

University and Educational Intelligence

BIRMINGHAM.—At the annual meeting of the Court of Governors held on Feb. 25, the vice-chancellor (Sir Charles Grant Robertson) stated that the University is making special efforts to forward the study of biology by increasing the supply of competent teachers available for schools and universities. He directed attention also to the highly successful work of the Appointments Board, the annual number of posts found by this board for Birmingham graduates having increased from 226 in 1924 to 346 in 1930, making a total of 1727, at a cost of about £100 a year. The economical working is due largely to the co-operation of the staff.

Prof. W. S. Boulton, professor of geology since 1913, is retiring at the end of the present session.

CAMBRIDGE.—J. O. Girsavicius (Gonville and Caius College) has been appointed to the Benn W. Levy research studentship in biochemistry for one year.

LONDON.—The following degrees have recently been conferred: D.Sc. (Botany) on Mr. M. A. H. Tincker, for seven published works dealing with the physiology of economic plants, together with four subsidiary contributions. D.Sc. (Physics) on Mr. F. H. Schofield, for eight published works on thermal conductivity and precision measurements of high temperatures, together with three subsidiary contributions. D.Sc. (Geology) on Mr. R. W. Pocock (Birkbeck College), for a thesis entitled "Contributions to the Geology of the West Midlands", consisting of four papers (*Geol. Survey*, 1921 and 1925, and *J. Geol. Soc.*, 1930–31).

THE result of the appeal made last year to former students of the Heriot-Watt College, Edinburgh, and friends and colleagues of the late Sir Francis Grant Ogilvie, the first principal of the College, has made possible the establishment of a Grant Ogilvie Memorial Prize Fund. The income of the Fund will provide two prizes, which will be awarded annually to the best students in the final years of the diploma course in electrical engineering and chemistry.

A NEW list of holiday courses in Europe has recently been compiled and published by the League of Nations Institute of Intellectual Co-operation, in three languages, English, French, and German (Oxford University Press, Warwick Square, London, E.C.4. Price 1s.). This list of courses open to foreign students contains all the essential information on 135 holiday courses to be held during 1932 in 17 different countries and 82 cities.

DOCTORATES conferred in the sciences by American universities are reviewed year by year for the National Research Council, Washington, and the titles of the theses, arranged under subject group headings, are published with statistical summaries in the Council's Reprint and Circular series. The review for 1930–31 shows that the number of these doctorates has increased steadily since the series began in 1920, from 330 conferred by 31 universities to 1147 conferred by 63. It provides data for what may, perhaps not too fancifully, be called the climatology of scientific research. Chemistry, as usual, claims a third of the aggregate of the labours of the new doctors—in Ohio State University, Columbia, and Illinois, one-half. Next to chemistry comes zoology, in which from fifteen to twenty per cent of the doctorates were conferred in California, Harvard, Johns Hopkins, Iowa State College, Michigan, Wisconsin, and Yale. Next in order come psychology, physics, botany, mathematics,

each of which is responsible for more than seventy doctorates, followed by physiology, agriculture, geology, bacteriology, pathology, engineering, and public health. Of the twenty theses on public health subjects, no less than sixteen belong to Johns Hopkins University. In the lists of titles, students will find indications of the lines of research favoured in America; that, for example, much of the research in psychology is concerned with observations of conditioned reflexes in white rats. Cancer research is conspicuous by its absence from the lists. Looking back over the records of ten years, the only important exceptions to the general increase by two hundred or more per cent in the number of doctorates conferred under the several subject group headings are physics (160 per cent), geology (170 per cent), and pathology (decrease by 4 per cent).

Calendar of Geographical Exploration

March 7, 1778.—Cook's Last Voyage

Capt. Cook reached the north-west coast of America in about lat. $44\frac{1}{2}^{\circ}$ N. In the summer of 1776, Cook, in the *Resolution*, accompanied by Charles Clerke in the *Discovery*, had sailed on a voyage of exploration for the British Admiralty to the northern region of the Pacific coast of America, with the view of discovering a route thither via the Arctic. A few new islands were discovered in the Pacific, including the atoll named Christmas Island, where an eclipse of the sun was observed on Dec. 30. On Jan. 18, Hawaii was discovered, and the group was named the Sandwich Islands, after the Earl of Sandwich, who had done so much to encourage Cook's explorations; the Spaniards had probably visited the group in the sixteenth century. The coast of America north of 40° N. was practically unknown before Cook's visit. His vessels anchored in Nootka Sound, and thence proceeded north, naming islets and inlets as they went. Cook's Bay was thoroughly explored, and conclusive proof was obtained that no passage through to Hudson's Bay existed. The coast of the Alaskan Peninsula was surveyed, and Cape Prince of Wales reached and named. Crossing the strait to the Asiatic side, Cook made acquaintance with the Chukchee, returned to the American side, and pushed north to Cape Lisburne. Ice on both coasts and in the open sea compelled the vessels to return. On the west coast of Hawaii, Cook was murdered by the natives. Capt. Clerke took charge and decided to continue Cook's work in the northern Pacific, but he died on Aug. 2, 1779, and was buried at Petropavlovsk (Kamchatka). The vessels then returned, reaching the Nore in 1780. Cook's previous voyages contributed so much to exploration that his remarkable achievement in these northern regions is sometimes overlooked.

March 7, 1925.—Eastern Bolivia

Col. P. H. Fawcett, leading an expedition to explore eastern Bolivia, reported from Cuyaba, Brazil, that his party was fit and his instruments were in good condition. Fawcett stayed at Cuyaba until April 20, and thence started on his proposed exploration of the Xinga, Araguaya, and Tocantin regions. A dispatch, dated May 30, 1925, from a camp in lat. $11^{\circ} 43' S.$, long. $54^{\circ} 35' W.$, was the last that was heard of him and his son and a young Englishman, R. Rimell. G. M. Dyott left for Brazil in 1928 to search for the party, and succeeded in crossing from Cuyaba to the Kulisehu River and thence reached the Xingu, following it to the Amazon. His journey was a remarkable feat of exploration, but it failed to find Fawcett and his party, and Dyott concluded that they had been

murdered by Indians. Fawcett's previous work had included many explorations in Eastern Bolivia, and he had acted as chief commissioner on the Bolivia-Brazil boundary commission in 1906.

March 9, 1914.—Capt. Shakespear in the Arabian Peninsula

Capt. Shakespear reached the Malham oasis, previously unvisited by Europeans. He left Koweit in February, determined to penetrate into the heart of the desert peninsula of Arabia and to cross it from the Persian Gulf to Egypt. He covered some 1200 miles of unknown country, and for the whole of his journey he kept up a continuous route traverse, checked by observations for latitude; he also took hypsometric readings for altitude. Thus for the first time a complete traverse of the lower Wadi er Rumma was achieved, the first reliable map of the Tuwaik settlements was made, and a new route from Buraida to Jauf followed. From 1909, when he was appointed political agent at Koweit, Shakespear had made annual excursions into the comparatively unknown hinterland, and these paved the way for his last journey. In 1915 he was killed in a skirmish between the forces of Ibn Saud and his rival Ibn Rashid.

Societies and Academies

LONDON

Royal Society, Feb. 25.—D. M. Needham, J. Needham, E. Baldwin, and J. Yudkin: A comparative study of the phosphagens, with some remarks on the origin of vertebrates. Arginine phosphate exists in all the invertebrate phyla of which representatives were studied, though in the coelenterates it was only found in a ctenophore. This compound may be associated with ciliary as well as muscular movement. Creatine phosphate is not confined to the vertebrates, but was found in echinoderm jaw muscle and enteropneust tissues. If any evolutionary significance may be attached to these findings, it is probable that they support the echinoderm-enteropneust theory of vertebrate descent (Bateson: MacBride: Garstang).—G. Phillips: Myotatic reflexes in sympathetomised muscle. After excision of its sympathetic innervation, skeletal muscle exhibits quantitative changes in proprioceptive reflex activity. Simultaneous myotatic contractions of two soleus muscles when subjected to the same passive stretch have been recorded by a 'double' isometric myograph and a twin string galvanometer. Three conditions of stretch-stimulation have been regarded as essential in making comparable records. These are, a small passive increment of length, performed at an even rate, from an initial posture of minimal tension. Under such conditions the latent period of the myotatic reflex determined by the time of onset of the first action current wave is shorter in the sympathetomised muscle. Soleus muscle deprived of its sympathetic innervation some weeks previously loses in great degree its power of maintenance of any postural contraction of other than low tension. The available evidence denies the existence of any sympathetic nervous mechanism responsible for the direct qualitative control of postural reactions; and suggests quantitative changes following sympathetomy are produced by a disturbance of the excitability of proprioceptive end-organs in sympathetomised muscle.—J. C. Eccles and H. E. Hoff: The rhythmic discharge of motoneurons. The events during the rhythmic cycle are described in terms of the 'activity' of the rhythmic centre, by which is meant the propensity of the rhythmic centre to set up a reflex discharge.

Geological Society, Jan. 13.—F. B. A. Welch: The geological structure of the eastern Mendips. The area discussed comprises the Beacon Hill pericline, the most southerly situated of the four echeloned Mendip periclinal and that bordering the Radstock coalfield. As in the other three cases, the structure is anticlinal with a steeply folded north limb: the core is formed of Old Red Sandstone and Silurian, the Avonian outcropping on the flanks. The south limb is much concealed by Mesozoic strata, which also stretch across the eastern part of the area, so that the Avonian can only be seen in deep ravines. The whole sequence of events appears to have been the northward drive of the east-and-west pericline against the southern 'nose' of the coal measure basin (with a north-and-south axis). Maximum resistance was offered to this movement along the line of this axis, and in this line lies the central fault block.—E. S. Hills: Upper Devonian fishes from New South Wales. The greater part of the material comes from Harvey's Range, north-north-east of Parkes, but there is a single specimen from the Jemalong Gap, another single specimen from the western flank of the Canoblas Mountains, and a few plates preserved in limestone from an unknown locality. The faunal list is enumerated. *Remigolepis* is a new genus lately erected by Stensiö to embrace remains found in East Greenland, and its presence in the collection was recognised by him. Not only does the present record of Upper Devonian fishes from New South Wales greatly extend the known range of these forms in south-eastern Australia, but also it affords valuable evidence for the correlation of the Devonian rocks of that district. It is suggested that the shallow marine deposits of the Lambian (Upper Devonian) series may be, in the main, older than the continental deposits of that epoch, and that the Upper Devonian rocks of Victoria may be the equivalent of only the top of the series as it is developed in New South Wales.

Physical Society, Jan. 15.—Shih-Chen T'ao and William Band: Some thermomagnetic effects in nickel and iron. The paper relates to the production of an e.m.f. in nickel and iron wires by the simultaneous application of a longitudinal magnetising field and a temperature gradient.—W. A. Leyshon: On periodic movements of the negative glow in discharge tubes. The effect is produced when traces of hydrocarbon vapour are present in the tube in addition to the filling gas (neon, in most of the experiments here described). The jumping glow may be due to internal flashing at that part of the surface of the cathode which is not covered by negative glow. The flash may be caused by the electrical breakdown of a partially insulating hydrocarbon layer, as a result of the collection of positive ions, or by a surface chemical action occurring when the reaction products of the discharge have reached a certain concentration at that surface. It is supposed that the electron emissivity of the surface is increased by the flash, and that the main glow jumps to the activated surface. The process is reversible and hence may be periodic.—G. I. Finch and R. W. Sutton: A cathode-ray oscillographic method of measuring inductance. The voltage fluctuations across the condenser in a damped oscillatory circuit, comprising inductance, capacity, and resistance, are recorded by means of a cathode-ray oscillograph.—H. R. Nettleton and F. H. Llewellyn: On the measurement of electrical resistance in terms of a mutual inductance and a period. It is shown that if the ratio a/a' of the radii of the concentric circles forming a simple inductometer is 0.50607₈, the mutual inductance is so accurately proportional to the angle through which the turning coil is displaced that the rising deviation from a linear law is