

forest authorities of Bulgaria, France, Greece and Portugal.

Acquisitions of land on a reduced scale were sanctioned, as also the inauguration of a certain number of forest workers' holdings. Acquisitions of land during the year amounted to 81,933 acres, of which 46,437 acres were classified as plantable; whilst 115 holdings were completed during the year, the total number now amounting to 1,156 at an average cost per holding of £499.

The balance in the Forestry Fund at the commencement of the forest year was £446,432. Receipts

from Parliamentary votes (£447,000) and forestry operations (£151,466) amounted to £598,466. Payments amounted to £761,220, so that the balance in the Fund at the end of the year was £283,678.

During the year the Commission lost Lord Lovat, its first chairman, and Mr. H. A. Pritchard, assistant commissioner for England and Wales. This thirteenth annual report may be regarded as a most fitting memorial to Lord Lovat, to whose remarkable energy and enthusiasm, supported by a strong body of commissioners and a keen staff, the present position of forestry in Great Britain must be ascribed.

Racial Distributions and Archæology

IN a lecture delivered in January last year at the John Rylands Library, Manchester, and recently available (*Bull. John Rylands Library*, vol. 17, No. 2. Separates, Manchester University Press, 1s. net) Prof. H. J. Fleure puts forward a tentative correlation of the evidence of archæology, human palæontology and ethnology. Prof. Fleure aims at showing that certain phases of culture may be associated with certain physical types of man in the past, and that, subject to the reservation that modification of culture may have taken place from outside, this association still holds good in modern representatives of, or approximations to, these ancient physical types. He also suggests the possible lines along which races have attained their present distribution.

Homo sapiens and *Homo neanderthalensis* clearly were differentiated at an early date. The former is known from East Africa, the latter essentially belongs to Eurasia. In the Old Stone Age, the flake implement is associated generally with Neanderthal man, while the finer technique of the core implements points to it being the work of *Homo sapiens*. The distribution of the core implement suggests that it may have arisen in Africa or south-west Asia and spread, on one hand to India, and on the other to western Europe.

The rise of hunting differentiates the work of the men from that of the women, the latter continuing to be food gatherers. Among modern food gatherers and hunters are the pygmy peoples of Africa and south-east Asia. Their breadth of head is possibly an ancestral trait derived from extinct types of man, such as Neanderthal man, whose heads incline to brachycephaly, if the torus is ignored. Unfortunately, no ancient skeletons of pygmies are known. On the other hand, a majority of the representatives of early *Homo sapiens* have long heads and most of the characters of the one of the two types into which these can be differentiated, are found among primitive hunter and collector groups, such as the jungle tribes of India, the Veddah of Ceylon and the Australian. The Bushmen and the extinct Tasmanian also include a good proportion of extreme long heads, as also do the Eskimo. These two groups may represent two early drifts of man, pushed to the farthest corners of the earth, while the pygmies took refuge in the equatorial forests.

There are numerous groups in which most have moderately long heads, while a few have extremely long heads. These are common in Africa, around the western Mediterranean, in North Africa and a related type is found in the Deccan of India, while much the same may be said of large groups in the East Indies. All are essentially herdsmen or culti-

vators. African groups show that hunter men acquired cultivator women. The herdsman grew from the hunter. Herding made men more predominant than ever and increased their pride in their breed. Cultivation first arose in north-east Africa and south-west Asia, perhaps in India as well, and there may have been a primary spread thence to the west and south-east. The spread to the south in Africa encountered difficulties of climate and the cultivator remained essentially a woman. It is, therefore, probable that much of the stock whence springs the pygmies was handed down in Africa, while in south-east Asia, there are traces, if rare, of this early stock, and the inhabitants of Papua have kinky hair. It seems useful, therefore, to think of a gradation with an increase in importance of the older types and style of life as one goes south in Africa, or through south-east Asia to Papua; while the absence of cultivators in Australia and Tasmania points to the isolation of these two areas before the arrival of cultivators in Papua.

North of this area of culture and drift lies the mountain mass of Tibet with its westward extensions. North of this the ways would be open only after the last glaciation. The north-eastward drifts through Asia, continuing into America, belong to a Tardenoisian or late Caspian phase.

In this connexion the rise and spread of broad-headed man must be considered. The main area of distribution is the mountain zones of Asia, Anatolia and Central Europe. Tentatively it may be suggested that the type came into existence in south-west Asia, in or near the Anatolian peninsula. Knowledge of ancient skulls is still insufficient to say when these broadheads moved into Central Europe; but there are broadheads from an epipalæolithic station at Ofnet; and from the beginning of the Bronze Age there is a peasantry in Central Europe. Some of the peoples of the Pamirs are broad-headed and in other respects like the people of Central Europe. It is difficult not to suggest a common intermediate origin for the two. In Anatolia and the western part of the Balkan peninsula there is a very broad-headed type with very straight occiput. This may be a specialisation which has superseded the older form.

Farther east and associated with the high plateau of the Gobi is a different intensification of broad-headedness, the most marked form being that with the face flattened, oblique eyes, yellow-brown skin and lank hair.

It is possible that these broad-headed types spread in the early days of the development of cultivation. There was evidently an important spread of popula-

tion about the middle of the third millennium B.C. in and around the great steppe, which reached north China and may be responsible for some of the drifts to America.

So far as the steppes of western Asia and southern Russia are concerned, the broad-headed type was not the earliest in the population. The graves of the third millennium yield a majority of extreme long heads, differing from the hunter and collector people surviving farther south. This type spread into Europe from the early Bronze Age onwards. Later in the Bronze Age came a period of warmth and drought which leaves the steppe poor in remains and probably accounts for the small extent to which inter-tropical Africa was influenced by Bronze Age movements. The Bronze Age movements distributed skilled craftsmen with a high grade of organisation far and wide; while as regards the steppe the movements had acquired the driving power of the acquisition of the horse. Hence their movements were turned towards Iran and India, in directions in which conditions were suitable, rather than to the north-east. These peoples are generally credited with being the authors of the Aryan languages. Their relation to the people of the Old Stone Age is not clear.

There remains a long-headed element, or rather on the long-headed side of medium, found in western Europe, as for example in Britain and eastern Asia, notably in China. There are indications of a spread of early agriculturists through south-eastern Asia to north China, which included moderately long-headed elements as well as broad-heads; and this element may also have been included in a similar migration to western Europe, but lack of data precludes dating.

Industry and the Research Associations

ON March 22, the Department of Scientific and Industrial Research convened an important conference at the Institution of Civil Engineers, at which Lord Rutherford presided, and more than one hundred representatives of the twenty-one research associations formed under the auspices of the Department were present. The object was to provide an opportunity for frank discussion with officers of the Department and members of its Advisory Council on the present position of the research association movement and its future.

On the eve of the conference, Sir Kenneth Lee, who is a member of the Advisory Council closely identified with the work of the research associations, and whose firm belief in industrial research is well known, entertained the representatives to dinner at the Dorchester Hotel. Mr. Runciman represented the Government and many prominent men in industry, finance and in the Civil Service were present. Among the speakers were Mr. Runciman, Lord Rutherford and the Right Hon. Reginald McKenna. In the course of his remarks, Mr. Runciman read a statement from the Lord President of the Council, in which Mr. Baldwin said that those present no doubt shared the opinion of the Advisory Council that the present scale of operations of the research associations is totally inadequate if they are to serve their full purpose. He looked forward, with confidence, to industrialists improving matters in that respect, especially now that the prospects of trade are more promising. If they do so, Mr. Baldwin's message continued, they can rely on the Government on its side being prepared to play some part in the

forward movement and to help in extending the scale of operations.

The views expressed at the conference left no doubt that the Advisory Council of the Department is right in believing that the time is ripe for a great development in the research association movement. The associations have already made a deep impression on British industry, not only in producing practical results of great monetary value, but also in bringing about a more sympathetic attitude towards the usefulness of scientifically trained men in the works. Several speakers emphasised the paramount duty of research associations of carrying out long-range investigations essential to widening the boundaries of knowledge. Reference was made to the benefits conferred on the consumer by the improvement in products as regards utility and price and to the raising of the standard of living resulting therefrom, and for this reason it was urged that a continuation of a substantial contribution from Government sources is fully justified. Attention was also directed to the importance of achieving stability of finance for the research associations as a means of securing the best work from those employed by them, of ensuring that the best scientific brains are available for that purpose and of making possible the planning of long-distance programmes.

At the conclusion of the proceedings, Lord Rutherford referred to the statement made by Mr. Runciman the previous night on behalf of the Lord President as to the willingness of the Government to afford increased financial help, and urged that as a next step the councils of the research associations should consider the scale of work required to meet the needs of their particular industries and submit proposals for the consideration of the Department, in order to bring about at the earliest possible date a very different scale of operations.

University and Educational Intelligence

CAMBRIDGE.—The following appointments have been made: Dr. W. A. H. Rushton, of Pembroke College, to be University lecturer in physiology. Mr. O. A. Trowell, of St. John's College, to be University demonstrator in physiology and Dr. H. N. Green to be University demonstrator in pathology.

LEEDS.—The following appointments have recently been made: Dr. Douglas H. Collins, to be research fellow in rheumatism under the scheme of co-operation between the University of Leeds and the Harrogate Royal Bath Hospital, for the institution of research into the cause and cure of chronic rheumatism and allied conditions; Dr. W. A. Bain, to be lecturer in physiology.

THE Educational Advisory Board of the British Social Hygiene Council is proposing to form a permanent central exhibit of biological teaching material and apparatus. In view of the increasing demand for including biology in school curricula, such an exhibit should prove useful to teachers. The Board is therefore seeking suggestions in connexion with all forms of biological material. Further information concerning the proposal and a list of suggested headings under which information is sought can be obtained from Mr. Percy F. Lee, Education Officer, Educational Advisory Board, British Social Hygiene Council, Carteret House, Carteret Street, London, S.W.1.