

Research Items

The Aleut. Dr. Waldemar Jochelson, as the leader of the ethnographical section of the great Riaboushinsky Kamchatka-Aleutian Expedition, spent the years 1909-10 in the investigation of the archaeology and ethnology of the Aleutian Islands. The results, submitted to the Russian Academy of Sciences in 1916, remained unpublished owing to the War, until 1925, when an archaeological volume was published by the Carnegie Institution of Washington. Dr. Jochelson has now issued, through the Institution, a monograph (Publication No. 433) dealing with the history, ethnology and anthropology of the Aleut. The expedition secured seventy skulls, of which fifty were in a sufficiently good state of preservation for measurement. They showed an average cranial index of 82.1 with a standard deviation of 2.7 and individual range of 78-88. As these skulls were from pre-Russian graves, the conclusion is that the Aleut were not a pure race. Measurements by Mme. Jochelson of 138 living individuals gave a cephalic index of 84 with a standard deviation of 3.3 and individual range of 76-94; this, allowing two units, agreeing substantially with the skull measurement. Thus it would appear that contact with the Russians did not affect head measurement. Comparison with neighbouring Indians and Palaeoasiatics shows the Aleut to be higher than all in comparative head breadth: for example, cephalic index of Alaskan and Siberian Eskimo, 79 and 80 respectively; Koryak, Kamchadals and Yukagir, 78, 79, 80 respectively; and Indians—Tlingit, Tshimshian, etc.—not more than 82. Two explanations are possible: either a mixture with Athapascans, some of whom are so high as 84, or the acquisition of a superbrachycephalic index after a period of isolation. The latter would be a modification comparable to that attributed by Boas to the physical characters of immigrants to America or those found recently in Russia as the result of a starvation diet.

Water-borne Enteric Fever: Enteric Carriers. The enteric (typhoid) fever outbreak at Malton, Yorkshire, in the closing months of last year, is the subject of a report by Dr. W. V. Shaw (Reps. on Pub. Health and Med. Subjects, No. 69. London: H.M. Stationery Office. 1s. 6d. net). The number of primary cases was 235, and the outbreak was traced to a patient suffering from enteric fever admitted to the public assistance institution at the end of September and remaining there for a month. This patient's infected excreta were drained into the river by a drain, afterwards found to be broken, which allowed part of the contents to soak into the surrounding soil and polluted the water supply. A small proportion of those who have recovered from an attack of enteric fever become permanent 'carriers'—faecal or urinary—of the specific organism and constitute a danger to the community. The whole subject of enteric carriers and their treatment is exhaustively discussed in a recent report to the Medical Research Council by Prof. Browning and Drs. Coulthard, Cruickshank, Guthrie and Smith (Spec. Rep. Series, No. 179. (London: H.M. Stationery Office. 1s. 6d. net).

Nutritive Properties of Pasteurised Milk. A valuable review of existing knowledge on this subject has been compiled by Drs. Stirling and Blackwood and is issued by the Hannah Dairy Research Institute,

Kirkhill, Ayr (Bull. No. 5. 4s. net, including postage). The inquiry is limited, so far as possible, to a consideration of the 'holding process' of pasteurisation, which consists in heating the milk to 62.5°-65.5° C. and maintaining it at this temperature for 30 minutes, after which it is cooled. Pasteurisation results in the coagulation and partial decomposition of a small amount of lactalbumin, a slight diminution in the soluble calcium and phosphate, some alteration in the rate of rennin curdling, and destruction of vitamin C. Nevertheless, the available evidence suggests that "infants can satisfy all their requirements on diets of adequate amounts of pasteurised milk provided that extra vitamin D, and, of course, vitamin C, are added to the diet". With these safeguards, there do not appear to be any grounds for the belief that pasteurised milk is a less valuable component of the diet for children than raw milk. A considerable bibliography of the subject is appended.

Prehistoric Birds in New Mexico. Cave deposits in the Pyramid Peak range in Dona Ana County, New Mexico, have yielded remains of fifty-eight species of birds. The deposits appear to belong to late Pleistocene or early Recent times, and were associated with the remains of extinct mammals, part being also found with human skeletal remains and evidences of the 'basket-maker' culture. In a summary account of their identifications (*Condor*, Jan. 1933, p. 15), Hildegarde Howard and Alden H. Miller point out that four species represented are now extinct, two being confined to cave deposits while the other two, a vulture and an eagle, were first found in the asphalt deposits of California. Of the species represented in the caves which are still living, several show extended distribution in prehistoric days. For the first time the sage hen appears in southern New Mexico, and the prairie chicken, plumed quail, magpie, caracara and California condor were more common in that area then than now. The occurrence of sixteen birds of prey, some of them large species best known from the Pleistocene asphalt pits of Rancho La Brea, suggests that in those times they were relatively abundant and that the Californian species formerly spread across the southern United States, so that the apparent absence of a rich falconiform fauna in the eastern States may merely be due to lack of suitable traps like the asphalt pits.

Inheritance of the Piebald Pattern in Horses. Piebald coat patterns are known in several domestic animals, and in cattle, sheep and rabbits the dominant and recessive types of piebald pattern are known to be different. Mr. V. Klemola (*J. Heredity*, 24, No. 2) has made a study of these markings in horses. He finds a dominant type (dominant to self-colour) in which the white areas are mainly dorsal, on neck, shoulder, back and croup. The recessive type is somewhat complementary to this, the white areas being mainly ventral, with a more or less white head. For distinction, the recessive form is designated as splashed white. This is generally associated with wall eye, in which the external membrane of the iris is more or less extensively white. The nature of this association is not clear, but it may be allelomorphous to the splashed white pattern. In Clydesdales the wall eye may occur alone. The coat colour inheritance was traced from certain German and Finnish stallions.

The dominant type is common in oriental breeds and American prairie and pampas horses and in Shetland ponies, some of the latter being homozygous for it. The recessive type is found in the breeds of northern Europe.

Urino-Genital Organs of Cetacea. F. D. Ommaney has described in detail ("Discovery" Reports, 5, 363-466; 1932) the urino-genital system of the fin whale (*Balænoptera physalus*) based on the examination in South Georgia of four fœtuses—two males, 2.65 and 1.23 m. in length, and two females, 2.1 and 1.73 m. in length respectively. Among the primitive features in the female are:—the ovary, which lies free upon the broad ligament and is not enclosed in a peritoneal sac, is multilobular and there is complete absence of accessory glands. In the male the prostate is not strictly a prostate gland but a diffuse assemblage of urethral glands opening along the dorsum of the urinogenital canal; there are no Cowper's glands and no vesiculæ seminales, and the testes are intra-abdominal. While the genital system shows many primitive features which suggest affinity to some group near the insectivores, there are, nevertheless, reasons for comparing it with the corresponding system of the ungulates, especially of the perissodactyles. The vascular and nervous supplies to the genital organs are also described. Each kidney is a composite organ made up of a great number of small unipyramidal kidneys (renculi) grouped together in lobules of four to six renculi. These renculi drain into a main urinary duct running through the centre of the kidney. The number of renculi in the kidney of a female fin whale was estimated to be about six thousand.

Control of the Loganberry and Raspberry Beetle. The depredations of the beetle *Byturus tomentosus* cause much damage to crops of raspberries and loganberries. Several papers are devoted to the control of this pest in the *Journal of Pomology and Horticultural Science* (11, No. 1). "The Control of the Loganberry and Raspberry Beetle (*Byturus tomentosus*)" by H. G. H. Kearns and C. L. Walton (pp. 39-52) shows that a 0.25 per cent pyrethrum wash is inadequate as a control, but two applications of derris wash (0.004 per cent rotenone) killed almost all the larvæ. Dusting with derris powder could replace the first spray if the adult beetles are seen to cluster round the opening flower buds. A short note in the same *Journal* (pp. 77-80) by the authors mentioned above shows that a barium silicofluoride spray is quite effective in controlling the pest. Messrs. Kearns and Walton write from the Long Ashton Research Station. Mr. W. Steer has also attacked the same problem at the East Malling Research Station and the third of his "Studies on *Byturus tomentosus* Fahr" appears in the *Journal*. He reports control of the beetle by means of one spray with derris wash late in June. Two late applications of nicotine wash checked the pest on raspberries. Some very illuminating figures showing the cost of spraying are also given.

Geological History of the Black Sea. An important contribution to the difficult problem of the origin and history of the Black Sea, based on sea-floor investigations and studies of raised beaches, has been published by A. D. Archanguelsky and N. M. Strahov (*Bull. Soc. Nat. Moscou, sect. géol.*, 10, 1, 3-104; 1932). Operating from the S.S. *Pervoiè Maia*, columns

of sediments up to four metres in length were obtained. There is now no doubt that the Black Sea is of the nature of a *graben* with an area that has gradually increased in size by repeated peripheral faulting. The present abrupt 'cliff' that separates the littoral from the central depression is a recent product of post-glacial faulting, and during post-glacial time the shallow-water floor has itself subsided more than a hundred metres by slow movement. The authors believe that the central depression dates from the Miocene. The detection of characteristic fossils of the Pontian stage in the northern floor off the Crimea and the southern floor off Asia Minor is conclusive evidence that a basin existed in the early Pliocene. At the dawn of the Quaternary the area was occupied by a brackish-water basin with a fauna like that of the modern Caspian. A succession of upward and downward movements is traced, and the causes accounting for the periodical changes in salinity are discussed, and correlated tentatively with the various stages of glaciation and dependent isostatic movements of the crust.

Coal of the Northumberland Yard Seam. Paper No. 26 of the Survey of National Coal Resources (H.M. Stationery Office, 9d. net) reports carbonisation tests, at high and low temperatures, of the coal of the Northumberland Yard Seam. Their interest lies in the fact that this is a weakly coking coal of the lignituous section in Seyler's classification, not usually regarded as a gas coal. The results showed that neither in thermal yield nor quality of gas was the coal equal to a good Yorkshire gas coal, but that the carbonisation could be satisfactorily carried out, yielding a satisfactory coke. The low temperature coke was readily combustible in a domestic grate of conventional pattern. The results indicate that, with some monetary allowance for the lower thermal yield, the coal might be used in the industries concerned.

Distribution and Frequency of Earthquakes in Italy. Prof. A. Cavasino has made a valuable study of the seismicity of Italy during the forty years 1891-1930 (*Boll. Ital. Soc. Sism.*, 30, 195-216; 1932). The annual number of perceptible earthquakes varies from 143 to 1,294, the total number being 16,501 and the average yearly number 412. Deducting after-shocks, there remain 6,060 principal earthquakes. Of the stronger shocks, those of intensities 6-10 (Mercalli scale), the total number was 768 or about 19 a year. Thus, in Italy, an earthquake strong enough to cause some damage to buildings occurs on an average once every 19 days. During the year, earthquakes are most frequent in November, least in June. The greatest two-hourly number of shocks occurs from 2 to 4 A.M., but Prof. Cavasino regards this distribution as more apparent than real, for, taking earthquakes of intensities 6-10, the ratio of the nocturnal to the diurnal number is only 1.04. The principal seismic provinces (in decreasing order) are Sicily, Calabria, Tuscany, Emilia, Campania, Abruzzo and Molise, Venetia, Umbria, Latium, the Marches, Lombardy and the Basilicata; moderately seismic regions are Apulia, Piedmont and Liguria; no province is seismically weak, but in Sardinia, which is aseismic, only four slight earthquakes were felt during the forty years.

Bleaching and Improving of Flour. During recent years, many processes have been suggested for bleaching or 'improving' the flour and yeast used in bread-

making. Marked differences of opinion exist as to the desirability of permitting such treatment of flour, and it is held by some that a material of such importance and of such widespread consumption should not be subjected to any manipulation beyond what is necessary to convert it into a wholesome food. A reasoned discussion of this question was presented to the Reale Istituto Lombardo di Scienze e Lettere in December of last year (*Rendiconti*, vol. 65, parts 19-20) by Prof. Bertarelli, director of the Institute of Hygiene of the University of Pavia. Both chemical and physical methods of treating flour are considered in this communication and a useful and critical summary is given of the opinions expressed by different authorities and of the decrees regarding such treatments promulgated in various countries. Bertarelli finds that flour bleached by the electrical process contains nitrites corresponding usually with 0.1-0.2 gm., and at most with 0.5 gm., of sodium nitrite per 100 kgm. and considers that these quantities are far too small to constitute a danger to the consumer. The use of 'improvers' containing, for example, persulphates or peroxides, is also strongly defended.

Estimation of Bismuth in Copper. The estimation of small quantities of impurities in copper has assumed a new importance since the introduction of Customs duties on metals. The most important impurity in this respect is bismuth, and a memorandum has been received from the Fiscal Policy Sub-Committee of the Brass and Copper Industries, dealing with this

question. The proportion of bismuth to be estimated does not exceed 0.020 per cent, and very much smaller proportions have sometimes to be considered. It is not certain that any method is in use which can be trusted for quantities less than 0.002 per cent, but this point is being investigated. The quantity of copper to be taken for the analysis is not stated in the memorandum, but apparently it is of the order of 10 gm. A colorimetric method is recommended, depending on the yellow colour produced when bismuth sulphate reacts with an excess of potassium iodide. A small addition of iron is recommended when the bismuth is being precipitated from the nitric acid solution by ammonia. The mixed hydroxides must be re-precipitated to remove copper, and each precipitation demands at least six hours to be complete. The hydroxides are dissolved in sulphuric acid, and brought to a slightly acid condition, the iron being then reduced to the ferrous state by sulphurous acid. The colorimetric comparison is made with a solution which has been carried through all the analytical operations, but to which no sample has been added. The standard solution should contain 0.001 gm. bismuth per c.c., and not more than 4 c.c. should be required to produce the match. The Committee bases these recommendations on the experience of competent analysts, but submits them for criticism. Suggestions as to the best analytical procedure should be sent to the Secretary, Mr. Lester Smith, c/o Squiers and Co., King's Court, 115 Colmore Row, Birmingham.

Astronomical Topics

Meteor of June 4. A brilliant meteor much brighter than the moon was observed in evening twilight on June 4 at 8^h 32^m G.M.T. Observations have been received from Hanwell, Surbiton, Rye, Arundel, Hindhead; and a satisfactory computation of the height and other details of the object has been made by Mr. A. King as follows: height 75 miles at appearance, 44 miles at disappearance; length of path 83 miles; speed 22 miles per second. The radiant was in Libra at 235° - 12°.

Photography of Faint Nebulæ. A useful paper on this subject has recently been published by K. Haidrich of Vienna (*Astr. Nach.* No. 5932-33). He discusses the nebular spectra, and the distribution of light at different wave-lengths and also the sensitivity of various kinds of photographic plates at these wave-lengths. Even the gaseous nebulæ are not all alike in their spectra; some give emission spectra, while others appear to derive their light by reflection from neighbouring stars, generally of type *B*. Then there are the obscure nebulæ, discussed by Father Hagen, the light of which is mainly red or yellow (some of the light is said to come from sodium). The spiral nebulæ give continuous spectra, resembling those of stars of types *G* and *K*. It is clear that no single process is suitable for the photography of all kinds of nebulæ, and that more than one method must be followed before it can be asserted that no nebulosity is present in a particular region. The tables given in the paper of the sensitivity of various kinds of plates at different wave-lengths should be of use to photographers.

Greenwich "Astrographic Catalogue", Vol. 6. This volume concludes the publication of the results

obtained from photographs taken with the Greenwich astrographic equatorial during the last forty years. The earlier volumes gave the measured positions of the stars in the zone between Decl. 64° and the pole; a second series of plates was taken in order to give the means of obtaining the proper motions of the stars. The brighter stars had previously been observed on the meridian at Kasan or by Carrington at Redhill; for the fainter stars the motions are deduced by comparing the earlier Greenwich plates with the later ones. Owing to the shorter time-interval, an annual motion of 0.03" has been taken as the minimum for the adoption of a proper motion for these stars. A diagram in the introduction shows the distribution of proper motions in different directions. It shows that the larger motions belong to Stream I; half the stars of this stream have motions greater than 0.05", while the number in Stream II is less than a quarter.

Determinations of the solar apex were made; grouping the stars by spectral type, the R.A. of the apex is 257° for types *B8*, *B9* and *A0*; it increases steadily as the type grows later, being 275° for *G5* and *K0*. A general solution without regard to type, but limited to stars in the B.D., gave 272° for the R.A. of the apex. Stars with annual motion exceeding 0.2" were not included in these investigations.

A list is given of the cases of two or more stars that appear to have common motion. There is one pair, separated by more than ten degrees, that have a large common motion of 1.1"; but a more certain case of connexion is that of a pair about 70' apart with a motion of 0.66".

Another list gives measures of stars separated by less than 30"; the differences of their motions are given, which in many cases makes it possible to decide whether they are physical or optical pairs.