

RESEARCH ITEMS

Ghost Figures of Santa Cruz

THE wooden figures from Santa Cruz, which represent the ghost or soul of a person who has been successful during his life and has gained prestige, are figured and described by Joyce Gillett, of the Cranmore Ethnographical Museum, Chislehurst, in *Man* of October 1939. These wooden figures are made after death and erected in the house of the deceased, when a feast is given. After the feast, the figure remains in the house standing in a corner. Very often skulls are seen standing around the figure, and these are said to be the skulls of past owners and keepers. Each figure has one keeper, and often gifts of tau and conch shells are placed before it. The figures are made, and regarded with esteem, not on account of an unwillingness to forget the dead, but because of a fear that unless something tangible is made in the likeness of a man who was lucky, that which was for the good of the people during his lifetime may be lost for ever. But if such an image is made, it is believed that the maker has captured for all time the gift of being lucky which was bestowed on the deceased, and this can now be transferred into the body of any living person—usually a member of the family or a relative—where it will continue to function. One example, now in the Cranmore Museum, was found in a disused house, not a ghost house, suspended from a height of five feet, and encased in a conical bird-cage of wood, the whole being covered with mats and tapa cloth, which appeared to have been smoked over a fire. On unwrapping, a very carefully decorated male form was found, in the nose and ears of which were pendants of pearl shell; pearl shell pendants hung on the hair, which was wrapped in tapa cloth and dressed in the shape of a cone, and protruded at the back of the neck. Biceps, wrists, knees, and ankles are circled with fibres on which are pendants and adornments of shell or seeds, while around the waist was a loin-cloth and a girdle of currency. The whole figure was dusted with turmeric.

The Quintuplets

J. W. MacArthur and A. R. Dafoe (*J. Hered.*, 30, 359-364; 1939), continuing their analysis of the Dionne quintuplets examine their growth up to their fifth birthday. The quintuplets were unlike at birth but have become, as is usual in monozygotic twins, more similar than fraternal. The variability in weights was greatest at times when growth was retarded—birth—weaning—before removal of tonsils. The maximal differences fell from 45.1 per cent at birth to 7.2 per cent at five years. Similarly height differences fell from 4.5 per cent at one year to 1.1 per cent at five years. The rates of growth of the quintuplets are neither equal, nor proportional to birth weight, but are regulative as with regenerating parts which tend to reach their potential dimensions under equal environmental conditions.

Inheritance of Disease-Resistance

L. T. WEBSTER (*J. Hered.*, 30, 365-370; 1939) has analysed the reactions of mouse populations to mouse typhoid and encephalitis virus. Progenies of

parents who died within 10 days of infection with mouse typhoid were more susceptible than those from surviving parents. Selection and inbreeding from susceptible and resistant parents retained these characteristics, while hybrids between highly resistant and highly susceptible mice showed a monofactorial F_2 segregation for resistance to both typhoid and encephalitis virus. Resistance is dominant in both cases. The outbreak of epidemics in genetically heterogeneous populations is discussed. Epidemics are caused in hitherto uninfected populations by the introduction and spread of a highly virulent, yet stable infecting agent. In an infected population the agent remains stable but the resistance of the population is reduced by inadequate diet or other causes. The dosage in the population therefore increases. Those individuals which are innately susceptible become infected first. The epidemic curve reflects this genetical difference in susceptibility.

Genetic Differences in Wild *Drosophila pseudoobscura*

TH. DOBZHANSKY (*Proc. Nat. Acad. Sci.*, 25, 311-314; 1939), continuing his studies on genetical differences in wild populations, shows that samples of different populations of *Drosophila pseudoobscura* caught in southern Texas show structural differences in the third chromosome similar to those previously found in California. Further, although some populations were only $1\frac{1}{2}$ miles apart, these appeared to be different in constitution and to be distinct breeding units.

Mouth-parts of the Female Anopheles Mosquito

IN *Parasitology* (31, 212-242; 1939), G. G. Robinson gives an account of the piecing mechanism used by the female mosquito during feeding. It appears that the observation made by Vogel in 1920 that the labral canal is closed ventrally by the opposed edges of the labral groove is confirmed. The hypopharynx, on the other hand, plays no part in the ventral closure of the food channel, except at its base. The use of the term 'labrum-epipharynx' is dispensed with in favour of the simple designation of 'labrum'. Snodgrass, it is pointed out, disagrees with the homology of the labella with labial palpi on the ground that the lobes of the labium have usually each a single muscle inserted directly upon it, whereas the palpi have antagonistic muscles. It is shown that in *Anopheles* the labella have these antagonistic muscles as in typical palpi, and the homology is consequently upheld. During feeding, penetration of the skin of the victim is made by the labrum and the wide terminal blades of the mandibles act as a cap to the entrance of the labral canal and serve for its protection during penetration. The function of the maxillae is to help in the efficient and smooth penetration of the host's skin.

North American Bees of the Genus *Osmia*

UNDER this title the Entomological Society of Washington presents the first volume of what is expected to be a series of memoirs. Written by Grace A. Sandhouse, it is a cloth-bound publication of 167 pages and was issued in August 1939. Bees of

the genus *Osmia* are essentially denizens of the palaearctic and nearctic regions, few being found elsewhere, and they are entirely wanting from the nearctic and Ethiopian regions. Of approximately 280 names, which have been proposed for species of *Osmia* in the nearctic region, about 120 become synonyms and 30 are referred to other genera, thus leaving 130 names now in the genus. The issuing of this memoir was made possible from accumulated interest on a monetary bequest of the late Frederick Knab which was supplemented by a donation by Dr. E. A. Schwarz. Inquiries regarding the sale of this publication should be addressed to the Corresponding Secretary of the Entomological Society of Washington, care of the Bureau of Entomology and Plant Quarantine, Washington, D.C.

Disastrous Earthquakes, January–June 1938

J. P. ROTHÉ has discussed the earthquakes felt by man during the first six months of 1938 (*Revue pour l'étude des calamités*, 2, No. 7, 230–241; July–August 1939). The five most disastrous shocks were those of February 5 in Columbia, April 19 in Asia Minor, May 3 at Iguala in Mexico, May 19 at Célébes, and June 11 in Belgium. The epicentral region of the Colombian earthquake, which was felt as far as Panama, corresponded roughly with the great 'graben' of the Cauca Valley, the depth of focus being 150 km. Considerable damage was done and people were killed and injured at Armenia, Calarca, Pereira, Manizalles, Aranzazu, Villa Maria, Riosucio, Aguadas, Medellín and Amaga. Probably the greatest shock of the period was the one with epicentre in the vilayet of Kirsehir in Turkey, where ten villages were completely destroyed. Altogether about 756 houses were destroyed and 800–1,000 people were killed or gravely injured. The epicentre of the earthquake of May 3 has been determined at the Observatory of Tacubaya to have been near Huilziltepec (Guerrero). This shock resulted in the destruction of much property, the deaths of five people and injury to thirty-eight others. The earthquake of May 19 with epicentre in the Straits of Macassar was particularly violent and did great damage at Dongala, where sixty houses were ruined. The earthquake was followed by a sea wave 2–3 m. high which flooded areas 80–100 m. inland, doing great damage to dwellings, crops and merchandise and resulting in death and injury to several people. According to M. O. Somville, the epicentre of the Belgian earthquake of June 11 was in the centre of the Mons-Brussels-Ghent triangle and its depth of focus 50 km. This shock resulted in the deaths of three people and damage to property of several millions of francs. Damage to property was at Brussels, Audenarde, Courtrai, Lille, etc., windows were broken at Anvers, and the shock was felt at Paris and at distances up to 300 kilometres from the epicentre.

Velocity of Coloured Light

DURING the last twenty years, observations have been made to determine whether light of different colours travelled through interstellar space with the same velocity. They have in general been based on observations of the times of the primary minima of the light of two wave-lengths of a binary star, generally Algol. Some have led to the conclusion that red light travels faster than blue, others the reverse. The question has been recently examined by J. S. Hall of Amherst College Observatory, working at the Sprout

Observatory with grants from the American Philosophical Society and Swathmore College (*J. Franklin Inst.*, 228; Oct. 1939). He measured the light of Algol, of wave-lengths 5599 Å. and 8060 Å. respectively, by a photo-electric photometer and compared them with that of a non-variable star Alpha Persei, making corrections for background illumination, atmospheric extinction and sensitivity of the photometer. He concludes that the minima for the visual and infra-red rays occur at the same time with an uncertainty of 3 minutes. As the light from Algol takes 195 light years, that is, 55×10^6 minutes, to reach the earth, this means that the speeds of the two lights are identical to within 3 parts in 55 millions. This supports the similar conclusion of Russell, Fowler and Borton from the scarcity of matter in interstellar space and the earth's atmosphere.

The Minor Planets of the Hecuba Group

THE above is the title of the Halley Lecture delivered by Prof. A. O. Leuschner on June 16, 1938 (Oxford: Clarendon Press. 3s. 6d. net). The Hecuba Group comprises about one third of all the known minor planets, and they revolve about the sun with approximately twice the angular daily rate of Jupiter. When very close commensurability exists, for example, if a planet revolves at almost twice the angular daily rate of Jupiter, the determination of the exact motion of the planet becomes complicated. Bohlin's Group Method has been applied to the problem with considerable success, and von Zeipel and also Leuschner and his colleagues have developed the method, tables being published to facilitate the computations. In the "Berkeley Tables", produced by Leuschner, higher order terms have been used than were employed by von Zeipel, and their application to Hygeia and a few other planets confirms their great accuracy. The Rechen-Institut has recently utilized these tables for the development of the perturbations of the planets of the Hecuba Group, and Dr. Raube has already published the results for Erato and Antiope. There is a considerable amount of detailed examination of particular cases which present various difficulties, and those who are engaged in this highly specialized form of work will find much useful material in Prof. Leuschner's lecture to assist them.

New Mathematical Tables

A SEVEN-PLACE parallel table of $\tan^{-1} x$ in radians and $\log_{10}(1 + x^2)$, computed by Dr. L. J. Comrie, has been added to the "Tracts for Computers" of the Department of Statistics, University College, London. Prepared in the first instance to assist in the fitting of curves of Pearson's Type IV to frequency distributions, the table will obviously assist in any other problem which involves the numerical integration of a rational function with a definite quadratic denominator; that the logarithms are not natural does not imply a complication in practice, for in any application except to a manufactured example a logarithm is sure to be multiplied already by some numerical constant. Second differences are provided for interpolation, and Dr. Comrie's name is a guarantee of absolute accuracy. The printing is excellent, and if we complain that paper wrappers are an inadequate protection, that is because we have no doubt that the tables are going to be subjected to hard wear. The tables are published by the Cambridge University Press, price 3s. 9d.