

the Tarsiodea, also a branch from the basal primate stock, approximates much more closely in its evolutionary tendencies to those of the higher primates. It is not improbable that the latter arose from fossil tarsioids in Eocene times, originating from the earliest and most primitive members of the group. Some of the resemblances shown by the tarsioids to the monkeys are due to parallel evolution.

The evidence also suggests that the monkeys diverged from the main stem of evolution very soon after the tarsioid stage had been passed. Of all the primates, the anthropomorphous apes stand nearest to man structurally, but there is no reason for believing that they derive from a common ancestor so distant and so generalised that it would not come into the category of the anthropomorphs. It is necessary to postulate an anthropomorph ancestry for modern man, though this does not mean that in the line of human descent there ever was a form which showed the characteristic specialisation of modern anthropoid apes such as the great elongation of the arms and degeneration of the thumb.

It is certain that the earlier anthropomorphs were relatively generalised creatures, in which the primitive proportions of the limbs were still retained, and yet they would have shown a grade of development of brain, skull, dentition, etc., which would have entitled them to be called 'anthropoid apes'. There is every reason for supposing that man was initially derived from such a type. The evidence of foot structure, as shown by Dr. Morton in America, is decisive. Structural features afford evidence that the foot of modern man is derived from a foot once used for grasping purposes.

At what stage in the evolutionary differentiation of the anthropomorphs did the human stem become segregated from that which led to the modern anthropoid apes? The mandible and lower dentition of the fossil *Parapithecus* of lower Oligocene age are regarded by most as representing a small and very generalised member of the Anthropomorpha, which may have formed the basis for the development of the later types. This may involve regarding the platyrrhine and catarrhine monkeys as precocious and specialised offshoots of the anthropomorphous stock.

Of the same geological age as *Parapithecus* is *Propliopithecus*, which so closely resembles the modern gibbon that it is included in the Hylobatidae. Thus even in these early times the anthropoid apes were already undergoing rapid differentiation.

It is generally conceived that man arose in Miocene times from a *Dryopithecus* stock which also gave rise to the modern African apes. Prof. W. K. Gregory has shown that the human dentition was almost certainly derived from this type. The human stock, however, has avoided modifications which are a necessary concomitant of brachiating habits, and it is improbable, therefore, that the direct ancestors of man practised brachiation to any considerable extent. The evidence suggests strongly that in the evolution of man the limbs attained to human proportions in advance of other parts of the human body. In early types of man such as *Pithecanthropus* or *Sinanthropus*, while the skull and brain were astonishingly ape-like, the limb structure was closely comparable or even identical with that of *Homo sapiens*. The larger an animal becomes, the more difficult it is for that animal to adopt the upright posture, and hence the common ancestor of man and the apes must have been a comparatively small animal, that is, at a hylobatid rather than a giant anthropoid level.

This harmonises with the fact that the gibbon is the only animal which shows an erect bipedalism comparable with that of man. The strikingly human characters of the large African apes must owe their origin to parallel evolution. The general form of ancient types of man—*Pithecanthropus* and *Sinanthropus*—recalls the gibbon rather than the great apes. If modern types of man did come into existence early in the Pleistocene, it is probable that the direct ancestors of man are to be found in the Miocene forms of *Dryopithecus*, already distinct from the line leading to the modern large anthropoid apes.

The known remains of *Dryopithecus* are almost entirely limited to jaws and teeth, and it has been surmised that the skull was probably not unlike that of the African ape. It may be, however, that future discoveries will show that it manifested characters shadowing in a much greater degree those of the Hominidae. If Schlosser's interpretation of the Eppelsheim femur as really belonging to *Dryopithecus* be correct, it indicates that *Dryopithecus* was much more adept in erect bipedalism than any of the great apes of to-day, and lends further support, therefore, to the conception that the precursors of the chimpanzee and gorilla set off on their own evolutionary adventures some considerable time before the dryopithecine precursors of man had come on the scene.

## Vitamin Standards

THE International Conference held in London in June 1931 under the auspices of the Permanent Commission on Biological Standardisation of the League of Nations Health Organisation recommended for international adoption standards and units for vitamins A, B<sub>1</sub>, C and D, which were to be provisional for two years. As certain of the standard preparations were not available until 1932, the second Conference was postponed until 1934, when two years experience of the practical application of the standards would be available.

The report of the second Conference, which was held in London in June 1934 under the chairmanship of Prof. E. Mellanby, has now been issued (*Quart. Bull. of the Health Organisation of the League of Nations*: Vol. 3, Extract No. 15; 1934). No change has been

recommended in the standards for vitamins B<sub>1</sub> and D. The former, which has perhaps proved the most satisfactory of all the standards recommended in 1931, is an adsorption product of the vitamin, extracted from rice polishings, on fuller's earth. The unit is the activity of 10 mgm. of the standard. It was prepared in the Medical Laboratory, Batavia (Java) by the method of Seidell, as described by Jansen and Donath. The standard for vitamin D, which was prepared at the National Institute for Medical Research, London, is a solution in oil of irradiated ergosterol. The unit is the activity of 1 mgm. of this solution, which has been found equal to that of 0.025  $\gamma$  of crystalline vitamin D. It is recommended that when a new standard solution becomes necessary it should be replaced by a solution

of the pure crystalline material in olive oil, of such strength that 1 mgm. contains 0.025  $\gamma$ .

The Conference recommends that pure  $\beta$ -carotene be adopted as the standard for vitamin A, in place of the present standard, which is a mixture of the isomers of carotene. The value of the unit is unchanged and one such unit is contained in 0.6  $\gamma$  of the new standard: the old standard contained the same activity in 1.0  $\gamma$ . The standard preparation is to be issued in solution in a vegetable oil, in which it has been shown that it does not lose colour on incubation in the presence of air at 37° C. for 7 days, the strength of the solution being such that 1 gm. contains 500 units, or 300  $\gamma$  of  $\beta$ -carotene. The Conference report states that it has been found that measurement of the coefficient of absorption at 3280 A. affords a reliable method for measuring the vitamin A content of liver oils and concentrates, and that the value obtained for  $E_{1\text{ cm.}}^{1\text{ per cent}}$  3280 A. can be converted into a figure representing units per gram by multiplying by the factor 1,600. This figure is the average of a series of comparative and independent tests on the unsaponifiable fractions of liver oils and on concentrates of high potency.

For vitamin C the Conference recommends the adoption of *l*-ascorbic acid as standard, the unit being the activity of 0.05 mgm. of the pure substance. (The previous standard was lemon juice, one unit being contained in 0.1 c.c.: it has since been found that the potency of lemon juice varies, but the adoption of the new standard does not involve any significant change in the value of the unit.) It was decided to ask the Institute of Medical Chemistry, Szeged, through Prof. A. Szent-Györgyi, to prepare a batch of 500 gm. of the standard and to ask Prof. W. N. Haworth to co-operate in controlling its purity.

Among the subjects suggested for future work are the provision of a sample of cod liver oil as a subsidiary standard of reference for vitamins A and D and the investigation of the anomalous action on certain species of different sources of vitamin D.

All the standards are kept at the National Institute for Medical Research, London, acting for this purpose as the central laboratory on behalf of the Health Organisation of the League of Nations.

### University and Educational Intelligence

CAMBRIDGE.—The General Board recommends that the following additional University teaching offices be established: (a) an assistant directorship of research in the Faculty of Economics and Politics; (b) an assistant directorship of research in colloid science; (c) a University lectureship in the Department of Mineralogy and Petrology; (d) a University demonstratorship in agricultural engineering (subject to financial provision being made by the Ministry of Agriculture and Fisheries); (e) two University lectureships in the Department of Pathology; (f) a University lectureship in experimental psychology; (g) a readership in industrial psychology (subject to the provision by the Medical Research Council of the stipend and pension contribution); (h) an assistant directorship of research in industrial psychology (subject to the provision by the Medical Research Council of the stipend and pension contribution).

EDINBURGH: On the recommendation of the Senatus, the Court has approved of the establishment

of a Sharpey-Schafer lectureship in physiology, a fund for the endowment of this lectureship having been contributed by pupils and friends of Sir Edward Sharpey-Schafer. The first of the lectures, to be given biennially, will be delivered in the coming summer term.

LONDON.—The Buckinghamshire County Council has decided to make a grant of £5,000, payable over ten years, towards the erection of new buildings in Bloomsbury.

A grant of £2,000 has been made by the Pilgrim Trustees to the London School of Economics towards central expenditure on the Land Utilisation Survey. The grant, which is for staff salaries and the preparation of the report on the Survey, is estimated to cover the cost of completing the Survey as far as central expenditure is concerned. Local bodies and others are subscribing to local expenditure, and it is hoped that sufficient additional contributions from these sources will be obtained to complete the total cost of the work. The Pilgrim Trustees have further given valuable assistance to the Survey by setting aside a sum of £1,000 which can be drawn upon as required by the London School of Economics to secure the continuance of the publication of the maps. This sum is to be repaid by the School from the publication account of the Survey.

### Science News a Century Ago

#### Walker's Eidouranion

"The Strand Theatre," said *The Times* of March 31, 1835, "from which Thalia and Melpomene have been banished by the Lord Chamberlain, has during Lent become the residence of Urania. Mr. Walker, the well-known popular lecturer, and perhaps the original lecturer, on the motion of the heavenly bodies and the phenomena of the planets, has commenced his very interesting lectures at this house. His lectures, and the reputation he has deservedly acquired by them, his apparatus and machinery, are so well known to almost all persons, that there is no need of giving a further description of them. They are in their contrivance elaborate and complex, but the illustration which they afford of the subject which he discusses is at once simple and intelligible. . . . The lecturer himself enters into his subject with a spirit of inquiry, and an earnestness of endeavour to familiarise science, which are very refreshing to those whose attempts at gaining information have been chilled by the technical formality of more stately teachers. . . . At a time when the theatres are closed against dramatic performances the public cannot do better than devote a few hours to the acquirement of the scientific knowledge which these lectures, and similar lectures, convey and there can be little doubt that to the younger branches of the community they will convey that information to which young persons are exceedingly averse, unless it is conveyed in such a manner as to excite attention without distracting the understanding and wearying the patience." The lecturer was presumably Deane Franklin Walker (1778–1865) who, like his father Adam Walker (1731?–1821), lectured on science at Eton and Harrow and other public schools.

#### The Tides of the United Kingdom

On April 2, 1835, Whewell read a paper to the Royal Society entitled "On the Results of Tide