

claws long and strong, those of front and middle legs fully as long as last tarsal joint. Vein M_1 usually deeply bent in after origin.

This genus is remarkable for having practically the same type of female reproductive system as *Glossina*. There is only one ovariole in each ovary. The ovaries mature an egg alternately; one at a time being hatched, and maggot carried to third stage, in the uterus. The uterus is merely the much distended uterovagina, functioning as uterus; it bears no copulatory vesicles anteriorly. Puparium dirty-gray to yellowish.

Musca larvipara Portchinski⁷ (syn. *Musca corvinoides* Schnabl & Dziedz.⁸) evidently belongs to this genus.

ANTHROPOLOGY.—*Prehistoric cultural centers in the West Indies*.¹ J. WALTER FEWKES, Bureau of Ethnology.

When the West Indies were discovered by Europeans the inhabitants of these islands were ignorant of the metals, iron and bronze, which have played such an important part in elevating the condition of prehistoric man in the Old World. Stone, clay, wood, bone, and shell were employed by the natives for utensils and implements; gold and copper for ceremonial purposes or for personal decoration. The Precolumbian aborigines of the West Indies, like those of the rest of America, were practically in what Professor Hoernes has aptly called the infancy of our race culture, to which the name Stone Age is commonly applied.

This period of race history seems to have been universal; it was nowhere of brief duration. Successive steps in cultural advancement were slow and in certain localities were retarded by unfavorable environmental conditions.

It has been estimated that the Stone Age in the Old World lasted from the year 100,000 to 5000 B.C.² The American Indian was practically in the Stone Age when he was discovered at the close of the 15th century, and the inhabitants of a few of the Polynesian Islands were still living in this epoch a little over a century ago. There is every reason to suppose that the

⁷ Bur. Ent. Comm. Se. Minist. Agr. St. Petersburg, 8, no. 8: 13, footnote. 1910.

⁸ Die Anthomyid. 128. 1911.

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² Practically another way of saying that the length of the Stone Age far exceeded the age of metals.

parentage of the American Indian dates as far back as that of the Europe-Asian man, provided both sprang from the same original source. It is known from evidences drawn from differences in implements that during the protracted Stone Age epoch man in Europe passed through distinct phases, which have been designated the Earliest, the Old, and the New stone epochs, before he entered that of metals. The American Indian had developed into the New or polished Stone Age when he came to America, and had not progressed beyond it when America was discovered by Columbus.

Although the Stone Age still survived in America when it was discovered, this epoch in the Old World had long before been superseded by one of metals, showing that the Age of Stone in the Old and New Worlds does not correspond in time; when the New World was discovered Europe had been in possession of metal implements for several thousand years. The highest development of stone technic, other things being equal, would naturally be looked for where it had been practised the longest time, and it is to be expected that the prehistoric stone objects found in America would be superior to the European, known to have been made before the discovery of bronze and iron.

Individual specimens of stone implements from the Old and New Worlds are so similar in form and technic that it is very difficult to determine which continent can show the better examples, but comparing the majority of implements from the Stone Age in America with those made before the discovery of bronze and iron now exhibited in Europe, it has been found that the former are, as a rule, superior to the latter. In Stone Age architecture we find a like superiority. The buildings constructed in the American Stone Age excel those of the same epoch in Europe, as will appear when we compare the stately temples of Peru, Yucatan, or Central America with the megalithic monuments and other buildings ascribed to the latest Stone Age of Europe.³

³ I have based my judgment on the probable form and character of the ancient houses of the Stone Age in Europe, from "house urns" or burial urns shaped like houses, or from the reconstructions made of walls as indicated by post holes and floors. These buildings of the European Stone Age were certainly inferior to those of the same epoch in America.

Character and decoration of pottery is also a fair indication of cultural conditions reached in the Stone Age in different regions of the globe. The ceramics of this epoch in America reached a higher development than those of the polished Stone Age of the Old World, as may be readily seen by comparisons of the beautiful prehistoric American Stone Age pottery and that of man before the use of metals in the Old World.⁴

It thus appears that, if we base cultural advancement on pottery or house building, America had reached a higher stage of development than Europe, even though man in the former was ignorant of the metals, bronze and iron. The implication is that the human race, found in America in 1500 A.D., had lived in a Stone Age longer than man in Europe, where metals had been introduced fully 6000 years before Columbus.

The implements found in the West Indies are among the highest developed examples of this Stone Age. Many of them are the most perfect of their kind and rank with the polished stones of Polynesia, of Africa and Asia. In architecture, the branch of the American race inhabiting the West Indies in prehistoric times had not made great progress, although the cognate ceramic art was well developed.

While there is little in prehistoric America to show a serial succession of stone implements based on method of manufacture, as indicated by chipping, polishing, or other superficial characters, the variations in their forms are great. They indicate geographical rather than historical cultural distribution. Certain characteristic forms of stone artifacts are confined to certain areas, but these characteristics are not of such a kind as to make it difficult for us to readily arrange them in a sequence. The first step to take in explanation of different types of stone implements is naturally to define the areas that are typical.⁵

⁴ These examples show the weakness of relying solely on stone, bronze and iron in classification and the futility of basing the degree of human culture on any one form of artifacts.

⁵ The culture historian is concerned with the distribution of archaeological objects in time and space or in history and geography. It is for the geographer to interpret geography in relation to history and of the historian to translate history by the interpretation of the geographer.

While the different known types of stone objects found in the West Indies may be considered geographically rather than historically, this manner of assembling specimens in large collections brings out many facts which will make it possible later to determine a definite chronology, and to associate types of implements with local conditions, thus affording an instructive study of the interrelations of environment and human culture.

We can believe that certain of the stone implements found on these islands are old, but it cannot be proved that the oldest of them extend back to the earliest polished stone epoch. Stone implements made by chipping, or those having unpolished surfaces, are rare in the West Indies; they have not been reported in sufficient numbers to enable us to say that they indicate the former existence in these islands of an epoch when chipped implements were the only ones employed. A few chipped axes have been reported from Santo Domingo and other islands, but neither there nor in other islands are the flint chips numerous enough to afford conclusive proofs of an epoch, notwithstanding these implements and their chips closely resemble similar objects picked up on the sites of work shops in the Old World.

The discoverers of the West Indies early recognized that the aborigines of different islands differed in their mode of life, their culture, and their language. In early accounts we find two groups designated as Arawak and Carib, accordingly as their life was agricultural or nomadic. It was stated by the early travelers that these groups inhabited different islands, the former being assigned to the Greater Antilles, the latter to the Lesser.

The large collection of artifacts characteristic of the aborigines of the West Indies now available shows that the stone tools, pottery, and other objects found on the islands inhabited by the Caribs are radically different from those from islands on which the so-called Arawaks lived. Students of prehistory did not at first connect this difference with any racial dissimilarity, but ascribed all these implements to Caribs. This conclusion does not necessarily follow, for it fails to take into account the significant fact that the stone objects found on the so-called Carib

islands may have been made by a people inhabiting them before the Caribs came. Moreover, this interpretation does not give sufficient weight to the evidence furnished by the implements themselves, for they imply a culture quite different from that of the Caribs as made known by historical accounts, as flourishing at an earlier date on the Carib islands. In other words, there is good evidence of a prehistoric race inhabiting the Lesser Antilles before the arrival of the Europeans.

One characteristic of the prehistoric objects found on the islands inhabited by Caribs when discovered may be mentioned in this connection. It is well known that the Arawak, like all agricultural peoples, are great potters, and that the ancient Caribs, like nomads, from necessity were not. The two races probably preserved these characteristics in the West Indies; and the fact that we find pottery objects of high excellence on all the islands inhabited by the Caribs leads to the natural inference that they were made by a people allied to the Arawak who anciently lived on these same islands.

Archæological remains left by the aborigines of the West Indies reveal three cultural epochs, grading into each other, which may indicate a sequence in time or distinct cultural stages. These epochs were the cave dwellers, the agriculturalists, and the Caribs. The most primitive culture is represented by objects found in the floors of caves or in the numerous shellheaps scattered from Cuba to Trinidad. A second stage is more advanced and is agricultural in nature, represented on all the islands but surviving at the time of discovery on the larger—Cuba, Hayti, and Porto Rico; while the third, or Carib stage, had replaced the agricultural in certain of the Lesser Antilles, especially on the chain of volcanic islands extending from Guadeloupe to Grenada.

Although the three stages above mentioned are supposed to follow each other chronologically, not one of them had completely died out when Columbus discovered America. The cave dwellers still survived in western Cuba and in Hayti, and according to some authorities they spoke a characteristic lan-

guage. The Arawak inhabited Porto Rico, Hayti, Cuba, Jamaica, and the Bahamas.

The customs of the aborigines who left the great shellheaps found throughout the West Indies were apparently not very different from those of the natives of prehistoric Florida, or northern South America. These people, essentially fishermen, lived on fishes, mollusks, or crabs, eking out their dietary with turtles, birds, and other game captured along the shores; fruits and roots were also probably collected and eaten, but their main food came from cultivated crops of yuca planted in the neighborhood of their settlements. The nature of their food supply confined them to the seashore or to banks of rivers where village sites occur in numbers. It is probable that the shellheap people of the West Indies were likewise cave dwellers and resorted at times to rock shelters for shelter or protection. We know from excavations in caverns that they buried their dead in these caves which later came to have a religious or ceremonial significance.

We may suppose that a life devoted to fishing would make men good sailors, and it is probable that the prehistoric Antilleans manufactured seaworthy canoes, hollowing out logs of wood with the live ember and the stone axe. It is also evident from objects found in the floors of caves that the women of this epoch manufactured pottery, and as reptilean figures in relief or effigy vases representing this animal occur constantly, we may suppose that some reptile as the iguana or turtle was highly prized for food. Some of the bone needles, whistles, and ornaments of shell or wood found in shellheaps show that those who camped in the neighborhood were advanced in culture, while other objects found in the West Indian shellheaps are, so far as technic goes, equal to that of the highest of the Stone Age culture. It is probable that this form of culture reaches back to a very early date in culture development.

One important consideration presents itself in relation to the shellheap life in the West Indies as compared with that of the shellheaps in Florida and Guiana in South America. From the very existence of the shellheap culture on the continents and con-

necting islands they would seem to shed light on the earliest migrations of West Indian aborigines. Unfortunately, however, the objects manufactured by all primitive people in this stage are so crude that they are not distinctive; there is often a parallelism in their work. For example, pottery from widely separated regions often bears identical symbols, even where the people who manufactured it have had no cultural connection. Consequently, although we find certain common features in decorated coastal pottery of Florida and that of Porto Rico, this similarity implies rather than proves cultural contact.

The highest prehistoric culture attained in the West Indies was an agricultural one. It was based on the cultivation of the yuca (*Manihot manihot*), a poisonous root out of which was prepared a meal, from which the so-called cassava bread was made. At the time of the discovery the cultivation of this plant had attained its greatest development and so completely had it developed that Porto Rico and Hayti are said to have been practically covered with farms of this plant. In fact, when sorely pressed by the Spaniards to furnish them gold for tribute one of the caciques offered to cultivate, for the conquerors, a yuca farm extending across the island of Hayti. Both Porto Rico and Hayti appear to have been densely populated, and the failure of the population to advance into a higher stage of development was limited by the perishable character of the root or food plant cultivated. Corn and other cereals⁶ were not extensively used and there was no domesticated animal. It is evident that this culture was built on a root food supply which was clearly a product of environment, and on account of this dependence merits careful study by the culture historian and anthropo-geographer.

The development of this culture varies on different islands or groups of islands, forming cultural centers of which the following can be recognized by the character of the pottery: (1)

⁶ Corn (*Zea mays*) was introduced into the West Indies as a food plant shortly before the advent of the Spaniards. If sufficient time had elapsed it would have replaced this unique form of cultural development based on root agriculture, unless as in the Lesser Antilles it had been destroyed by Caribs who were pressing in upon it with such force that it could not survive.

Porto Rico, (2) Jamaica, (3) eastern Cuba and Bahamas, (4) St. Kitts, (5) St. Vincent, (6) Barbados, (7) Trinidad. The differences in artifacts characteristic of these culture centers of the Antilles are sometimes small; thus, the Porto Rico area, which includes also Hayti and Santo Domingo on the one side and the Danish islands on the other, is clearly allied to the eastern Cuba and Bahama area. In the former we have the three types of stone implements—stone collars, elbow stones, and three pointed idols—none of which has yet been found in Cuba, the Bahamas, or Jamaica. Pottery from these islands, except the last mentioned, bears rectilinear or curved lines ending in enlargements,⁷ a decorative feature which is absent in Jamaica. This feature does not occur in the Lesser Antilles from St. Thomas to Trinidad, where four different regions of decorated pottery can be differentiated.

An adequate account of the characteristic features that differentiate the seven Antillean culture centers of the West Indies would swell this article to undue proportions, but will be considered at length in a report on the magnificent Heye collection of West Indian antiquities.

Lest the author may be thought to have confused the ancestral cavern culture with a secondary cave life due to an adaptation to environment, it may be added that the former is that discussed in this article.

⁷ This characteristic feature of Porto Rican pottery decoration appears on characteristic pottery found by Mr. Clarence Moore in mounds of northern Florida.