

Research Items

Physical Characters of the Bedouin

DR. WILLIAM M. SHANKLIN, of the American University of Beirut, in the summer of 1934 made an expedition into the Syrian desert with the object of studying the members of the Rwala tribe, who appear to conform to the definition of a Bedouin as "a nomad who breeds and keeps camels and . . . able to trace his descent from certain recognized pure-bred Bedouin tribes". The Rwala are a subdivision of the Al-Glas, one of the major branches of the Anazeh nation, who are found more especially in the Hejaz and Syrian deserts. In recording his results (*J. Roy. Anthropol. Inst.*, 65, Pt. 2; 1935), Dr. Shanklin summarizes the evidence of the blood-groups, published more fully elsewhere, as showing a high percentage of blood group *O*, indicating that the Bedouin belong to a race of very considerable antiquity. The American Indians also belong to the blood-grouping *O*. The Rwala in their physical characters have retained features which are regarded as having characterized the primitive Mediterraneans; but elsewhere in the Near East, Egypt, Arabia, etc., this type has been overrun by the brachycephalic element, to which observers have directed attention. Thus among their average measurements are: head-length, 191 mm., breadth, 144 mm.; cephalic index, 75 (range 67 to 82); nasal height, 55 mm., nasal breadth, 35 mm.; bizygomatic breadth, 130 mm.; bigonial breadth, 106 mm. They are white, but have brown, or brunet skin, straight black, or brown, hair, brown eyes and high, straight, narrow noses. If the view that holds that the agglutinogens *A* and *B* are of relatively late origin is accepted, the evidence of the blood-groups would corroborate the evidence of physical character in showing that the Bedouin may well be representatives of the primitive Mediterranean race, who have preserved their racial character over a long period. On the other hand, the earliest known skulls of the American Indians, as pointed out by Hooton, are also dolichocephalic, and this, with their blood-grouping, accepting the conclusion of their Asiatic origin, may point to the fact that they and the Bedouin are the descendants of a remote, but common, primitive stock.

New British Bird

THE rather remarkable number of scarce American birds that have appeared in the British Isles in the past two years—yellowshank, American pectoral sandpiper, and others—is further increased by the recent addition to the British list of Audubon's little shearwater (*Puffinus assimilis-herminieri* Leason) which J. J. Harrison describes in the July issue of *British Birds* as of the West Indies form. The bird was found alive on the beach at Bexhill-on-Sea by Mr. W. E. Dance on January 7, being mobbed by gulls. When taken home it soon collapsed and died. The record is of importance because Gould recorded a specimen from Dover, but owing to insufficient verification it was never accepted, and he himself excluded it from his later works on British birds. It was in the April issue of *Ibis* that Mr. W. P. Lowe described another new British bird, the Franklin's gull, which was watched among a flock

of herring and black-headed gulls on Exmouth beach, Devon, on January 19, 1936. The British razorbill has recently had its status as a separate sub-species established owing to comparisons of British with Swedish and Greenland skins showing that the British birds are definitely smaller in measurements than the Continental ones and that the Faroe birds belong to the British race; hence the alteration in nomenclature to *Alca torda britannica*.

Periodicity in Algæ

IN certain districts of India, the regularity of the seasonal changes, especially as regards temperature and rainfall, offers an opportunity for the study of algal periodicity which would never arise under the variable conditions of the English climate. M. S. Randhawa (*Proc. Indian Acad. Sci.*, 3, No. 5, 1936) has now followed the periodicity of the freshwater Algæ in the Saharanapur District over the greater part of two years, and has obtained some very definite results. Many of the Algæ rest through the hot dry summer months in the form of thick-walled oospores; these germinate with the rain of the Monsoons and continue to grow vegetatively through the cooler autumn and winter months. With the rise of temperature in the spring a period of sexual reproduction sets in, ending with the production of thick-walled oospores. The gradual rise in temperature after a long period of vegetative growth is evidently particularly favourable to sexual reproduction, which is apparently strikingly prolific. Under these more consistent climatic conditions, the Algæ fall into step with the seasons and thus show marked periodicity, which is masked in more variable climates by small changes which affect the algal growth. It is of interest that the filling up of the ponds and streams by flood waters after the dry season is accompanied by a peak in the development of Myxophyceæ, an effect which has also been recorded in British Lake District waters when much debris is carried down by heavy rain.

Electric Heating of Garden Frames

A PAPER by Dr. J. Grainger and T. F. Armstrong (*Gardeners' Chronicle* of June 13 and 20) shows that the use of soil heating by buried electric cable is quite satisfactory for raising seedlings of green crops such as lettuce and endive, for the forcing of special crops, as mint and rhubarb, but not for root crops such as radishes, which tend to flower rather than to swell their roots in heated soil. A valuable table showing detailed consumption of electricity for raising the soil temperature by varying amounts is given. Heating cables have also been used to heat the air within deep propagating frames, and although this was successful from a horticultural point of view, it requires an average of 1.06 units of electricity per cubic yard per day to raise the temperature 10°–15° F. above that outside the frame. With electricity at ½d. per unit, this works out about twice the cost of heating similar structures by a coke fire in a hot-water system. The paper also shows that heating the soil may aggravate the effects of crown rot disease of rhubarb, during forcing.

Autopolyploidy

THE evolutionary significance of autopolyploidy, based on the numerous cases now investigated, has been considered by Dr. A. Müntzing (*Hereditas*, 21, 263). About one hundred species are now known to show intra-specific variation in chromosome number, autotetraploidy being the most common condition. Such tetraploids usually show *gigas* characters, being generally stouter and slower in development. Both morphological and physiological changes result from the larger cells, but hexaploids frequently and octoploids generally show dwarfing, indicating that the optimum chromosome number has been exceeded. Intra-specific tetraploids are also ecologically different from the diploids, and they usually have a different geographical distribution, being generally, but not invariably, more northern. Such polyploids appear to be generally more hardy and adapted to a northern, alpine, xerophytic or coastal habitat, into which the corresponding diploid does not extend. Experimentally induced autotetraploids show essentially the same features as natural ones. Chromosome association at meiosis is the same in both, ranging from almost complete bivalency to almost complete quadrivalency. Wild autopolyploid races are usually fertile, while experimentally induced ones generally show poor fertility. This difference may be accounted for by the effects of natural selection. The perennial species in a genus have a higher average chromosome number than the annuals. Autopolyploidy has played an important role in the evolution of higher plants.

Tokyo Earthquakes in 1935

WE have received the last of the quarterly *Seismometrical Reports* for 1935 issued by the Earthquake Research Institute. These refer only to earthquakes that were sensible in Tokyo. After the great earthquake of 1923, a system of eight seismological stations was founded in and around Tokyo. During the year 1924, 60 earthquakes were felt in Tokyo, and the records obtained were sufficient to determine the epicentres of 52 and the focal depths of 42 earthquakes. In 1935, the number of stations had risen to thirteen, the number of sensible shocks was 78, the epicentres of all and the focal depths of 67 earthquakes were ascertained. In Tokyo itself, most of the shocks (55 in number) were just perceptible, and none at any station reached even semi-destructive strength. The mean depth of the foci was 28 miles, the greatest depth measured being 75 miles.

Oxidation-Reduction Potential

COMPARATIVELY few accurate measurements of the potentials of oxidizing-reduction systems have been made, one of the main difficulties being the ease of hydrolysis usually observed with the higher valency ion. One of the best investigated systems is that of the thallic and thallic ions, Tl^{3+}/Tl^{2+} , which was investigated in 1905 by Abegg and J. F. Spencer. Later investigators showed that the potential appeared to vary considerably with the nature of the anion, doubtless owing to the formation of anion complexes. Two recent investigations of the electrode, by J. R. Partington and H. I. Stonehill (*Trans. Faraday Soc.*, 31, 1357; 1935) and by A. A. Noyes and C. S. Garner (*J. Amer. Chem. Soc.*, 58, 1268; 1936), have included precautions to avoid this effect. The former investigators used the sulphates in sulphuric acid solution, and the latter the nitrates in nitric and perchloric acids. The two values for the

normal potentials, 1.20-1.22 volts, and 1.230 volts, respectively, are in satisfactory agreement. Since there is little likelihood that complexes are present in the nitrate and perchlorate, the results show that the formation of sulphate complexes by thallic sulphate is not very extensive. An interesting feature of the work of Noyes and Garner was the use of ozonized oxygen for the oxidation of the thallic to the thallic salt in concentrated nitric acid, thus avoiding the introduction of extraneous substances into the solution.

Experiments with Neutrons

C. H. COLLIE and J. H. E. Griffiths (*Proc. Roy. Soc.*, A, 155, 434) have investigated the absorption of fast and of slow neutrons using an arrangement in which the effect of mere scattering was largely eliminated. The absorption cross-sections for fast neutrons were nearly the same ($1-1.5 \times 10^{-24}$ cm.²) for a number of elements tried. The experiments with detectors sensitive to slow neutrons showed an increase in activity when the absorber was put in, and this probably means that new slow neutrons were produced by collision of the fast neutrons with the absorber nuclei. S. Kikuchi, H. Aoki and K. Husimi (*Proc. Physic. Math. Soc. Japan*, 18, 115) have studied the production of γ -rays from numerous substances bombarded by fast neutrons (2×10^6 e.v.). Slow neutrons were excluded from the specimen. The cross-sections calculated for γ -ray production vary unsystematically with atomic number, the absolute values are of the order 5×10^{-25} cm.², and it seems that γ -ray production is responsible for a considerable part of the absorption of fast neutrons by many elements. The γ -ray energies seem to be fairly similar in all cases, but they are not monochromatic. The γ -rays excited by slow neutrons appear to be of a different type, they are usually harder, and are to be ascribed to the capture radiation associated with nuclear transformations.

Statistical Research Memoirs

THE first volume of a new publication entitled *Statistical Research Memoirs* appeared in June of this year, edited by Prof. E. S. Pearson and Dr. J. Neyman, and published by the Department of Statistics at University College, London. The *Memoirs* will contain only papers prepared in that Department. The series will not be strictly periodical, but it is hoped that a volume of more than 150 pages will be issued about once a year. The price is 15s. a volume, or 12s. 6d. to those who signify in advance their intention to purchase the next volume. The *Memoirs* are intended to advance the general theory of statistics, which at present is not yet on firm foundations. It is the ambition of the Department to contribute towards the establishment of a theory of statistics on a level of accuracy which is usual in other branches of mathematics. The present volume contains seven papers, two by J. Neyman and E. S. Pearson, and the others by P. P. N. Nayer, B. L. Welch, P. O. Johnson and J. Neyman, P. V. Sukhatme, and R. W. B. Jackson. All of these deal with closely related subjects, connected with the well-known methods of Neyman and Pearson for testing statistical hypotheses. The *Memoirs* will, as a general rule, be restricted to the general theory. Papers dealing with the applications of statistics serve their purpose best when they appear in journals devoted to the particular fields of application.