

Research Items.

DATING THE HEBREW EXODUS FROM EGYPT.—In the April issue of the *Fortnightly Review* Dr. H. R. Hall attempts to estimate the value of the recent startling discoveries in Egypt, but he defers a full appreciation until next winter's work and an examination, which must be protracted, of the objects in the tomb. More definite conclusions are reached by Mr. Arthur Weigall in the *Empire Review* for May. He identifies the 80,000 "unclean" people, whom Manetho says that one of the Pharaohs deported to the east bank of the Nile, with the heretic Aton-worshippers. Thus arises the question of the Hebrew exodus, which tradition has associated with Rameses the Great, the best known of the Pharaohs. But it more probably occurred in the reign of Tutankhamen, 1358-1350 B.C., and this is corroborated by the Karnak inscription, which states that he was employing Asiatic slaves in his great work of rebuilding the temples ruined by Akhnaton, a result which raises the question of the connexion of Hebrew monotheism with the earliest known monotheism of the Egyptians. It is also interesting to note that Tutankhamen in the same inscription speaks of Egypt as being plague-ridden in his reign.

FLINTS IN MALTA.—In the May issue of *Man* Miss M. A. Murray describes the results of excavations at a group of megalithic ruins of Borg en Nadur, overlooking the little harbour of Fort St. George, which forms part of the great bay of Marsa Scirocco on the south-east of Malta. During the excavation of this site last summer about thirty stone implements were found under the pavement west of the dolmen. They include three specimens the appearance of which suggests that they are part of an apparatus for producing fire. Throughout Malta flints of this kind, generally recognisable by the fact that they contain no cutting edges and have a characteristic semi-circular hollow on one side, where the stone had been struck by the steel, are often found. Until the last fifty years or so, flint was imported into Malta from Sicily for fire-producing purposes, and during the War, when there was a shortage of matches, these flints came into use again, and were sought for in the fields where they had been thrown away. The flints found at Borg en Nadur may have formed part of such a consignment.

CIVILISATION AND PRIMITIVE PEOPLES.—MR. H. Balfour in his presidential address delivered before the Folklore Society, published in *Folk-Lore*, vol. xxxiv. No. 1, discusses the results of the expedition to the Naga Hills, Assam, whence he has returned with a rich store of material for the Pitt-Rivers Museum. In his address, he discusses the danger of interfering with the institutions and customs of primitive tribes. "To root up old-established indigenous trees and plant in their place alien substitutes to which the soil is unsuited is a useless and unproductive work; and equally futile and unprofitable is it to abolish ruthlessly old-established beliefs and practices, and to endeavour to replace them with imported doctrines and customs, which have developed under totally different conditions, and which merely puzzle the natives without enlightening them." In the districts most exposed to foreign influence—that of Christian missionaries and that of the Bengalis—he noticed "marked evidence of a comparative lack of that virility, alertness, and zest which I had observed in the more eastern districts, and the partial atrophy of these qualities is certainly correlated with the loosening of the grip upon traditional customs and ritual. I firmly believe that the comparative inertness is mainly the outcome of change of habit consequent upon contact with

alien peoples and alien cultures." These conclusions, arrived at by a singularly competent and sympathetic observer, demand the attention of all British officers placed in control of primitive races.

RED SEA-WATER DUE TO A DINOFLAGELLATE.—Another instance of discoloration of the sea by a Dinoflagellate is recorded by K. Hirasaka (*Annot. Zool. Japon.*, x., Art. 15, Dec. 1922). In December 1921 discoloration of the water in Gokasho Bay, Japan, was observed and was found to increase until by January 10, 1922, the entire bay presented "a deep bloody or a chocolate colour," which continued to the end of February, when it began to diminish, and by the middle of March had disappeared. The depth to which the discoloration extended was from three or four to six feet. The organism, a new species of Dinoflagellate of the genus *Gymnodinium*, seemed to migrate diurnally according to the temperature and intensity of light, the colour of the water being deepest in the afternoon. The author states that the discoloured sea water was highly luminous.

JAPANESE MARINE TRICLADS.—T. Kabouraki (*Journ. Coll. Sci. Imp. Univ. Tokyo*, xlv., Art. 3, Sept. 1922) gives an account of the anatomy of the three marine triclads known from Japan, namely, *Procerodes lactea*, *Stummeria trigonocephala*, and *Ectoplana limuli*. The former two live beneath stones, but the last named occurs abundantly on the cephalothoracic appendages and on the gill-books of *Limulus longispina*, is 4 to 6 mm. long and about 1 mm. broad, and usually milky white. The author concludes a brief discussion of the integument with his opinion that the turbellarian epidermis is homologous with the cuticle of the trematodes, and he regards the rhabdites as the equivalent of gland secretions, and as being of use to the worm in securing food as well as in offence and defence. He states that all three worms are very sensitive and they usually move to a dark place, and that even on a slight shock they stop instantly, contract, and remain immovable. *Ectoplana* is not a parasite, and causes no injury to the *Limulus* on which it occurs; it lives on the fragments of food left over by the *Limulus*, and hence is a commensal. It lays its eggs on the gill lamellæ. Appended is a note on the classification of the marine triclads and a key to the genera.

SOME ANTARCTIC CRUSTACEA.—The latest in the series of reports on the British Antarctic (*Terra Nova*) Expedition (Zoology, vol. iii. No. 10), published by the British Museum (Natural History), is by Prof. W. M. Tattersall and deals with the Crustacea of the order Mysidacea. The usual but indefensible grouping of these with the very different Euphausiacea under the name "Schizopoda" is here abandoned. In addition to the purely antarctic collections, the report deals with a large amount of material obtained during the winter cruises of the *Terra Nova* off the north of New Zealand. A review is given of all the known antarctic Mysidacea, and it is pointed out that they were all taken in deep water and form part of the cold water fauna which is found in the depths of all the oceans. The littoral antarctic species, if any exist, are still unknown. So far as the evidence goes, however, the distribution of the group supports Regan's delimitation of the Antarctic Zone. From New Zealand only three adequately described species of Mysidacea have hitherto been known. In this report the number is increased to fifteen, of which eight are described for the first time. Seven of the new species belong to the genus *Tenagomysis*, to which only two species had previously been referred. This genus is only known from New Zealand and the

Auckland Islands. The *Terra Nova* also collected a few species in the Atlantic, of which one, obtained off Rio de Janeiro, is especially interesting. It is referred to Dana's long-forgotten genus *Promysis*, with which Hansen's *Uromysis* is identified. The other two species of the genus are from the East Indian Archipelago, but the seeming discontinuity in the distribution may be obliterated by further research.

BOTANY AT THE CARNEGIE RESEARCH STATIONS.—The Carnegie Institution maintains two special research laboratories, at Tucson, Arizona, and Carmel, California, where desert and coastal vegetation are readily studied, but in addition, as Year Book No. 21 of the Carnegie Institution of Washington shows, its workers are far more widely spread. In the Department of Botanical Research, under the general direction of Dr. W. T. MacDougal, fundamental researches by H. A. Spoehr and his collaborators are being carried out upon photosynthesis and respiration. Some of this work has been published in full since the issue of the Year Book, as Carnegie Publication No. 325 (*Studies in Plant Respiration and Photosynthesis*, Washington, February 1923). Space only permits the mention of the following points from the brief summary in the Year Book, which is packed with interesting facts and views: *lævulose* is not found to be so readily used in respiration as *glucose*: an explanation of the increased diastatic activity of leaves kept in darkness is found in the increased production of amino-acids and their effect on diastatic action: respiration and photosynthesis are found to be strikingly inter-dependent and affected alike by changes in various external factors. Chemists as well as botanists will be interested in the methods developed by Dr. F. A. Cajaró for the quantitative estimation of small amounts of the separate sugars in mixtures of *glucose*, *lævulose*, *sucrose*, and *maltose*; these methods depend upon oxidation under standardised conditions and upon estimation of cupric reducing power. Dr. W. T. MacDougal's work upon permeability leads him to consider lipins and pentosans as important constituents of the plasma membrane; the effect of different kations upon permeability is being considered from this point of view, with many new experiments in progress to elucidate the puzzling phenomena of "antagonism." Many ecological investigations by Forrest Shreve are in progress, and W. Cannon has been studying the evaporating power of the air and of the plant in South Africa. Dr. F. E. Clements directs another group of researches. One notes studies of the water cycle of the plant, of vascular conductivity by Prof. J. B. Farmer's method, and the effect of sap movement upon bud development; this work has supplied no evidence for the once very popular assumption of an inhibiting factor released by actively growing buds.

NEW FOSSIL TURTLE FROM ARIZONA.—Attention was recently directed (*NATURE*, March 31, pp. 443-4) to the remarkable assemblage of vertebrate remains collected by Dr. J. W. Gidley in the Pliocene of Arizona, and to the promise of further information concerning the reptiles. C. W. Gilmore now supplies the description and numerous figures of a new fossil turtle from that district (*Proc. U.S. Nat. Mus.*, vol. lxii., art. 5). *Kinosternon arizonense*, n.sp., the first extinct representative of the genus in America, is most nearly allied to the recent *K. flavescens* (Agassiz), which, with one other of the eight living American examples, is said to range into Arizona.

METEOROLOGICAL STATIONS IN HIGH LATITUDES.—The U.S. *Monthly Weather Review* for January contains an article by Sir Frederick Stupart, director of the Meteorological Service of Canada, on the above

subject, which formed a presidential address, given before the American Meteorological Society at Boston, Mass., on December 30, 1922. The author, while acknowledging the furthering of meteorology when aiding commerce and finance, suggests that difficulties arise in granting funds for the equipment of an out-of-the-way Arctic station, although the latter may materially improve weather forecasting. In the early days of forecasting in Canada and the United States the weather services were handicapped by the lack of data from the North. This great want has more recently led to the establishment of stations in Iceland and Spitsbergen, and still later in Jan Mayen Island. The Alaskan stations are said to have been of the greatest use for forecasters in the United States and Canada. Reference is made to the influence of radiation during the winter months over the land areas of Siberia and northern America, which leads to the formation of high pressure and intense cold, while in some winters the low pressure of the North Pacific tends greatly to modify the pressure distribution in northern America, and in these cases mild winters may be looked for. In some winters the Siberian high pressures extend across as one system into America, and great cold waves sweep southwards. The study of the dominant anticyclonic and cyclonic conditions seem so full of promise that the author emphasises augmenting the number of stations in the Arctic zone. The study of the conditions in high latitudes would help also to a better understanding of the severe storms along the Atlantic steamship routes.

HISTORY OF AN OIL-WELL.—Probably few individual oil-wells are of sufficient technical, apart from commercial, importance to warrant their being the subjects of communications to learned societies. Yet the paper read by Mr. A. E. Chambers to the Institution of Petroleum Technologists on April 10, dealing with one of the earliest, largest, and most celebrated wells in Mexico, namely, Potrero No. 4, constituted not only an interesting but also a valuable dissertation on a matter of more than mere local importance. Mexico, in regard to oil-production, is a country of surprises; its wells, even if not always big producers, at least provide plenty of variety both in behaviour and in the problems they present during development and production. Not the least of these problems is that connected with salt-water, a particularly formidable one at the present time. The well under discussion was no exception. Situated in Vera Cruz State, 50 kilometres N.W. of Tuxpam, it was brought in as a gusher at the end of 1910 and not got under proper control till March 1911. Thenceforward it produced oil until 1914 when, after developing extensive seepage areas in its vicinity, it caught fire, owing to lightning, in August of that year. This fire was not finally extinguished until early in April of the following year, when the well started producing again and continued till the end of 1918. Emulsification set in in 1919, and this closed the history of the well. During this chequered career it produced no less than one hundred million barrels of oil, and the technical difficulties which had to be overcome in connexion with its control were of no mean magnitude, considering the fact that drilling methods in those days were somewhat crude compared with present-day practice. The oil originally produced was of an asphaltic base, s.g. 0.931 at 60°. The pressure (closed well) amounted to 825 lbs. per square inch. Its ultimate appearance in the storage tanks was as an emulsion having a s.g. of 0.979 and containing 54 per cent. of salt water. In this departure it unfortunately foreshadowed the behaviour of many more recent wells in Mexico, a feature the significance of which has latterly been so widely debated.