

Research Items.

MAMMALS AND BIRDS FROM HAITIAN CAVES.—A small collection of bones of mammals and birds were obtained in 1921 by Mr. J. S. Brown and Mr. W. S. Burbank during geological studies under the U.S. Geological Survey for the Republic of Haiti, from two caves situated between 3 and 4 kilometres N.E. of St. Michel and 600 metres above sea-level. These bones have now been described respectively by Mr. G. S. Miller, junr., and Mr. A. Wetmore (Smithsonian Miscell. Coll. vol. lxxiv. Nos. 3 and 4). Rodents were the more plentiful among the mammals, the most abundant being *Isolobodon portoricensis*, Allen, which also occurs in Porto Rico and the Virgin Islands. Two new genera are established: *Alphætreus*, with *A. montanus*, n.sp., as genotype, which is allied to *Plagiodontia* and *Isolobodon*; and *Ithyodontia*, genotype *I. levir*, n.sp., allied to *Isolobodon*. *Brotomys voratus*, Miller, was also present as well as a ground sloth, doubtfully referred to the genus *Megalocnus*, and a few unidentified mammals, while man was represented by the head of a femur and an implement made of chert. Early man, however, though known to have used these rodents as food, does not appear in this case to have been responsible for the presence of their remains in the caves. Their importation would seem to be due to a huge extinct barn owl, which Mr. Wetmore names *Tyto ostologa*, n.sp. Possibly the *Chamepelia passerina*, *Crotophaga ani*, and *Tolmachus gabbii*, also present in the caves, were further victims of the owl.

AN INDIAN POND-SNAIL.—Dr. N. Annandale and Maj. R. B. Seymour Sewell have published (Rec. Ind. Mus. xxii. pp. 215-292) a memoir on the banded pond-snail of India (*Vivipara bengalensis*). The latter author contributes an account of the anatomy and bionomics; Dr. Annandale deals with the systematic features and with the histology of the edge of the mantle and the external ornamentation of the shell. Spiral rows of horny chætæ and fine spiral ridges on the periostracum are present, and, indeed, best developed in the fully formed embryo, and disappear, as a rule, in the full-grown shell. In those shells ornamented with bands of dark pigment, the latter are periostracal in origin and, with the test sculpture, correspond in position with the rows of chætæ and the spiral ridges. The free edge of the mantle bears at least three digitiform processes,—other secondary ones may be present,—and the processes correspond in position with and are concerned in moulding the periostracal sculpture, the colour pattern and the sculpture of the test. In the systematic account eleven races of the species are recognised. The parasites and incolæ met with are recorded and include spirochaetes and ciliates in the alimentary canal, rarely sporocysts and developing cercariæ, but frequently encysted cercariæ of two species.

MEADOW GRASSES.—In an article on the comparative morphology and development of *Poa pratensis*, *Phleum pratense* and *Setaria italica*, in the *Japanese Journal of Botany*, vol. i. No. 2, pp. 53-85 (1922), Makoto Nishimura has devoted special attention to the phenomena attending the germination of these grasses in comparison with *Agrostis alba*. In *Poa pratensis* the percentage of germination was lowest, 50 per cent., and the process extended over the longest time, while in *Setaria* 95 per cent. of the seeds were viable, and started into growth very rapidly. Absorbing hairs were developed on the coleorrhiza at an early stage, and continued functioning until long after the elongation of the roots; similar hairs were also produced from the epiblast. The various stages of development during the first two seasons of growth have been followed out, being characteristic in each case. *Setaria* shows the greatest

depth and spread of roots, but the other species exhibit more branching of a larger number of extra nodal roots, thus attaining the same end. Each bud derived from the stool is usually associated with two crown roots, in which case the bud development is normal, but when only one crown root is present the bud fails to grow out. In all three species the inflorescence is a spike, and the embryos are of the usual type. In *Poa pratensis*, however, polyembryony is frequent, and arises in various ways, the various types of abnormality apparently being due to the sting of an insect. A useful bibliography and a series of clear plates add to the value of this communication.

BRAZILIAN METEOROLOGICAL SERVICE.—Yearly volumes of meteorological observations at Rio de Janeiro and at numerous stations in Brazil for the three years 1912, 1913, and 1914, under the superintendence of Señor Sampaio Ferraz, have recently been received. Each volume contains about 100 pages of tabular matter. The observations at Rio de Janeiro are similar in detail to those made at European observatories, hourly values being published of rainfall and sunshine, and detailed monthly results of general meteorological phenomena. In many cases the results are compared with the mean results for more than thirty years. The observations for the provinces are on a uniform scale and the monthly and yearly results can be combined or compared with others in different parts of the world. Wind frequency is regularly recorded and also the mean velocity, so that knowledge of surface winds is readily available for aircraft; the results are in every way a valuable addition to the world's meteorology. Each volume contains tables and maps showing the rainfall for the first six months and second six months of the year, and for the year as a whole, at stations covering Brazil, the various falls being shown in the maps by degrees of shading. Generally the two halves of the year have very different rainfalls. In each of the three years the total rainfall reached 118 inches at one or more stations; in 1914 there were four stations with a rainfall exceeding 118 in., the maximum being 3596 mm., or 142 in., at Remate de Males, Amazonas; this place had the heaviest rainfall in two of the three years. The total annual rainfall at Rio de Janeiro ranged from 36 to 38 inches in the three years.

HEAT CONDUCTIVITIES OF METALS UNDER PRESSURE.—Volume 15 of Contributions from the Jefferson and the Cruft Laboratories of Harvard University is dedicated to Prof. E. H. Hall, who for more than forty years has been a member of the Harvard faculty. The volume is a reprint of 31 papers by the staff and students which have appeared in scientific and technical journals and proceedings of societies during 1921 and 1922. Eight of these papers are by Prof. Duane and his pupils and deal with various properties of X-rays. Six are by Prof. Bridgman, and one of these deals with high-pressure experiments. The heat conductivities of eleven metals have been measured up to pressures of about 12,000 atmospheres by the bar or by the cylinder method. The rate of change with increase of pressure is fairly uniform for each metal, the total change for the maximum pressure being an increase for lead of 21 per cent., tin 15 per cent., zinc 2.5 per cent., and a decrease for iron of 0.3 per cent., copper 9 per cent., silver 4 per cent., nickel 14 per cent., platinum 2 per cent., bismuth 38 per cent., and antimony 25 per cent. Between these results and those obtained previously by Lussana there are serious differences. The ratio of the thermal to the electrical conductivity is considerably changed by pressure, a result not in accord with the electron theory of conduction.