

RESEARCH ITEMS

Fertility Cults in East and West

A POSSIBLE link between the Mediterranean and adjacent regions of the ancient world and Japan in the symbolism of the cowrie as a fertility emblem is discussed by Kurt Singer (*Man* of April 1940). While Elliot Smith's theory of the cowrie as a "life-giver" and closely associated with parturition and other fecundity cults has been accepted, for example, by J. Gunnar Andersson, as a working hypothesis making it possible to range under a single point of view all the varying uses of the cowrie, a difficulty is that no Neolithic figurine of the Astarte type shows any recollection of the cowrie talisman. The Western evidence in figurine and cult observances is suggestive rather than conclusive, but a Neolithic (*Jōmon*) figurine from north-eastern Japan is unique in showing not only unusually strongly accented breasts, but also what appears to be a monstrous vulva but is probably the giant image of a cowrie shell hanging from a cord attached to the neck-band. The ritual use of powdered shell and water for various ceremonies may also be thought to confer life and force by administering a simulacrum of mother's milk produced from a simulacrum of the womb. Two masks recall the traditions about Baubo-Iambe and Demeter. They formed the central part of the autumn procession at the festival of the Gongoro Jinja in Kamakura, and were worn one by a woman showing signs of distraction and the other by a woman obviously with child who addressed ribald remarks to male onlookers. The procession closed with men carrying poles, recalling phallic symbols. Arguments and parallels may be cited in support of the suggested resemblance to Demeter and Baubo.

Stomatopoda from the John Murray Expedition

Two memoirs on the Stomatopoda have recently appeared (John Murray Expedition, Scientific Reports 6, No. 3, by B. Chopra, No. 6, by G. E. H. Foxon. British Museum (Natural History), 1939). The collection of Stomatopods is small but of interest. Some are of large size, more than 300 mm. in length. Sixteen species and varieties are recorded, one species of *Squilla* and one of *Lysiosquilla* being new. The variation in the raptorial teeth in *Squilla investigatoris* is remarkable; also the variation of the relation of rostrum to eyes in *Lysiosquilla multifasciata*. There are many varieties of *Gonodactylus chiagra*, some of which are regarded as distinct species. A small one was dredged at the unusual depth of 1,300 m. Fragments of *Squilla investigatoris* were also dredged at this depth, but it is, of course, not certain that the species was actually living there—a record depth for any Stomatopod. It is difficult to place the new species *Lysiosquilla sewelli*, which combines characters of this genus with those of several others. In his work on the larvæ, Foxon has modified his former classification (1932, Great Barrier Reef Report) which has been criticized by Guernsey (*Proc. Zool. Soc.*; 1937) who regards the classification of Giesbrecht as the more natural one in which the two fundamental types of larva, antizoea and pseudozoea are separated. The revised key gives two main groups, the first containing Coronida and *Lysiosquilla* (antizoea larva), the second containing all the others.

In the second group *Squilla* and *Pseudosquilla* are placed close together, in agreement with the adult classification of Kemp, and *Odontodactyla* and *Gonodactylus* which have early larvæ very similar to *Pseudosquilla* and different from *Squilla*, in another section. It is shown that *Squilla* larvæ occurred everywhere, but in great numbers near the coast. *Pseudosquilla* larvæ are likely to be found near land, and *Lysiosquilla* larvæ are the most likely to be found farthest from land.

Turbellaria from Bermuda and the Sargassum

L. H. HYMAN has recently described a valuable collection of Acoel and Polyclad Turbellaria derived from material collected by herself, by Dr. Wheeler and by Dr. Verrill in Bermuda, and also several Sargassum collections from the Bingham Oceanographic expeditions to the western and central North Atlantic, the Gulf of Mexico and the Caribbean (*Bull. Bingham Oceanograph. Coll.*, Peabody Museum of Natural History, Yale University, 7, Art. 1; 1939). Nine plates of clear drawings illustrate this paper, in which there are two new species of Acoela, eleven known and two new species of Polycladida, and one new variety of Polyclad. Many of these were collected on the shore at Bermuda, but there are also species from the floating Sargassum weed which is a fruitful hunting ground for these worms. The Polyclads are chiefly species originally described by Verrill in 1900 and 1901 and these are now assigned to their proper genera with details of their sexual anatomy. Use has been made of colour drawings made from live specimens by Dr. Wheeler, director of the Bermuda Biological Station, which makes the descriptions doubly valuable; the whole monograph forms a useful addition to the rapidly growing series of writings on the Bermudan fauna.

Identification of Plants of Tanganyika Territory

"A FIELD Key to the Savanna Genera and Species of Trees, Shrubs and Climbing Plants of Tanganyika Territory" by the late B. D. Burttt (published by the Tsetse Research Department) should prove extremely valuable to workers in this part of Africa, where it is difficult to get plants named locally, especially as the collections are housed in European herbaria. Many of the workers in Tanganyika are attached to technical departments, and the key will have added value from the fact that its use does not require a preliminary botanical training, so that anyone dealing with plants as indicators of soil conditions, timber trees or plants with poisonous or useful properties will be able to record his observations in the concrete form of a correct botanical name. Though primarily concerned with plants of Tanganyika, the savannah plants are very similar in the neighbouring parts of Northern Rhodesia, Nyasaland, Uganda and Kenya, so that, with reservations, the key may be applicable to the savannahs of these districts or serve as a basis for a similar key. It is much to be regretted that Mr. Burttt's death has interrupted this work, of which he had outstanding knowledge, but it is to be hoped that in time the key to the genera will be supplemented by a key to the species as originally intended.

A Fossil Link between North America and Asia

A MAIL report from Science Service and the Smithsonian Institution announces the clarification of a problem which has long puzzled American geologists. Large numbers of fossil leaves which somewhat resembled the foliage of living poplars have been collected between Greenland and south-western Tennessee, for the past seventy years. Roland W. Brown suggests that the leaves are similar to those of a present-day Japanese tree, the katsura. He further argues that if leaves were fossilized through being blown into mud, it ought to be possible to find also the fossil seeds. Katsura seeds have sickle-shaped wings and are wind-blown. Dr. Brown ultimately found a few of them fossilized in the localities where the fossil leaves occurred. A study of variation in leaf form of the present-day tree paralleled the various types of fossil foliage. This brilliant piece of palaeontological investigation adds yet another to the fossil links, such as those of the horse, which bind North America and Asia.

Genetics of the Garden Pea

GENETICAL experiments with the edible pea, *Pisum sativum*, have been carried on since the time of Mendel. Nevertheless, the linkage relationships of even the well-known characters, round-wrinkled seeds or yellow-green cotyledons, are insufficiently known. C. Pellew (*J. Genetics*, 39, 363-390; 1940) has published some of her extensive linkage data. She shows how reciprocal translocations and trisomics enable us to identify the chromosomes and positions on the chromosomes where a particular gene is placed. The *K* reciprocal translocation of Hammerlund has been used for the present report. The genes, *A*, *I*, *Gp*, *Fs*, *R*, and *Bt* have cross-over percentages of 1, 1, 1, 20, 40, and 40, respectively, with the point of interchange. In normal lines *A-L* has 12 per cent crossing-over, *R-Bt* 30 per cent, and *Fs-Sp* about 42 per cent. Between these pairs of genes independence is shown in normal lines; but experiments with several translocations indicate that *A*, *L*, *R*, and *Bt* are all on chromosome 1. *Fs* and *G-p* are on chromosome 2, which with chromosome 1 took part in the *K* reciprocal translocation. The author also shows that competition and possibly elimination of certain types take place in the male gametophyte and in the young sporophyte.

Oxygen Isotopes in Rocks and Ores

A STUDY of Grenville marble, Niagara dolomite and Pennsylvania limestone and shells, all carbonates of widely different ages, made by M. Dole and R. L. Slobod (*J. Amer. Chem. Soc.*, 62, 471; 1940), reveals no significant difference in the ratio of the oxygen isotopes ^{16}O and ^{18}O as a function of the age of the rocks. The oxygen in iron ores of the Keewatin and Middle Huronian ages does not differ significantly in isotopic composition from the oxygen in normal water; the slight excess density observed in experiments on the oolitic and fossil type of Silurian ores is probably due to the presence of carbonates in the ores. The oxygen of Grenville marble when liberated as carbon dioxide and reduced with hydrogen gives water 9.2 p.p.m. heavier than normal, but when the carbon dioxide is driven out of the rock by heating, the resulting water is only 7.9 p.p.m. heavier. The difference is attributed to the isotopic fractionation which occurs when the carbonate ion is decomposed

by acid. The authors discuss the question as to whether the isotope ratio corresponds with sea-water or rain-water.

X-Ray Diffraction of Liquid and Plastic Sulphur

THE anomalous behaviour of liquid sulphur in respect of viscosity, specific gravity, surface tension, thermal expansion, and specific heat at just above 150° has invited a study of the structure of liquid sulphur at different temperatures. Various workers have attempted to explain these anomalies on the basis of X-ray diffraction patterns, but recorded data are not consistent. In a recent publication (*J. Chem. Phys.*, 8, 29; 1940) Gingrich has attempted to clarify the position. He obtained and compared the X-ray diffraction patterns of liquid sulphur at eight temperatures between 124° and 340° and, in addition, that of plastic sulphur at room temperature. The intensity curve, as a function of $(\sin \theta)/\lambda$, for plastic sulphur is typical of an amorphous substance and shows three peaks. Those for liquid sulphur, corrected for absorption, polarization, and incoherent radiation, at 124° , 166° , 175° , 225° , and 340° show a main peak with two plateaux. The position of this peak shifts irregularly with temperature. Thus from 124° to 157° the value of $(\sin \theta)/\lambda$ decreases slightly, from 157° to 166° it gives a large decrease, and from 166° to 340° it decreases gradually. Atomic distribution curves show that (i) the first concentration of sulphur atoms in plastic sulphur is at 2.08 Å. with two nearest neighbours, and (ii) 1.7 nearest neighbours are found at an average distance of 2.07 Å. in liquid sulphur at all temperatures. (i) does not yield enough information to distinguish between closed rings of sulphur atoms and long coiled chains in plastic sulphur; and (ii) indicates that in liquid sulphur most atoms (about 70 per cent) still have two permanent neighbours which are covalently linked at the same distance as in the S_8 molecule, and about 30 per cent have one nearest neighbour.

The Mohammedan Calendar and the New Moon

J. H. REYNOLDS has discussed in a paper entitled "The Mohammedan Calendar and the First Visibility of the New Moon in Egypt" (*Occas. Notes Roy. Astro. Soc.*, No. 7; 1939) the months of the fast of Ramadan and the feast of Bairam, which commence when the thin crescent of the new moon is first visible after sunset. At the Helwân Observatory, two assistants are delegated to report both the beginning and ending of the month of the Ramadan fast, but sometimes a village sheikh in Upper Egypt or the Delta sends a wire to the Quadi's court announcing his discovery of the crescent. Occasionally the date of the alleged observation is known at the Observatory to be impossibly early. Reynolds applies J. K. Fotheringham's table (*Mon. Not.*, 70, 527; 1910), which shows the minimum true altitude at sunset or sunrise for the moon to be visible for true differences between the azimuths of the sun and moon, the latter ranging from 0° to 23° . While Fotheringham claimed that the table is independent of the latitude differences, Reynolds does not accept this view, and expresses the opinion that the table is probably inapplicable for latitudes of 50° and above. He suggests that the point would be worth verifying by observation, because of the importance of such factors as refraction and transparency of the atmosphere near the horizon.