

## RESEARCH ITEMS

## Australian Shell Ornaments

A DETAILED study of shell ornaments in use by the aborigines over wide areas in Australia has been made by C. P. Mountford and Alison Harvey, ethnologists of the South Australian Museum (*Records S. Austral. Mus.*, 6, 2, 1939). These shell ornaments fall into two divisions, one made from the baler shell (*Mela diadema*) and the second from the shell of the pearl oyster (*Meleagrina maxima*) and the smaller pearl shell (*Meleagrina margaritifera*). The pearl shell ornaments are found almost exclusively in western Australia, while with a few exceptions the baler shell ornament is limited to Queensland, Western Central Australia and north-eastern South Australia. The pearl shell ornaments are used for decoration and as objects of ceremonial importance. For the former purpose they are suspended from a belt back and front, while both men and women wear several down the back suspended from a necklace of human hair. In Central Australia the chief aspect of their magical purpose is their potency in charms for women and their healing properties. Various myths are woven round the pearl shell, and a particular chant is sung when the designs, which appear on them, are being engraved. The ornaments are oval in shape and vary from two to eight inches in length. The baler shell ornaments vary in use according to locality; but they may be used as ornaments or for ceremonial purposes. In west-central Queensland, for example, they are used for personal adornment or as a decoration on the haft of a spear-thrower. Among the Dieri, however, the shell ornament had great magical value and was closely connected with the circumcision ceremony, in which it was worn by the initiate as a chest ornament. The Dieri were also the only tribe using the shell for evil magic. In appearance the ornament was an ovate piece of white shell from two and a half inches to five inches long. Designs were engraved on the concave face and red ochre rubbed in. These shell ornaments were intended for male use only, but in certain circumstances, more or less ceremonial, women were allowed to handle or use them.

## Scaphocephaly among Australian Aborigines

IN an examination of 2,000 skulls of Australian aborigines, Frank J. Fenner, honorary craniologist of the South Australian Museum, has found five cases of scaphocephaly (*Records S. Austral. Mus.*, 6, 2; 1939). Two forms of scaphocephaly are recognized, of which one is descriptive of the form of skull characteristic of the Eskimo, and found among the Australian aborigines, and the second is pathological—a premature, probably fetal, synostosis of the sagittal suture present in a very long narrow type of skull; this is a rare condition occurring in many races, European, Egyptian, Negroes, etc. The specimens here described belong to the second class. Premature closure may, of course, occur without any trace of scaphocephaly. Of the skulls examined three were adult (male) and two juvenile, 4–5 years and 6 years. Detailed observations and comparisons with such normal material as was available were made. In the result these observations would go to support the conclusion of Hamy that scaphocephaly is the result of the synostosis of the two parietal bones,

that this synostosis is the result of a pathological process, probably inflammatory, and that the deformation occurs only when the fusion begins during intrauterine life at a time close to the commencement of the ossification of the cranial vault. In two of the skulls and in one described in 1867, fine vascular pores covering the surface of the bone gave evidence of a pathological condition. Three of the skulls examined showed a synostosis of the squamous suture, but of 1,200 normal aboriginal skulls, three only showed fusion of the squamous suture—all aged individuals. Probably this condition is here related to the sagittal synostosis and an outcome of the same underlying pathological cause.

## Doubling the Chromosomes of Nicotiana

H. E. Warmke and A. F. Blakeslee (*J. Hered.*, 30, 419–432; 1939) have successfully induced the doubling of chromosome numbers in *N. Sanderæ*, *N. Tabaccum* × *glutinosa*, and *N. glutinosa* × *N. sylvestris*, by treating with colchicine. Treatment of seed gave as high as 100 per cent tetraploids of *N. Sanderæ*. A new method of application by using an emulsion spray, consisting of stearic acid, morpholine and lanolin, has been found more efficacious than the water spray. It is noteworthy that mixtures of fertile and sterile flowers on one plant were not obtained from seed treatment, but the whole plant was either diploid or tetraploid in behaviour. On the other hand, stomatal size in these plants was not always correlated with fertility. This indicates that some of the plants may have been periclinal chimeras.

## The Chrysanthemum Midge

A MINUTE, red, two-winged fly which produces small conical galls upon the leaves and stems of chrysanthemums has been recognized as a serious pest in the United States, and has appeared twice in Great Britain during the last decade. The present attack is, fortunately, somewhat limited, but Dr. H. F. Barnes has published a timely description of his studies of the insect (*J. Roy. Hort. Soc.*, 64, Pt. 2; Nov. 1939). The midge, which has usually been recorded as *Diarthronomyia hypogæa*, infests commercial late-flowering chrysanthemums, but will not apparently spread to the earlier summer kinds, nor to common, closely related weeds. Five generations appear every year in cool greenhouses, but in heated structures there are eight. The length of time spent in each stage of the life-history appears to depend directly upon temperature, being generally shortened by summer heat. Severely infected plants do not flower. Consistent spraying or fumigation with nicotine provides a complete, though very expensive, control. The most effective prevention, however, is the cutting of infected shoots to ground-level, for the stool cuttings which emerge later from such plants are found to be free from the insects.

## Larvæ of British Coleoptera

IN the *Entomologists' Monthly Magazine* of November and December, Dr. F. van Emden, of the Imperial Institute of Entomology, contributes the first of a series of articles on the larvæ of British Coleoptera (beetles). The object of these contributions is to provide keys to enable the larvæ of the

British members of the order to be recognized as reliably as possible, and the first of these articles deals with the family Cerambycidae. The material upon which the account is based consists primarily of that available in the collections of the British Museum (Natural History). Important additions, however, were based upon the specimens obtained on loan from the Zoological Museum, Copenhagen. All the thirty-six genera of British Cerambycidae are included in these keys. Seven of the genera, however, have their characters taken from literature, since no larval material was available. While it will obviously be a lengthy business in dealing with the larvæ of even the chief families of British Coleoptera, the present account is a good beginning, and we hope to see many other groups similarly treated by Dr. van Emden.

#### Control of the Bean Rust Fungus

A RUST disease of the bean is widely distributed in Lower and Middle Egypt, and its control has formed the subject of a study by Dr. A. F. El-Helaly (*Min. Agric. Egypt, Tech. and Sci. Serv. Bull.* 236, Govt. Press, Bulâq, Cairo, P.T. 4, 1939). Spraying with Bordeaux mixture of half per cent strength was found most effective, and yielded the significant net profit of from one to four Egyptian pounds per feddan. Chocolate spot, caused by *Botrytis fabae*, was also controlled by the same treatment. Sulphur fungicides were tried, but were not found reliable against these particular parasites, and the Bordeaux treatment possessed the further advantage that no physiological check was administered to the foliage.

#### Vertical Air Currents

SCIENTIFIC Note No. 81 (7) of the India Meteorological Department, by K. P. Ramakrishnan, deals with vertical currents in the first few kilometres over Poona and their possible effect on the measures of upper winds made by pilot balloons assumed to rise at a known constant rate. The vertical currents were deduced from the height-time curves found for balloons by the tail method, which involves measurements of the angle subtended by a tail assumed to hang vertically beneath the balloon, with the aid of a special graticule in the pilot balloon theodolite. The method is probably accurate enough for the purpose of revealing vertical currents of the strength of those often observed at Poona in the hot season. A more serious source of error in computing the vertical currents arose from the assumption that the differences between the observed rate of ascent ( $V$ ) and the rates given by the standard formula  $V = \frac{L^{1/2}}{q(L+W)^{1/3}}$ , where  $q$  is a constant for a particular size of balloon,  $L$  is free lift and  $W$  is weight of balloon, are measures of the vertical currents. Actually, the rate of ascent of a balloon is affected by its shape, which is never truly spherical, and, to judge from the performance of the 100-gm. Dewey and Army balloon, by other factors not yet understood, for with this balloon, so far as observations have been made at the Meteorological Office, the rate of ascent varies roughly as  $\frac{L}{(L+W)^{2/3}}$ , and not as the square root of that quantity, as is implied by the standard formula. Such sources of error probably do not invalidate two of the conclusions reached by Ramakrishnan; first, that the rate of ascent of a balloon for a given lift and weight is far more variable

in the afternoon than in the morning at Poona, and that this is due to the greater magnitude of the vertical currents in the afternoon, and secondly that a method of obtaining upper winds that involves the assumption of a constant rate of ascent of the balloon is thoroughly unreliable in a tropical climate like that of India. The values of vertical velocity found were mostly between 3 km. and 5 km./hour in the afternoon, and occasionally reached 10 km./hour.

#### Geography of Egypt

A VOLUME entitled "Contributions to the Geography of Egypt", written by J. Ball (Cairo: Government Press, 10s. 6d.), may be regarded as a comprehensive study of most aspects of the Nile and contains a great deal of new matter as well as facts that are scattered in various publications. Apart from the treatment of the physical aspects of the Nile basin and water, the Faiyum depression is the subject of a lengthy study. Much has already been written on this lake. Dr. Ball points out that the absence of Pliocene deposits proves that the depression cannot have been in existence in those times. The numerous lacustrine deposits of later ages show that a lake of varying height must have existed from early Pleistocene times to the present day, and since there can have been no erosional deepening of the depression while the lowest part was below the surface-level of the lake, its excavation must have been entirely accomplished between the end of the Pliocene and the beginning of the Pleistocene. But the Nile then flowed at much higher levels than to-day, so that its lateral stream could not have effected erosive action at such low levels. Thus, argues Dr. Ball, the Faiyum was hollowed out independently of the action of the Nile: some other agency must have been at work. He concludes that the depression is due to wind erosion in early Pleistocene times, and this theory is supported by what is known of the origin of other depressions in the Libyan plateau such as the oases of Kharga, Dakhla and Qattara.

#### Drainage of Southern Ireland

THE peculiar trellised pattern of the river system of southern Ireland has attracted considerable attention since Jukes postulated a superimposed origin from an elevated initial surface. Hull modified this hypothesis by invoking fault lines as controlling the right-angled deflections of the rivers. Austin Miller has re-examined the whole problem in a paper entitled "River Development in Southern Ireland" (*Proc. Roy. Irish Acad.*, 45, Section B, No. 14). One of the most difficult features to explain is the failure of the subsequent at the expense of the consequent rivers in the completion of the pattern which might be expected to have led to the outflow of the Blackwater to Dungarvan Bay and the Lee to Youghal Bay. Conditions appear to favour this completion, for there has been rejuvenation since the present mouths were acquired that would provide the subsequents entering these two bays with the increase in gradient necessary for headward encroachment. Mr. Miller suggests that the explanation lies in the acquisition by the present estuaries of a volume of discharge, by a long process of captures, so much greater than that of their competitors that they have been able to excavate sufficiently rapidly through the hard ridges that attempt to bar their courses and so outrival the strike streams in spite of the softer rock over which the latter flow.