

themselves for instance the maps could be interpreted as indicating merely that phoneme distributions are influenced by some of the same factors as gene frequencies—the existence of isolates, of equilibrium states, diversification by chance events, migration, distance. But with the biological evidence, albeit scanty, of the existence of anatomical variations in the vocal organs, and of some genetic basis for them, the hypothesis that phoneme frequency is in some way functionally related to genetic variations from one population to another appears more reasonable.

But this book does not prove the hypothesis. To do so requires biological procedures. It should not be too difficult to measure the energy expended in producing given sounds by individuals anatomically different in their vocal organs from the same and from different populations; to investigate the frequencies of vocal structure variants across Europe, say by questionnaires to dissecting rooms; to assess the hereditary component of such structures by family studies. To the need for such investigations "The Sounds of Language" clearly points. D. F. ROBERTS.

## REFERENCES

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- <sup>3</sup> BALLARD, C. F. 1955. A consideration of the physiological background of mandibular posture and movement. *Dental Practitioner*, 6, 80.
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GENETICAL VARIATION IN HUMAN POPULATIONS. By G. Ainsworth Harrison (Ed.). Symposium of the Society for the Study of Human Biology, Volume iv. Pergamon Press. 1961. Pp. 115. 35s.

The first four papers in this symposium concern balanced polymorphisms. Dr Mourant deals with blood groups. Perhaps the most useful new data he offers us are the indications that certain minute differences within the Rhesus and MN complex are strictly associated with certain races. Dr Allison discusses the abnormal hæmoglobins with the help of five maps. What he has to say is best considered in conjunction with the chemical evidence recently summarised by Gerald in Penrose's *Recent Advances in Human Genetics*. This account reveals something of the infinite possibilities of variation in human hæmoglobins and hence of their selection by the great range of blood parasites to which dense human populations have been exposed. So far differences in resistance only to the malarial organisms have been explored. But ought we not to consider also the question of resistance to other blood parasites?

Necessarily these two essays are slight in relation to the size of the field they refer to. Other studies on haptoglobins, transferrins and urinary amino-acids are fuller in proportion. But the fullest are those dealing with the more slowly moving studies. One of these, covering the study of finger prints from Galton to the present day, deals with an aspect of variation which is perhaps the nearest approach known in man to selective neutrality.

The last contribution is the only one which deals with adaptive variation in a classical or direct sense. This is concerned with skin colour and recent

studies of its value as a protection against damage and as an agent in regulating temperature. The author, Dr Ainsworth Harrison, refers obliquely to the short time that certain races in the Congo, in Indonesia, and in America generally have had for adapting themselves to new climates as accounting for the lack of close adaptation. But ought we not rather to think of the differences in the amount of variation present and recombination occurring in migrant races and available for selection to act upon? The native American people are not only recent arrivals. They are recently sieved through a narrow funnel, the Bering Strait. Such an explanation of their narrow range of colour is worth examining since it helps to define the frequency of the mutations of pigment genes by which we assume the white and the black races to have arisen. Whether the same genes operate in different black races is another question about which we still have no evidence.

If we consider the whole scope of human variation and the vast problems concerning its origins, maintenance and functions we see that more has been left out of this symposium than has been put in. It succeeds, however, in doing two things. It shows us the contrast between polymorphic and directly adaptive variation. And it also shows us the contrast between variation as it appears in man and in other organisms. We do not yet know how far this contrast is inherent in the species as it at present exists and how far it arises from the special technical means of investigation that are available for studying man.

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THE PROGRESS AND EVOLUTION OF MAN IN AFRICA. By L. S. B. Leakey. Oxford University Press. 1961. Pp. 53. 9s. 6d.

In July 1959 Dr Leakey, Director of the Coryndon Museum at Nairobi, discovered a shattered but nearly complete skull of a small-brained early man. It had been exposed by erosion in the Olduvai Gorge. The fossil was associated with stone tools which might have been used by such a man in killing and eating the animals whose dismembered remains lay around. This discovery was the reward for almost a life-time's study of the sites of early human occupation in East Africa. Three weeks later an account of it appeared together with the claim that here was the "oldest yet discovered maker of stone tools"; indeed the first authentic man. In the following year several more discoveries linked this first find with the later Chellean man and his tools. In due course Dr Leakey was invited to give the two lectures at Oxford and Birmingham which are here reprinted.

What matters about Dr Leakey's lectures is the use he makes of his find as evidence of man's beginnings. Above all we want to know its relations with other evidence. On this cardinal issue he unfortunately gives us no references. There are plenty and they are accessible. I have therefore added a list which, especially with the summary\* of Le Gros Clark, will enable the reader to see the problem as a whole.

The account must begin in 1925 with Raymond Dart's discovery at Ta-ung in South Africa of the skull of an immature man-ape. It could be described as man-ape because the brain-case was of ape-like size but the canine teeth were reduced to man-like size. Moreover the site on the driest edge of the veldt was unfavourable in its climate and in its vegetation for any creature like a modern ape.

To this new creature Dart gave the name of *Australopithecus africanus*.