RESEARCH ITEMS

Ethnography of the Washo of Nevada, U.S.A.

ROBERT H. LOWIE, during a stay of several weeks at Minden, Nevada, and at Coleville, California, in 1926, was able to supplement the somewhat exiguous technical information available concerning the Washo. This is an isolated stock or an aberrant Hokan group ranged about Lake Tahoe in westernmost Nevada and easternmost California (*Univ. California Pub. Amer. Ethnol. and Archæol.*, 36, 5; 1939). Kroeber sets their number in 1770 as possibly 1,500, where more recent figures approximate 300. Their settlements were minute, their huts usually being from two to four. The chief had nothing to do with fighting enemies or adjusting quarrels within the tribe. His sole function was to arrange dances and other gatherings, where he would exhort the Washo to be good. Special headmen led in hunting jack rabbits, deer and antelope respectively. The antelope headman dreamed the right to office, the two others were purely secular leaders, the rabbit chief being chosen by the people. Property rights were maintained for clumps of pine nut trees, patches being marked off by lines of rocks. While brothers never quarrelled over pine nut privileges, trespass by a stranger was resented. Acorns were not a staple of diet, though the Washo made a dish of them. The pine nuts were gathered by men and women co-operatively. When dried, the nuts kept for about a year. Along the Walker River, the Washo constructed many 'fish houses'. Trout were speared and fish were also taken in nets or clubbed to death. Antelope, deer and jack rabbits were hunted communally. Other species of animal added to the food supply; porcupine, grasshoppers and locusts were eaten. The shamans became such through dreams, but not every dream was interpreted as a transfer of supernatural power, even though it might be of an uncanny character.

Sacred Twinned Vessels

M. D. W. JEFFREYS describes and figures in *Man* of September a collection of sacred twinned vessels, now in the Wellcome Historical Medical Museum, London, which he obtained in 1930 in the markets of the native towns of Akwa and Aguleri, Nigeria—strongholds of the Umundri culture in the Onitsha Province. Design and decoration of one of the vessels suggest that the pottery is based on a wood technique. From the religious use to which they are put the vessels may be regarded as a unit combining the Patten and the Chalice. In them is placed the sacrificial food and oblation of wine when offered to a sky god *Chuku*, to *Alushi*, and to the ancestral spirits *Ndichie*. The vessels are not common, and with the increasing spread of Christianity are now seldom made. Similar twin vessels have been reported from Egypt. It is possible there is a connexion between the use of sacred twin vessels and the derivation of the word *graal* or *grail*. One suggestion is that *graal* is an abbreviation of *gradalis*—*grad*-'step' or 'division', *alis*-'food', that is, a combined or stepped vessel for keeping separate the sacrificial offerings. Bread and wine have been through the ages the offerings to the gods and ancestors and it is reasonable to assume special vessels to prepare and carry them, combining the two into a single unit. The use of vessels having separate compartments for different kinds of offerings appears in the Greek *kernos*, several small cups or jars joined together. It was used in the Eleusinian Mysteries to carry first-fruits, and a similar vessel of metal is in use in the Orthodox Greek Church to-day.

Arthritis in Wild Mammals

HERBERT FOX, of Pennsylvania, in the course of examination of 1,700 wild mammals has observed changes in the joints which correspond with chronic arthritis in man (*Trans. Amer. Phil. Soc.*, N.S., 31, 75; 1939). This applies to truly wild animals as well as to menagerie specimens. The cases described seem to indicate that there is no apparent relationship between the incidence of arthritis and the systematic position, geographical distribution, habits or habitat of the mammals involved. On the whole the most conspicuous lesions occur among anthropoid apes, baboons, Felidæ, Hyænidæ, Ursidæ, Cervidæ and a few others; whereas a number of groups, such as Canidæ, Rodentia and Chiroptera, seem to be free from the disease, at any rate so far as shown by the material examined. Prof. Fox makes an interesting suggestion, that the one character which separates arthritic mammals from non-arthritics is body size. This may be compounded of a large body upon slender supports (as in Bovidæ), or stockily built body upon stouter supports (as in Felidæ). Where the greatest stabilization of the spinal column is demanded for the animal's locomotion there the greatest degree of spondylitis arises, and the localization of lesions in the fore-limbs of carnivorous mammals and the hind-limbs of herbivores may be associated with jolt-shock and locomotive power.

Deep-Sea Fishes of Bermuda

THE importance of an account of the Bermudan deep-sea fishes of the family Melanostomiatidæ, by Walter Beebe and Jocelyn Crane, can be gauged from the size of the collection described. Intensive collecting in a limited area eight miles in diameter and a mile deep yielded 250 specimens belonging to 10 genera and 32 species, or 62 per cent of all known genera and at least a third of the species taken in all seas (*Zoologica*, 24, 65; 1939). The collecting was noteworthy also because extensive use was made of the bathysphere for recording movements and behaviour, and ten individuals, representing five species, were examined alive and their luminescence and behaviour noted, while more than 100 freshly caught specimens were used for the recording of colour notes and sketches. Hitherto only eight specimens in the entire family had been studied when freshly caught or recently preserved. As with most families of Bermudan deep-sea fish, the depths at which these were taken were greater than the average in other regions, practically none except very young individuals having been taken above 500 fathoms, although they were seen above that level from the bathysphere. The description of the collection runs to 174 pages and contains many striking figures of these deep-sea forms and their remarkable barbels.

Hymenopterous Parasites of Hover Flies

The hover flies or Syrphidæ constitute one of the largest families of the Diptera. In their larval stages many of them are highly beneficial to man since they prey upon aphides and thereby destroy very large numbers of the latter. They are, perhaps, the most important of all the natural enemies of these pests. The usefulness of syrphid larvæ is apparently counteracted to a considerable extent by species of hymenopterous parasites. Our knowledge of the structure and biology of such parasites is extremely meagre and their earlier stages have scarcely been observed at all. An attempt towards filling this hiatus in entomological knowledge is made by M. Kamal who, under the title of "Biological Studies on some Hymenopterous Parasites of Aphidophagous Syrphidæ", contributes an article as Bulletin 207 (Entom. Section) Technical and Scientific Service, Egyptian Ministry of Agriculture. The investigations embodied in this paper were carried out at Riverside (Calif.) under Prof. H. S. Smith, and they serve as a beginning towards a better understanding of the subject. A distinct drawback is the absence of any date indicating when the Bulletin was published.

Pelargoniums

The Pelargonium, which goes too often under the erroneous horticultural pseudonym of Geranium, is a potent and ubiquitous contributor to garden beauty. It is usual to think in terms of one or two species only of this genus, but Sir Arthur W. Hill (*J. Roy. Hort. Soc.*, 64, Pt. 8, August 1939) has recently described a larger number of the 250 species which it actually contains. South Africa is the home of the genus, and more than 200 species grow there. The Dutch were the first to bring over Pelargoniums of horticultural value, and *P. triste* was apparently the first kind to appear in Great Britain, in the year 1632. By 1703, a considerable number of species was in cultivation, and the favourite *P. zonale* was produced by cross-breeding in 1710. Sir Arthur's paper is designed to portray the horticultural possibilities of the genus; he deals with variety in leaf and flower form, outlines the tuberous species, and mentions such kinds as *P. tetragonum* with fleshy stem and cactus-like flower, and *P. crithmifolium* with fleshy leaves.

Crustal Structure of California

Using data obtained by reading seismograms for sixteen near earthquakes and one blast, P. Byerly has determined the structure of the crust of the earth in California and the speeds of the primary and secondary waves in the several layers of the crust (*Bull. Seismol. Soc. Amer.*, 29, No. 3, July 1939, pp. 427–462). The records used were chiefly from Wood-Anderson and Benioff seismographs with a drum-rate of 60 mm. per min. and they were read to the nearest 10^{-1} second of time. The estimate of the dimensions of the crust chiefly rests on the accurate determination of the depth of focus of the Berkeley earthquake of March 8, 1937. These dimensions turn out to be 9 km. of granite overlying a layer 23 km. thick of intermediate material, which itself overlies the mantle. Data obtained for shocks with epicentres to the south of Berkeley were found not to fit this structure, but successfully did so when it was assumed that the granitic layer thickened towards the south. In all the earthquakes considered there was a lag of P_n as it passed under the Sierra Nevada, a fact which had been noticed previously. A reconsideration of the P_n data of the Nevada earthquake of December 20, 1932, together with all the other data, suggests that the root of the mountain mass projects into the mantle beneath the surface layers by an amount between 6 km. and 41 km. The velocities of the P and S waves in the various layers were found to be (*a*) in the surface layer $P = 5{\cdot}61 \pm 0{\cdot}05$ km./sec., $S = 3{\cdot}26 \pm 0{\cdot}09$ km./sec. and there is a suggestion that these may start from different foci; (*b*) in the intermediate layer $P = 6{\cdot}72 \pm 0{\cdot}02$ km./sec. and $S = 7{\cdot}24 \pm 0{\cdot}04$ km./sec., though only the former was used for the determination of the structure; (*c*) in the mantle $P_n = 8{\cdot}02 \pm 0{\cdot}05$ km./sec.

Age of Meteorites

F. A. Paneth has issued an important paper with this title which describes the methods for determining the age of meteorites and the results obtained (*Occasional Notes Roy. Astro. Soc.*, No. 5; 1939). The most satisfactory formula is derived from the following simple principles: let U and Th be the grams of uranium and thorium present in a sample of a meteorite, and let He be the number of cubic centimetres of helium which have originated from these two radio-elements; then the age in years is

$$\frac{He}{1{\cdot}14\,U + 0{\cdot}29\,Th}\,10^{7}.$$

At one time it was believed that the age-values determined by this method were on the low side, owing to the escape of helium. As Paneth points out, however, temperatures up to 1000° cannot drive out more than about 5 per cent of the helium contained in an iron meteorite, and as only the outermost portion is heated during the flight through the atmosphere, the method is satisfactory for iron meteorites. This remark does not apply to stone meteorites; the stone meteorite Pultusk lost practically all its helium content after 3 hours at a temperature of 800°. Table ii shows the maximum age in millions of years of thirty meteorites. This varies from 2,800 in the cases of Thunda and Mount Ayliff to only 100 with Bethany, Goamus, and Toluca. On the basis of the assumption as to the solubility of thorium in iron, Paneth and his colleagues were of opinion that the real values might be 10–20 per cent lower; but this is an under-estimate. They developed a method for the determination of the thorium content of iron meteorites, preliminary figures for three of which are given, and, though improvements can still be made, they are confident that its quantity in meteoritic iron can be greater than was suspected. The above equation shows that this will diminish the age, and in the case of Bethany, Goamus, the figures are 30 million years instead of 100 million years. The result of the research shows that no meteorites exist with ages greater than that of the earth—a fact which supports the view that the meteorites originated within the solar system. Nevertheless, the low age found seems to give weight to the short time-scale of the universe, that is, that the whole universe is of no greater age than the earth. It seems fairly certain that iron meteorites assumed the solid state at different times, and further research will probably reveal important relations.