my official situation, and the liberality of the King towards one of the members of my family, have placed me in a position of great comfort. These circumstances however have bound me to consider myself as the devoted servant of the country, and to debar myself from efforts to increase my fortune which might otherwise have been open to me. I do not look forward therefore to any material increase of income, and that which I enjoy at present is hardly sufficient, in my opinion, to support respectably the honour which you and Lord John Russell have proposed to confer upon me. . . ."

Sir Charles Bell and his Edinburgh Professorship

ON December 8, 1835, when Sir Charles Bell was about to succeed to the chair of surgery at Edinburgh, he wrote from London to his brother George: "I have seen enough to satisfy me of what the world can offer to a man—I mean this great world; and were you to look back to my letters, you would find the opinion, uniformly expressed, that the place of a professor who *fills his place* is the most respectable in life. My hands are better for operation than any I have seen at work, but an operating surgeon's life has no equivalent rewards in this world; I must be the teacher and consulting surgeon to be happy. Do you remember this is the fifth offer I have had to return to lecturing?" The same day his brother wrote from Edinburgh: "You are now an adopted member of this University, and with the unanimous assent and acclamation of a Town Council composed of persons of all parties, chosen by the several wards of this intellectual city. And surely never was an offer more honourable to an individual, for I do assure you it has the approbation of all ranks and classes of men, and of none more than the Professors of the University and the whole medical profession."

Electrostatics: a Cold Night on the Roof

"IT may be a question," wrote Faraday on December 10, 1835, "whether every case of electric residence on the surface of conductors in our atmosphere is not a case of induction"; and proceeded to try experiments to see if a metallic surface could retain any charge if there was no other surface or object opposite to it. A large concave mirror was insulated on the lecture room table, its curved surface facing upwards to the ceiling, and charged electrically. When the distribution of charge was examined, it was found to correspond with that in earlier experiments. The intensity was greatest at the edges; no electricity could be obtained from the lowest central part. The topmost point only of a ball rested at the centre showed a feeble charge.

But these effects might be due to inductive action of the ceiling, thought Faraday, although it was far above the lecture table; and so: "Then removed all this apparatus to the roof of the house, into a situation where a straight line drawn from the upper point of the 3 inch ball in the mirror, and passing by the edges of the mirror, could reach no external object except the starry sky. The sky was clear; the stars bright; the cold great, being about 27° or 28° and freezing fast at the time. Then repeating the experiments as within the house as nearly as possible, the same electrical effects were produced. Hence electricity can exist upon surfaces which are not inductively related to other surfaces of conducting matter".

Societies and Academies

DUBLIN

Royal Irish Academy, November 11. W. B. MORTON: Settlement from a suspension flowing through a tube of circular section. The rate of precipitation is examined on the two limiting assumptions of steady Poiseuille flow and of a distribution of particles maintained in uniformity across the section of the tube by eddies. J. J. NOLAN and V. H. GUERRINI: The diffusion coefficients and velocities of fall in air of atmospheric condensation nuclei. Methods for determining these quantities are described. The values found for nuclei in Dublin air are $D = 18 \times 10^{-6}$ and $V_g = 7{\cdot}5 \times 10^{-5}$. From these values the mass of the nucleus is deduced to be $1{\cdot}68 \times 10^{-16}$ gm. and its radius $2{\cdot}85 \times 10^{-6}$ cm. As the concentration of nuclei in air falls off with time, the nuclei are found to be of larger size. The bearing of this variation in size on the part played by the nuclei in the equilibrium of atmospheric ionisation is pointed out.

PARIS

Academy of Sciences, November 4 (*C.R.*, **201**, 801–860). LUCIEN DANIEL: The heredity of monstrosities in the descendants of the Jerusalem artichoke grafted on the annual sunflower to the eighth sexual generation. JEAN LE ROUX: Non-Euclidian distances. NICOLAS LUSIN: The choice of a perfect ensemble distinguished in an arbitrary analytical complement having non-enumerable constituents. G. DRINFELD: Integral invariants. N. ARONSZAJN: The metric characterisation of Hilbert space, of vectorial spaces and of certain metric groups. ANTOINE APPERT: New remark on the maximum of semi-continuous functionals. MAX SERRUYS: A rational scale of classification of fuel for internal combustion engines. The fuel is used in a motor under closely defined conditions of working, and compared with a fuel composed of a definite mixture of heptane and *iso*-octane. MARCEL CHÂTELET and FRANÇOIS KERTÉSZ: The activity of the chlorine ions in some solutions of complex chlorides of cobalt and chromium. ALBERT PORTEVIN and MICHEL CYMBOLISTE: Study of electrolytic baths. JEAN SWYNGEDAUW: The phenomena of electro-filtration in the electrolysis of gels. LÉON BLOCH, EUGÈNE BLOCH and CHOONG SHIN-PIAW: The emission spectrum of the selenium oxide, SeO. The fundamental vibration frequencies of the molecule SeO in the normal and excited state are $908{\cdot}9$ cm.$^{-1}$ and $533{\cdot}4$ cm.$^{-1}$. The energy of dissociation of the molecule in the normal state was found to be $5{\cdot}31$ volts. FRÉDÉRIC JOLIOT, ANDRÉ LAZARD and PIERRE SAVEL: The synthesis of radio-elements by deuterons accelerated by means of an impulse generator. ALBERT MICHEL-LÉVY and ANDRÉ MURAOUR: The variation of detonation spectra with the nature of the surrounding gas. A mixture of tetranitromethane and toluene was detonated in different gases, argon, krypton, carbon dioxide, nitrogen, air, helium, hydrogen and chlorine. Reproductions of the spectrographs obtained are given. The results support the hypothesis attributing the observed luminosities to the stimulation by the shock waves of the gas molecules surrounding the explosive. WILFRIED HELLER: The distances between the colloidal particles in the bright layers of certain iron oxide sols. The author has found a method of preparing artificially the bright layers discovered by

Zocher: the method is based on the slow hydrolysis of solutions of ferric chloride. An outline of the theory of the phenomena is given. JEAN SAVARD: The Raman spectra of methyldiethylcarbinol, dimethylbenzylcarbinol and the corresponding ethylene hydrocarbons. Frequencies due to the phenyl group, and the C.H and C=C linkages are given: tentative frequencies for other groups are suggested, but require confirmation by further work. All compounds containing the ethyl group give an intense line of frequency about 720. ARAKEL TCHAKIRIAN and MICHEL LEWINSOHN: Preparations of alkyl trihalogenides or of phenyl germanium of the type $RGeX_3$ and of methylene germanium hexachloride. ANDRÉ CORNILLOT and RENÉ ALQUIER: The reaction of acetylene with acetyl chloride. In the presence of aluminium chloride, acetylene and acetyl chloride give methyl-β-chlorvinylketone, $CH_3.CO.CH=CHCl$. This is very unstable: treated with boiling alcoholic soda, besides much tarry matter, this compound gives 20–25 per cent of triacetylbenzene. JACQUES BOURCART: The Quaternary of the coast of Rabat (Morocco). S. DEB: The discovery of an Orbitoid in the Annot (Alpes-Maritimes) grits. JACQUES FROMAGET: New observations on the upper Trias of western Tonkin and on the Norian age of the *Myophora napengensis* layers. FERNAND OBATON: A method for the rapid determination of the quantity of water contained in the soil. The method is based on the determination of the electrical resistance of a column of soil under a fixed pressure. The conversion of electrical resistance into moisture content is based on a curve reproduced. RENÉ SALGUES: The erythrocytes, hæmoglobin and the globulin value in the bird. JACQUES PELLEGRIN: The buccal variations in the barbel of the Kivu region. ROBERT WEILL: The working of the colloblasts. MAURICE CAULLERY: Remarks on the preceding communication. J. TIMON-DAVID and G. CERESOLA: The influence of sex on the lipids of some marine molluscs. JEAN COURTOIS: The action of various chemical compounds on the plant phosphatases. MME. PAULETTE CHAIX: The action of some compounds containing sulphur on the fermentation of glucose by propionic bacteria (*Propionibacterium*). WACLAW MOYCHO: Do bacteria secrete protease? Oppenheimer and Enler hold that living bacteria have not the power of secreting proteolytic enzymes, the latter only being liberated after the death of the cell. This view has not been proved experimentally, and has been adversely criticised. The author describes experiments with *B. prodigiosum* which he regards as clearly proving that the enzymes are only liberated after the death of the bacterium.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, 21, 561–585, Oct. 15). C. P. HASKINS: A determination of the magnitude of the cell 'sensitive volume' associated with the white-eye mutation in X-rayed *Drosophila*. The results of exposure for different periods to the same source of X-rays suggest that passage of a single electron through this locus is sufficient to cause a mutation. Assuming that every electron causes a mutation, the minimum volume of the white loci in the X-chromosomes of all cells of the optic *anlage* at the time of treatment is $37{\cdot}06 \times 10^{-18}$ c.c. TH. DOBZHANSKY and A. H. STURTEVANT: Further data on maternal effects in *Drosophila pseudo-obscura* hybrids. CHESTER STOCK and FRANCIS D. BODE: Occurrence of Lower Oligocene mammal-bearing beds near Death Valley, California. This is the first time these fossils have been recorded in the Great Basin Province, which is far from previously known areas of occurrence. A definite age determination has been made for the lowermost formational unit in the Tertiary rock sequence of the Grapevine and Funeral Mountains forming the north-east wall of Death Valley. Geological sections are given. ARTHUR E. KENNELLY: Adoption of the metre-kilogram-mass-second (M.K.S.) absolute system of practical units by the International Electrotechnical Commission (I.E.C.), Brussels, June 1935. An account of the history of electrical units and a list of sixty-one quantities with their symbols, M.K.S. and C.G.S. units. BERTIL HANSTRÖM: Preliminary report on the probable connexion between the blood gland and the chromatophore activator in decapod crustacea. Extracts from the eyestalks of most of the crustaceans examined cause concentration of pigment within the skin chromatophores. The active regions on microscopic examination are found to contain the blood gland and the X-organ, both of which receive nerves from a part of the brain connected with the optic paths. It is believed that the blood gland is the source of the chromatophore activator, though the X-organ may also be concerned with the colour changes of crustaceans.

Forthcoming Events

[*Meetings marked with an asterisk are open to the public.*]

Sunday, December 8

BRITISH MUSEUM (NATURAL HISTORY), at 3 and 4.30.—M. A. Phillips: "Fossil Mammals".*

Monday, December 9

BRITISH MUSEUM (NATURAL HISTORY), at 11.30.—C. Musters: "Some Zoological Collecting Trips".*

SWINEY LECTURES ON GEOLOGY, at 5.30.—(at the Imperial College of Science, Exhibition Road, South Kensington, S.W.7).—Dr. Frederick Walker: "The Formation of British Coast Lines" (succeeding lectures on December 11, 13, 16, 18, 20, January 1, 3, 6, 8, 10 and 13).*

Tuesday, December 10

PHARMACEUTICAL SOCIETY, at 8.30.—Dr. P. Hartley: "International Biological Standards for Drugs and Therapeutic Substances".

Thursday, December 12

ROYAL ASIATIC SOCIETY, at 4.30.—Mme. Gabrielle M. Vassal: "The Temples of Yunnan".

ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 5.—Dr. Cecil Wall: "The Surgeons' Company, 1745–1800" (Thomas Vicary Lecture).*

Friday, December 13

ROYAL SOCIETY OF ARTS, at 4.30.—Khan Bahadur Sheikh Sir Abdul Qadir: "The Cultural Influences of Islam in India" (Sir George Birdwood Memorial Lecture).

ROYAL INSTITUTION, at 9.—Sir Richard Paget: "Sign Language as a Form of Speech".