

Research Items

Rumanian Folk-Dances

THE current issue of the *Journal of the English Folk Dance and Song Society* (Vol. 2) is devoted to the International (European) Folk Dance Festival, which was held in London on July 14-20, 1935 (see NATURE, July 27, 1935, p. 154). In addition to a detailed report by Mr. F. Howes of meetings, dances and excursions, it contains the papers read at the Conference which formed part of the proceedings. These papers include a study by Dr. Romus Vuia of the remarkable Rumanian dance of the Călușari, or Hobby-Horse Dance, of which the primitive evolutions attracted so much attention. At the close of a detailed description, Dr. Vuia suggests that the Călușari, who observe special customs at special places such as water, woods, hills and cross roads, have a magical origin, and that they embody two magical elements (a) connexion with the sun, and (b) connexion with the fairies, who have a special association with water. That they personify the fairies is indicated by, among other things, their knowledge of healing plants and their nature. Related forms of the dance are found throughout the Balkans, and through these a connexion is suggested with the ancient types of stick and sword dances of western Europe. The hobby-horse which appears in the dance has a double function as both the origin of and the destroyer of fertility. As the demon of fertility it takes away as well as gives. This double aspect of magic also appears in the relation of the Călușari with the fairies, who both cause and avert disease. The fool of the Călușari also appears in the Stag Dance at Christmas and the New Year. In this dance he appears with a phallus, and, instead of being killed, as is usual, he himself kills the stag. In its original form the Călușari was a dance intended to drive away the demons of ill-health.

The Oriental Migratory Locust

THE February issue of the *Bulletin of Entomological Research* (27, Part I, 1-194) is devoted to a series of papers describing the results of researches on locusts. It is only possible here to comment upon one of the contributions, namely, that of Dr. B. P. Uvarov, on the oriental migratory locust. The swarms of this locust, which occur over north-eastern Asia, the Malay Archipelago and the Philippine Islands are usually referred to the subspecies *migratorioides* (R. and F.) which inhabits tropical Africa. Dr. Uvarov points out, however, that the oriental locust can be readily separated from the African subspecies since it is a smaller insect with a less constricted pronotum and a narrower head, in its gregarious phase. Its correct designation is *Locusta migratoria manilense*, Meyen, and its claim to be a separate subspecies is based upon material from specimens obtained from a number of widely separated regions. Dr. Uvarov concludes that in the Philippines, Borneo and Malaya, conditions favouring swarm development are brought about by the primitive methods of land utilisation. The grasslands, known in the Philippines as *cogonales*, are the product of shifting cultivation and of repeated burning of the grass. These lands are of a dry, impoverished type and

create a habitat alien to the nature of the country but eminently suitable for the locusts. The problem of locust control under such conditions is one which demands careful field studies for its solution.

British Sawflies of the Genus *Hoplocampa*

DR. H. W. MILES has recently published a revision of the British species of the sawfly genus *Hoplocampa* (*Entom. Mon. Mag.*, March 1936). Altogether, nine species are known at present in Great Britain, and the species *H. brevis* was found for the first time only last year. *Hoplocampa flava* and *H. testudinca* infest plum and apple respectively and are known from most of the important fruit-growing areas of England. While the life-histories of these two species have been tolerably well studied, little is known of the biology of the remaining seven species. *H. alpina* appears to attack, as a larva, the blossoms of mountain ash (*Pyrus aucuparia*), while *H. brevis* lives on the fruits of the pear. The last-mentioned species has only so far been found in Cambridge, but probably has a wider range in southern Britain. The genus *Hoplocampa* is associated with *Pyrus*, *Prunus* and *Crataegus*, and its members probably have only one generation per annum. Dr. Miles gives a key to the determination of the British species, which has been adapted from the works of Enslin and Morice, after a study of recently obtained specimens.

Ecology of a Sandy Shore

THE Skalling peninsula is a sand-dune area on the west coast of Denmark which partially cuts off a large tidal lagoon from the North Sea. The tidal range there is about 1.6 metres, and at low tide a foreshore of about five hundred metres of muddy sand is exposed on the western side of the lagoon. Thamdrup (*Medd. Komm. Danmarks Fisk. og Havundersøg.*, Ser. Fisk., 10, No. 2, 1-125) gives a detailed account of the ecology of two traverses from high to low-water on this shore. He describes first the chemical and physical conditions, including the salinity, hydrogen ion concentration, oxygen content, etc., of the water, and the tidal conditions, and the range of particle size in the sand. He then lists twenty-five species found, and discusses fourteen of them in detail. Notes are given on the general habits of each, and on their breeding periods so far as these are known, and his notes on growth rates, especially of *Arenicola marina*, are particularly valuable. Two molluscs, *Cardium edule* and *Macoma baltica*, are discussed in special detail on the evidence of growth obtained from annual rings on their shells, and Thamdrup shows the differences in mortality of the different year groups in successive years, as well as the wide variation in growth rate, especially in *Cardium*, at different tidal levels.

A Fungus Parasite of Cabbage

MR. J. R. THOMSON has studied a fungus which causes white spots to appear upon cabbage leaves ("*Cylindrosporium concentricum* Grev.,"; *Trans. Brit. Mycol. Soc.*, 20, Pt. 2, 123-132, January 1936). The fungus was first described under the above name by

Greville in 1823, but its nomenclature has undergone many vicissitudes, and finally its first designation was restored by von Hoehnel in 1924. The paper under review substantiates and approves this latter view, and also describes the features of the organism as it occurs upon the host, and as it behaves in pure culture.

Eureka (California) Earthquake of June 6, 1932

THOUGH not of great destructive power, this earthquake forms the subject of an interesting study by Mr. N. R. Sparks (*Bull. Seis. Soc. Amer.*, 26, 13-27; 1936). It affected chiefly the region around Humboldt Bay in Northern California, the shock being felt from Coos Bay on the north to San Jose on the south, a distance of more than four hundred miles. Nearly all the brick chimneys round Humboldt Bay were damaged or thrown down, the tops of many of those left standing being rotated in a clockwise direction. Yet a steel-reinforced concrete stack, 305 feet high, at Samoa, in the central region, was neither cracked nor shifted. The epicentre, as determined by seismographic evidence, lay in lat. 40° 45' N., long. 124° 30' W., and this point agrees closely with that given by the isoseismal lines. It lies a short distance off the coast, on the continuation of a fault ruptured at the time of the earthquake of 1906 and apparently parallel to the great San Andreas rift. The depth of the focus was about thirty-seven miles.

Climate of Czechoslovakia

THERE is a paper by B. Hrudicka among the Publications of the Faculty of Science of the University of Masaryk for 1935 which contains useful climatological information. It is entitled "A Climatic Map of Czechoslovakia according to Köppen's Classification". Köppen's system of classification, it may be recalled, is one of the most successful that has yet been devised. The different climates are distinguished by a number of letters, capitals corresponding with the main features defined by temperature and rainfall, while smaller letters provide for sub-divisions of these. In Czechoslovakia only three main climates are found. All three are humid (*f* according to Köppen), as there is no dry season. They are (1) the humid warm temperate (*Cf*), (2) the humid type with distinctly cold winter, the mean temperature of the coldest month being below -3° C. (*Df*), and (3) in the mountains, the tundra (*ETG*), with the warmest month averaging between 0° C. and 10° C. The climate *Df* appears in the two sub-types *Dfb* and *Dfc*; the former prevails in the low-lying regions, and is characterised by four months or more averaging over 10° C., and the latter with less than four such months, in the moderately high parts. It is interesting to note that marine influences are obviously present in this country; for example, the warmer summer required by *Dfc* compared with *ET* climates results in a rise in the boundary between these two types with distance eastwards; in the same direction there is a fall in the boundary between *C* and *D* due to the increasing severity of the winter with the more Continental conditions in the direction of Russia.

Absence of Living Bacteria in Stony Meteorites

THAT living bacteria could not exist in aerolites or stony meteorites would probably be generally accepted as a fact. Prof. Charles Lipman, however,

four years ago reported the finding of living bacteria in aerolites. He claimed that stony meteorites had brought down with them from somewhere in space "a few surviving bacteria, which can in many cases be made to grow on bacteriological media in the laboratory". It might be thought that the heating of the meteorite in its descent through our atmosphere would destroy any bacteria if they were present. In reply to this objection, it is suggested that owing to poor conductivity, the interior of a meteorite remains cool even though it burns externally. The matter has been reinvestigated by S. H. Roy, using the same aerolites and methods as Prof. Lipman (*Geol. Ser. Field Mus. Nat. Hist.*, Chicago, 6, No. 14, 179, Dec. 12, 1935). The meteorites had first to be powdered aseptically, and then cultured in various special media. Of twelve tubes of culture media inoculated with meteoritic powder, growth appeared in three only, the other tubes remaining without growth over a long period of incubation. The growths obtained were those of two common terrestrial species of bacteria, *Bacillus subtilis* and *Staphylococcus albus*. It is significant that the same organisms were obtained in control plates exposed in the container in which the crushing was carried out. The conclusion reached is therefore that no living bacteria are present in aerolites, such growths as may be obtained being due to unavoidable contamination from the air during the process of preparation for cultivation.

High Permeability in Magnetic Fields

IT has been known for several years that the magnetic properties of iron and silicon steel are altered by cooling from high temperatures in a magnetic field. This property is only shown by metals and alloys which remain plastic whilst cooling through the Curie point. In the *Bell Laboratories Record* of April, J. F. Dillinger points out that the lowest temperature at which the heat treatment is effective is identical with that at which plastic flow begins to occur. He considers that a magnetic material is composed of small regions in each of which the material is magnetised to saturation in a definite direction. In iron and permalloy it is one of the cubic axes of the crystals, but in an unmagnetised polycrystalline specimen the crystals are oriented at random. As the field is applied, the magnetisation of the various regions tends to become parallel to it. If the temperature is sufficiently high, plastic flow occurs owing to the stresses produced by the magnetisation. When the specimen is cooled, the regions still retain their new directions, and it is relatively easy to remagnetise the specimen in the direction in which the magnetic field was applied. Its permeability will consequently be greatly increased. To find the temperature range in which the application of the field is important, several specimens of permalloy cut from the same casting were heated to $1,000^{\circ}$ C. and then cooled to room temperature. It was found that the application of the field as the specimen cools from 600° to 400° C. increases the maximum permeability from about 5,000 to 250,000. It multiplies the permeability therefore by a factor of 50. By very carefully annealing permalloy containing 65 per cent of nickel at temperatures just below its melting point in an atmosphere of hydrogen, and then heat treating it in a magnetic field, the extraordinarily high permeability of 600,000 has been attained.