Research Items.

STONE IMPLEMENTS FROM NIGERIA.—The Geological Survey of Nigeria has issued as Occasional Paper No. 4 a communication by Mr. H. J. Braunholtz, describing a number of stone implements of palæolithic and neolithic types found in the alluvium of the Bauchi Plateau. Their discovery is a by-product of the tin-mining industry, which necessitates removing and sifting large quantities of alluvial deposit in river valleys. The depth at which they are found varies from a few feet to 30 feet. Unfortunately this affords no criterion of age, and further, the exact location of the finds has not always been recorded. In some cases, however, the depth and situation taken together seem to argue a considerable antiquity such as, *e.g.*, a site "under 20 feet of alluvial and 85 yards from the recent river edge." The implements are, with one possible exception, of local rock and of local manufacture. The palæolithic implements are made of a quartz porphyry, the neolithic of basalt (dolerite). Many of the former are much rolled. Allowing for differences due to the employment of a different material, the palæolithic implements resemble western European types of the Chelles to Le Moustier epochs, but not of the later palæolithic times. While the neolithic types are widely distributed in Nigeria, the Bauchi Plateau is the only site in the provinces up to the present on which palæolithic implements have been found. The absence of late palæolithic forms suggests either an isolation of Nigeria from ultra-Saharan Africa at this period, or lack of stone suitable for finer flaking, or, possibly, a more recent origin than their typological affinities in North Africa and Europe.

PAINTED POTTERY FROM MESOPOTAMIA.—Mr. W. F. Albright, of the American School of Oriental Research, Jerusalem, describes in *Man* for March interesting results obtained from a surface examination of mounds in the Middle Euphrates region which throw a light on the comparative ceramics of the æneolithic and Early Bronze periods. The site of the finds, Tell Zeidân, is a mound about 500 metres in length stretching along the eastern bank of the Balîkh river. It is covered with potsherds and flint artefacts, the former being nearly all of a creamy white or light buff, covered with geometric designs in black or reddish brown, applied both with and without a slip, in the former case on the buff ware. Only one polychrome sherd was found. It showed alternating bands of black and brownish red on a white slip over a light buff paste. The result of a comparison of this pottery with that from Abû Shahrein, Tell el 'Obeid, and other sites in which the proto-Mesopotamian ware has been found, and a study of the material as a whole, suggests a similarity, which almost amounts to an identity, in all the pottery from north-western Mesopotamia, Babylonia, and southern Susiana in the pre-monumental age. Its place is taken by incised ware in the third millennium. A possible dating may be given by taking Susa I. as falling in the first half of the fourth millennium, Tell Zeidân about the middle, the early occupation of Eridu and Tell el 'Obeid as slightly later, and the painted ware of Kerkut as belonging to the second half of the fourth millennium.

YOUNG FISHES.—The literature on the behaviour of aquatic animals by day and night receives a contribution from Dr. A. C. Johansen, who discusses the diurnal vertical movements of the young of some fishes in Danish waters (*Meddelelser fra Kommissionen for Havundersogelser. Serie Fiskerie.* Bd. 8, Nr. 2, 1925). Dr. Johansen produces observations obtained from catches made with a stramin ring-trawl. The paper contains results of a serial collection taken every two hours throughout the twenty-four on April 20-21, 1925, in the southern Kattegat, and a comparison of a number of hauls taken at different stations in the Kattegat, Belt Sea, and western Baltic in the same month by day and night. Two water-layers were sampled, the surface and an intermediate layer estimated as being at a depth of about 16 metres. The catches showed that the average number of post-larvæ of any one species caught was greater at night than in the daytime in the upper water layers, and the same held good for the number of fish species. This demonstrates the necessity for stating the time at which hauls are made when studying the horizontal and seasonal distribution of young fish. The writer considers that, at any rate for the smaller stages, the results represent an actual migration from deeper layers at night, and that in the day-time the majority keep down below 16 metres; but that for the larger more swiftly moving forms, there is a probability that they can avoid the net in the daylight, so that no definite conclusions can be drawn. A short report is given of the plankton results obtained, and also of previous work and theories as to causes of vertical migration. Perusal of this paper only emphasises the need for more observations at sea.

THE FAUNA OF SARAWAK.—The *Sarawak Museum Journal* for December 1925 is devoted to a series of papers describing the collections made by Dr. E. Mjöberg in northern Sarawak. It is a region which affords great opportunities to the biologist, and the fact that the collections include many new species is to be expected from a part of the world so little explored. Among the insects, Dr. H. H. Karny reports on the katydids (Tettigoniidæ), cricket-locusts (Gryllacridæ), and Copeognatha. Dr. R. Hanitsch, in dealing with the Blattidæ, lists no less than 55 species, among which 24 are described as new to science: perhaps the most interesting feature with respect to this family is the almost entire absence of cosmopolitan forms—a fact probably associated with the absence of the white man in the region concerned. The Collembola form the subject of a paper by Dr. H. Schött and, with one exception, all the 12 species recorded by him are new, and three new genera are also erected. The Amphibia and Reptilia from Mt. Murud comprise only 14 species, and of these, five are described as new by Mr. Malcolm H. Smith. The discovery of a new lizard allied to Phoxophrys is of particular note, as is also that of a tree-frog (*Philautus mjöbergi* sp. nov.) which was found depositing its eggs and breeding in the pitchers of Nepenthes. In a second paper Mr. Malcolm Smith reports on the more extensive collections made over a wider area of Sarawak during the past two years. They comprise some 700 specimens representing 95 species. The most noteworthy are a diminutive form of toad allied to Megalophrys, which appears to represent a new genus, and an undescribed ground-gecko of the genus Gonatodes. There are two short notes on birds: Dr. E. Hartert describes a peculiar form of flycatcher, and Mr. Einar Lönnberg directs attention to an apparently new race of flowerpecker.

ANATOMY OF HENDERSONIA.—Mr. H. Burrington Baker has been studying and gives a minute description of the anatomy of *Hendersonia occulta* (*Acad. Nat. Sci. Philad.*, 77), which he considers to be the most primitive living example of the family Helicinidæ. His conclusion is based on the fact that

Hendersonia retains a right auricle and a metamorphosed right kidney in both sexes. With respect to the first of these characters, Hendersonia is fully as generalised as any neritid, while as to the second it seems even less specialised. The Neritidæ cannot be considered as in any sense ancestral to the Helicinidæ, although their aqueous habitats have permitted them to retain certain markedly primitive characters, while the terrestrial life of the Helicinidæ can be correlated with an increase in specialisation along several lines. While the homologies between the Rhipidoglossa and the Pulmonata are extremely hypothetical, the genitalia of Hendersonia and the Helicinidæ perhaps can be tentatively regarded as representative of an intermediate stage between those of the less specialised members of the former group and those of the latter. Both the Helicinidæ and the Pulmonata show a marked tendency towards the concentration of the cerebral, pleural, and, to some extent, the pedal ganglia. The nervous systems of these two pulmonate groups actually prove the more usual conception of separate evolutions from common, probably marine, ancestors.

A BOT-FLY PARASITIC ON MONKEYS.—Under the title *Zoopathologica*, the New York Zoological Society has recently established a journal devoted to the publication of its scientific contributions dealing with animal diseases. In vol. 1, No. 7 (January 1926), Messrs. R. C. Shannon and C. T. Greene record the occurrence of larvæ of Cuterebra in certain primates. One lot of material consisted of the neck portion of the skin of a howling monkey (*Alouatta palliata inconsonans*) from Darien, Panama. It was so heavily infested with larvæ that the skin is described as resembling a collection of cells in a bumble-bee's nest. The other lot of material consisted of two bred flies and a number of larvæ taken from a red howling monkey at Kartabo, British Guiana. Probably all the material belongs to the same species of Oestridæ which is described as *Cuterebra baeri* sp. nov. from that obtained at Kartabo. Little is known of the habits of Cuterebra, but, from what is known, the eggs are probably laid about the haunts of the hosts, possibly on the leaves of the plants. It is suggested that if the leaves be eaten by the host animal, the larvæ hatch in the mouth and, boring their way through the tissues, eventually reach the skin of the throat region. Here they make breathing holes and remain in subcutaneous pockets until fully grown. When mature they work their way out and fall to the ground where they pupate.

FERTILISATION IN A CYCAD.—Prof. A. Anstruther Lawson, of the University of Sydney, publishes in the *Transactions of the Royal Society of Edinburgh* (vol. 54, part 2, No. 6, 1926) a most interesting account of the processes preceding, accompanying, and following fertilisation in the cycad genus Bowenia. This Australian cycad has not been readily accessible to botanists, but the selection of the district in which the plant is native as a centre for fruit-growing, has enabled Prof. Lawson to obtain an uninterrupted supply of cones, collected twice weekly throughout the year. The result is a very full account of the cytology of the reproductive organs and of the process of fertilisation. The massive sperms, with spiral ciliated band bearing thousands of cilia, have actually been seen moving in living material, as they swim in the archegonial chamber. Prof. Lawson describes the dilated neck cells of the archegonium as excreting a fluid which adds to the liquid in which the sperms are moving, and also as acting as 'swinging gates,' which are forced apart by the entrance of the sperms, to close again behind them. Interesting figures of nuclear structure following fusion also suggest that the chromatin of the male and female nuclei remains distinct; the spindle in the first division after fertilisation is a broad one of double organisation, maternal and paternal chromosomes dividing and separating independently.

FLOW OF SWEDISH RIVERS.—In Band 3, No. 5 of *Meddelanden från Statens Meteorologisk-Hydrografiska Anstalt*, Dr. G. Slettenmark gives a mass of data on the flow of the chief Swedish rivers, illustrated by a map showing the location of the gauging-stations. The first table gives a list of the 187 stations, the area of the lake basins on the river, and the total area of the river basin. This is followed by tables giving the mean and extreme value of the flow during each month of the year and other useful values calculated from these figures. Many of the stations date back to 1910, but others are of more recent origin. The publication affords exhaustive information on the hydrography of the Swedish river systems. The very brief discussion of the data is in Swedish.

DOES A FARADAY CYLINDER MEASURE ELECTRON CURRENTS?—We have grown so accustomed to measure electron currents by means of a Faraday cylinder through a hole in which the electrons entered, that a short note in the January issue of the *Proc. Nat. Acad. of Sci.*, Washington, throwing doubt on such measurements, is somewhat disconcerting. It is by Mr. E. O. Lawrence, a National Research Fellow working at Yale University under Prof. Swann, and gives an account of measurements of the currents entering a Faraday cylinder 2·2 cm. diameter through a hole of 1 cm. diameter when the length of the cylinder and the accelerating or retarding potential between the tungsten filament emitting the electrons and a plane anode between the filament and cylinder were varied. The anode was placed 4 cm. from the filament and the electrons passed through a hole 0·2 cm. in diameter in it. Curves of current received in terms of the retarding potential and length of cylinder show that a Faraday cylinder does not retain all the electrons which enter it, and it follows that measurements of the speeds of electrons depending on retarding potential observations require revision.

SOAP-BOILING PROCESS.—A further contribution to the knowledge of the equilibria underlying the soap-boiling processes has been made by J. W. McBain and W. J. Elford by a study of the potassium oleate–potassium chloride–water system, described in the *Journal of the Chemical Society* for February. The solutions were examined in polarised light, and from the results, equilibrium diagrams for the systems water–potassium oleate and water–potassium oleate–potassium chloride were constructed, clearly showing the limits of existence of the various soaps.

VAPOUR PRESSURES OF ARSENIC TRIOXIDE.—The determination of the vapour pressures of arsenic trioxide up to 500° C. made by E. R. Rushton and F. Daniels, is described in the *Journal of the American Chemical Society* for February. The apparatus consisted of an evacuated Pyrex flask, fitted with a Gibson diaphragm and heated electrically in a metal bath. The published data include the melting and transition points, heats of fusion, vaporisation, and transition of the various allotropic forms of arsenic trioxide. The exact relation between the amorphous glassy form and the crystalline forms has always been rather obscure, and it is to a large extent cleared up by this work.