

of the International Polar Year 1932-33. In order that an idea of the probable number of purchasers may be gained, and that matters may be so arranged that the publication shall be developed into a permanent institution, the Deutsche Seewarte, Hamburg, would be glad to hear in advance from anyone who is likely to place orders for the new charts, and is prepared to submit sample charts and supply any information required. The cost of publication has to be covered by the sale of the charts, and the enterprise therefore depends for its success upon there being a sufficient number of purchasers to keep the price of the individual charts reasonably low.

University and Educational Intelligence

CAMBRIDGE.—Dr. H. R. Hulme, of Gonville and Caius College, has been elected to an Isaac Newton studentship, and W. E. Candler, of Trinity College, and R. H. Stoy, of Gonville and Caius College, have been elected to additional Isaac Newton studentships tenable for one year.

OXFORD.—The electors to the Hope professorship of zoology propose shortly to proceed to the election of a successor to Prof. E. B. Poulton, who has resigned as from January 1, 1933. The resignation of Prof. Poulton, who has held the chair for forty years in succession to the first Hope professor, the late J. O. Westwood, is greatly regretted. It is understood, however, that he intends still to carry on in the Hope Department those researches which have had such fruitful results, especially in the field of insect bionomics.

WALES.—It is stated in the annual report of the Council of University College, Swansea, that the capital deficit of the College has now been extinguished. There is urgent need for a new library, and the Council has decided to raise funds for the provision of a permanent building. It is proposed to issue private appeals for this purpose. The College has established a metallurgical research council to conduct investigations into problems which concern the chief industries of the region.

A STUDY of the place of physical education and hygiene in the curricula of teacher-training institutions has been published as Bulletin No. 10 of 1932 of the United States Office of Education. It is increasingly recognised that the effectiveness of teaching is dependent on the physical health of both teacher and taught, and in about half of the States teacher-training institutions are required by law to include physical education in their general curricula. In some of the States all applicants for teaching positions are required by the State boards of education to present credentials in physical education and health education. In West Virginia physical education is given a prominent place in all types of certificates granted by training colleges. The report directs attention to the fact that a successful programme of health education and physical education is not easily organised or measured in terms of clock hours of instruction or semester hours of credit and that nearly all training colleges provide opportunities for additional physical activities other than those prescribed, including 'hikes', week-end excursions and camping expeditions.

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Calendar of Geographical Exploration

Nov. 13, 1876.—*Doughty's Wanderings in Arabia*

Charles M. Doughty started from Muzeiryb on his two years of wandering in Arabia. His "Arabia Deserta" has been described by D. G. Hogarth as the "Georgic of the Desert"; he characterised surely, sensitively and for all time the immemorial tribal life of the steppe and desert. He wandered as the poorest of the poor among the Bedawin tribes and faithfully and in minutest detail recorded their life and that of the oasis towns. He had been fired with ambition to visit Arabia when wandering in 1875 in the country beyond Jordan. Refusing even to pretend to forswear his faith, he openly travelled as a Christian and, though often persecuted, yet achieved his aim and attained the last station on the pilgrim route to Mecca. His unique journey resulted in contributions to geographical knowledge and to literature; it also gained for him a great reputation with Semitic scholars for the copies and drawings of the Nabataean and Himyaritic scripts which he obtained.

Nov. 14, 1770.—*Sources of the Blue Nile*

James Bruce reached the source of the Blue Nile. In June 1768 he arrived at Alexandria, thence he visited Thebes and crossed the desert to Kosseir. He sailed to Jidda and after a stay in Arabia re-crossed the Red Sea, landed at Massawa and finally reached Gondar, the capital of Abyssinia. There his medical skill procured him the support of the Queen Mother, a very useful ally during his troubled stay in Abyssinia. On October 28, 1770, he left Gondar and, from the top of a gently rising hill on which was the church of St. Michael of Geesh, viewed the sources of the Blue Nile. On his return to Gondar political difficulties detained him until December 1771, but then he was allowed to return by Sennar to Nubia. In the Nubian Desert, sand storms and thirst so oppressed the party that the notes and observations of his journeys were discarded, though fortunately Bruce later recovered them. He reached Cairo in January 1773. Bruce was disappointed that the source of the Blue Nile was not considered, as he himself considered it to be, the real source of the Nile. Moreover, the source of the Blue Nile had been previously visited by the Jesuits. Thus the importance of his journey was rather that he re-discovered these regions and in so doing attracted the attention of his generation to African exploration. The five volumes in which he gave his experiences remain a vivid picture of travel in these regions and give much information about the geography, history and social customs of Abyssinia.

Nov. 14, 1805.—*Finding a Route Across the Rockies*

Capt. M. Lewis and W. Clarke reached the mouth of the Columbia River. They had left the Missouri in May 1804, wintered with the Mandan Indians, resumed the journey up the Missouri, crossed the Rockies and reached the Columbia River, where they wintered. In March 1806 the party divided, Lewis going via the Lolo Pass and thence carrying out certain explorations, while Clarke proceeded to the Yellowstone at its nearest approach to the three forks of the Missouri. They met again on the Missouri and reached St. Louis in September, 1806. The outward journey was calculated at 4134 miles, and Lewis's shorter return journey at 3555 miles from the mouth of the Missouri to the Pacific. They had been

commissioned to explore the Missouri from the point of view of the most direct and practicable water communications across the continent to the Pacific for commercial purposes. They achieved this object and also helped to attract traders to the regions west of the Mississippi by their accounts of possibilities of development.

Nov. 14, 1917.—Philby in Arabia

H. St. J. B. Philby arrived in the Gulf of Bahrain on a political mission to Riyadh, in the course of which he crossed the country from Ojair to Jedda, returned to Basra and once more set out to Riyadh. Thence he journeyed south to Wady Dawasir, thus penetrating some distance into the Nejd. In 1920-22, Philby crossed from Amman to Kabala near the Euphrates. With him went Major A. L. Holt, who had already made extensive surveys between Bagdad and Haifa. Philby's greatest Arabian exploit, however, was the crossing of the Rub' al Khali, the great waterless southern desert, in the early months of 1932. Starting from Hufuf on Jan. 7, he succeeded in reaching Sulaiyil, covering 1800 miles in 90 days. Finds of flint implements and freshwater shells indicated the site of an old river-bed or lake at Bir Maqran, and at Wabar craters of meteoritic origin were discovered. The first crossing of this desert, though by a different route, was in 1931, by Mr. Bertram Thomas.

Societies and Academies

LONDON

Royal Society, Nov. 3.—J. Mellanby: Secretin. Secretin may be prepared from the duodenal mucous membrane by (a) extraction with absolute alcohol, (b) precipitation by dilute acid, and (c) resolution of the precipitate in acid alcohol and precipitation by acetone. The product has the percentage composition of a sulphur-containing protein. It is soluble in water but insoluble in dilute acid. The physiological actions of secretin are: (a) the production of a copious secretion of pancreatic juice, (b) the contraction of intestinal muscle, and (c) the secretion of a small quantity of bile.—Margaret Hill and A. S. Parkes: Studies on the hypophysectomised ferret (1, 2, 3). Hypophysectomy of the male during the breeding season (June) caused regression to the anæstrous condition in about a month; the regression being characterised by decrease in testis weight and by aspermatogenesis. The experimentally produced degeneration is about three times as rapid as the normal decline into anæstrus. In the female ferret, removal of the pituitary body about two hours after the beginning of copulation did not inhibit ovulation, which occurs in the normal animal about 36 hours after mating. It would thus appear that some ovulation-producing substance is secreted by the anterior pituitary body within two hours of the beginning of copulation. The corpus luteum, however, failed to develop, and there were no signs of pregnancy or pseudo-pregnancy.—J. D. Gillett and V. B. Wigglesworth: The climbing organ of an insect, *Rhodnius prolixus* (Hemiptera; Reduviidae). It is present in both sexes of the adult, but is absent in the nymphs. It occurs on the distal end of the tibia of the anterior and middle pairs of legs. It enables the insect to climb upwards on clean glass at almost a right angle, but it is of little use in the reverse direction. The

organ is a little oval sac of pliant chitin filled with blood. On its lower surface it bears about 5000 tubular hairs, $1\ \mu$ in diameter, which appear to be the outlets of unicellular glands producing an oily secretion. At their free ends the anterior surface of these hairs is cut away obliquely so that only their hind margin comes in contact with the surface as the insect climbs. Among these hairs are about 50 delicate tapering hairs arising from large sockets and projecting slightly beyond the others. These appear to be sense organs. They are surmounted by a spindle-shaped mass of cells giving off a nerve fibre.

Physical Society, Nov. 4.—M. Fahmy: A further point of analogy between the equations of the quantum theory and Maxwell's equations. A previous paper (*Proc. Phys. Soc.*, 43, 124; 1931) dealt with an analogy between the electromagnetic equations in free space and the equations of the quantum theory, exhibited by means of five-dimensional geometry. In the present paper the analogy is pursued further and leads to the Eddington relation between the number of electrons in the universe and its radius.—Lewis F. Richardson: Time-marking a cathode-ray oscillogram. Time-marks have been arranged as little blurs or gaps in the trace, by periodically unfocusing the electron stream. The current in, and voltage across, a conductor can thus be recorded together with the time on a single oscillogram.—T. C. Richards: The elastic constants of rocks with seismic applications. The results of a geophysical survey by means of the seismic method over a large oil-bearing limestone structure in south-west Persia indicate that the limestone possesses a higher elastic velocity at its lower boundary than at its upper. Specimens of the limestone at different depths obtained by 'coring' do not give the same elastic constants when measured by a simple optical method, and the bearing this result has on the practical seismic observation is discussed.—L. R. Wilberforce: A common misapprehension of the theory of induced magnetism. It is usually stated that if any given magnet is immersed in a medium of permeability μ the magnetic field around it is similar to that in a vacuum, but diminished in strength in the ratio of $1:\mu$. This statement is inconsistent with the ascertained experimental laws of induced magnetism.

PARIS

Academy of Sciences, Oct. 3 (195, 565-588).—Ernest Esclangon: The total eclipse of the sun of August 31, 1932, observed in the United States and in Canada. In spite of some cloud, good spectrographs of the corona were obtained, also some excellent general photographs of the corona.—Lucien Daniel: The experimental production of small bulbs in the leek.—Claude Chevalley and André Weil: An arithmetical theorem on algebraical curves.—Nikola Obrechhoff: A general method of summation of divergent series.—D. Riabouchinski: Some considerations on the hydrodynamical interpretation of the periodicity of sunspots. An account of experiments with a glass globe containing water, rotating on its axis and containing a stirrer rotating in the same direction, but faster than the globe. Some air was admitted to the globe and photographs are reproduced showing the internal movements. The theory of J. Wilsing on the constitution of the sun is discussed from the point of view of these experiments.—Louis de Broglie: Remarks on the magnetic moment and moment of rotation of the electron.—