

Research Items

Diet of Serbian Gypsies

IN Serbia it is known that gypsies feed on carrion, and a number of instances of their addiction to the flesh of animals, which have not been slain for food, but have died a natural death or from disease, have been collected by Dr. Alexander Petrovič in a further contribution to his studies of the gypsies of Serbia (*J. Gypsy Lore Soc.*, Ser. 3, 18, 1; 1939). This is a matter of preference, as it occurs even among the more well-to-do. Mirijevo, a village near Belgrade, where there are some twenty gypsy families whose material condition is comparatively good, is renowned for the fact that its gypsies eat carrion. When a peasant has a sow or hog or an ox that has died of some disease, he buries it in a piece of ground near the road. Someone will then inform the gypsies of the fact, and they will pay a small sum for the information. Then at night two or three will go to the spot indicated, dig up the carcass, and carry it home. At Rakovica, also near Belgrade, when there was a serious pestilence among the sheep in 1937 the peasants were at their wits' end to know what they should do with the dead sheep. Some were buried, others thrown into the fields and meadows. Gypsies from Ripanj, an outlying village, used to come at night, dig up the carcasses, and carry them away. Dead horses are also dug up and their hides, and sometimes the meat as well, are sold; but a gypsy never eats horseflesh, because the horse is a friend of the gypsies and is considered more or less a member of the family. Some of the poorer gypsies eat carrion meat without special preparation; but others prepare it by washing, soaking with nettles or garlic, and boiling until the smell has gone. Sedentary gypsies eat carrion meat only when with gypsies who prepare it in this way. It is then said, however, to be tasteless; while those who express preference for the flesh of animals that have died, say that it is on account of its flavour, which is superior to that of slain meat. Whether the sense of smell among gypsies is deficient is neither clear nor easy to ascertain. Their vocabulary, though not decisive one way or the other, suggests that they do not discriminate very decidedly between smells, good or bad.

Race, Religion and Caste in India

IN the course of a study of the racial affiliations of religion and caste in India, Rai Bahadur Sarat Chandra Roy considers the probable contribution to the formation of caste of the Alpine and Mongol racial elements in the population (*Man in India*, 18, 2-3, 1938). One section of the Alpines appears to have entered India by way of the Pamir plateau and the Hindu Kush in the Chalcolithic period. At the present time the modern Asiatic representatives of the race are found in this region in their greatest purity, and the race is also the dominant element in the Khotanese. Neither among these nor among the European Alpines is there found anything resembling the caste system as it is known in India. In central Asia this is not due to the influence of Islam; for the Tafiks of Kashgar, for example, retain customs and beliefs derived from Pre-Islamic times, which are

not approved by Islam. Even class sentiment neither determines occupation nor prevents inter-marriage between different social grades. Among European Alpines, tribal feeling is still, or was until recently, strong among Balleon peoples; and some have bird names. There is also evidence of bird names among the people of Bengal and the Prabhus of Bombay Presidency, who contain a strong brachycephalic element. In comparatively early times Aryans visiting famous places of pilgrimage in Bengal, Gujarat, Anga and Kalinga, presumably of Alpine or pre-Aryan origin, were required to undergo an expiatory ceremony. Although Indian representatives of the Alpines, such as the Bengalis, Gujrātis and Mārātas have long adopted the Hindu caste system, they are not as rigid in observance as, for example, the Dravidian Hindus of the south. Buddhism with its doctrine of equality was especially strong in Bengal and among Gujrātis, as also were Vaishnavism and Jainism. The first historical king of Bengal, Gopala Deva, was elected by the people, and the Mārātas have an equally democratic spirit. Modern movements for social and religious reform have been initiated and developed for the most part by men of the Indo-Alpine race; but they appear to have contributed little to the formation of the complex caste system.

Growth of Tissues *in Vitro*

O. A. TROWELL and E. N. WILLMER (*J. Exp. Biol.*, 16, 60; 1939) made tissue extracts from several organs of growing and adult fowls and tested the growth-promoting properties of these extracts on periosteal fibroblasts growing *in vitro*. They found that these properties were most pronounced in brain extract and diminished in the following sequence—thyroid, thymus, testis, ovary, bone-marrow, liver, kidney and muscle extracts. Extracts made from the spleens of adult cocks were far more efficient growth-promoting agents than extracts made from the spleen of young birds. The growth-promoting power of a tissue extract could not always be correlated with the age of the tissue from which the extract was made, with the rate of growth of that tissue or with its nuclear content.

Rat Fleas in Plymouth

R. B. MAYFIELD (*Parasitology*, 30, 314; 1938) investigated the species and numbers of fleas harboured by rats in a certain section of the Plymouth docks, and also examined a few rats from the town of Plymouth. The total number of rats investigated was 83. Of 77 rats caught in the dock premises, 63 were examples of *Rattus norvegicus* and 14 of *Rattus rattus* which were found to harbour three species of fleas, namely, *Nosopsyllus (Ceratophyllus) fasciatus*, *Xenopsylla cheopis* and *Leptopsylla segnis (musculi)*. The presence of *Xenopsylla cheopis* was almost entirely confined to a certain grain store. Four specimens of *Rattus norvegicus* and two of *Rattus rattus* were caught in the town of Plymouth and yielded 32 specimens of *Nosopsyllus fasciatus* and 3 of *Leptopsyllus segnis* but no *Xenopsylla cheopis*.

Bird Fauna of a Rocky Island

THE aptitude of some animals to make use of the most unpromising conditions is shown by a short account of the birds of Malpelo Island by James Bond and Randolph Meyer de Schauensee (*Proc. Acad. Nat. Sci. Philadelphia*, 90, 155; 1938). The island is a bleak pinnacle of volcanic rock, 330 miles from the mainland of Columbia; the upper plateau presents "one of the most barren, bleak expanses of rock I have ever seen. Not a single plant living or dead was to be found", says one of the authors; the only vegetation the survey revealed was on a steep cliff about 200 ft. high, where there was a moss and a grass growing from the damp crevices. Yet here was found a small fauna of ten species of birds. Most of them were sea-birds, which depended upon the surrounding ocean to supply them with food—a booby, a small colony of frigate birds, a colony of thirty gulls, and two species of terns. But there were waders, ten spotted sandpipers in company with about twenty-five wandering tattlers (*Heteroscelus incanus*), a duck hawk, and more remarkable still, a martin (*Progne* sp.) and barn swallows which were apparently inhabiting a cave. The latter birds must have been subsisting upon some sort of insect life; it would be of great interest to know the complete fauna of this isolated and barren island. The visit was made on February 8, 1937.

Census of Californian Sea-Lions

COMPLAINTS have been made by commercial and sport fishermen that the sea-lions of California cause inordinate damage to fish stocks and to fishing gear, and that the destruction is increasing with a numerical increase in the seal colonies. It was thought possible that the Californian population had been increased on account of the migration northwards of Mexican individuals, following upon the activities of a company engaged there in killing and canning seal flesh for cat and dog food. To test these suppositions, a census of the seal rookeries was carried out between June 13 and 26, 1938 (*California Fish and Game*, 24, 415; 1938). This census did not reveal any great change in the sea-lion population. During the last census, in 1936, Steller's sea-lion (*Eumetopias stelleri*) had a total population of 4,900, in 1938 it was 5,841; while the corresponding figures for the other species, the Californian sea-lion (*Zalophus californianus*) were 2,501 and 2,020. Indeed, the five counts carried out from 1927 to 1938 show that the sea-lions have remained about the same numerical level, for although the trimming hunters have ceased to kill the adult bulls and the State law protects the animals, a good many are still slaughtered annually by 'sportsmen' and fishermen. Natural mortality is heavy, not more than 50 per cent of any year's crop of pups reaching the age of one year, while the death-rate amongst adults is also comparatively high; so that the present birth-rate seems about to balance the death-rate. The conclusion of the authors, Paul Bonnot, G. H. Clark and S. Ross Hatton, is that for the present there seems to be no reason for reducing their numbers.

Host Selection in a Chalcid Wasp

D. C. LLOYD, of the Farnham House Laboratory, Imperial Institute of Entomology, describes his attempts to determine those factors that are involved

in the selection of hosts by the chalcid *Ooencyrtus kuvance* (How.) (*Phil. Trans. Roy. Soc.*, B, 227, Dec. 1938). He also describes observations made on the distribution of the eggs in a restricted environment (Petri dishes) such as when the chalcid is kept in immediate contact with the host (eggs of the gypsy moth) in which it lays its eggs. It is shown that egg-laying by this parasite is not at random but has reference to the nature of the host available. Usually the female selects unparasitized hosts. If she is forced to superparasitize, she selects those host-eggs containing the youngest parasites. If only parasitized hosts are available the female parasites tend to retain their eggs rather than deposit them. It is concluded that the oviposition response is to a perceptual complex of stimuli which is such that the female insect tends to select those hosts in which the progeny are able to develop.

Post-Glacial History of Fenland Vegetation

A SERIES of sections and bores throughout southern Fenland show a stratigraphical sequence of lower peat, fen clay and upper peat to occur regularly over the entire area. Past ecological and climatic changes reflected in this succession have formed the subject of an investigation by H. Godwin and M. H. Clifford (*Phil. Trans. Roy. Soc.*, B, 229; Dec. 1938). Tree remains are abundant in the lower peat. At Woodwalton Fen this peat formation apparently led to the destruction of pre-existing oakwoods on clay giving rise to, at first, open water or alder brushwood, passing gradually into drier fen woods with oak, birch and pine. The clay bed separating the peats is shown by foraminiferal and diatom analysis to have been laid down in brackish water and hence represents a marine transgression. A freshwater phase developed later with extensive development of *Sphagnum-Eriophorum-Calluna* peat and the formation of raised bogs which were locally submerged later by the formation of meres in which calcareous lake marl was deposited over the acidic *Sphagnum* peat. The correlation of the vegetation phases with archaeological and climatic horizons leads the authors to date the general formation of peat in the fens in the Atlantic period. They became wooded in the Neolithic period and the marine transgression which gave rise to the fen clay occurred at the end of the Neolithic period. The raised bogs were developed during the Bronze and Iron Ages. A second marine transgression occurred in Romano-British times. This gave rise to a layer of semi-marine silt which overlies the upper peat on the seaward side of the fens and along the courses of the estuaries. There were human settlements upon the silt whilst it was forming, and its present surface shows the remains of dense occupation. The great meres of the Fenland probably formed either in the Iron Age or the Romano-British period.

Greenland Plankton

THE Godthaab Expedition visited the waters west of Greenland in 1928, and extensive plankton samples were taken and associated with hydrographic work. The collector, Gunnar Seidenfaden, gives an account of the work of collecting, and his experience of the inadequacies of his equipment should be of value for guidance of future expeditions. The material collected has been worked over and described by

Jul. Grøntved, who has collaborated with Seidenfaden in the account of the distribution of plankton (*Meddelelser om Grønland*, 82; 1938). Previous records of plankton from 1850 onwards for the region are discussed and incorporated in the distribution maps for the species, now greatly extended through this expedition, especially in the more northern waters, and this volume forms an extremely useful basis, upon which more detailed knowledge may be built up. The samples include surface collections, and a considerable number of depth samples, especially down to about 100 m.; the species fall mainly into the groups Diatomæ, Peridineæ, Flagellatæ, Ciliatæ. (Chlorophyceæ were not observed in the material.) The Grinnell Expedition, 1850-51, collected a sample of 'red snow', and it is of interest that this appears to have been from Crimson Cliff, near Cape York, which again on this present expedition showed the same phenomenon. This well-known locality for 'red snow' is due to perennating snow flats, near bird-cliffs, which supply the nutriment for the organism.

Moisture in Wood

A BROCHURE entitled "Recent Work on Moisture in Wood" by W. W. Barkas, issued for the Forest Products Research Laboratory (H.M. Stationery Office, 1938), summarizes the results of recent research undertaken by the Physics Section. The objects of the study were the mode of retention of water by wood, and the part which this water plays in determining the strength and shrinkage of the material. The main conclusions arrived at are (1) the differentiation between the molecular and capillary water held in the cell wall, (2) the demonstration that the water in the cell cavities cannot be sharply differentiated from the capillary water in the cell walls, (3) the proof that strength, shrinkage and vapour pressure changes begin in the wood as soon as it is dried below the waterlogged moisture content, (4) the evidence put forward that wood reacts identically under externally applied loads and under internal shrinkage forces.

Clover Creek Earthquake of July 15, 1938

THIS earthquake was worthy of particular study by H. Landsberg (*Bull. Seis. Soc. Amer.*, 28, No. 4, Oct. 1938) since earthquakes in the Appalachian region of the United States are singularly infrequent. The shock occurred at 5.45 p.m. E.S.T. (22.45 G.C.T.) in Pennsylvania in an area known as Morrison's Cove, a limestone valley between the Tussey Mountains in the east and the Dunning, Short, Loop, and Lock Mountains in the west; in the north the boundary is the Juniata River. The shock was not recorded by seismographs and was probably tectonic in origin, though a 'cave-in' is not an impossible hypothesis. From macroseismic evidence collected by the author and the U.S. Coast and Geodetic Survey, the author was able to construct a map and indicate intensities on the modified Mercalli scale, thus making the epicentre known. For the purpose of estimating the focal depth, H. Neuberger (*ibid.*, p. 259) developed the new formula

$$h = \frac{sR_n^2}{4.6 \log \frac{I_e}{I_n}} - \frac{1.15}{s} \log \frac{I_e}{I_n}$$

where h is the depth of focus in kilometres; s an absorption coefficient; R_n the radius of an area within an isoseist n ; I_e the Mercalli intensity of the shock in the epicentre; I_n the Mercalli intensity at the isoseist n . Microseismically in the district in question $S = 0.1$, and hence the focal depth was between 0 and 7.5 km.

Oxidation of Carbon Disulphide

IN a study of the non-explosive catalytic oxidation of carbon disulphide vapour in dilute mixture with air, R. H. Griffith and S. G. Hill (*J. Chem. Soc.*, 2037; 1938) made the interesting observation that at about 140° in the glass tube oxidation occurred with simultaneous production of ozone. This is probably due to the presence of atomic oxygen. The yield is fairly small, about 0.5 mgm. of ozone per hour with 65 mgm. of carbon disulphide; but the ozone can be detected by the smell and gives characteristic reactions. This homogeneous reaction is difficult to suppress, but this can be done by adding small amounts of ethylene, when the heterogeneous reaction with nickel sulphide as catalyst can be followed and is found to be of zero order with respect to carbon disulphide. Carbonyl sulphide (COS) was also studied and was found not to undergo homogeneous oxidation so readily and no difficulty was found in following the heterogeneous reaction alone, which was found to be of the first order with respect to carbonyl sulphide but to be retarded by sulphur dioxide. The same authors have previously (*J. Chem. Soc.*, 717; 1938) described the preparation of the catalyst of nickel subsulphide, Ni_3S_2 , from finely divided metallic nickel by the action of carbon disulphide vapour carried in nitrogen at 350°, and have investigated its use in the catalytic hydrogenation of carbon disulphide, carbonyl sulphide, mercaptan and sulphur dioxide, the work being extended by B. Crawley and R. H. Griffith (*J. Chem. Soc.*, 720; 1938).

Nuclear Physics

THE issue of the *Review of Scientific Instruments* of December 1938 devotes eighteen pages of its Physics Forum to a review of progress during the past year by T. H. Osgood of the University of Toledo, Ohio. In the section devoted to nuclear physics the author shows how the study of the products of the bombardment of elements by fast neutrons has led to the discovery of isomeric forms of the same nucleus and he points out the value of the "evaporation" theory of the nucleus, according to which an energetic particle injected into the nucleus shares its energy rapidly amongst the components of the nucleus, which remains in an excited state until a chance accession of energy by a particle leads to its evaporation from the nucleus. Progress in mapping energy-levels has been facilitated by the study of resonance effects when the injected particle has some particular energy. The production of controlled beams of particles has been assisted by placing the electrostatic generators in air at 6 or 7 atmospheres and in this way producing several million volts in a small space. Important results are expected from the new method of producing slow neutrons by the intermittent action of cyclotrons, particularly when the number of instruments is increased by the completion of those now under construction in various centres.