

honorary degrees were conferred upon the following, among others: *M. Eng.*—Prof. F. S. Rishworth, professor of civil engineering in University College, Galway. *D.Sc.*—Prof. R. G. Harrison, professor of biology in the Yale University; and Prof. T. M. Lowry, professor of physical chemistry in the University of Cambridge. *LL.D.*—Prof. W. R. Scott, Adam Smith professor of political economy in the University of Glasgow.

EDINBURGH.—At the graduation ceremonial on June 30 the honorary degree of Doctor of Laws was conferred upon the following, among others; Prof. C. V. Boys, Mr. H. M. Cadell; Mr. D. M. Greig, conservator of Museum, Royal College of Surgeons, Edinburgh; Dr. R. S. MacDougall, formerly reader and Steven lecturer in agriculture and forest entomology in the University; Mr. Andrew Mellon, United States ambassador; Prof. A. Robinson, emeritus professor of anatomy in the University; Sir Archibald Sinclair, Secretary of State for Scotland; and Sir Josiah Stamp.

The following were admitted to the degree of Doctor of Science, titles of theses appearing after the names: Mr. S. C. Devadatta, "The Distribution of Lactate between the Corpuscles and the Plasma in Blood"; Dr. Honor B. Fell, "Morphological and Experimental Studies on the Skeletogenesis of the Fowl"; Mr. D. Finlayson, "Some Physical Problems associated with the Internal Combustion Engine"; Mr. D. S. MacLagan, "An Ecological Study of the 'Lucerne Flea' (*Smythurus viridis*, Linn.)"; Dr. D. Meksyn, "Electromagnetic Phenomena in the General Theory of Relativity"; Mr. H. S. Ruse, "Theorems in the Tensor Calculus"; Dr. R. H. Slater, "Synthesis of Quinoline Compounds of possible Therapeutic Value".

At the close of the ceremony, the Principal, Sir Thomas Holland, referred to two medallions by Emeritus Professor Schlapp, representing Sir Walter Scott and Thomas Carlyle as students, which have been placed in the McEwan Hall. Walter Scott matriculated in the University in 1783, attended classes for three years but failed in Greek, and his father took him away to his own business. Scott returned in 1789, studied in the Faculty of Law and was admitted to the Faculty of Advocates in 1792. At the age of fourteen years, in 1809, Thomas Carlyle trudged from Ecclefechan to the University of Edinburgh. He seemed to have profited mainly from the teaching of the professor of mathematics, and later in life, just after he had failed to persuade any publisher to accept "Sartor Resartus", he made an unsuccessful attempt to obtain the professorship of astronomy in the University. He was rejected, and that incident probably turned him finally to letters.

LONDON.—The following doctorates have been conferred: *D.Sc.* in anthropology on Dr. E. J. Dingwall (University College) for two works entitled "Male Infibulation" and "Artificial Cranial Deformation" (Bale, Sons, and Danielsson, 1931); *D.Sc.* in chemistry on Mr. J. W. Smith (University College) for a thesis entitled "Studies in Intensive Drying and Related Phenomena" (*J. Chem. Soc.*, 1929 and 1931; *Phil. Mag.*, 1929); *D.Sc.* (Engineering) on Mr. H. C. H. Townend (Northampton Polytechnic Institute) for ten contributions to the study of aerodynamics.

ST. ANDREWS.—Amongst those who received the honorary degree of *LL.D.* at the graduation ceremonial on June 28 were Sir James Frazer, author of "The Golden Bough", Dr. Albert Schweizer, and Prof. L. R. Sutherland, emeritus professor of pathology in the University.

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Calendar of Geographical Exploration

July 11, 1616.—Samuel de Champlain

Samuel de Champlain, the great French explorer, returned to Quebec, which he had founded in July 1608, after his third and greatest journey. He set out in 1615 and, travelling down the Ottawa and Mattawa Rivers, Lake Nipissing, and French River, reached Georgian Bay. Thence he proceeded inland and explored Lake Ontario. Champlain's earliest voyages were to the West Indies and Mexico. In 1603 he travelled up the St. Lawrence, and in the following years surveyed the coasts of Nova Scotia, the Bay of Fundy, and the mainland so far as Cape Cod. In 1613 he reached Allumette Island in the Ottawa River, in an endeavour to discover a supposed short route to the ocean via the Ottawa River. Lakes Champlain, Nipissing, and Simcoe were discovered by him, and he made further journeys on Lakes Huron and Ontario, which had been visited a few years earlier by Brulé. Interestingly enough, Champlain contemplated, during a visit to Panama, the project of a ship canal across the isthmus.

July 11, 1897.—First Air Attempt on the North Pole

S. A. Andrée, a Swedish aeronaut, with two companions and about five tons of supplies, set out in a balloon for the north pole. Heavy guide-ropes dragging over the ice were to be used for steering. Andrée had already made successful flights in this way. Rising from Danes Island, Spitsbergen, at 2.30 p.m., the balloon passed out of sight within an hour. A buoy containing a message that at 10 p.m. the balloon was in 82° N., 25° E., moving towards the north-east at an altitude of 800 ft., was found. But until Aug. 22, 1930, nothing more was known of the fate of Andrée and his companions. On that date, members of an expedition to White Island found their bodies and their diaries. They had reached 82° 56' N., but had been compelled to return on foot, and had died at Giles Land, White Island, to the east of Spitsbergen.

July 13, 1102.—An Early Pilgrimage to Jerusalem

Saewulf, or Saewlf, an Anglo-Saxon native of Worcester, a merchant, took ship at the little harbour of Monopoli, near Bari, for his pilgrimage to the Holy Land. The effect of the Crusades was to encourage such pilgrimages, and Saewulf, though not the first to make the journey, was the first who left a narrative of it. His outward journey was made direct from Italy to the Ionian Islands, from Negropont to Rhodes, and thence to Palestine. His record shows the great increase of European influence in the Levant in war, commerce, and pilgrimage; his account of the destruction of pilgrim and trading vessels in Jaffa during a great storm is specially valuable from this point of view. His description of the sites of Hebron is detailed and interesting. Among other places, he visited Nazareth and Cana of Galilee. He embarked on his return journey at Joppa, coasted down past Tyre, Sidon, and Acre, touched at Cyprus, and put in at Rhodes. There he changed to a smaller vessel and later to another, and proceeded through the Dardanelles. The narrative breaks off abruptly at the point when Saewulf was near Constantinople and wished to worship there before returning home. Inevitably, many of Saewulf's historical explanations seem quaint to modern students, but his narrative throws a good deal of light on conditions in his time.

July 13, 1909.—Mikkelsen's Voyages

Ejmar Mikkelsen left Thorshavn in the *Hekla*, in command of an expedition to explore north-east Greenland. Mikkelsen had, with Amdrup, explored

the east coast of Greenland in 1900, worked with the Baldwin-Ziegler 1901-2 expedition in Franz Josef Land, carried out oceanographical survey in the North Atlantic in 1903-4, and, in joint command with Leffingwell, explored northern Alaska in 1906-8. In 1908-10 Mikkelsen discovered the records left by Mylius-Erichsen of his tragic journey of 1907.

July 13, 1923.—American Scientific Expeditions to Mongolia

George Olsen, a member of one of the above expeditions, found the first complete dinosaur eggs. The theory that Central Asia must have been a centre of origin for ancestral types of mammalian life aroused the interest of Prof. Henry Fairfield Osborn, president of the American Museum of Natural History, and eventually led to the organisation of a series of remarkably well equipped scientific explorations of the region of Mongolia which lies between the Kalgan and the Altai Mountains. Palæontology, geology, palæobotany, archaeology, topography, zoology, and photography were all represented in the 1925 expedition. But palæontology took first place in the 1922-23 expedition, which justified the theory in such a remarkable way. Dr. R. C. Andrews, the leader of the expeditions, reports that the major geographical features of the Gobi have been determined, and a surveyed line of more than 1000 miles has been run north-west through the heart of the desert.

July 15, 1836.—Sir T. Livingstone Mitchell in Australia

Sir T. L. Mitchell discovered the Grampian Hills, on a journey in Australia during which he also discovered the Wimmera and Glenelg Rivers and cleared up the main features of the Murray-Darling basin east and south of the Darling. Mitchell's explorations in Australia began in 1831, and to him and Sturt is due the elucidation of the drainage system of south-eastern Australia. In 1846 he crossed the Carnarvon Range and discovered the upper portion of the Barcoo River.

July 15, 1874.—The Road to Lhasa

The famous Indian explorer, Nain Singh, left Leh on a journey through western Tibet to Lhasa and the region south of that city. He travelled 1319 miles, of which about 1200 were across country never previously explored, and made detailed surveys of the route. Numerous lakes were discovered, as was the existence of a vast snowy range parallel to and north of the Brahmaputra River. Of this range, Nain Singh recorded the position of several peaks and estimated their heights. Nain Singh on his previous memorable journey had made a route survey of the road between Katmandu and Tradom and of the great Tibetan road from Lhasa to Gartok. He had traced much of the upper course of the Brahmaputra, and made estimates of the heights of various mountain peaks.

July 16, 1906.—Sven Hedin in Central Asia

Sven Hedin, the famous Swedish explorer, started from Srinagar on his journey to the region lying between Shigatse and Leh, and north of the Brahmaputra. He discovered a range of mountains lying parallel to the Himalayas on the Tibetan side, and mapped this previously unknown region. In 1893-97, Hedin crossed the desert between the Yarkand and Khotan Rivers, discovered the buried cities of the Takla Makan, and found that Lob Nor had changed since Przhvalsky visited it. In 1899-1902 he surveyed the Yarkand River and much of northern Tibet. Apart from his archaeological work, Hedin made great contributions to the mapping of central Asia, and especially of the sources of the Sutlej and Brahmaputra.

Societies and Academies

LONDON

Royal Society, June 30.—J. W. Cook, I. Hieger, E. L. Kennaway, and W. V. Mayneord: The production of cancer by pure hydrocarbons (1). Tests for cancer-producing action on mice are in progress, or have been completed, with preparations of the following polycyclic aromatic hydrocarbons composed entirely of benzene rings:—(1) All the six possible four-ring compounds, (2) all the ten known compounds out of the fifteen possible five-ring compounds, (3) some compounds containing six and eight rings, and others. Some of the hydrocarbons examined are of very low solubility, and hence all tests carried out with them are unsatisfactory. No hydrocarbon in the pure state has produced cancers except 1:2:5:6-dibenzanthracene and some closely related compounds. It produced cancer of the skin when applied in a concentration of 0.003 per cent in benzene.—J. W. Cook: The production of cancer by pure hydrocarbons (2). Preliminary results suggest that 6-*iso*-propyl-1:2-benzanthracene is carcinogenic, and a pure sample of this has been synthesised and is being examined for carcinogenic activity, together with other *iso*-propyl and methyl derivatives of 1:2-benzanthracene. 5:6-*cyclopenteno*-1:2-benzanthracene produced metastases in the axillary glands and lungs in four mice to which it was applied. There is evidence that a molecular structure consisting of new rings attached to the 1:2- and 5:6- positions of the anthracene ring system is particularly efficacious in promoting carcinogenic activity.—G. H. Eagles and A. H. H. Kordi: The cultivation of vaccinia virus: a new series of subcultures in cell-free medium. The cell-free medium has been prepared with the view of obtaining from adult rabbit kidney an extract rich in cell substance while eliminating the presence of actual cells. The medium must be freshly prepared. Vaccinia virus has been propagated in this medium through ten subcultures in one series, representing a multiplication of 10^{20} times the original culture with a dilution of 10^{17} of the virus content of the original culture. Though greater irregularity in growth occurs in cell-free medium than in medium containing living cells, experience has shown that with the former substantial yields of virus have been realised.

Physical Society, May 20.—A. O. Rankine: (1) On the representation and calculation of the results of gravity surveys with torsion balances. An alternative method of indicating the functions of the Eötvös torsion balance, and of calculating those quantities, depending upon the distortion of the earth's gravitational field which the balance measures, is described and a convenient method is indicated of applying graphically the necessary corrections for the effects of the earth's rotation and irregularity of the surface of the ground.—(2) Some observations with a gravity-gradiometer. An account is given of a series of observations with a Shaw and Lancaster-Jones gravity-gradiometer, during which it was discovered that very persistent, although small, electric charges could be developed on the mica ring forming part of the oscillation-damping system. Such charges, which may persist for weeks, may not arouse suspicion, although in fact they lead to spurious results in the normal use of the instrument.—R. L. Smith-Rose and J. S. McPetrie: The propagation along the earth of radio waves on a wave-length of 1.6 metres. A description is given of the simple transmitting and receiving apparatus which has been employed for the experiments on this wave-length. Measurements of the field-intensity at different distances from the transmitter have been carried out