

Research Items

Anthropometry of Syrian Males

MEASUREMENTS, as well as other observations of 1483 Syrian males, have been made by W. M. Shanklin (*J. R. Anthropol. Inst.*, 68, 2, 1938). Syria has been a battleground of the nations from time immemorial. Of the invasions of the mountains less is known than of those of the coastal regions; but within historic times one large mountain group, the Druzes, has migrated into southern Lebanon and the Jebel Druze in the Hauran. Like the coastal plain, the desert border has been frequently invaded. Question is raised whether the living races of to-day show traces of their complicated ancestry, and if there is any correlation between the diverse geographical areas and population. In this study the material is examined from the point of view of the religions represented and geographical areas—Shiite Moslems, Sunni Moslems, Christians, and Alouite and Druze, secret sects with Moslem origins. The geographical areas are mountain, desert-border, and desert. Summarizing the results of 15 measurements and 6 indices, as well as the other observations, it is shown conclusively that there are significant differences between the mountain groups and the desert border groups, while both of these differ from the Syrian Bedouin. The major differences are a progressive lengthening of the head, and a decrease of the cephalic index (maximum, Mitwali, 87; minimum, Rwala, 75), in passing from the mountain region to the desert border and the desert. Other changes in the same direction are a progressive narrowing and lengthening of the face and a lengthening of the nose. Convex noses, rarely seen in the desert, are frequently found in the other groups. There is also a progressive darkening of the skin towards the desert, and an increase in the percentage of blood-group O. The line of cleavage for Syrian racial differences is thus along geographical and not religious lines. The nomadic peoples of the desert are clearly Mediterranean in the larger sense. The border peoples represent a transition to a brachicephalic stock, which cannot be considered 'Armenoid'.

Boat Oculi Survivals

IN a further study of the survival of oculi on boats, Mr. James Hornell records additional examples from Portugal, the coasts of the Mediterranean, Madagascar, Zanzibar, the Swaheli coast of East Africa, and the Far East (*J. R. Anthropol. Inst.*, 68, 2; 1938). In Portugal its use, though lingering in the fishing centres, is on the decline. There are several distinctive substitutes for the oculus, the most common being a star, usually five-pointed. Apart from these substituted devices, the same type of oculus with minor variations occurs along the whole coast line of Portugal south of the Tagus. The custom was encountered nowhere on the Spanish coast except at Malaga. In Sicily and in Malta the oculus is in common use as a device against the evil eye. In the Adriatic the true oculus is rare, though it does occur; but a large red disk on each bow is common around Venice. At ports lower down the coast the oculus is supplanted by a comma-shaped wooden boss on each bow. No trace of the oculus is found in the Red Sea

or Persian Gulf, owing to observation of the precepts of the Koran against representation of the human figure, or parts of it. It is only when the Swaheli coast is reached that the oculus is again encountered. Here the *mtepe*, the only indigenous sea-going craft, and many of the small craft of Pemba and Zanzibar are 'eyed', and commonly the eyes are duplicated in the stern. In Mayotte, the island nearest to Madagascar, the oculus is common, both on the bows and the quarters. In Madagascar itself the oculus, not found on the outrigger canoes, occurs on vessels of typical Arab design and on two-masted coasters of lighter type. Omitting India, where the oculus has already been noted, it appears in Burma, but has disappeared in Indonesia and the Malay Peninsula, where the Mohammedan religion has spread. It appears to have occurred sporadically in Selangor and Sumatra, and continues to flourish in Bali. An old tradition is preserved with fidelity in Botel Tobago. The statement made previously that the oculus is universal on the Chinese junk is incorrect. It is never seen on the boats of northern China.

Population Problems in the United States

THE Population Association of America arranged a symposium on "Intrinsic and Environmental Factors in American Population Growth", which was held at the American Philosophical Society, Philadelphia, in November 1938; and the results have recently been published (*Proc. Amer. Philos. Soc.*, 80, No. 4) as a series of papers by leading American students of population questions. The contributions include "Agriculture and Current Population Trends" by Conrad Taeuber, "Social Environment and Population Growth" by Warren S. Thomson, "Intrinsic Factors in Population Growth" by Frank W. Notestein, "Psychological Factors and Fertility" by John C. Flanagan, "Childlessness" by Clyde V. Kiser, "Cultural Patterns in Rural America" by C. C. Taylor, "Reflections of an Anthropologist on the Future of Population" by H. L. Shapiro, "Population Study and Related Sciences" by A. J. Lotka. The whole constitutes a valuable survey of population trends and problems in the United States, supported by extensive statistics on many points. These statistics are frequently derived from special investigations. Among the conclusions which emerge are the importance of contraception in lowering the birth-rate and the fact that the birth-rate has declined below the replacement level. In the professional group the reasons for family limitation are mainly financial, the cost of higher education and the health of the wife. One writer concludes from results derived from questionnaires that contraception is not responsible for any major share of permanent childlessness. The population is expected to reach its peak by 1980. There was a considerable movement back to the land during the depression years 1930-35. Migration from farms has taken place not only in regions where agriculture is non-commercial, but also in areas where commercial agriculture is dominant. In the latter areas smaller families appear to be a part of the culture complex.

Phosphorylations in the Cell

H. KALCKAR (*Enzymologia*, 5, 365; 1939) has shown that accumulation of phosphoric acid esters takes place in fresh kidney extracts under aerobic conditions so long as suitable concentrations of sodium fluoride are present. These esters do not normally accumulate owing to the activity of phosphatases, of which a group—the 'acid' phosphatases—are poisoned by fluoride. Fluoride, however, diminishes the respiration and this must have an inhibitory effect on the synthesis of the esters, which depends partly on the respiratory activity of the tissue. The specificity of the enzymes involved is shown by the facts that addition of α -glycerophosphate inhibits only the phosphorylation of glycerol, whilst the addition of hexosediphosphate inhibits only the phosphorylation of hexoses. M. Silverman and C. H. Werkman (*Enzymologia*, 5, 385; 1939) observe that phosphorylation of vitamin B₁ to form cocarboxylase takes place when a suspension of propionic acid bacteria (*Propionibacterium pentosaceum*) is incubated for two hours at 30° C. in a medium containing hexosediphosphate and synthetic vitamin B₁.

Nitrogen-containing Substances of the Intestines

K. RI (*J. Biochem.*, 29, 265; 1939) examined the large intestine and duodenum of healthy adult dogs for nitrogen-containing substances with the following results. The amount of choline, humine, purine-nitrogen, arginine, leucine, valine, isoleucine, phenylalanine and aspartic acid contained in the muscle layer of the duodenum was found to be larger than that of the muscle layer of the large intestine. The amount of glutamic acid and serine, however, contained in the duodenum was less than that of the large intestine. The duodenal mucous membrane was found to contain more choline, arginine, histidine, tyrosine, glutamic acid and glycoecoll than the mucous membrane of the large intestine, and more humin, alanine and isoleucine were found in the mucous membrane of the large intestine than in that of the duodenum. Experiments showed that the chemical constituents of the digestive organs were distributed quantitatively, differing somewhat according to the various regions. Histidine, for example, was found in abundance in the duodenal mucous membrane and isoleucine in the duodenal muscle layer and in the mucous membrane of the large intestine.

Hypoglycæmia and Anoxæmia

H. E. Himwich, S. J. Martin, F. A. D. Alexander and J. F. Fazekas (*Endocrinology*, 24, 536; 1939) studied the activity of the autonomic system of dogs during hypoglycæmia and anoxæmia. Electro-cardiographic changes showed that in both conditions an initial transitory sympathetic influence was followed by parasympathetic predominance. This increased activity of the autonomic nervous system was associated with a depressed metabolism of the brain, as indicated by diminished cerebral utilization of oxygen. It is concluded that with depression of the brain metabolism the predominant and ultimate effect on the autonomic nervous system was a release of parasympathetic influence.

Alimentary Canal of Molluscs

THE structure and function of the alimentary canal in different groups of molluscs have already been dealt with in several accounts in recent years.

This work is continued in a communication by Dr. Vera Fretter who has investigated these problems in the Tectibranchs, *Philine aperta*, *Scaphander lignarius*, *Haminea hydatis* and *Actæon tornalis* (*Trans. Roy. Soc. Edin.*, 1939). All these have radulæ, but the last has no odontophore so that the method of feeding is similar. *Actæon* also differs from the others in lacking a pair of salivary glands which secrete a fluid containing an amylase and a glycogenase. Again, this species lacks a crushing gizzard. The stomach of all of them has a bilobed digestive gland opening into it; this produces a proteolytic enzyme with an optimum of pH 6.3 and a diastatic enzyme and a glycogenase with an optimum between pH 6.3 and pH 7.0 and a lipase. These enzymes produce soluble products and small particles which are ingested by the digestive cells of the digestive glands wherein digestion is completed. The gland exhibits a cyclical series of changes which includes secretion, and in *Philine* and *Scaphander* the latter phase of activity is associated with the expulsion of excretory matter. This gives rise to a characteristic type of faecal pellet. As in Gastropods purines tend to replace urea, it is suggested that in this group a terrestrial mode of life is preceded by a uricotelic metabolism.

Neocomian Cephalopods of India

THE Cephalopoda of the Neocomian Belemnite beds of the Salt Range are described by Dr. L. F. Spath (*Palæont. Indica*, N.S., 25, No. 1, pp. 154, pls. 25; 1939). They are found condensed into the basal beds or lower part of the Belemnite marls, and include eighty-one species of ammonites and three of belemnites; of the former only seven can be definitely identified with species already known; the latter belong mainly to the genus *Hibolites*. The ammonites show that the deposit is of Infra-Valanginian and Valanginian age, and indicate the existence of six zones, but the succession does not appear to be complete. They belong mainly to the families Olcostephanidae, Berriassellidae and Neocomitidae, and their affinities are with the fauna of the great equatorial belt (Tethys and extensions). The author believes that the distribution of oceans and continents was already essentially the same as at the present day, except for the more extended Tethys, and he visualizes an equatorial zone extending 45° of latitude north and south of the equator. While the fauna of the Belemnite beds consists essentially of cephalopods, it includes also a few representatives of reptiles, fishes, brachiopods, pelecypods and one gasteropod.

Greenkeeping Research

THE spring number of the Journal of the Board of Greenkeeping Research (St. Ives Research Station, Bingley, 3s. 9d. post paid, 1939) contains an account, by R. B. Dawson and N. L. Ferguson, of the production of the St. Ives strain of creeping red fescue grass. This strain is a propagation of a uniform population of *Festuca rubra genuina* var. *glaucescens*, selected from sea marsh turf at Cark in Cartmel, Lancashire. The new strain offers greater leafiness and density of growth than existing commercial strains of the same species, and it has also good winter colour and reasonable resistance to fungal disease. Much of the St. Ives Station's work has centred around the treatment of lawns with appropriate fertilizers; but R. B. Dawson and R. B. Ferro show that this is inadequate without mechanical aeration

by scarification. A paper on the Belfast Airport, by S. P. Mercer and P. A. Lineham, describes some fascinating ecological transformations from dredged mud to turf which can support a load of four tons per square foot. The original soil had a salt content of about 0.4 per cent, and its relative acidity was pH 8. Many species of grass were tried upon the drained soil, but a mixture of 40 parts by weight of perennial ryegrass seed to one part of yellow suckling clover gave the best results. Sowings of *Poa maritima* were also used for initial colonization of bare mud. The interesting and complex life-history of an oil beetle, *Meloe proscarabæus*, is also described by Miss B. Lovibond. The species does not seem to cause much trouble upon lawns, except the distaste for its occasional presence in large numbers.

Melanism in Pheasants

THE two inter-fertile species of pheasant, *Phasianus versicolor* and *P. colchicus*, are subdivided into about 42 subspecies. The origin of one of these, sometimes called *P. colchicus* mut. *tenebrosus*, the black pheasant, is uncertain. J. H. Bruckner (*J. Hered.*, 30, 45-52; 1939) has reported some interesting breeding results. Melanism is dependent on one incompletely dominant gene. The F_1 hybrids between melanic pheasants and the common ring-neck pheasant, *P. colchicus*, are remarkably similar in the distribution of markings to *P. versicolor*. Bruckner suggests that *P. colchicus* may be the older or 'wild type', and that natural selection has selected the least melanic types to produce *P. versicolor*. Modifiers of melanic distribution are known in *P. colchicus*, and hybrids between melanic forms and *P. colchicus* range greatly in the amount of melanism.

Earthquakes during March 1939

ACCORDING to E. Peterschmitt, of the Bureau Central Séismologique de Strasbourg, there were a hundred earthquakes and strong tremors recorded by people and instruments during March 1939. There was not a day on which no earthquake was experienced somewhere in the world, and the greatest number on any one day was eight, on March 17. Of the hundred shocks recorded seventeen were of sufficient strength to have the epicentre determined accurately either by isoseismal lines or from instrumental recordings. Probably the strongest was on March 20, on the Island of Kiou Siou, Japan, and the next in order of magnitude were March 1, strength V, near Ebingen, Jura Souabe; March 5, strength V, La Cote-Saint-Andre (Isere, France); March 12, strength V, Province of Aquila, Italy. These were closely followed by March 20, strength IV, Barcelonnette (Hautes Alpes, France), and Susa (Torino, Italy), epicentre Mont Viso, 44.6° N., 7.1° E.; and March 30, strength IV, in the Ossam Valley.

Coastal Fogs in Scotland

A COMPARISON between the frequency of fog in each month of the year at Scottish lighthouses and inland observing stations in the period 1925-34 and similar data for the period 1889-1900 discussed by Buchan, is the subject-matter of Professional Note No. 88 of the Meteorological Office, by F. E. Dixon. The procedure at lighthouses is to log the number of hours on each day during which, in the opinion of the lightkeeper, there is sufficient atmospheric obscurity to necessitate the sounding of a fog signal, and the personal equation is a factor. At the climatological

stations, on the other hand, a more important disturbing factor is the seasonal variation of the time of sunrise in relation to the morning hour of observation. As the period between sunrise and one or two hours after sunrise is a critical one in regard to early morning fogs due to cooling of the lower atmosphere by radiation, this disturbing factor is apt to give rise in fog statistics to a spurious seasonal variation due to the fact that in winter the common hour of observation of 9 h. G.M.T. is favourably placed for the observation of this class of fog, whereas in summer it is much too long after sunrise and will have allowed most of the fogs to have cleared away as a result of prolonged sunshine. It appears from a chart (Plate IV) showing the average annual fog duration at the lighthouses in 1925-34 as a percentage of the average for the earlier period, that 1925-34 was in most areas much the least foggy; but when considering the exceptions, it is clear that these arise mainly because of increased industrial activity, resulting particularly in an increase of winter fogs so great as more than to counteract the general tendency, due to meteorological causes, for the 1925-34 period to be less foggy. This is particularly well shown in the Firth of Forth, and the Moray Firth, where the prevailing winds carry atmospheric pollution from industrial areas out to sea. The tendency for fogs with clear skies to thicken just after sunrise owing to an increase in pollution is well shown by the observations at fixed hours at Aberdeen, where the average number of fogs in 1927-36 increased from 0.4 to 7.0 between 7 h. and 9 h., whereas in summer the corresponding figures were 2.6 and 1.1.

Mechanism of Formation of Polythionic Acids

H. Stamm and H. Wintzer have shown (*Ber.*, 71, 2217; 1938) that the primary product in Wackenroder's reaction (the reaction between hydrogen sulphide and sulphur dioxide in aqueous solution with formation of polythionic acids) is thiosulphurous acid, $H_2S_2O_2$. Although this compound cannot be isolated, its chemical nature can be investigated by the aid of the hydrolysis of dimethyl thiosulphite. In a further communication (*Naturwiss.*, 27, 317; 1939) the authors conclude that the reactions of this substance which are important as regards the formation of polythionic acids are the following: $H_2S_2O_2 \rightarrow H_2S + SO_2$ (1); $H_2S_2O_2 + H_2S \rightarrow 3S + 2H_2O$ (2); and $H_2S_2O_2 + 2HI \rightarrow I_2 + 2S + 2H_2O$ (3). These reactions proceed quantitatively under suitable conditions. Reactions (2) and (3) show that the thiosulphurous acid is a powerful oxidizing agent. In order to study the reactions of the acid without reaction (1) occurring, it is necessary to work in a non-aqueous solvent, and for this purpose anhydrous formic acid was chosen. It was thus possible to show that the first reaction is reversible. When dimethyl thiosulphite was hydrolysed by hydrochloric acid in the presence of sulphurous acid in the correct proportion, tetrathionic acid was formed quantitatively, the equation being $H_2S_2O_2 + 2H_2SO_3 = H_2S_4O_8 + 2H_2O$. With excess of sulphurous acid and at pH 6.9, trithionate and thiosulphate are formed in equal proportions: $S_4O_8^{2-} + SO_3^{2-} = S_3O_6^{2-} + S_2O_3^{2-}$. If in this reaction the sulphurous acid is replaced partly or completely by thiosulphuric acid, higher polythionic acids are formed, including hexathionic acid. Once formed, the polythionic acids do not react with the thiosulphurous acid. It will be seen that these reactions offer a satisfactory explanation of the formation of polythionic acids in Wackenroder's solution.