

exhibitions of war-time utilities in food production in the way of goat, poultry, rabbit, pig, pigeon and bee keeping. A committee has been formed to revise the more obsolete of the by-laws, and the alterations will be put before the ordinary general meeting this month and balloted upon in August. Notable changes in staff have been the retirement of the curator of mammals and birds, and of the librarian, with temporary termination of the duties of the director of the aquarium (who is now working at the War Office), and of Mr. Bushby and Mr. Fisher.

British Museum (Natural History): Recent Acquisitions

THE Zoological Department has received from Mr. I. R. P. Heslop two skulls of the pigmy hippopotamus (*Chæropsis liberiensis*) which came from the Owerri and Warri Provinces in southern Nigeria. The interest in these two specimens lies in the fact that the distribution of this species was formerly held to be confined to a comparatively small part of West Africa, namely, to Sierra Leone, Liberia, and the French Ivory Coast. The Museum has received rumours from time to time during the past few years of the existence of the pigmy hippopotamus over a much greater range than was formerly thought to be the case. The occurrence of this species in southern Nigeria shows that its distributional area is very much greater than was assumed.

Major J. F. E. Bowring, of Ickingham Hall, Bury St. Edmunds, has presented to the Department of Mineralogy an exceptionally fine specimen of Burmese amber, probably the largest preserved in any museum. The specimen has a rich, dark brown colour, and is brightly fluorescent in ultra-violet light. It measures 22 in. × 14 in. × 7 in. and weighs 33 lb. 10 oz. The largest specimen of amber so far recorded is one weighing 21½ lb., of lighter coloured Prussian amber, preserved in the Mineralogical Museum of the University of Berlin. The Department of Mineralogy has also acquired some crystals of pale green actinolite from Mogok, Burma. These are the first specimens of the amphibole family from that locality to be represented in the collections. The crystals are of gem quality, and, although they possess the good characteristic prismatic cleavage, the mineral more usually occurs in fibrous aggregates like tremolite asbestos.

Large-Scale Plankton Cultures

H. Pettersson, F. Gross and F. Koczy have published an account of large-scale plankton cultures using the plankton shaft of Pettersson's new institute (*Medd. Oceanogr. Inst., Göteborg, No. 3; 1939*). The shaft is cylindrical, 12 metres deep and 2 m. in diameter. Interaction between the concrete walls and the sea-water has been avoided by coating the latter with a British rubber composition 'Semtex', on which a cellulose white paint had been sprayed to lighten the dull grey. The tank was filled with a mixture of sea-water from the Bay of Biscay and fresh water, and was manured with nitrate, phosphate, silicate and filtered soil extract. The water was run in from the bottom after sterilization by passage over

a mercury arc lamp. Layers of different salinity and temperature were formed, the temperature being kept down in the upper less saline layer by means of cooling coils. Illumination was supplied by sodium and mercury lamps and was usually maintained at 30–40 kilolux at the surface.

With a large crop of phyto-plankton or flagellates in the water the light intensity was reduced to 50 per cent in a depth of rather less than a metre, and at the lower limit of the culture medium layer, 550 cm. thick, the light had fallen to the level of the compensation intensity, about 500 lux. Samples of phyto-plankton and zooplankton from the Swedish coast were introduced into the upper layer, which was usually at 7°–9° C. Good growth was obtained and observations were made upon the vertical distribution of the animals as a phototropic response. Quantitative measurements were made at intervals of the changes in the diatoms, autotrophic flagellates and copepods. Thus the first steps have been taken in the development of a valuable method for the study of plankton in an immobilized water column in which the physical and chemical conditions can be varied at will. An observational is thus transformed into an experimental science.

Phenology of 1939

THE Royal Meteorological Society's Phenological Report for 1939 has been issued with its usual abundance of statistics and diagrams (Roy. Meteor. Soc., London. 3s.) It is interesting to note that the work is to continue, despite the War, and that other organizations like the British Empire Naturalists' Association and the Rothamsted Experimental Station are co-operating. There is a total of 385 observing stations compared with 439 in the previous report, and a scheme has been prepared to meet the growing demand for a simple method of assessing and demonstrating, at intervals throughout the year, the state of the season in the British Isles, making use of the Society's organization. In order to replace some unsatisfactory plants on the list, flowering dates are being made for the first time of *Cardamine pratensis*, *Acer pseudoplatanus*, *Viburnum opulus*, *Digitalis purpurea* and *Calluna vulgaris*. The historic phenological observations at the Marsham district of Norfolk, which have been made since 1736, are being continued.

With regard to meteorological effects in Great Britain during 1939, the severe December-January cold did not affect plant-life generally; the subsequent warm spells produced forwardness with a tendency to persist, especially with regard to insects, the larvæ of which experienced early favourable conditions for feeding up after hibernation. The general influence of the year, so free from extremes, was favourable to fruit, cereal and root crops (in striking contrast to the previous year), and wild fruits were also plentiful; absence of severe gales and early frosts resulted in brilliant autumn tints and the second flowering of many plants. Spring bird migrants generally tended to lateness in arrival. Of migrant insects, *Vanessa cardui* appeared

in considerable numbers, but the weather was unsuitable for the larvæ to produce many autumn specimens. *V. atalanta* and *Colia croceus* were scarce, but striking immigrations of *Pieris rapæ* and *P. brassicæ* from all parts caused great damage to greens. Generic names in full have now been added to the index table and nomenclature is brought up to date. The promptness of the appearance of the report under the difficulties of present conditions is most encouraging to all the voluntary workers concerned.

Australian Aboriginal Artist

ILLUSTRATIONS accompanying the printed report now available of a communication presented at the Canberra meeting of the Australian and New Zealand Association for the Advancement of Science which dealt with aboriginal sculpture render possible an independent judgment on material the discovery of which is hailed by the author, E. P. Goddard, as "one of the most noteworthy finds in many years" (*Report. 24th Meeting Aust. and N. Zealand Assoc. Adv. Sci. 1939, Sect. F., Anthropology*). The sculpture is the work of a woman of about thirty-two years of age, Kalboori Youngi by name, and a member of the Pitta-Pitta tribe. She is obviously a sculptor of natural genius, producing carved human figures remarkable both for their modelling and their detail, as well as their feeling for the disposal of mass and line. She works in two kinds of clays, of which one is used in the composition of the 'widow's caps' used in mourning rites. Her tool at first was a fine flake of quartzite, but she now employs a pocket-knife which has been given to her.

Although the Pitta-Pitta are now in contact with station-life, Youngi has not come under mission influence, nor has she seen sculpture of any kind. The Pitta-Pitta tribe is described as "virtually a tribe of hereditary artists", apparently on the ground that that part of the Diamantina of central western Queensland, more especially Brighton Downs station, contains numerous rock-drawings, paintings and carvings in caves and on rocks "executed long before the white man took up his pastoral holdings". The familiarity with graphic art may suggest the orientation of the aboriginal sculptor in seeking a form of self-expression, unusual and unexpected though it may be, but the derivation of the medium of expression, the sculptor's art, still seems obscure. The sculptures consist of human figures, male and female, singly and in groups, with horses and dogs as accessories rather than main elements in the composition in a manner which suggests the technique of European portraiture. The author compares this work with early Mesopotamian and Egyptian, but the comparison which suggests itself is with Sumerian, and notably the statue of Gudea.

Electrical Development in Ireland

FOLLOWING the reading by Mr. P. G. Murphy of a paper on "The Electricity System of Eire" at a meeting of the University College (Dublin) Engineering Society, Mr. Sean McEntee, Minister for Industry

and Commerce, said that he agreed with the author's estimate that in normal circumstances the demand for electricity in Eire might be expected to double itself within a decade, so that the country would then be using about 800 million of electric units yearly. By interconnecting the electricity systems of Eire and Northern Ireland this was quite feasible. It did not necessarily follow that in normal circumstances the exchange of normal power would be very large, but the interconnexion would undoubtedly help to reduce the amount of stand-by plant to meet emergencies, and would enable provision to be made for security of supply at a far lower cost than could be made by either system independently. Perhaps this development may be hastened by the present abnormal situation.

From the experience of the Electricity Supply Board, a combination of water-driven stations and fuel-burning stations is essential in Eire. The Shannon scheme has reduced the dependence of Eire upon foreign fuel to about 220,000 tons of coal yearly. On the other hand, the Electricity Supply Board's accounts still shows that during the year ended March 31, 1939, £95,000 was spent on fuel, most of which was imported. Next to the Shannon and the Liffey, the Erne and the Boyne appear to be the most important rivers from a hydro-electric point of view. The Boyne might produce an additional 100 million kwh. per annum, but its development might be very unsatisfactory owing to high rates of compensation to landowners. The Erne, if satisfactorily developed, might give an annual output of 200 million kwh., but its storage facilities and a large part of its catchment area lie within the six counties of the north—a fact which has created a very difficult problem in drainage for the Government of Northern Ireland. Mr. McEntee believes it possible to develop the hydro-electric potentialities in such a way as to improve considerably the drainage in the area affected, but any such proposals would require the active co-operation of Northern Ireland and Eire.

Roads with a Cotton Fabric Basis

IN the United States of America there is a widespread interest at present in the new 'cotton roads' which are being made across the continent from New York to California and from Florida to Maine. According to an article published in *Roads and Road Construction* of April 1, the modern procedure in construction is to lay the cotton fabric on a surface treated with bituminous material. The bituminous material is then applied to the fabric and completely covered with crushed mineral aggregate. The crushed cover material is rolled in and a lighter application of bituminous material is applied and covered with a layer of chips, which are rolled in with a heavy roller. The best results in cotton roads have been obtained from cloth of comparatively open weave. The breaking strength varies between 25 and 45 lb. (grab method) according to grade. The most practicable fabrics cost between 450 and 750 dollars a mile for a road 18 ft. wide.