., pp. 278-279.

lengthened for it is in the determination of time sequences for culture data that the most distinctive progress has been made."19 He further stated in his chapter on chronology:

Indeed a time perspective, or chronology, is just as essential to the comprehension of culture and man as is the third dimension to space. Geology, for example, did not become a science until by empirical methods it established a timesequence of periods and these periods are in turn of equal importance to zoology. In like manner, the future status of anthropology depends upon the establishment of a chronology for man and his culture, based upon objective verifiable data. Progress in this direction will go hand in hand with the development of techniques adequate to the conditions of the problem.<sup>20</sup>

The importance of the development of stratigraphy as a means of establishing the relative time of various culture periods is mentioned again in the 1922 edition. Greater stress is placed upon the importance of correlating stratigraphic sequences with an historical calendar. Wissler mentions both New and Old World examples of stratigraphic discoveries that could be correlated with historical events, respectively, Pachacamac, Peru, and Troy.

Clark Wissler also presented a time chart for the New World in this edition.<sup>21</sup> He called it a crude, but justified, attempt to organize the archaeological data that had been accumulated. The time chart places the time of migration from the Asian continent to the American continents at about ten to 'twelve thousand years B.C. The chart is divided into five areas: North American Hunting, North American Maize, Mexico and Peru, South American Manioc, and South American Hunting. Wissler believed that the first arrivals to the New World knew how to chip stone, fashion a cutting edge, and use the spear-thrower as a hunting device. This time-chart indicates that cultural distinctions diminish as one goes further back in time and "vanish until all rest upon one common primitive substratum."22

The third edition of Wissler's The American Indian, published in 1938, provides us with another summary of events and achievements in American anthropology. This is especially true in regard to chronology for the various cultural traditions in the United States. Wissler's belief in 1917 that a great many sites would be uncovered and a stratified sequence of cultures would be revealed

<sup>19.</sup> Wissler, 1922, p. v.

Ibid., pp. 287-288.
 Ibid., p. 301.
 Ibid., p. 302.

was not fully realized during the twenty year interval. In the eastern United States the usual find was an unstratified deposit of complex cultural content, and as Wissler pointed out, "Even such deposits are none too numerous, but are found at their best in shellheaps, rock-shelters, and caves."23

A method for obtaining absolute dates for sites in the Southwest had been perfected by A. E. Douglas during the interval between the second and third editions, and the Folsom cultural horizon had been established; but the dendrochronological dating techniques were not found useful in the eastern part of the United States. However, a system for organizing cultural data had been devised for this area, by W. C. McKern. It circumvented time considerations and worked entirely with cultural manifestations. McKern's taxonomic method has often been confused and interpreted as an alternative to chronolgy building, but it was conceived by McKern as a necessary preliminary step toward organizing cultural material for later time identification.<sup>24</sup> Thus, by 1938, with larger and larger areas in the East being organized under McKern's taxonomic divisions of a focus, aspect, phase, pattern, or base, the data were made ready for someone to build a chronology for the prehistoric cultural periods in the eastern United States.

Clark Wissler set forth in 1938 a tentative prehistoric chronology for this area east of the Rocky Mountains on the basis of the presence or absence of pottery. He stated that, "Stratified evidences for early cultures without pottery are on record for Florida, New York, New Jersey, Kentucky, Nebraska, New Mexico and Arizona."25 He added that "pottery appears chiefly as an addition to a relatively continuous development, suggesting the diffusion of a new craft rather than invasions by pottery makers."26 Thus, placing the pre-pottery horizon at the bottom of a time-scale, Wissler constructed the following cultural periods:

- 4. Recent and historic
- 3. Mississippi
- 2. Woodland
- 1. Pre-pottery.27

This tentative chronology had no dates attached to it, but it was

Wissler, 1938, p. 307.
 McKern, 1939, pp. 301-313.
 Wissler, 1938, p. 312.

<sup>26.</sup> Ibid.

<sup>27.</sup> Ibid.

a start in the right direction; and, in a few short years, a chronology was developed for the eastern United States that had dates, profiles, and pre-historic cultural sequences.

# CHRONOLOGY BUILDERS IN THE EAST

The first detailed chronology for eastern United States cultural traditions was devised by James Ford and Gordon Willey in 1941. This work appeared in Volume 43 of the American Anthropologist, and has been followed by that of Martin, Quimby, and Collier in their Indians Before Columbus, 1946, and that of James Griffin in his Archaeology of Eastern United States, 1952.

In general these three separate publications have in common their concepts of the cultural traditions in the eastern United States, but differ in their concepts of the time of development of the traditions. In 1941. Ford and Willey state, in regard to early men in the East:

Indisputable evidence of the association of human remains or cultural evidences with extinct Pleistocene fauna has not been found in the eastern area. This by no means denies the possibility that such finds will be made, or that new evidence will bring general acceptance of some of the questionable associations already discovered. Folsomoid projectile points have come from almost every state in the area, and so far they have not been found to be related to any of the known archaeological cultures. The great age of the similar type in the western states promises some very interesting discoveries for the East. However, in view of the present lack of evidence, a discussion of these early cultures in the east is impossible.28

Thus, the earliest known cultural horizon in the East was given the name "Archaic" by Ford and Willey. This earliest cultural horizon lacked horticulture, had no pottery except in its late stages, and is characterized by an "abundance, variety and quality of artifacts (which) do not compare with the more complex later developments."29 Ford and Willey also saw the Archaic Period as "sort of a foundation cultural pattern for the East into which new traits and complexes were intruded in for the later cultural stages."30

The two outstanding features of the Ford and Willey chronology and cultural sequences are the time-scale and the source of cultural influence. The time-scale places all of their cultural horizons after the birth of Christ. The time of the Archaic period

<sup>28.</sup> Ford and Willey, 1941, pp. 331-332. 29. Ibid., p. 332. 30. Ibid.

is vaguely illustrated in their charts as prior to A. D. 700. The other cultural horizons begin about A. D. 750, and end at A. D. 1700; they are as follows:

Temple Mound II	1600	to	1700	A.	D
Temple Mound I	1450	to	1600	A.	D
Burial Mound II	900	to	1450	A.	D
Burial Mound I	700	to	900	A.	D
Archaic	prior	to	700	A.	D.
?? Pleistocene	Man Perio	bd	??		

Thus, all of the known cultural traditions in the East developed, flourished, and ceased to exist in a total period of about 1000 years.

The second outstanding point about the sequence of cultural traditions developed by Ford and Willey was the source of cultural influence for the area. The authors selected the Mississippi River valley as the center of the cultural diffusion, maintaining that the diffusion went from the mouth of the river to the north and up other river systems. The lands in the East that were drained by the Mississippi and its tributaries were considered as one cultural area, and since culture moved from the south to the north, aboriginal sites in Louisiana were earlier in time than those of the same cultural horizon in the Ohio River valley. In effect, they reasoned that the spotty distribution of the Temple Mound culture in the East was due in part to European culture in 1600 to 1700, and in part to the fact that it had not had enough time to spread out along the Mississippi drainage system. The Archaic Indian cultures found existing alongside later cultural traditions in the East were not mentioned.

In 1946, Paul S. Martin, George I. Quimby, and Donald Collier published *Indians Before Columbus*. The book, obviously intended for classroom use, is the most comprehensive textbook on the archaeology of the United States to date. It covers, in varying degrees of fullness, all the major archaeological research discoveries and sites in the United States prior to 1946. The authors' orientation toward the study of archaeology is indicated by their statement that:

From studies of past or extinct culture the archaeologist paints a picture of what has gone before. Such a picture enables us to orient our own culture with reference to all others, past and present, and gives us a complete temporal and spatial perspective.<sup>31</sup>

<sup>31.</sup> Martin, Quimby and Collier, 1946, p. 13.

## And.

We learn that the world was not created in 4004 B. C. Rather, man has been on this planet about a million years. Laboriously and slowly, he has unconsciously created cultures and civilizations which have been handed on by precept, imitation, and social heritage.32

They conclude:

New methods of obtaining food, new systems of social organization, conflicts between technology and the social controls, migrations, cultural mixing, new and elaborate ways of living-all these are indicated in the temporal and spatial perspective of archaeology.33

The temporal sequences they developed for the eastern part of the United States are similar to those developed by James Ford and Gordon Willey, in that all of the cultural horizons extend no further back in time than A. D. 1, with the exception of the Browns Valley culture in the Wisconsin-Minnesota area. However, they differed with Ford and Willey in that they did not place as much importance on the Lower Mississippi River as a culture center from which cultural influences moved invariably from south to north.

The time-charts devised by Martin, Quimby, and Collier indicate the probable time of the introduction of pottery and agriculture for each area. The corn type believed to be first used in the eastern areas was the type first used by the Basket Makers of the Anasazi area in the Southwest, which in turn is believed to have made its way up the west coast of Mexico.<sup>34</sup> However. the route of this cultural diffusion from the Southwest to the East is not specified. The pottery complexes in the East are thought to have diverse origins; in this matter these authors differed sharply with Ford and Willey, who thought pottery had its origin in Mexico and then gradually spread up the Mississippi River drainage area. Martin, Quimby and Collier stated their view that:

The earliest pottery in the South, which was fiber-tempered, appears to have been an indigenous development, although the idea of making pottery may have come from outside the area. About the same time there appeared to the north another pottery tradition which emphasized vessels with coniodal bases and stamped decoration. This northern pottery complex was probably derived from Asia via Bering Strait.35

The authors' chronological periods differ, as well, from those of

<sup>32.</sup> Ibid. 33. Ibid.

<sup>34.</sup> Ibid. 35. Ibid., p. 519.

Ford and Willey, as the postulated stages of chronological cultural development for the East.

The first stage suggested by Martin, Quimby and Collier covered the period from early postglacial time to about A. D. 500-700, and exhibited a culture similar to the Folsom-Yuma-Cochise.<sup>36</sup> This cultural group was described as relatively homogeneous, in contrast to later stages.

The second stage was represented as lasting from about A. D. 500 to A. D. 900. This stage was characterized as one in which pottery, pipe-smoking, agriculture, and burial mounds were first found in the East.<sup>37</sup> The impact of these new cultural items changed other socio-cultural activities and ideas. Agricultural endeavors favored a more sedentary life, and the burial mounds indicated a more highly organized social system as well as more highly structured ideological system (only a few bodies are found in the burial mounds), and the pottery made it possible to store surplus food for future use. It was noted by the authors that not all the people in the East took part in this "early American revolution"<sup>38</sup> and that, as there was a movement of people into areas more suited to agriculture, conflicts developed between the people practicing agriculture and those who clung to the old hunting.39

The third stage was said to last from A. D. 99 to A. D. 1300. The most marked change in this period was the social and political integration of a culture based on agriculture. The period was characterized by the largest burial mounds and the most extensive earth-works. The work with copper and stone became highly stylized and artistic. Trading establishments and religious outposts were found among distant peoples.<sup>40</sup> The authors found a greater diversity of cultural traditions in this period than in any other previous period.

The fourth stage was estimated to have lasted from about A. D. 1300 to A. D. 1700.<sup>41</sup> The period covered the time of the invasion of Europeans, and a period in which American Indians lived in many places, as their ancestors did in the first, second, and

<sup>36.</sup> Ibid., p. 232.

<sup>36. 10</sup>id., p. 232.
37. Ibid., p. 233.
38. Ibid., p. 235.
39. The implication of this statement seems to be that the "ancient for-tifications" found and described by explorers a hundred years pre-viously were indeed used as a means of defense rather than for religious rites—or, for both purposes.
40. Martin, Quimby and Collier, 1946, p. 236.
41. Ibid., p. 237.

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third stages of culture. Some were still hunters, some practiced a little agriculture, and others were still building mounds. In comparison to Ford and Willey's chronology, the one made by Martin, Quimby, and Collier is much more general; also it covers considerably more time. The two are placed below for comparison:

Ford and Willey	Time	Martin, Quimby, Co	ollier Time
Pleistocene Man	??	First Stage	Postglacial to A. D.
Archaic	A. D. 300 A. D. 700		A. D. 500 A. D. 700
Burial Mound I	A. D. 800 A. D. 900	Second Stage	A. D. 700 A. D. 900
Burial Mound II	A. D. 900 A. D. 1300	Third Stage	A. D. 900 A. D. 1300
Temple Mound I	A. D. 1300 A. D. 1650	Fourth Stage	A. D. 1300
Temple Mound II	A. D. 1650 A. D. 1700		A. D. 1700

The authors of *Indians Before Columbus* felt confident that they had constructed a correct chronology of the relative succession of cultures and periods for the eastern United States.<sup>42</sup> They stated that, while the dates they have used were surmises, "These guesses, however, are conditioned by some knowledge of the rates of culture change, known duration in comparable cultures and periods elsewhere, some cross-dating with cultures of a known date, and other tenuous criteria. We believe that our dates have a high degree of probability, and we should be surprised if when . . . more objective dating is obtained, there will be any great discrepancy."<sup>43</sup>

Discrepancies were revealed when new and old dating techniques were applied in the East. The fact that no site in the East exhibiting true stratigraphy had been found and dug and

42. Ibid., p. 238. 43. Ibid., p. 238.

the results published prior to 1948,44 made Martin, Quimby, and Collier's task of chronology construction doubly difficult. However, Joffre Coe's work in North Carolina-the first location of an Eastern site with true stratigraphy in depth suggested that the chronological stages of Martin, Quimby, and Collier may have been four to five thousand years in error.<sup>45</sup> Also, when radiocarbon dating techniques were used in the East, the discrepancies became more apparent. For example, these authors gave the Lamoka Culture in the Archaic period the date before A. D. 500,46 but it is dated by radiocarbon as between 1500 and 2500 B. C. Their chronology placed nine-tenths of all the cultural traditions in the East past the time of A. D. 1.

The chronology constructed by Griffin has four main divisions. The first is called Paleo-Indian and covers a period from about 8000 to 3000 B. C. The second is the Archaic; it begins about 3000 and ends about 500 B.C. The Archaic period is divided into early and late periods, the late beginning about 1300 B. C. The third period is called the Woodland, and is subdivided into three parts: Early, Middle, and Late Woodland, dates respectively 300 B. C., A. D. 600, and A. D. 1200. Thus, the entire chronology covers about 1,900 years. The culture period it covers overlaps with other periods, notably with the Mississippi Period. The fourth period is the Mississippi, which covers a time span of about 1000 years, and is divided into Early (A. D. 800) and Late (A. D. 1500).47

Griffin	TIME	Martin, Quimby and Collier	
Paleo-Indian	8000 B. C.	First Stage	
Early Archaic	3000 B. C.		
Late Archaic	500 B. C.		
Early Woodland	300 B. C.		
Middle Woodland	600 A. D.		
Early Mississippi and	950 A. D.	Second Stage	
Middle Woodland	1000 A. D.		
Late Woodland and	1300 A. D.	Third Stage	
Mississippi	1450 A. D.		
Late Mississippi	1700 A. D.	Fourth Stage	

It is interesting to note the differences between Griffin's chronology and that of Martin, Quimby, and Collier:

Guthe, C. E., "Twenty-five years of Archaeology in the eastern United States," Archaeology of Eastern United States. 1952, p. 3.
 Coe, J., "The Cultural Sequence of the Carolina Piedmont," Archae-ology of Eastern United States. 1952, p. 304.
 Martin, Quimby and Collier, op. cit., p. 240.
 Griffin, James, Archaeology of Eastern United States. 1952, fig. 205.

It is obvious that the Griffin chronology is more detailed in delineating time periods before the birth of Christ; his Archaic period is entirely in B. C. time, whereas that of Martin, Quimby and Collier-as well as that of Ford and Willey-is placed in A. D.<sup>48</sup> Griffin's chronology names the earliest known cultural horizon as Paleo-Indian, whereas in the other two chronologies the earliest is the period of the Pleistocene Man,49 or the Archaic Period.50

The major observation to be made in comparing these three chronologies is that the gaps between the earliest cultural traditions in the East begin to disappear in Griffin's work,<sup>51</sup> and as Griffin observed, while time-scales for the East have been erected without any sound foundation, there was a definite trend among archaeologists (prior to radiocarbon dates) to extend the estimates of the duration of the various major archaeological periods.52

# THE USE OF RADIOCARBON DATES IN EASTERN UNITED STATES ARCHAEOLOGY

The reconstruction of the cultural history of any group depends upon several factors, including the recovery of cultural equipment used by the group, and the placement of cultural events within a chronology. The archaeologist works with many unknowns in his attempt to reconstruct the life of a prehistoric group. It is of major importance that he develop a time-scale within which he can place the various cultural manifestations he uncovers. Prior to radiocarbon dating techniques, the archaeologist-with a few exceptions-had to use relative time determinates.<sup>53</sup> This was particularly true in the reconstruction of cultural history in the eastern United States. In this area, various cultural traditions existed side by side, one group keeping certain cultural complexes intact for centuries that other groups had long since discarded. The East as a whole had a general movement from less complex cultural traditions to more complex ones, yet pockets of less complex cultural systems continued to exist to 1700 A. D. with little change.

<sup>48.</sup> Vide Supra, p. 66.
49. Ford and Willey, op. cit., p. 331.
50. Martin, Quimby and Collier, op. cit., p. 232.
51. Griffin, J., op. cit., figure 205.
52. Ibid., p. 365.
53. The Southwest had an absolute dating method, the tree-ring technique.

The "crazy-quilt" pattern of the various cultural traditions in the East has been extremely difficult to define, especially since the dating techniques used in other areas were difficult to apply. Therefore the discovery of a new dating technique, the radiocarbon method, by Arnold Libby in 1946, was looked to for aid in unraveling the mystery of cultural traditions in the East.

The list of radiocarbon dates issued by Libby before 1952 caused concern because some of the dates indicated considerable deviation from previous ideas of several cultural sequences. In the East the radiocarbon dates first indicated that, contrary to previous conceptions, Hopewell Culture did not follow Adena but preceded it by some 800 to 1000 years.<sup>54</sup> That the question of the validity of the radiocarbon technique for establishing dates was raised by many archaeologists eventually led to more exact methods of collecting, testing, and preserving the carbon from archaeological sites. Thus, by 1955, the dates from the radiocarbon techniques corrected earlier mistakes, as Johnson states: "The initial attempts to date Adena and Hopewell cultures and some phases of the Archaic cultures in the Southeast were far from satisfactory, largely because many of the samples were unsuitable for this purpose. Determinations since 1952 confirm the general opinion that Adena preceded Hopewell. In addition, the dates indicate that the two cultures overlapped in time."55

The Old Copper Culture in Minnesota, Wisconsin, upper Michigan, and probably northern Illinois, eastern Iowa, and southern Ontario has long been recognized as a culture of antiquity (about 2000 years old). However, the radiocarbon dates indicate even greater antiquity. The two radiocarbon dates from the Old Copper Culture are 5600 and 7510 years before the present. These dates would put the Old Copper Culture some 3000 to 5000 years earlier than it was formerly thought to occur. Both the Griffin, and the Martin, Quimby, and Collier chronologies placed the Old Copper Culture at about A. D. 100.56

The radiocarbon dates from Barbeau Creek (Modoc) Rock Shelter are particularly interesting to eastern archaeologists. The site is located near Prairie due Rocher, Illinois, and most likely belongs to the Archaic period. It was divided into three stratigraphic levels, A, B, and C (level A being nearest the surface or top; B, the middle level; and C, the lowest occupational level).

<sup>54.</sup> Griffin, 1952, p. 368. 55. Johnson, 1955, p. 155. 56. Griffin, 1952, Figure 205, and Martin, Quimby and Collier, 1946, p. 289.

Level A is dated at about 5700 b.p.; level B dates average about 8500 b.p.; and level C dates average about 10,000 b.p.<sup>57</sup>

The date of the lowest level is the earliest recorded for the presence of man in the east. The fact that the culture is typically Archaic makes this archaeological site even more interesting, as this culture intrudes into the time period formerly thought to be exclusively Paleo-Indian.

One of the most certain dates from the radiocarbon method is the age of the forest beds at Two Creeks, Wisconsin. It is believed that this spot marks the last advance of the Wisconsin Glaciation-the Mankato advance-and therefore is important in determining various geochronological events which in turn help fix the time of deposits that contain articles of human manufacture. The trees that were pushed down by the ice advance have been given the radiocarbon date of 11,400 b.p., or 9400 B. C. This date makes the Folsom Culture, the Archaic culture of Barbeau Creek Rock Shelter, and the Mankato advance contemporaneous. To say the least, these facts require the reinterpretation of cultural traditions in the East. It is obvious that the conceptions of time regarding the various cultural horizons in the East have been steadily pushed back; thus early man in the East is found to have existed earlier and subsequent cultural traditions to have existed longer, overlapping and combining with later cultural horizons.

The radiocarbon dates have shed light on the process of cultural change. It is becoming increasingly clear that the time required for a culture to develop distinctive changes cannot be estimated by a simple formula. It will be recalled that the Ford and Willey chronology had placed 90 per cent of the cultural traditions of the East within a time dimension of 1,000 years; the significance of this dimension is that, within its limits, four or five major cultural systems were said to have been adopted and discarded. Radiocarbon dates have shown us the error in assuming that these changes occurred in this short a time. This is not to say that many cultural changes cannot take place rapidly, but only that it did not happen in the East within the time allowed by Ford and Willey.

The radiocarbon dates for the East, when correlated with the various cultural traditions, present an extended or long chronology for the East, one that begins as early as the end of the last ice

<sup>57. &</sup>quot;b.p." is used to designate years before the present. In addition, the year numbers have been rounded off and the error in plus and minus is not stated.

advance of the Wisconsin glaciation, some ten to twelve thousand years ago. A tentative chronology in which radiocarbon dates are correlated with the various cultural periods follows:

Paleo-Indian 15000 to 3000 B. C.	The earliest dates for this period come from sites in the High Plains area. The Folsom cul- ture evidences found at the Lindermeir Site date about 10,000 years ago. The Paleo-Indian culture at Bolyston Fishwier Site has been dated at 5,700 years ago. Thus, the Paleo-In- dian period is roughly 15,000 to 3,000 B. C. This means that the migration to the New World began before the end of the last ad- vance of the Wisconsin Glaciation.
Archaic 9000 to 1000 B. C.	The Archaic extends back in time to about 9,000 B. C., and while some evidence indicates that Archaic Culture groups existed after A. D. 1, it is considered to have ended about 1,000 B. C.
Early Woodland (Adena) 1000 B. C. to 800 A. D.	The Early Woodland period dates from about 1,000 B. C. to about A. D. 800. This period is characterized by the Adena Culture, radio- carbon dates reveal that Adena and Hope- well Cultures overlapped in time.
Middle Woodland (Hopewell) 500 B. C. to 1300 A. D.	The Middle Woodland period is characterized by the Hopewell Culture and is dated as occurring about 500 B. C. to A. D. 1300. Sev- eral dates in the lower Mississippi Valley indicate that Hopewell occurred in this re- gion later than it did in the northern Mis- sissippi Valley around the present city of St. Louis. If this is true, then there is reason to believe that it is an indigenous culture with possible influence from the Southwest via the High Plains.
Mississippi 1000 A. D. to 1700 A. D.	The Mississippi period is dated about A. D. 1000 to A. D. 1700, and the culture was found still flourishing in Louisiana by the early French explorers. The dates for Kin- caid have been determined both by radio- carbon and by the tree-ring method. These dates place Kincaid later in time than the Cahokia Mound site across the Mississippi River from St. Louis. The date for Cahokia is about A. D. 1100.
Late Woodland 1300 A. D. to 1700 A. D.	The Late Woodland period began in many places (especially Ohio, New York, and Pennsylvania) after the climax of the Hope- well tradition. It is dated from about A. D. 1300 to A. D. 1700.

A brief comparison of the above chronology with those described earlier illustrates how the radiocarbon dates have influenced the conceptions of time in the archaeology of the eastern United States.

# CONCLUSIONS

Ascertaining time has been of interest to many sciences, including the study of prehistoric man. One of the most difficult tasks of an archaeologist has been his job of correlating reconstructed cultures with an historic calendar. The prehistoric events in the New World relating to man have been a source of speculation since the new continent was found to exist; and, as the body of knowledge about it accumulated, men continued to seek explanations of the presence, activities, and origins of the New World's aboriginal inhabitants. Sections of the continent have been divided up for convenience of analysis, and the eastern part of the United States has proved to be a particularly difficult area for archaeologists to place cultural tradition within an absolute time-scale.

The discovery of the radiocarbon method of ascertaining time has made the task of establishing dates for various cultures in the East much easier, as it allows an archaeologist to date his site or occupational level in absolute time. The dates arrived at by the radiocarbon method have demonstrated that the cultural traditions in the East were of far greater antiquity than prehistorians had thought them to be. The radiocarbon dates also have been useful in establishing dates for various geologic events in the East. One of the most important of such events was the last advance of the Wisconsin Glaciation. This advance, called Mankato, stopped at Two Creeks, Wisconsin, about 11,000 years ago. Radiocarbon dates for the Barbeau Creek (Modoc) Rock Shelter site near this last advance of ice indicate its existence about 11,000 years ago, thus making the two events contemporaneous. The sites east of the Rocky Mountains dated 9,000 to 11,000 years ago contain strikingly different cultural equipment. The archaeological site at Barbeau Creek (Modoc) Rock Shelter contains artifacts that will probably place it within the Archaic Culture Period, the second culture period for the eastern United States. Other sites further west, in Colorado, contain artifacts that would place them in the Paleo-Indian period. This was not what most archaeologists expected, for the East was thought to have cultural traditions occurring later than any of those in the west. It indicates the possibility that other culture horizons, 15,000 to 18,000 years old, are likely to be discovered in both the western and eastern United States.

Radiocarbon dates have confirmed the theory that man arrived in the New World before the end of the Ice Age. Sites in Alaska have been dated about 15,000 years before the present, and sites at the tip of South America have been dated about 8,600 years ago; thus it is almost certain that man existed in most of the eastern area of the United States without a thousand years of either one of the above dates.

The radiocarbon method has proved immensely useful to archaeologists everywhere in the world. As a measurement of time, the radiocarbon dates are reliable within a reasonable range of error, providing, of course, that the specimens for testing are collected with care. The unique usefulness of this method lies in the fact that the determination of dates remains independent of hypothetical geological or archaeological interpretations, yet chronological problems of both studies can now be solved with radiocarbon dates.

## BIBLIOGRAPHY

#### Adair, James.

1775. The History of the American Indians. London. (Reprinted, Johnson City, Tennessee: The Watauga Press, 1930.)

#### Antevs, Ernest.

- 1925. "Retreat of the Last Ice-Sheet in Eastern Canada." Canada Geologic Survey, Vol. 146. Ottawa.
- 1938. Rainfall and Tree Growth in the Great Basin. Washington: Carnegie Institution of Washington.

#### Atwater, Caleb.

- 1820. "Descriptions of the Antiquities Discovered in the State of Ohio." In Archaeologia Americana, Transactions of the American Antiquarian Society, Vol. I. Worcester.
- 1831. Remarks Made on a Tour to Praire du Chien. Columbus.

#### Boas, Franz.

1927. Primitive Art. Cambridge Harvard University Press:

#### Bradford, A. W.

1841. American Antiquities and Researches into the Origin and History of the Red Race. Boston.

#### Clinton, De Witt.

1882. Letters, on the Natural History and Internal Resources of the State of New York. New York.

#### Coe, Joffre.

1952. "The Cultural Sequences of the Carolina Piedmont." In Archeology of Eastern United States. Chicago: University of Chicago.

#### Coues, Elliott

1893. History of the Expedition Under the Command of Lewis and Clarke. New York: F. P. Harper.

## Cooper, W. S.

1942. "Contributions of Botanical Science to the Knowledge of Postglacial Climates." Journal of Geology, Vol. 50.

#### Daniel, Glyn E.

1950. A Hundred Years of Archaeology. London: Gerald Duckworth and Company, Ltd.

#### Fewkes, J. Walter, et al.

1912. "The Problems of the Unity or Plurality and Probable Place of Origin of the American Aborigines." In American Anthropologist, N. S. 14.

- Ford, J. A., and Gordon R. Willey.
  - 1941. "An Interpretation of the Prehistory of the Eastern United States." In American Anthropologist, Vol. 43.
- Glock, W. S.
  - 1937. Principles and Methods of Tree-Ring Analysis. Washington: Carnegie Institute of Washington.
- Griffin, James (Editor)
  - 1952. Archeology of Eastern United States. Chicago: University of Chicago Press.
- Guthe, Carl E.
  - 1952. "Twenty-five Years of Archeology in the Eastern United States." In Archeology of Eastern United States. Chicago: University of Chicago Press.
- Harris, Thaddeus Mason.
  - 1805. Journal of a Tour into the Northwest of the Alleghany Mountains Made in the Spring of the Year 1803. Boston.
- Harrison, William Henry.
  - 1883. "Aborigines of the Ohio Valley." In Fergus Historical Series, Vol. 26.
- Haven, Samuel.

"Archaeology of the United States." In Smithsonian Contributions to Knowledge, Vol. VIII.

# Holmes, William H.

1903. "Aboriginal Pottery of the Eastern United States." In Twentieth Annual Report, Bureau of American Ethnology, Volume 20. Washington.

#### Jacobi, H.

1908. "Ages of the World (Indian)." In Encyclopaedia of Religion and Ethics. (James Hastings, Editor.) New York: Charles Scribner's Sons.

#### James, Edwin.

- 1905. "Account of an Expedition from Pittsburgh to the Rocky Mountains." In Early Western Travels, Vol. 14-16. Ohio.
- Jefferson, Thomas
  - 1787. Notes on the State of Virginia. London.

#### Jones, David.

1865. "Journal of Two Visits Made to Some Nations of Indians of the West Side of the Ohio River in the Years 1772 to 1773." In Sabin's Reprints, Vol. 2. New York.

#### Johnson, Frederick.

1952. "Reflections Upon the Significance of Radiocarbon Dates." In W. F. Libby, Radiocarbon Dating. Chicago: University of Chicago Press.

#### Kalm, Peter.

1770. Travels into North America, Vol. III. (English Translation by J. R. Foster.) Washington.

#### Kidder, A. V.

1924. An Introduction to the Study of Southwestern Archaeology. New Haven.

## Krieger, Alex.

1944. "The Typological Concept." In American Antiquity, Vol. 9, No. 3.

#### Kroeber, A. L.

1939. "Cultural and Natural Areas of Native North America." In University of California Publications in American Archaeology and Ethnology, Vol. 38.

#### Le Page du Pratz, Antoine S.

1785. History of Louisiana, Vol. III. Paris. (English translation 1763.)

# Libby, Willard F.

- 1952. Radiocarbon Dating. Chicago: University of Chicago Press.
- 1955. Radiocarbon Dating. (Second Edition.) Chicago: University of Chicago Press.

#### McCulloch, J. H.

1829. Researches, Philosophical and Antiquarian Concerning the Aboriginal History of America. Baltimore: F. Lucas.

#### McKern, W. C.

1939. "The Midwestern Taxonomic Method as an Aid to Archaeological Culture Study." In American Antiquity, Vol. 4.

#### Martin, Paul, George Quimby, and Donald Collier.

1946. Indians Before Columbus. Chicago: University of Chicago.

## Mitra, Panchana.

1933. A History of American Anthropology. Calcutta: Calcutta University Press.

#### Moore, Ruth.

1953. Man, Time and Fossils. New York: Alfred A. Knopf.

1956. The Earth We Live On. New York: Alfred A. Knopf. Morehead, Warren K.

1910. The Stone Age in North America. Boston.

Nature: A Weekly Magazine of Science, Vol. 154. August 12, 1944. London: MacMillan and Company.

#### Nelson, N. C.

- 1916. "Chronology of the Tano Ruins, New Mexico." In American Anthropologist, Vol. 18.
- 1924. "Contributions to the Archaeology of Mammoth Cave and Vicinity, Kentucky." In Anthropological Papers of the American Museum of Natural History, Vol. 22. New York: American Museum Press.

#### Oakley, K.

1949. "The Fluorine Dating Method." In American Yearbook of Physical Anthropology.

#### Parker, A. C.

1916. "The Origin of the Iroquois as Suggested by their Archaeology." In American Anthropologist, N. S. 18.

## Powell, J. W.

1879-1880. "Anthropological Data." In First Annual Report of the Bureau of Ethnology. Washington.

#### Rice, Stuart A.

1931. Methods in Social Science. Chicago: University of Chicago Press.

#### South, Stanley.

1955. "Evolutionary Theory in Archaeology." In Southern Indian Studies, Vol. 7. Chapel Hill, N. C.

#### Spier, Leslie.

- 1916. "New Data on the Tenton Argillite Culture." In American Anthropologist, Vol. 18. Lancaster.
- 1931. "N. C. Nelson's Stratigraphic Technique in the Reconstruction of Prehistoric Sequences in Southwestern America." In Stuart A. Rice, Methods in Social Science. Chicago: University of Chicago Press.

#### Squier, E. G., and E. H. Davis.

1848. "Ancient Monuments of the Mississippi Valley." In Smithsonian Contributions to Knowledge, Vol. 1.

#### Sterns, Fred H.

1915. "A Stratification of Cultures in Eastern Nebraska." In American Anthropologist, N. S. 17.

#### Tomb, J. Walter.

1953. An Essay on Time. Princeton: Princeton University Press.

## Volk, Ernest.

1911. "The Archaeology of the Delaware Valley." In Papers of the Peabody Museum of American Archaeology and Ethnology. Vol. 5. Cambridge.

# Williams]

#### Wissler, Clark.

- 1914. "Material Cultures of the North American Indians." In American Anthropologist, Vol. 16.
- 1917. The American Indian. New York: Douglas C. McMurtrie.
- 1922. The American Indian. (Second Edition.) New York: Oxford University Press.
- 1929. Introduction to Social Anthropology. New York: Henry Holt and Company.
- 1938. The American Indian. (Third Edition.) New York: Oxford University Press.
- 1940. Indians of the United States. New York: Doubleday, Doran and Company, Inc.

#### Zeuner, Frederick E.

- 1950. Dating the Past. Second Edition. London: Methuen and Company, Ltd.
- 1952. Dating the Past. Third Edition. London: Methuen and Company, Ltd.