

A Comparison of Crania From the Shell Heaps of Brazil With Those of the Archaic of the Eastern United States

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It is now generally accepted that sometime previous to 8000 B.C., a culture adapted to open forest conditions, began to differentiate in the eastern portion of North America. This culture, which became known as the Eastern Archaic, was based on earlier Paleo-Indian traditions, and since it was carried by relatively small bands of people, differentiated into a number of local cultural manifestations, and, as genetic isolates, into a number of local physical types. Yet, undoubtedly contacts of a sort were maintained, so that despite the cultural and physical diversification, two fairly distinct branches developed. These represented adaptations to broad climatic and ecological areas, and exhibited enough cohesion to become associated with large linguistic entities. In the northern area, more recently vacated by the retreating glaciers, we thus find a Boreal Archaic culture, largely associated with a Lenid (rugged eastern long-headed) variety, (1) and consisting of groups which were in all probability speakers of Proto-Algonquin. In the southeastern part of the United States the Boreal Archaic was matched by the Southern Archaic culture, associated with the Iswanid (small southern mesocranial) variety, consisting of populations which in all probability were Proto-Muskogean in speech. There is some evidence that three or four thousand years later the linguistic stocks had fairly well differentiated, and that a number of Paleoamerind varieties had made their appearance.

A possible third linguistic stock, the Siouan, probably also occupied parts of eastern United States as early as the Late Archaic, possibly occupying the intermediate area, via the Ohio Valley, between the Mississippi and the Eastern Seaboard. Physically, these people were probably more closely linked with the Boreal Archaic culture and the Lenid variety in the East, and with the Southern Archaic and Iswanid variety in the Middle West. But as yet these relationships are still somewhat conjectural, being based for the most part on the fact that eastern Siouan groups exhibited Woodland traits, and that physically they antedate the Dakotid variety of Siouan-speakers west of the Mississippi. The long-headed, high-vaulted Mandans, traditionally the ancestral group of the Siouan-speakers, are also physically the closest relatives of the Siouan tribes of Virginia, while the intermediate Quapaw of Missouri—also non-Dakotid physically—suggest an Iswanid link with the Southern Archaic.

The problems involving the Eastern Archaic are thus definitely relegated back to the period around 4000 B.C., a period during which grasslands spread over an area that extended from what is now Illinois to the Atlantic coast. In general it may be said that the Eastern Archaic culture over a period of seven or eight thousand years reflected a series

of adjustments of a hunting and gathering economy in a woodland setting.

Going farther afield, to the Southwest, and to a number of South American areas we find similar adjustments and transitions from Paleo-Indian to Archaic level cultures which exhibit general parallels, but differ in specific culture content. A number of archaeologists recognized this North and South American parallelism, but were reluctant to go farther than to point out parallels that could be expected in a general Archaic level of cultural development.

When Professor Georg K. Neumann of Indiana University read the manuscript of Willems and Schaden *On Sambaqui Skulls* (2) previous to its publication in 1951, he noted close morphological resemblances of this material to the Archaic Indian Knoll people of Kentucky, and on that basis suggested a closer metrical and morphological comparison to determine possible physical relationships of these two series. Since the morphological observations are not strictly comparable, the present study confines itself largely to a metric and indicial comparison in the hope that it will reflect morphological similarities. As the Sambaqui series is quite small this study is to be regarded as a preliminary or pilot study for more detailed work, which would necessitate a reexamination of all Brazilian material under conditions in which standardized morphological observation techniques are employed. The series described by Willems and Schaden, although limited, nevertheless points out the basic similarities of these two populations, and shows where the greatest differences exist. These differences may be interpreted either as a matter of genetic drift or minor adaptations to local conditions.

Interest in the ancient peoples of eastern Brazil dates back to Lund's excavations of the Lagoa Santa crania from the Sumidouro caves between 1835 and 1844. Subsequently the sambaquis or shell heaps from the southern coast of Brazil yielded cranial material which has been repeatedly identified as representing a second Paleomerind variety. The first description of sambaqui material was published by Lacerda in 1882. A larger series, which included Lacerda's material, was later re-examined by Willems and Schaden (2) and serves in the broader comparisons made in this paper. The Archaic Indian Knoll series from Kentucky is that which is part of the collections of the U. S. National Museum. Observations and measurements on this series were made by Professor Neumann, who describes the Iswanid variety which it represents, as follows: (3) "The skull is relatively small with an average capacity of 1366.9 cc., a cranial module of 150.4, a glabello-occipital length of 177.0 mm., a maximum breadth of 134.9 mm., and a basion-bregma height of 138.8 mm. These dimensions yield a cranial index of 76.25, and a length-height index of 78.27. The cranial vault is therefore on the lower border of mesocrany and high in relation to its length. It is ovoid in form, with medium muscular relief, small to medium brow ridges, medium frontal slope, small frontal breadth, a slight amount of sagittal cresting, medium parietal eminences, only a slight amount of lambdoidal flattening, and an occiput that has a medium high position.

"The face as a whole is of gracile rather than rugged build and not large in relationship to the braincase. All facial dimensions tend to be moderate (total facial height 118.0 mm., upper facial height 70.1 mm., and bizygomatic breadth 135.9 mm.), and the same applies to the proportions of the face (total facial index 87.09, mesoprosopic, and upper facial index 52.14, mesene). The size of the zygomatic bones and their anterior projection are only moderate, but the lateral projection of the zygomatic arch is generally pronounced. The orbits are most frequently somewhat oblong, often square with a small amount of inclination; and the (left) orbital index is mesoconch (77.92, if the breadth is taken from maxillofrontale, 88.33 from dacryon). The nasal index is leptorrhine, 46.60, on the border of mesorrhiny. Absolute diameters of the nasal structures are small with a breadth of 23.8 mm., and a height of 51.2 mm.; both root and bridge dimensions are moderate. Prognathism is medium to submedium. The size of the mandible is medium, the most common chin form is bilateral, and gonial eversion small to medium." (3)

A comparable description of the Sambaqui skulls, following Willems and Schaden, would be as follows: The skulls are of medium size, with an average cranial capacity of 1442.4 cc., and a cranial module of 151.7. The glabello-occipital length is 177.4 mm., the maximum breadth is 138.0 mm., and the basion-bregma height 137.5 mm. These dimensions yield a mean cranial index of 78.42, and a mean length-height index of 77.76. The braincase is mesocranial, and high in relation to its length.

Judging from a few photographs, it appears that the skull is ovoid in form, with medium muscular relief, medium brow ridges, medium frontal slope, occasional sagittal cresting, medium parietal eminences, little lambdoidal flattening, and an occiput that has a medium high position.

In facial dimensions and proportions the Sambaqui skulls are moderate, with a rather short total facial height of 112.6 mm., a moderate upper facial height of 72.5 mm., and a bizygomatic breadth of 138.0 mm. These dimensions yield a euryprosopic total facial index of 84.43, but a mesene upper facial index of 54.45. The size of the zygomatic bones and their anterior projection are moderate, but their lateral projection is generally marked. The orbits tend to be square and rather high with a breadth of 40.4 mm., a height of 36.0 mm., and an orbital index of 88.75. The nasal breadth is 26.5 mm., the nasal height 51.3 mm., and the nasal index 51.61, on the border between meso- and chamaerrhiny. Both root and bridge dimensions and prognathism tend to be moderate. The size of the mandible is also moderate, the most common chin form is bilateral, and gonial eversion is generally lacking.

If these two descriptions are compared point for point, the general similarity of the Eastern Archaic and Sambaqui populations is striking. Over-all cranial size is moderate for both; they are similar in vault form and dimensions, both being mesocranial and hypsicranial. The shorter faces of the Sambaqui population center mainly in the symphyseal height of the mandible rather than in differences in upper facial height. Orbits tend to be definitely higher in the Brazilian series, which is also characterized by somewhat broader nasal dimensions, at least as far as one can determine from six cases.

In summary, this paper provides the morphological and metrical proof for Professor Neumann's suggestion of near identity of the Eastern Archaic and the east Brazilian Sambaqui populations, which, if roughly contemporaneous, and separated only for a relatively short time span, should show a considerable degree of resemblance. These resemblances in turn might suggest other historical relationships which deserve to be tested.

Literature Cited

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