South Indian Neolithic Culture.

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THE sources of information from which Man's early culture history may be elucidated are mainly two-fold. On the one hand, there are the actual relics of antiquity, whose relative position in the chronological sequence is determined by their position in the deposits in which they are found, and by their associations. On the other hand, there are important data to be derived from the study of the living races and peoples who have continued in a condition of arrested culture,—such are the Bushmen, the Australians, the American Indians etc., whose conditions of life afford examples of persistence of Stone Age conditions into modern times—the first is the archæological and the second the ethnological method of investigation.

The recognized divisions of time before the existence of historical records are named after the principal materials used for the manufacture of tools, weapons and utensils; and the Stone Age which preceded the use of any metal is now sub-divided into periods or phases, and named generally after type, stations or localities where the particular industry is best represented. Thus considered there are three main divisions:—Eolithic or dawn of Stone Age, Palæolithic or Old Stone Age and Neolithic or New Stone Age.

Researches into the prehistoric archæology of Europe show that early Palæolithic man made implements having a thick wedge-shaped edge tapering to a point with a heavy rounded butt opposite, which must have been held in the hand and used for hacking or chopping. This is now generally known as a 'hand-axe', which is a free translation of the French name, *coup-de-poing*. The next step forward is marked by implements of broad ovate form in which the cutting edge extends all round and the tool is more symmetrically shaped. Some of these sharp rimmed implements may have been hafted for use as axes or knives, but this can only be conjectured. No remains whatever have been found of the hafts of these Palæolithic implements. Assuming that the handles were invariably of wood, it is not surprising that most of them should have perished without leaving any trace. No undoubted modern implements of these types are known, and they were not made by Neolithic man.

Rude implements of quartzite found in very great abundance all over South India bear marked resemblance to, and are identical with, the European forms of hand axes referred to above, and evidently relate to a period of culture strictly conformable with the Palæolithic culture of Europe. While the implements of the Palæolithic peoples of Europe passed through various stages of development evidencing a chronological sequence of comparatively well-established culture phases leading to the distinctive culture of the Neolithic age, the course of transition has not been so clearly traced in India, so that the hiatus between the Palæolithic and the Neolithic ages is much more emphasized and is left largely unfilled.

In the Palæolithic age, stone implements were never ground or polished, whereas Neolithic implements were frequently ground or polished. But the reason for its tardy appearance is as obscure as its origin, seeing that there was nothing to prevent the men of the old Stone Age, particularly in Europe, from treating flint in this way as they had treated bone tools. It is now thought that the new method reached Western Europe at the same time as the idea of building dolmens over the dead; and most of the implements finished by this means are axe heads generally called 'celts'. This term is derived from a latin word supposed to mean 'chisel', and has nothing to do with the people called Celts or Kelts.

While the working part of the Palæolithic hand-axe was the point and the side edge all around, the butt being simply for grasping, in the celt the broad butt has become the sharp business end, the point is of secondary importance and the side edges are no longer used. The celt is usually used mounted at right angles in a wooden handle and used like a modern axe. A celt is thus an axe-head of hard stone with a cutting edge at the broad end, a butt more or less pointed, the sides or edges in nearly straight lines both in the side and front views, the whole or part being finished by grinding after being chipped into shape.

These stone axes are, no doubt, the best known implements of the Neolithic age, and they are also the most widely distributed products of the Stone Age in other parts of the world. Their shapes vary within somewhat narrow limits, but they all agree in having a broad cutting edge, the butt-end being usually blunt. Some of them are roughly shaped by mere flaking and they may belong

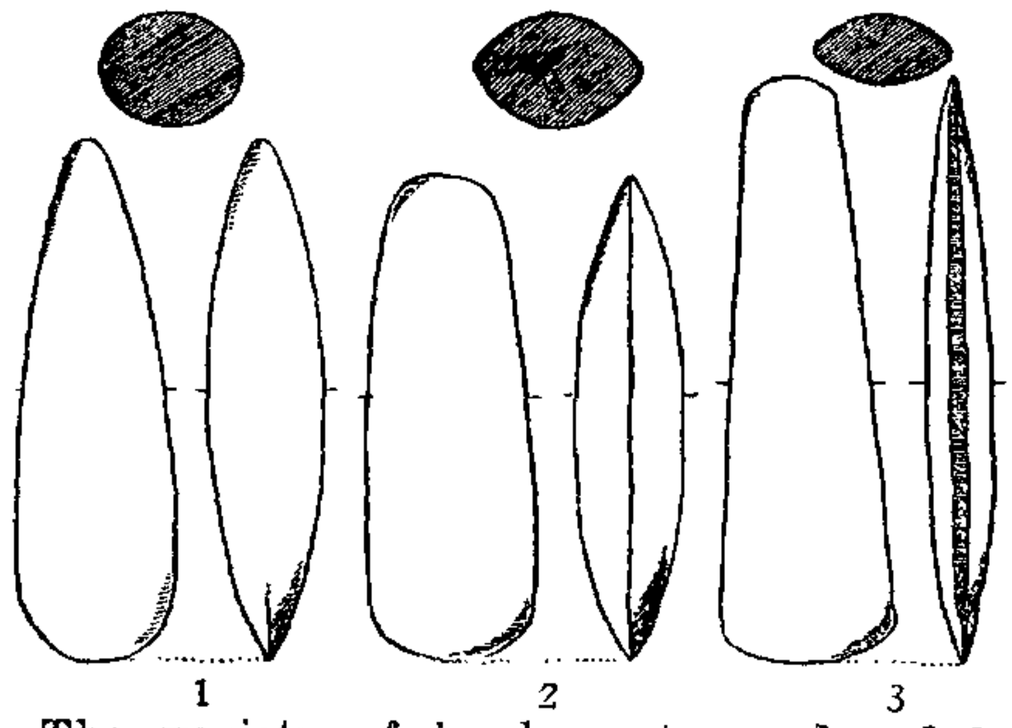
to a period previous to the introduction or discovery of methods of grinding and polishing. Some unpolished implements are no doubt unfinished specimens.

Speaking generally, four stages may be discerned in the manufacture of a Neolithic celt. In the initial stage we get an implement which is roughly chipped into shape. In the next stage, the implement is advanced a stage by 'pecking', *i.e.*, breaking down the angles of the different chippings with a sharp pointed instrument with the object of decreasing the quantity of material. In the third stage, the implement is ground and all excessive roughness removed, and in the final stage, the ground surface is polished. The implement is thus complete and is ready for hafting.

In making an implement from a block of stone, a stone hammer was used for striking blows to reduce the stone to proper form. In the manufacture of the larger implements a suitable block was chosen and brought into shape by a succession of blows, each blow removing a portion of the stone. The implement was thus the 'core' or the central part of the stone, the flakes removed being either discarded or, if suitable in shape, used for making into smaller implements such as scrapers, knives and spear heads.

Methods of grinding and polishing were no doubt of later origin than the processes of battering, pecking or flaking. In Europe, the hardness of the favourite material flint would delay or prevent the discovery that an implement might often be most easily finished by rubbing it on a suitable piece of rock. In India the stones were more easily worked, and lent themselves more readily to grinding and polishing. It is probable that the art of grinding and polishing was introduced into Europe from the East. As to the methods of grinding and polishing little need be said. A fixed grind stone in the form of a slab of rock has been widely used, such as the rock surfaces discovered in the Bellary District by Mr. Bruce Foote, on which well-polished grooves had been worn by grinding the celts to a sharp edge. Similar grooves were found in other localities in South India. Smaller whet stones have also been widely used for both grinding and polishing. The extreme degree of polish on some stone implements is an evidence of great pains spent in the process. It may be that the polishing of stone implements was in the first case the result of the observation that implements in frequent use acquired a polish especially at the cutting edge.

Most of the stones are less easily flaked than flint. Quartzite is particularly refractory and the flaking is difficult to control. Quartz is still worse in this respect and lends itself very badly to being chipped into any shape, for which reason it was very rarely used by the South Indian Palæolithic peoples. With the change in the method of working tools and weapons came an equally great change in the material the Neolithic people selected. Instead of the light-coloured quartzite chosen by the Palæolithic people, the South Indian Neolithic men chose rocks of superior toughness and tenacity such as trapoid rocks, diorite, basalt etc.



The variety of implements produced by the Neolithic people is also much greater than that made by the Palæolithic people. In the celt group several varieties have been distinguished. Three of the best known types are illustrated in the order in which they are thought to have been made: (1) A primitive form with a pointed butt, a cutting edge of oval outline and an oval cross section approaching a circle. (2) The butt becomes blunt and then broad, while the curve of the cutting edge is reduced, and the cross section becomes an oval sometimes pointed at both ends as the sides are sharpened. (3) The next important stage is the thin butted celt which has a sharpened butt (like a second cutting edge), an oblong section due to the sides being ground flat, and a cutting edge with slight curve approaching a straight line. While the pointed butt is more commonly met with in South India, the sequence is continued by several other varieties. One of the most interesting types is the broad and thin celt foreshadowing the earliest type of iron axes which differ from all the rest. There is the battle axe type of

celt which is short and thick. A rare and aberrant form is a thin celt with its sides bevelled almost to a sharp edge.

The word celt is often applied to implements of the type of adze heads or chisels. Modern stone axes of Neolithic type have been found in many parts of the world, and specimens from the Pacific Islands, America and other regions are often practically identical with the celts of the Neolithic Age. The axe or adze is the most important tool of wood-working peoples, since it is essential for the procuring and shaping of material for huts, canoes and other wooden structures. Implements of this form have been used in primitive agricultural works and some of them may be regarded as hoe-blades. It is often impossible to decide whether a given stone celt was used as an axe-head, an adze-head or as a chisel. The adze-head which is adapted for attachment to a haft in the same way as the axe-head, but with the edge of the blade transverse to the line of the haft, may be distinguished from an axe-head by the fact that one of the faces in the adze is bevelled off at the edge. The chisel has a wedge-shaped edge and is usually narrower than either axe- or adze-head.

The prehistoric localities discovered in South India unmistakably show that the Stone Age peoples were widely distributed over the country with the exception of the mountainous and forest regions of the West Coast where few relics have been found of these ancient races. Their distribution seems to have been considerably influenced by the accessibility of the materials suitable for their implements. Thus numerous settlements of the Palæolithic race have been formed within the bounds of the quartzite-yielding districts of Chingleput, North Arcot and Nellore than elsewhere in South India. The Kistna river becomes the northern boundary of these peoples, their traces getting less the further north we go. The Palar river similarly forms the southern boundary. Neolithic remains are most numerous in the northern parts of the Deccan plateau, where materials for their implements are more plentiful. Few traces of them exist south of the Cauvery.

The chief centre of the Neolithic peoples in South India was Bellary where many settlements have been discovered. The first discovery of any Neolithic celt in India was made in this district in 1872 by William Fraser. This was followed by a systematic survey of the district by Bruce Foote disclosing several Neolithic settlements. Shevaroy hills in the Salem district are also rich in Neolithic implements and other relics of a civilization rooted in the depths of time, such as the megalithic monuments. Neolithic sites have also been discovered in Kurnool, Guntur, Anantapur and Cuddapah districts and in several localities in Hyderabad State.

The first appearance of pottery occurs in Neolithic Age. Yet no place has been met with in South India where the making of vessels has been carried on on a large scale. Typical Neolithic pottery is dull coloured and rough in shape with little decoration beyond impressed or incised patterns, as distinguished from Iron Age pottery, with its better polish and finish and brighter colour.

In the Neolithic Age we also get indications of the domestication of animals. This implies that Neolithic man was largely pastoral, with a food supply rendered more or less constant by domestication. The increase in sedentary habits had an inevitable tendency for the people to group themselves in communities. And with aggregation in communities, it was no longer essential for each individual to be self-supporting. With this tendency, progress in agriculture was rapid.

Towards the close of the Neolithic Age we get the first evidence of the use of metals. While archæological discoveries in other lands disclose a Bronze Age prior to the Iron Age, in India there is nothing to warrant us to put forward such a claim in favour of bronze, the prehistoric peoples of India having obviously passed directly from the use of stone to the use of iron, as is clear from the iron implements excavated from the prehistoric burials in South India, though the process was necessarily very slow. Prehistoric men no doubt began to use iron as they had used stone, not recognizing it as iron but as something harder than stone and better adapted for making into implements. The earliest iron implements were no doubt mere copies in iron of the Neolithic celt.

In the next stage of prehistoric culture the art of smelting and working iron was introduced and gave it the name of the Early Iron Age. The much greater ease and rapidity with which weapons and tools of greatly improved quality could be produced in iron, led to the making of stone implements to be gradually abandoned.

Bruce Foote's account of the Bellary Hill

Settlement shows that in South India the Iron Age followed hard on the Neolithic Age, remains of the two phases of culture occurring in the same sites. It is evident that in a very large number of cases the Iron Age people must have occupied the old Neolithic sites, and celts and other stone implements are found mixed up with the highly polished and bright coloured Iron Age pottery, as has been found at the ancient village site of Pati at Peddamudiyam village in Cuddapah district excavated by the Archæological Survey in 1905. The site has been successively occupied by peoples in varying stages of civilization from prehistoric to modern, and finds of Neolithic stone implements, pottery, implements in iron, stone lingams, bronze rings and gold coins and ornments have been found, including a small find as recent as February last. From the evidence afforded by several such ancient sites in the districts of Deccan and in Mysore, it is very reasonable to conclude that the iron workers were the direct successors of the Neolithic people.

The Neolithic and Iron Age peoples constructed megalithic monuments such as the dolmens and stone circles which are found in various parts of South India. They are found on the Palni hills in the Madura district, on the Shevaroy hills in Salem district, on the Nilgiri hills, in Coimbatore, Malabar, Coorg, Hyderabad and elsewhere. It is observed that the distribution of megalithic monuments agrees with that of the Neolithic and Iron Age sites. This association combined with the Neolithic and Iron Age remains met with in these tombs enable us to conclude that these graves were constructed by these early races. These megalithic structures afford evidence of a relatively high social organization and of a well-developed religious cult.

The interest manifested in the study of the early chapters in the story of Man's Culture is steadily increasing, and there are now but few regions which remain totally unexplored for traces of early Man and of his activities. It is, however, a sad reflection that South India is of all parts of the globe, about the least explored region, though there is evidence of its having been populated by very ancient races in the dim distant past, and shows in its present primitive population cultural contact and racial linking with the primitive races of Indonesia, Melanesia and Polynesia. Bruce Foote's investigations have not been followed up by any excavations of prehistoric sites, and it is to be hoped that the several administrations responsible for the Government of the different parts of South India, and the learned bodies, such as the Universities, will wake up to the great need for exploring the prehistoric archæology of South India.

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The Affinities of Chætognatha.

By C. C. John, D.Sc., D.I.C. (London).

SOME of the observations on the anatomy and development of the Chætognatha seem to be of importance in throwing light on the systematic position of the group. Various authors have assigned it to widely different phyla taking into consideration certain sets of characters in support of their individual views. As all these theories have been reviewed by Burfield,* it is proposed at present to deal with only some of the more accepted views put forward by Huxley,† Doncaster‡ and Patten.§ Huxley was the first to state definitely that the Chætognatha shows a great deal of resemblance with Annelida; and later this view has been emphasized by Hertwig¶ and others. In support of this view it was pointed out that as in Polygordius the spacious body cavity of the trunk is divided by a longitudinal septum, which supports

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§ Patten, W., *The Evolution of Vertebrates and their Kin*, Churchill, London, 1912.

¶ Hertwig, O., "Die Chætognathen," *Jen. Zeitschrift*, XIV, 1880.