

Research Items

Early Iron in Egypt

MR. CHRISTOPHER HAWKES contributes to *Antiquity* of September a note on the content of two pieces of iron, one from the Great Pyramid (Fourth Dynasty, c. 2900 B.C.) and one from Abydos (Sixth Dynasty, c. 2500 B.C.), constituting the two major items of evidence for the use of iron in Egypt before the New Kingdom, to which Mr. G. A. Wainwright referred in his article "The Coming of Iron" in *Antiquity* of March last (see NATURE, 137, 584). It has been shown, Mr. Hawkes now points out, by tests made by Dr. H. J. Plenderleith in the British Museum laboratory in 1926 and repeated in 1932, that the Pyramid piece affords no trace of nickel, and that, although minute traces of nickel were present in two samples from the Abydos piece, these are in samples taken from the outer rust, and no nickel appears in the core. Since all meteoric iron known has been found to contain nickel, it is a reasonable inference that neither of these two pieces is of meteoric origin. Even if the date of the Pyramid specimen is doubtful, as some have maintained, though a later origin seems improbable, there can be no question about the piece from Abydos. Further, Mr. Hawkes, on submitting his material and his conclusions to Dr. C. H. Desch, was informed by him that not only was he satisfied with the result, and accepted the view that the nickel in the Abydos samples of rust was in all probability derived from the associated copper, but he also referred to further specimens of early iron "which is certainly not meteoric" lately received by him from sites in Syria and Mesopotamia. Mr. Hawkes is, therefore, of the opinion that these pieces may be taken as evidence for the occasional smelting of terrestrial iron in the Near East as early as the third millennium B.C.

The Food of Australian Birds

IN a series of articles (*Emu*, 24-35) the late A. M. Lea and J. T. Gray present a great mass of data on the food of Australian birds, based on analyses of stomach contents of 1,708 individuals covering 301 bird species. The results are classified into several main groups, such as: insects—destructive, and useful; seeds and vegetable matter; miscellaneous; and shells. Whenever possible, more detailed determinations of food items are given, while in an appendix all non-vegetable foods are classified in some detail, with lists of birds feeding on them. Although no discussion of the results is presented, the data provide ample material for judging the economic status of any given bird, as well as the relative liability of various animal groups to bird attack. In this connexion, a very high percentage of records of Rhynchota and Hymenoptera, both considered well 'protected', is worthy of notice.

Fauna of Sussex

INTERESTING records and comments upon the birds and butterflies of east Sussex, by N. F. Ticehurst, Capt. T. Dannreuther and others, appear in the *Hastings and East Sussex Naturalist* (5, 120, 157, Aug. 1936). Among the former the occurrence of Sykes's wagtail is discussed, and while it appears to

be certain that birds with the characteristics of *Motacilla flava beema* have been seen on several occasions and have bred in the area, the suggestion that the colour variety may not be a true geographical race seems a likely one.

Pseudodiaptomus from South America

THREE species of this copepod genus are already known from South America. Mr. Stillman Wright adds a new one and describes the relationships, distribution and habitat of all four ("A Revision of the South American Species of *Pseudodiaptomus*", *Annaes da Academia Brasileira de Sciencias*, Rio de Janeiro, 8, No. 1; 1936). These calanoids are interesting, for the group seems to be in the process of migration from salt to fresh-water; it is widely distributed and some of the species are apparently restricted to small and nearly inaccessible areas; therefore little is known about them. The South American species are found in water of different salinities; thus, as Dahl has previously pointed out, *P. gracilis*, appeared only in the sample farthest from the sea, in practically fresh-water, and was associated with *P. richardi*. The latter species was the only one represented in slightly more saline water, whilst in waters still more saline *P. richardi* was replaced by *P. acutus*, and this in turn disappeared in sea-water. Apparently the new species, *P. marshi*, taken in the estuary of Rio Capibaribe at Recife, Pernambuco, in Bahia de São Marco at São Luiz, Maranhão and in the estuary of Rio Jaguarabe at Aracatz, Ceará, is adapted to somewhat more salty water than *P. richardi*. So far as is known, none of the South American species lives in the sea.

Mosquitoes of the Ethiopian Region

DURING the last twenty-five years or so, knowledge of mosquitoes has increased to a manifold degree—not only with respect to their relations to disease transmission but also as regards their structure and biology. This vast amount of new information is scattered through many periodicals and, in such a form, it obviously lacks co-ordination. The Trustees of the British Museum (Natural History) have, therefore, taken a step to meet this difficulty in deciding to publish a three volume monograph on the mosquitoes of the Ethiopian Region, that is, of African south of the Sahara. Part I of this work appeared in April 1936, and deals with the general ecology of mosquitoes together with the taxonomy of the larvæ belonging to the Culicine series. Its author, Mr. G. H. E. Hopkins, has spent some years in mosquito survey work in Uganda, which well qualifies him for this task. The present contribution, which runs to 250 pp., is profusely illustrated with excellent text-figures showing the chief diagnostic characters of the larvæ of the different species. The study of the morphology and classification of mosquito larvæ has progressed alongside that of the adults. The advantages of such investigations are obvious since they enable rapid determination of species to be made without the labour of rearing them to the perfect insect—a process not always successfully

achieved. At the present day, therefore, knowledge of mosquitoes in the larval stage is as important as a proper acquaintance with the adults. Furthermore, an important aspect of mosquito control is eradication of the larvæ, which in its turn is founded upon a thorough knowledge of their specific habits and breeding places. In the present work these aspects of the work are dealt with as adequately as possible. It is stated in the preface that the other two sections of this work are nearing completion and will be issued next year.

Oil Treatment for Uneven Blossoming

THE influence of climatic factors during the winter months on the crop of fruit trees is examined by O. S. H. Reinecke (*J. Pom. and Hort. Sci.*, 14, 2, 164; 1936) with special reference to South African temperature conditions. Data are presented for prunes and pears which show that when the winter maxima temperatures were high, the crop was poor, and conversely, low winter maxima were associated with abundant yields. The critical temperature appears to be near 64.5° F. Certain varieties of peaches, plums, pears and apples subject to high winter temperature and a shortened dormancy period suffer from 'delayed foliation' and a protracted blossoming period which results in fruits of irregular size and also makes pest control very difficult. Successful attempts to induce even blossoming in these conditions by artificial means are described by M. W. Black (*ibid.*, 175). Apple and pear trees sprayed about four weeks before blossoming with raw linseed oil emulsion, seal oil or certain mineral oil emulsions, produced an earlier, more prolific and more even bloom, whilst fewer leaf buds remained dormant, resulting in the formation of more spurs and shoots. Varieties most susceptible to conditions favouring 'delayed foliation' responded most readily, and the response was more marked after abnormal winters conducive to this disorder. The crop of Bon Chrétien pears was considerably increased as a result of the more normal blossoming, fruit quality, especially the storage properties of the fruit, was enhanced, and the bearing capacity of the tree was increased, due to more fruit buds being differentiated on both spurs and shoots. The oil spray treatment promises to be of great value to commercial growers by virtue of its beneficial effects on fruit production and tree growth in general, whilst the insecticidal properties of some of the mineral oils may be utilized simultaneously.

Soviet Arctic Stations

IN recent years the number of Soviet Arctic observatories, as a rule functioning throughout the year, has been steadily increasing, and now they number no less than seventy-seven. In an article on hydrographic surveys along the northern shores of the Soviet Union in the *Polar Record* for July, Prof. J. Schokalsky gives some account of the institution of these stations. The movement began in 1923 with the erection of a station on Matochkin Shar, Novaya Zemlya. There are now 14 stations on the Barents Sea, 26 on the Kara Sea, 19 on the Laptev Sea, 7 on the Eastern Siberian Sea, 6 on the Chukhotsk Sea and 5 on the Bering Sea. Of the total, 5 are magnetic-meteorological observatories, 28 are first-order stations with registering instruments, 24 take eye-readings only and 11 record observations only three times a day. All stations

take observations of ice movements and all have radio-telegraphy. At many of the stations high-altitude observations are regularly taken. The Soviet Union has instituted a special school to train observers for these stations. Each observer as a rule spends only one year in an arctic station.

Viscometry

THE demands made by industry in Germany for accurate standardization of technical viscometers has led the Reichsanstalt to construct an absolute viscometer for the determination of the viscosities at different temperatures of a series of mineral oils which change little with time; these can be used for the standardization of industrial viscometers. The apparatus has been described by Drs. S. Erk and A. Schmidt (*Phys. Z.*, July 15). The liquid is forced by air pressure in succession through two capillary tubes of the same diameter, one short and the other long, which connect three metal cylinders of 4-5 cm. diameter, from which vertical glass tubes ascend to serve as manometers. The pressures are read by cathetometer and their differences for the long and short tubes enable the end effects to be eliminated. The apparatus is immersed in a bath at constant temperature with the capillary tubes horizontal. It has been found that carefully selected tubes drawn in the ordinary way have smoother internal surfaces and are more suitable than tubes formed in the plastic state about a mandril. To facilitate change of capillary tubes their connexions to the metal tubes are made by pipe unions which screw against perforated steel spheres cemented to the capillaries close to their ends. The capillaries are calibrated by mercury threads. An accuracy of 0.2 per cent for the viscosity is attained.

A New Insulating Material

WE learn from the September 13 issue of *Helios*, the electrical trade journal published in Leipzig, that the scarcity of raw materials in Germany has stimulated research for home materials having like or similar qualities. This has sometimes led to the discovery of new materials which are not only better but also possess new and valuable qualities. For example, it has occurred quite recently in the case of insulating tubes, for which supplies of cotton and oil varnishes have to be obtained from foreign countries. A new material called 'isyntha' has been developed which constitutes an excellent material for insulating tubes and wires. Tubes made from this material are free from woven layers and seams and are almost perfectly homogeneous. It is fire-proof and is not affected by acids or oils. When tested with a suitable oscillating crank gear testing machine it was only after five hours, when more than a million bends had been made, that a crack appeared. Heating to a temperature of 78° C. for a period of 30 days caused no change in the material. Similarly, it withstood immersion in various acids and in a solution of caustic soda without showing any external change or loss of weight. At a temperature of -18° C. a tube, which had been roved round a cylindrical rod five times its diameter, showed no signs of breakage or splintering. There are many possibilities of usefulness for isyntha tubes in electrical and radio engineering. Wires covered with it are procurable. The material can be stripped off the wires very easily and is puncture-proof for very high voltages.