

ance of this year, 1932, in the religious and national as well as international life of the Irish people" by issuing a sumptuous "National University Handbook, 1908-1932". This volume, produced at the Sign of the Three Candles in Fleet Street, Dublin, by Colm O'Lochlainn, a graduate of University College, Dublin, deals with the whole of the academic activities of the University, its three constituent colleges at Dublin, Cork, and Galway, and the recognised national ecclesiastical college of St. Patrick, Maynooth, the relationship of the University to secondary schools, and its social and recreative interests. It includes lists of publications, literary and scientific, by the teaching staff and others holding higher degrees of the University. A chapter on applied science records achievements of four of its science graduates distinguished as research workers: Dr. E. J. Butler, director of the Imperial Bureau of Mycology at Kew since 1920; Dr. F. D. Murnaghan, who has held high appointments as a mathematician in the United States; Dr. T. A. McLaughlin, initiator and managing director during the constructive period of the Shannon Power Electrical Scheme; and Dr. J. J. Drumm, an account of whose remarkable traction battery by Prof. A. J. Allmand, published in NATURE of March 12, 1932, is reproduced in the Handbook. The development of work in applied science in the University has been fostered by the liberal system of travelling studentships, to which the Handbook refers as having provided awards far exceeding any similar facilities offered by other universities in the north-west of Europe.

THE University of London has published, in the form of a pamphlet entitled "New Buildings on the Bloomsbury Site" (18 pp. with illustrations and map), its first proposals for the development of this important site of ten acres behind the British Museum. As frontispiece is a photograph of the model prepared by the architect, Mr. Charles Holden, of the proposed University buildings as seen from Russell Square. The model, without detail or fenestration, gives an impression of a vast building, cunningly devised and working up to a great tower, placed centrally on the site and visible from the main approaches to the new buildings. The tower, as the architect explains, will dominate the group and will serve as the main entrance to the buildings—the administrative building to the south and the library and scholastic sections to the north. "The very orderly disposition of the parts", he adds, "and the strong horizontal character of the whole would give to the mass a classical bias which, together with the rhythmical disposition of the window and door openings and other essential features, may be relied upon to present a neighbourly front to the British Museum and to the surrounding buildings, without the necessity of introducing a columnar treatment." The nearest anatomical parallel to the plan is a spine with vertebrae extending from the tower to the northern extremity facing Gordon Square, the administrative block and the Great Hall forming the head and facing Sir John Burnet's northern extension of the British Museum with its classical columns, the Great Hall being on the Russell Square side of this frontage. The height of the tower is not stated, but it would appear to be about 200 ft.—in no sense a skyscraper, but high enough and impressive enough to give character and unity to the architect's design. The pamphlet includes an account of the history of the University, stressing appropriately its difficulties in finding suitable accommodation for its administrative work; and particulars are given of some of the purposes—university and collegiate—for which the new building will be devoted.

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## Calendar of Geographical Exploration

July 3, 1798.—The Zambezi and the Cunene

Lacerda left the Zambezi and travelled northwards between Lakes Nyasa and Bangweolo. He had previously explored the Cunene River, and thought that the upper course of the Zambezi might be connected with the Cunene. If this were so, he hoped that the Portuguese might establish cross-country trade between Mozambique and Benguela. Lacerda died in October 1798, and his party returned to Tete in November 1799. Much new information had been gained, but it was soon forgotten and was not available when Livingstone began his travels.

July 3, 1826.—The Arctic Coast of Canada, 1825-26

Sir John Franklin reached the head of the Mackenzie delta. There his party divided into two groups, Sir J. Richardson leading a group eastwards and Franklin going west. Richardson traced 863 miles of unexplored coast between the Mackenzie and the Coppermine Rivers, discovering and naming Franklin Bay, Wollaston Land, Dolphin and Union Strait, and Coronation Gulf. Franklin traced the coast westwards from the Mackenzie for 374 miles to Cape Beechey.

July 4, 1734.—The Siberian Arctic

Pavlov and Muraviev left Archangel to sail for the mouth of the Ob. The expedition formed one of the numerous surveys inaugurated by the Russian Senate, the Admiralty, and the Academy of Sciences in the thirties of the eighteenth century. The impetus towards the geographical survey of Siberia was given by Peter the Great, though the work was not begun until after his death. The boats of the 1734 expedition proved unsatisfactory and a second journey started in 1736, with Malygin in place of Muraviev. Malygin anchored in the sound now named after him; he and his companions mapped the coast of Yalmal and also of Byeli Ostrov. The Ob mouth and the Gulfs of Tas and Gyda were mapped as the result of Ovzyn's voyage (1734-37), while the coast between the Yenisei and the Taimyr Peninsula was explored by Minin in 1738-40.

July 8, 1497.—Vasco da Gama

Vasco da Gama with four vessels left the Tagus River on a journey which filled in the gap of 800 miles of unknown east African coast between the limit reached by Diaz in his 1487-88 voyage and the part known to the Arabs. After a five-thousand-mile ocean journey, he anchored off the west coast of South Africa near the Cape of Good Hope, where, in their eight days' stay, the Portuguese got into touch with the Hottentots. They put into Mossel Bay, and later passed the pillars set up by Diaz, thus entering unknown waters. Natal was passed on Christmas Day. At the Quilimane River they stayed for twenty-two days, suffering much from the low-lying, marshy nature of the coast. At Mozambique they met Arab dhows and learned from them the nature of their further journey along the east coast. The monsoon favoured them and they reached the Indian coast on May 23. The return journey from India to Africa occupied three months, and so many of the men became ill and died that one ship was abandoned in Mombasa; but after that the conditions were favourable and the first ship reached Lisbon in June 1499. Thus was inaugurated the sea route to India, which so profoundly affected the relations between Europe and Asia. Da Gama made a second voyage to India in 1502, and in 1524 was appointed Viceroy of Portuguese India, but died at Cochin on Dec. 24, 1524.

July 9, 1739.—Cape Chelyushkin

A Russian expedition under Lieut. Laptev left the mouth of the Lena, and reached Cape Thaddeus, 76° 47' N., on Sept. 2. After wintering at the head of Khatanga Bay, Laptev tried to return to the Lena, but his vessel was nipped in the drift ice off the Olonek River. He and his men with infinite difficulty reached their former winter quarters. Thence Laptev and his second in command, Chelyushkin, made sledge journeys to survey the peninsula, and, in 1742, Chelyushkin reached by land the northerly cape which now bears his name.

## Societies and Academies

### LONDON

**Royal Society, June 23.**—R. Whiddington and J. E. Taylor: The photographic action of slow electrons. The photographic action of electrons (60-300 volts) has been experimentally investigated in the case of 'Imperial Duplex' films. The formula connecting the blackening with the electron current producing it is of the same form as that known to hold in the case of light but with the constants appropriately changed. The 'inertia' of the film is considerably reduced by oiling its surface before exposure, almost certainly due to fluorescence of the oil under electron impact.—A. Egerton and G. S. Callendar: The saturation pressures of steam (170° to 374° C.). The saturation pressures of steam up to the critical point have been measured by a dynamic method using the apparatus designed by the late Prof. H. L. Callendar for the determination of the total heat of steam. The probable accuracy of the results is 1 in 6000. Previous results by statical methods had agreed satisfactorily to 270° C., but departed considerably from each other above that temperature. The present results lie in the region between the former determinations, and should help in the establishment of a precise knowledge of the thermal properties of steam.

### DUBLIN

**Royal Dublin Society, March 22.**—Henry H. Dixon and T. A. Bennet-Clark: Electrical properties of oil-water emulsions with special reference to the structure of the plasma membrane (2). Previous work has been confirmed and extended by the use of modified methods and apparatus. It has now been shown that the electrical behaviour of water-in-oil emulsions agrees with that of cells in the several particulars. The sensitivity of a water-in-oil emulsion is raised with the increase of the sodium/calcium ratio. The change of resistance is associated with the elongation in the path of the current of the minute droplets of the water-phase of the emulsion, and inversion is not necessary even for large changes of resistance. The application of the emulsion-theory of the plasma membrane to the results of permeability experiments is discussed.—Paul A. Murphy and Robert M'Kay: A comparison of some European and American virus diseases of the potato. In a comparison of a number of European and American virus diseases of the potato undertaken some years ago, it was found that the latent viruses present in American 'healthy' potatoes, as well as in those showing symptoms of various diseases, seriously interfered with the results. The following diseases have been found to correspond on the two continents: leaf-roll, aucuba mosaic, interveinal mosaic, and witch's broom. American leaf-rolling mosaic may have affinities with paracrinkle. No equivalents have been found for six other virus diseases of the potato described in America.

### PARIS

**Academy of Sciences, May 17** (vol. 194, pp. 1697-1768).—H. Vincent and L. Velluz: The cryptotoxic properties of sodium  $\alpha$ -oxynaphthoate. Its special action on the diphtheric toxin. Sodium  $\alpha$ -oxynaphthoate possesses a selective neutralising action on the diphtheric toxin. The toxin thus neutralised ('cryptotoxin') injected into guinea-pigs gives neither local sear, paralysis, nor general troubles, and gives immunity against the diphtheria toxin.—André Blondel: The effect of hysteresis in heating by an oscillating magnetic field.—Charles Nicolle, J. Laigret, Marcandier, and R. Pirot: The rat, an animal reacting to benign endemic forms of typhus. The long conservation of virus in the rat. It has been found that the rat can act as a reservoir of the virus of some forms of typhus: for typhus of the Old World type, as distinguished from a second type (Toulons, Athens, and elsewhere), the rat carrying the virus shows no sign of infection.—Charles Nicolle and L. Balozet: An attempt to restore the original activity to rabic virus fixed by intracerebral passages on the dog. The experiments have led to an unexpected result. Instead of increasing the pathogenic power, the inoculations have specialised the virulence for the dog's brain and removed from the virus the power of causing hydrophobia except when placed in the brain.—E. Mathias, W. J. Bijleveld, and Ph. P. Grigg: The rectilinear diameter of the carbon monoxide molecule. Measurements of the densities of the liquid carbon monoxide and of its saturated vapour at the same temperature for absolute temperatures ranging between 68° and 131°.—L. Léger and T. Bory: *Eimeria pigra*, a new juxta-epithelial coccidium, parasitic on *Scardinius erythrophthalmus*.—Henry Perrier de la Bathie was elected *correspondant* for the Section of Botany.—J. Favard: The distribution of the points where a nearly periodic function takes a given value.—de Séguier: Normalisers of substitutions of order 2 of linear, quadratic, Hermitian, and skew groups in a Galois field of odd order.—Mlle. Mary L. Cartwright: Certain integral functions of finite order.—Basile Demtchenko: The variation of resistance at low velocities under the influence of the compressibility.—J. Bion and P. David: Daytime weakening of mean and intermediate (wireless) waves propagated over the sea. Sommerfeld's formula  $d/\sigma\lambda^2$  ( $d$ , distance;  $\sigma$ , conductivity of the ground;  $\lambda$ , wave-length) has been hitherto examined by varying  $\lambda$  and  $d$ , since the conductivity of the sea is known ( $10^{-11}$ ). For observations made over the sea, with wave-lengths, 700, 215, and 158 metres, and up to a distance of 1050 km., Sommerfeld's formula was found inapplicable: the empirical formula of Austin, on the contrary, gave figures very close to the experiments.—J. Sambussy: The part played by the nature of the electrodes in the conductivity of semi-conducting liquids. The current flowing through a column of nitrobenzene depends partly on the material of the electrodes. Some peculiarities in the fall of potential per centimetre were observed with lead, and especially with tantalum electrodes.—André Lallemand: The variable paramagnetism of crystallised ferric chloride and the constant paramagnetism of the  $\text{Fe}_2\text{Cl}_6$  molecule in the gaseous state. Constitution of the molecule  $\text{Fe}_2\text{Cl}_6$ . In the state of vapour, the two atoms of iron have equal magnetic moments, and hence possess the same valency.—J. P. Mathieu: Double salts, complex salts, and circular dichroism.—René Lucas and Marcel Schwob: The stroboscopic method for the measurement of electrical double refraction.—Mlle. Ellen Gleditsch and Sverre Klemetsen: The actinium-uranium ratio in an old uraninite-clevite from Aust-Agder (Norway). In this mineral the actinium found was 3.2 per cent of the