Research Items

Social Origins in India

Two things in the social organization of India immediately strike the observer, it is pointed out by K. P. Chattopadhyay (*J. Asiat. Soc. Bengal. Letters*, **1**, 1935) in discussing peculiarities of caste in relation to early racial movement. One is the peculiar system of endogamy combined with exogamy running through the whole system, the other is that the giving of food and drink, or acceptance thereof, between different social groups depends on certain ideas of purity associated with the groups. In the course of further discussion, it is also noted that theories of caste, which have been put forward, tend to ignore local differences. Applying to conditions in India the results of an analysis of culture and the effects, issuing in rivalry and group isolation, presumably produced by racial migrations, it would appear that there were not two, but three cultured peoples who contended for mastery in India and built up the caste organization. Of two early streams of culture bringers one was a fisher folk, who were acquainted with, or later acquired, knowledge of iron and practised a rude form of agriculture, comparable to jhuming, but not terracing or systematic irrigation. Another people worked copper, silver and gold and practised terraced irrigation with hoe cultivation. Cattle were valued for meat only. A third stream of later date is associated with cattle for dairy work, but not for plough cultivation. This last-named employment of cattle is associated with another people, who sometimes preceded and sometimes followed the dairy folk. With this people and the people of the hoe cultivation is a tradition of origin from, or occurrence of, incestuous unions of brothers and sisters. The fisherfolk practised burial, at first in the house, but the hoe culture people practised cremation. In some instances the burial people, after being submerged, again recovered and then a formal, but not actual, cremation was made to precede burial. Alliances between different groups and bitter struggles appear to have taken place before equilibrium was reached and the caste system evolved.

Hormones and Evolution

In a communication recently presented to the Royal Anthropological Institute, Dr. S. Zuckerman discusses the evidence bearing upon the relation of hormones to the evolutionary problem (*Man*, 1936, August). How far, it is asked, is the endocrine system responsible for physical and psychological characteristics; what value is to be attached to Bolk's view of the endocrine mechanism as one through which man has become a fœtalized primate? Does the so-called hormone theory of evolution in fact reveal some novel evolutionary mechanism? Recent research has largely justified the *a priori* view that all the characteristics of the organism are moulded by an endocrine mechanism to subserve the developmental integration of the various bodily systems, in order that the correlated action of an organism as a whole should be possible. At the same time, physical and psychological characters are dependent on an enormous number of factors besides hormones. There is not the slightest direct experimental evidence in support of the view that different individuals and different racial types possess distinctive types of endocrine balance. We do not yet possess the data for making definite interpretations of racial types in terms of hormones. There is a correspondingly unfortunate lack of evidence in Bolk's view of the fœtalization of man, and within the order of primates an orderly process of fœtalization cannot be recognized. Yet it is not unlikely that human evolution may have proceeded by a series of changes in the endocrine complex; but we are defeated in any attempt to find in this conclusion some novel understanding of the evolutionary process. The endocrine complex, like any other character, is genetically determined, and we have no knowledge that the effect of its response to environmental influence is transmitted to a succeeding generation. The available facts of endocrinology provide no measuring rod by which to estimate the divergence between different racial types.

Sickness Absence and Labour Wastage in Industry

An attempt has been made by the Industrial Health Research Board of the Medical Research Council, by an investigation of data furnished by several organizations, to obtain some sort of datum line by which absenteeism due to sickness and wastage by lapsing from employment may be evaluated (Report No. 75. London: H.M. Stationery Office. 1*s*. 3*d*. net). This Report is divided into two parts, sickness being dealt with by May Smith and Margaret Leiper in Part i, and labour wastage by Major Greenwood and May Smith in Part ii. The measurement and incidence of sickness absence in clerical work and light organizations are considered, and in two large groups examined the rates for men are 3 days and 4½ days respectively, and for women 4 days and a little more than 6 days, per year. The crude rates obtained are subject to various fallacies, for example, long periods of absence due to serious illness of two or three workers may upset any simple arithmetical ratios obtained. Respecting labour wastage, the problem to be solved is discussed, the crude wastage rate is considered, and an 'industrial life table' is constructed. The actual labour wastage in two organizations is then studied, and various interesting features emerge from the analysis. Finally, suggestions are made for recording and analysing sickness absenteeism and labour wastage.

False-killer Whale in Scotland

Two papers dealing with the recent stranding of false-killer whales (*Pseudorca crassidens*) in Britain record an exceptionally interesting occurrence (*Scottish Naturalist*, 1936, p. 93). The greatest stranding, of forty-one individuals, took place in the Tay Estuary on November 27, 1935; but odd occurrences of single individuals or of small groups up to eleven in number which took place between November 16 and December 10, and ranged along the east coast from Norfolk to Montrose, show that a considerable movement must have been taking place in the North Sea. Prof. A. D. Peacock and his collaborators have recorded minutely the measurements and other striking characters, of the Carnoustie school of whales, reserving more detailed studies for later publication.

Hydroids from the West Indies

DR. EUGÈNE LELOUP in his monograph "Hydraires Calyptoblastiques des Indes Occidentales" (Mémoires du Musée Royal d'Histoire Naturelle de Belgique, Deuxième Série, Fasc. 2, 1935) describes collections made by P. Wagenaar Hummelinck on his voyage in 1930 to the West Indies, especially to the Islands Bonaire, Curaçao and Aruba. With these are specimens taken from floating Sargasso weed in the Atlantic and a series of calyptoblastic hydroids dredged at Dry Tortugas (Florida), the last sent by Dr. Waldo L. Schmitt, Smithsonian Institution, U.S. National Museum. Among these hydroids, four are found for the first time in the Atlantic: *Halecium dyssymetrum* from Florida, hitherto only known from the East Indies, and for the first time recorded since the type specimens were described; *Synthecium cylindricum* var. *pusilla* on Sargassum weed, previously known only from the Pacific; *Laomedea kincardi* and *Sertularella minuscula* from Bonaire, previously known only from the Pacific and from the Indian Ocean respectively. Several other forms are reported for the first time since the discovery of the type specimens, and many are new records for certain localities. Among the fifty species and varieties described there are three new to science.

Principal Rots of English Oak

A SMALL volume on this subject by Messrs. Cartwright and Findlay of the Forest Products Research Laboratory has been issued by the Department of Scientific and Industrial Research (London: H.M. Stationery Office, 1936). Existing knowledge and recent work carried out at the Laboratory on the principal fungi causing decay in English oak are detailed and illustrated. One of the fungi attacking the tree is known as the beef-steak fungus, and the attack increases the value of the timber, producing the so-called 'brown oak' which fetches a higher price and is much valued in France. The report states that the general measures for controlling the attack of heart-wood of trees by fungi are the prevention, by sylvicultural methods, of the formation of large branches which may die by becoming infected with fungi. Attacks of this nature are serious in parts of England; but in some of the best managed oak forests in France are unknown. Probably one of the best preventives is to keep the young plantations dense and thin lightly in the earlier stages of growth; and to grow oak in mixture, preferably when possible with its natural companion beech. The economic aspects of the various rots of felled timber are dealt with; and a final section treats of the stains and discolorations of oak wood such as 'golden oak', yellow, grey stains and chemical stain.

Composts for Mushroom Growing

THE food requirements of the common mushroom have not yet been determined with accuracy, though a considerable amount of success has been obtained with composts of a more or less synthetic nature. Mr. G. Paterson-Hart has described a number of such mixtures (*Gard. Chron.*, Aug. 1, 1936). Soya bean compost, a mixture of bean straw with tree leaves, and sphagnum moss impregnated with stable drainage, have proved fairly successful. Straw, covered with soil, and impregnated with salt solution, has grown mushrooms, whilst grass cuttings, ditch clearings, tree leaves and straw, when mixed and covered with mould, make quite a successful bed. The problem would seem to be to identify the common factor in all these different mixtures, and also in such varying habitats as stable sand dunes and heathy woods, where the fungus grows naturally.

Air Conditioning in Living Rooms

A SIMPLE device for humidifying air to a degree best suited for breathing has been developed by the A.E.G. Co. of Berlin and is described in *A.E.G. Progress*, No. 2, 1936. The water to be evaporated is contained in a tank in which rests a frame with capillary pads consisting of absorbent blotting paper overlapped and sewn together. These pads are completely saturated with water and can be readily replaced. The evaporation of the water is accelerated by an electric fan built into the back wall of the protective case. With a relative air humidity of 50 per cent and a temperature of 68° F., the apparatus evaporates about 7 oz. of water per hour. It is found that one filling of water is sufficient for eight hours operation. The quantity of water evaporated varies to a certain extent with the condition of the air, the rate increasing with the heat and the degree of dryness. The apparatus has been found useful in living rooms where the atmosphere gets close, in nurseries, in offices where smoking is allowed, as well as in hotels, hospitals, etc. In countries where a dry and warm summer climate has already rendered the electric fan indispensable, the apparatus is particularly useful, producing a refreshing and vitalizing effect.

The Nitrous Oxide Molecule

ALTHOUGH the molecules of carbon dioxide and nitrous oxide are both linear, it is known that one is symmetrical and the other unsymmetrical:

$$O = C = O \qquad N \leftarrow N = O.$$

Cheng E. Sun and Ta-You Wu (*J. Chinese Chem. Soc.*, **4**, 340; 1936) show that this difference may be explained by the energy contents of the two molecules. They used the semi-empirical method of Eyring and found that the unsymmetrical form of nitrous oxide has a lower energy content than the symmetrical form, whilst the reverse is the case with carbon dioxide. Although the method is only approximate, the differences between the energies of the two forms are sufficiently large to be significant.

Recent Advances in Enzyme Chemistry

IN a summary of recent work on enzymes, Prof. E. Waldschmidt-Leitz (*Chemistry and Industry*, **55**, 620; 1936) points out that crystalline enzymes (urease, pepsin, trypsin, etc.) are all proteins, yet the reactions show that an enzyme cannot merely be a protein, the existence of a specific active grouping being necessary for enzyme differentiation. An iron porphyrin complex is the active group of liver and pumpkin catalases as well as of the peroxydase of horse-radish. A low molecular weight flavine compound, vitamin B_2, when connected with a protein carrier, becomes a true enzyme, the yellow respiratory ferment. The 'two-affinities' theory of von Euler, according to which an enzyme must be capable of reacting with its substrate at two distinct points in the molecule, is shown to be most defensible. The action of activators (for example, trypsin by enterokinase) is probably due to intermediate compound formation. Many other interesting features of enzyme chemistry are considered in the article.