Research Items

Cephalic Types among the Seminole Indians

IN the summer of 1932, Dr. Wilton Marion Krogman and others with him secured an anthropometric record of a number of full and mixed blooded Seminole Indians of Oklahoma. The Seminole is apt to be an extremely mixed type. Linguistically they are referred to the Muskogean stock, belonging specifically to the northern division, which embodies Upper Creek, Lower Creek and Seminole. In physical character, the Seminole incorporates diverse elements, Indian, Negro and white. From 1702 onwards the Creek gradually absorbed Floridan tribes, among whom were the Oconees, who formed the essential nucleus of the Seminoles. The Oklahoma Seminoles appear to have mixed more freely with both white and Negro than the Florida Seminoles have done. There also have been in the Oklahoma Seminoles occasional crosses with Comanches, Kiowa, Caddo, Pawnee, Shawnee and other neighbouring tribes. The data examined by Dr. Krogman (*Z. Rassenkunde*, 3, 2; 1936) are derived from the cephalic dimensions and indices of 109 full-blooded Seminoles and 41 Seminole-Creek mixed-bloods. The head is found to be of moderate length, full-blood, male, 191·9 mm.; mixed, male, 192·1 mm.; broad, full-blood, male, 132·7 mm.; mixed, male, 133·6 mm. The cephalic type of both the full-blood and the mixed groups tends to sub-brachycephaly and moderate hypsicephaly. The forehead is wide. On the basis of the frequency distribution of cephalic indices and the calculation of the coefficient of variation, it is concluded that the full-blooded Seminoles are relatively homogeneous. It is thought possible that the long- and high-headedness may have been introduced by whites, the most frequent intermarriage being with whites of Scottish descent.

Anahæmin B.D.H.

THE success of liver therapy in the treatment of pernicious anæmia has naturally led to many attempts to isolate the active principle. The basis of most subsequent work was the investigation of Cohn, Minot and their co-workers, who isolated a fraction from liver which was both active when given by mouth and could also be administered by injection. More recently, Dakin and West (*J. Biol. Chem.*, 109, 489; 1935) obtained a polypeptide from liver which they showed to be curative in pernicious anæmia when injected subcutaneously in quite small doses. The British Drug Houses, Ltd., London, N.1, has prepared this polypeptide, to which the name 'Anahæmin' has been given; its hæmatopoietic activity has been demonstrated, in clinical trials arranged by the Medical Research Council, by Ungley, Davidson and Wayne (*Lancet*, Feb. 15, p. 349): reference to this work was made in the Council's Report for 1934–35. Anahæmin yields on hydrolysis the amino-acids lysine, arginine, glycine, leucine, hydroxyprotine and aspartic acid, together with glucosamine. One injection of 2 c.c. of a solution containing 200 mgm. of anahæmin produced an immediate reticulocyte response, followed by a striking increase in the number of red blood corpuscles, which was maintained for a period of more than thirty days. Further, there was considerable subjective improvement, and in the cases which manifested signs of degeneration of the cord, there was noticed a distinct amelioration of the symptoms.

Parasites of *Munida*

THE species of *Munida* and their Rhizocephalian parasites in northern European waters form the subject of an exhaustive investigation by Brinkmann (Bergens Museum Skrifter No. 18, 1926). It is divided into three parts, the hosts, the parasites, and the hosts with their parasites; the last section is subdivided into two portions, (1) the general relationships between the two, and (2) the effects of the parasite upon the tissues of the host. Three species of *Munida* are recognised, namely, *M. bamffia*, a form rarely found below 100 m.; *M. sarsi* (the *M. rugosa* of Sars but not of Fabricius) generally found between 100 m. and 300 m.; and *M. tenuimana* which has 250–300 m. as its upper limit. Three species of parasites are also recognised, namely, *Lernœodiscus ingolfi* found on all species of *Munida* but principally on *M. sarsi*; *Triangularis munidæ* similarly found on all but mostly on *M. sarsi*, and *T. boshmai* found equally on two species but only once on *M. bamffia* in many thousands of specimens. The infection takes place at a moult of the host. In a number of double infections it was found that both parasites were of the same size, and so presumably infected the host at the same time. A smaller group, however, showed infections at different moults, and from this it is evident, despite what was previously thought, that infection does not ensure immunity against subsequent infections. The effects of parasitism on the host are fully discussed, and the author finds that Geoffrey Smith's theory does not explain the phenomena in *Munida*. The work is well illustrated.

A New Enteropneust

KAPELUS (*Ann. Nat. Mus.*, 8; 1936) gives a detailed account of a new enteropneust, *Saccoglossus inhacensis* which was collected by Mortensen and by van der Horst in Lourenco Marques. It presents two features of interest. First, the nervous tissue is very well developed and an epidermal nerve layer is present in proboscis, proboscis stalk, collar and a thinner layer in the body region. In the collar the central nervous system is hollow for part of its course, and its neural crests are still in direct connexion with the epidermis without being separated from it by the limiting membrane. This shows clearly its derivation from the ectoderm. The body region also has a dorsal and ventral cord, and the position of the former is marked externally. Secondly, for the genus, this species possesses a large number of gill slits, up to 82 pairs. The last six pairs are reduced to mere circular canals, without tongue bars, placing the alimentary canal in direct communication with the exterior.

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Metabolism of Stored Fruit

THE inhibition of ripening in fruit and of germination in seeds and potatoes has recently been discussed by M. Copisarow (*J. Pom. and Hort. Sci.*, **14**, 1, 9; 1936). In experiments with potatoes he has obtained inhibition of sprouting and suppression of fungal decay by spraying with a 1 per cent solution of maleic acid in amyl acetate. Normal development occurred on discontinuing the treatment. Similar results were obtained when potatoes were treated with an amyl acetate emulsion of the ether extract residue from unripe apples, whilst the extract residue from mature apples gave slight sprouting and over-ripe apples more vigorous sprouting. Ripening of Newtown Pippin and Jonathan apples, pears and green bananas was also suppressed by the maleic acid treatment. In all cases, an aqueous solution of maleic acid was found to be unstable in its inhibiting effect compared with the amyl acetate solution. Attention is directed to the fact that the decline in naturally occurring inhibition is accompanied by evolution of the accelerator (ethylene), and it is suggested that maleic acid may probably be identical with the natural inhibitor, the 'blastokolin', which, according to Kockemann, has the properties of an unsaturated acid. On the basis of the chemical and physiological similarity between maleic acid and the naturally occurring inhibitor and the constitutional link between ethylene, maleic acid and the acid-fruit constituents, it seems not improbable that maleic acid acts as inhibitor and is degraded to ethylene with the onset of ripening. Certain practical applications to fruit storage are discussed, and it is suggested that paraffin oil wrappers containing maleic acid might be effectively used.

Ink Disease of *Iris reticulata*

THE outer bulb scales of *Iris reticulata* are sometimes attacked by a fungus which causes the appearance of inky black patches. *Mystrosporium adustum* is the organism concerned, and as its horticultural significance is not fully understood, Mr. D. E. Green has carried out several experiments upon the incidence and control of the malady (*J. Roy. Hort. Soc.*, **61**, Pt. 4, 167–175, April 1936). Artificially inoculated bulbs rotted very quickly, but naturally infected organs flowered, and showed relatively little effect of the disease, except a decrease in the number of bulbs over a period of years. Rotting was always more rapid in unsterilised, than in sterilised, soil, thus indicating that the actual destruction of tissues is brought about by secondary organisms. The experiments on control seem to show that it is improbable that any simple treatment can eradicate the disease, and the most that can be done at present is to reduce the spread of the fungus by annual lifting and removal of diseased bulbils.

West African Timbers

UNDER the auspices of the Department of Scientific and Industrial Research, two pamphlets have been issued by the Forest Products Research Laboratory, Princes Risborough (*For. Prod. Res. Records*, Nos. 6 and 7. London: H.M. Stationery Office, 1935), dealing with the properties of an African mahogany and mansonia respectively. Generally speaking, the investigations on the two timbers are discussed under distribution, description of tree and of the timber, seasoning and mechanical properties, durability, working qualities, uses and supplies. The home of both species is in the African forests. The African mahogany (*Khaya anthotheca*) occurs in mixed evergreen and deciduous forest, ranging from the Ivory Coast, through the Gold Coast, Nigeria, French Cameroons and Angola to Uganda in the east. The specimen of the tree submitted to tests at Princes Risborough came from Uganda. The supplies in the past have come mainly from the Ivory Coast. From the tests undertaken, it is considered at Princes Risborough that this mahogany is suitable for the purposes to which other African mahoganies are applied. It is said to be superior to *Khaya ivorensis* in strength, but only equal in stiffness, whilst under transverse loads the timber is slightly inferior to the Central American mahogany, *Swietenia macrophylla*. Valuable data on the African mahoganies have also been obtained by French investigators (Bois Coloniaux; Plaquette documentaire éditée sous les auspices du Comité National des Bois Coloniaux. Paris: Musée des Colonies, 1935). The Mansonia (*Mansonia altissima*), so far as present records go, occurs in the deciduous forests of west tropical Africa from the Ivory Coast through the Gold Coast, Dahomey to Nigeria. From the research work undertaken by one of the sylviculturists in Nigeria with this species, it would appear to be possibly more abundant than has hitherto been surmised; and it seems under suitable conditions to regenerate with comparative ease. The timber has a similarity to black walnut in appearance and strength properties. It is therefore considered that it should be fit for use for practically all purposes for which black walnut has previously been employed, including the manufacture of propellers for aircraft, an important and increasing economic demand.

Halleförs Dolerite Dyke, Sweden

AN important contribution to the petrology of basaltic intrusions is made by T. Krokström in a study of the great Halleförs dyke of Middle Sweden (*Bull. Geol. Inst. Upsala*, **26**, 115–263; 1936). The dyke is about 40 km. long, has an average width of 1 km., and trends east and west. The marginal type is mainly ophitic olivine-dolerite, associated with a coarser variety which locally shows a glassy development of its interstitial material. The central parts of the eastern half of the dyke display an apparently continuous variation from coarse, even-grained dolerite to markedly porphyritic types with a very fine-grained groundmass. The latter types, and even, in part, the dolerites, have locally been subjected to albitisation which is referred to late magmatic processes. A few small dykes of adamellitic affinities intersect the marginal dolerite and are interpreted as consanguineous with the rocks of the central suite. Certain granophyre veins, however, found near the margin, are thought to have been generated by transfusion of the gneissic country rocks. In the western part of the dyke a few exposures of helsinkitic rocks and epidotic breccia occur. These are interpreted as results of pneumatolytic action combined with a certain amount of mechanical deformation. The age of the dyke cannot be irrefutably established, but it is shown that there is no reasonable objection to the general opinion that it is post-Jotnian. Comparison is made with the Breven dyke. It is found that both dykes are consanguineous, but that the present section exposed through the Breven dyke is a deeper one as compared with that through the Halleförs dyke.

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Destructive Earthquakes of 1935

IN the latest issue of the *Matériaux pour l'Étude des Calamités* (No. 36, 160–163; 1935), M. C. Bois gives a list of the destructive earthquakes that occurred during the latter half of the year 1935 (see NATURE, **136**, 639; 1935). The total number of such earthquakes is 24, making 40 for the whole year, in some of which, however, the damage caused was extremely slight. During the first half of the year, there were four earthquakes of the highest degree (III) of Milne's scale for destructive earthquakes, and during the latter half only one, namely, the Turkestan earthquake of October 8, during which 105 lives were lost. If the total number of earthquakes for the year is somewhat less than usual, their destructiveness, as measured by the loss of human lives (about 35,000), is above the average of about 28,000 given in NATURE of April 11, p. 605.

Surface Temperatures in Sliding Friction

F. P. BOWDEN and K. E. W. Ridler (*Proc. Roy. Soc.*, A, May 1) have made experiments in which two metals in sliding contact were used as the elements of a thermocouple, and estimates of the surface temperature were made. This temperature may be quite high (above 1,000° for constantan on mild steel), though the mass of the metal remains cool. A simple calculation of the rate of production of heat and its transfer by conduction shows that high local temperatures are to be expected, particularly as only a fraction of the surface is actually in contact. The temperature rises with the load and the speed of sliding but reaches a constant value corresponding to the melting point of one of the metals, when the latter is relatively fusible (for example, gallium, Wood's metal, lead). The experiments were repeated with the surfaces lubricated under 'boundary' conditions—that is, covered with an adsorbed film of lubricant. Here also high temperatures were observed, and it is suggested that the high temperature is an important factor in the breakdown of the boundary film. There is evidence from other work that the boundary film is continually broken down and regenerated during sliding.

New Methods in Mass Spectroscopy

A. J. DEMPSTER has recently described (*Proc. Amer. Phil. Soc.*, **75**, 8) a new mass-spectrograph with which he has obtained several new and important results (see NATURE, **135**, 542; **135**, 993; **136**, 65; **136**, 180). The source of positive ions is a vacuum spark energised by a Tesla circuit. This arrangement gives singly and multiply charged ions of all the electrode metals tried, including palladium, platinum, gold and uranium, which have proved recalcitrant in other arrangements. The arrangement for analysing the rays consists of an electrostatic field between curved plates, followed by a magnetic field, and it gives focusing of ions of constant m/e even if both their initial directions and initial velocities are spread over limited ranges. This double focusing property represents an advance on the arrangements of Aston and of Bainbridge.

Locating Underground Rock by Sound Waves

IN *Roads and Streets* of April, a simple method developed by the U.S. Bureau of Public Roads for locating the distance of rock beneath the ground surface is described, and is said to be giving excellent results. The method has been previously used extensively when prospecting for oil at considerable depths, but in these cases elaborate and costly apparatus has been used. The device now employed is a highly sensitive seismograph, and by its use the time and expense required for drilling to find out how deep the rock lies is saved. Accurate results are obtained by measuring the speed with which an impulse from the explosion of a buried blasting cap travels through the earth. The impulse travels through soil at a speed of 1,000–6,000 ft. per sec. but through rock it travels at a rate of 16,000–20,000 ft. per sec. When the cap is exploded, a record is made for the time measurement. Special detectors are placed on the ground at different distances from the explosion and pick up the impulse as it comes through the ground. The detectors are electrically connected with the time-recording device. When a detector is close to the explosion, one impulse coming through the soil is received. At greater distances an impulse coming through the soil is received and also another which has travelled through soil to rock, through rock and finally from the rock to the surface, arriving at the detector a fraction of a second later. At still greater distances the impulse moving through soil and rock arrives ahead of the impulse moving more slowly through the soil alone. From the data thus obtained, it is possible to calculate how far the impulse went downward through the soil before it encountered rock.

Lightning Discharges and Atmospherics

AN investigation has been made by H. Norinder, of the Institute of High-Tension Research, University of Uppsala, on the relation between lightning discharges and atmospherics in radio-receiving. The investigation lasted over two years, and a very large number of atmospherics was recorded. In a paper to the *Journal of the Franklin Institute* of May, he discusses in detail the observations and the results he has obtained. The author's method of studying atmospherics is to use horizontal aerials in connexion with resistances and cathode ray oscillographs. The atmospherics were observed in mobile field stations. By varying their position it could easily be found out whether any of the effects were produced by high-tension transmission lines. By connecting loud speakers to the aerial as well as the cathode ray oscillographs, a simultaneous record was obtained of the noise and the associated disturbances. A very clear distinction was obtained between the atmospherics of short duration ('clicks') and the atmospherics of long duration ('grinders'). The 'clicks', in the author's opinion, are due to local actions inside the thunderstorm clouds, such as short sparks which are not easy to detect by visual observations. They can be seen when an aeroplane traverses local showers of rain, snow or hail. The 'grinders' are quite distinct from the clicks both in their general aspect and the way they vary. Good reasons are given for believing that 'grinders' are caused by distant lightning discharges. It is shown that the field of an electric discharge will, after a short passage in the atmosphere, be transformed into superimposed components having different periodic variations. The sometimes apparently complicated forms of atmospherics are in most cases found to be a secondary effect caused by gradual deformation during transmission.

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