
CURRENT SCIENCE—50 YEARS AGO

THE SCOPE AND LIMITATIONS OF PHYSICAL ANTHROPOLOGY*†

PHYSICAL anthropology is the study of Man as an animal. As the physical nature of Man underlies all his cultural activities, physical anthropology is the most fundamental among the subdivisions of anthropological science. As contributions to the knowledge of Man are made by numerous departments of science, periodical evaluation and review of specialist data are of importance to keep up the coherence of physical anthropology and also to maintain intelligent contact between representatives of the different branches of anthropology.

ZOOLOGICAL POSITION OF MAN

Recent studies in comparative anatomy, embryology and physiology substantiate in general the orthodox view of anthropologists that a common ancestral stock has given rise to Man and the anthropoid apes, but this view requires to be modified in several points of detail on account of the factor of convergence that complicates human phylogenetic problems. "Resemblance is no proof of relationship", but may be due to parallelism in evolution. For example, the simian features of the extinct lemurs of Madagascar have to be attributed to parallelism, and contrary to the common accepted classification, Lemuroidea cannot be regarded as having given rise to the higher primates, as, in early geological times, they showed specializations which were avoided by the latter. If the palaeontological evidence that irreversibility is a general feature of evolutionary development be accepted, it may be inferred that the ancestral stock from which Man came did not have limbs that were specialized for arboreal life. This will lead us to the conclusion that the man-like characters of the gorilla are parallel developments. It however remains true that Man has a simian ancestry, and G. G. Simpson's superfamily, *Hominoidea*, which includes both Man and anthropoid apes is justified. Comparative physiology of

Hominoidea is also complicated by the effects of parallel developments. Similar blood groups have, according to Zuckerman, arisen independently in Man and anthropoid apes.

PALAEOANTHROLOGICAL EVIDENCE OF HUMAN ORIGIN

The solution of most of our problems of human phylogeny will, in future, depend on fossil records as they turn up. Such fossil evidences as are now available are meagre, and have been made much of. Some of the primitive Miocene anthropoids of the old world, particularly *Dryopithecus*, show striking resemblance in their dentition to Man. The splitting up of the *Hominoidea* into several genera appears to have happened early in Miocene times. No Pliocene Man is known to us in spite of the evidence offered by stone tools referred to that age. The earliest *Hominidae* discovered are *Pithecanthropus* and *Sinanthropus*. Taking into consideration the relatively greater variability of Man, it appears that anthropologists have exaggerated the points of difference between *Pithecanthropus* and *Sinanthropus* and made two genera of them instead of one. While the skull, brain and teeth in *Pithecanthropus*, retained primitive simian characters, the limb bones were like those of *Homo*. This is of significance in showing that the differences in limb structure between Man and anthropoid apes are very old, and that the divergence between the two groups must have taken place at a relatively remote period.

Neanderthal Man of later Mousterian date was more specialized than modern Man, who, it seems certain, was derived, not from these extreme Neanderthals, but from more generalized types of earlier date.

The study of endocranial casts is useful but has its own pitfalls. The convolution patterns in Man and anthropoid apes are not correctly impressed on the bones as in the lower animals. Too much emphasis has been laid in the past on the 'simian sulcus' in the study of endocranial casts of fossil *Hominids*, but Elliot Smith has shown how misleading this 'simian sulcus' can be. According to him, some modern

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human brains occasionally develop a sulcus which is easily mistaken for the simian sulcus.

In the study of individual skeletons there are considerable difficulties due to our inability to eliminate variations due to differences in habits, diet, etc. Even the determination of sex offers difficulties when only skulls are available for study.

PHYSICAL ANTHROPOLOGY OF RACE

There is considerable overlap in racial characters even among primary races owing to the 'reticulate evolution' of Man. Many of the racial characters now adopted are themselves susceptible to environmental influences, which may obscure fundamental similarities. Blood groups are more reliable, but there seems to be no correlation between them and body types. The determination of racial characters of pre-historic peoples from a study of their skeletons is again of uncertain value. The Grimaldi skulls of Europe, for example, were regarded as Negroid, but Elliot Smith was of opinion that they were merely variants of the Mediterranean race. R. A. Fisher has

also shown the greater advantages of the study of the living over that of skeletal material.

THE FUTURE OF PHYSICAL ANTHROPOLOGY

With the handicaps inherent in the material, and with the existing technique, it is doubtful if sensational progress will be made in physical anthropology. But biometry still holds the key to the understanding of the composition of geographical groups of Man. Physical anthropology will have to become more of a field science and study Man as he is today, attacking such problems as the relation of nutrition to physique, effects on physical types of change of environment, the phenomenon of twinning, the relation of bodily types to mental traits, etc. Human genetics will have to be studied by the anthropological method. Various formulae have been devised for assessing the nutritional status, but anthropologists will have to determine what the normal physical type is for a given population.

A. AIYAPPAN

THE COCONUT PALM BEETLE

This familiar coconut pest commonly known as the rhinoceros beetle is one of the most discouraging and distracting features in the cultivation of the coconut tree in many parts of South India where it is more responsible than any other single factor for causing a serious set-back to the young growing tree, leading in the case of neglect to a complete destruction of the tree. It is probably one of the pests regarding which requests for suitable remedies are received most frequently. A considerable amount of study both in respect of its life-history and of remedial methods has been made but it is nevertheless a fact that many lacunae exist in the former while as regards remedies no satisfactory ones are yet known. On both of these aspects and especially in connection with the life-history of the pest a careful study extending over a long period has been made, the results of which are now published (M. C. Cherian and K. P. Anantanarayanan, *Indian J. Agric. Sci.*, 9, Pt. III). The duration of the egg period, the larval and pupal periods are all subject to con-

siderable variation and are found to be 9 to 17 days, 100 to 180 days, and 24 to 62 days respectively, the period from egg to adult varying from 129 to 232 days. The adults themselves were found to live for periods up to a maximum of 293 days. It is also brought out that the beetles are active throughout the year although during certain months of the year, viz. March and April, the pest is most active; elsewhere too this is the same experience, the peak of the damage being soon after the first rains begin. Work on remedial methods which of course are more important from a practical view-point has not led to any helpful recommendations; a trial has been made of various baits, none of which was found of any use. We have noted however that a mash made up of a little groundnut oil cake with cow-dung proved remarkably effective as a bait. We find no reference to the spraying with Bordeaux Mixture which was tried as a good repellent in certain Mysore trials. Various other devices which are probably mere 'nostrums' but which may have something in