

gluten. The diameter of each filament is one 16,000th of an inch.

Frederic Carpenter Skey (1798–1872) was a pupil of Abernethy and became successively assistant-surgeon, lecturer on anatomy and surgeon at St. Bartholomew's Hospital. He was elected F.R.S. in 1837 and in 1863 served as president of the Royal College of Surgeons.

Royal College of Surgeons

THE *London Medical Gazette* of February 18 contains the following eulogy of the Royal College of Surgeons:

"Of the existing institutions connected with the medical profession the College of Surgeons is in various respects by far the most important. The building is worthy of the great national establishment; the library is a magnificent addition, which has grown up of late years; the museum is a monument worthy of the name it bears, and creditable to the nation. Nor do the names of many among its present members reflect less honour upon English surgery than the greatest of their predecessors, while of the existing Council it is but justice to add that they have shown their determination to keep pace with the march of intellect and the improvement of the times. In these respects—we mean setting aside ancient prejudices—in gathering wisdom from passing events—and in rendering their institution available to great national objects—we must say they have far outstript their elder brethren in Pall Mall, and accordingly are their character and influence as a public body proportionately greater. It is in Lincoln's Inn Fields that the battle between the new and the old race of practitioners must be fought. . . ."

University Events

CAMBRIDGE.—Prof. J. Proudman will give a course of six lectures on dynamical oceanography in the Zoological Lecture Theatre at 5 p.m. on Mondays, Wednesdays and Fridays, commencing on Monday, February 15.

The following have been approved for the degree of Sc.D.: D. A. Bannerman, of Pembroke College, and E. A. Guggenheim, of Gonville and Caius College. Miss Frances Mary Hamer, of Girton College, has been approved for the title of the degree of Sc.D.

EDINBURGH.—The Cameron Prize for 1937 has been awarded by the Senatus to Prof. J. Bertram Collip, professor of biochemistry in McGill University, Montreal, in recognition of his many contributions to endocrine therapy and in particular his work on the parathyroid gland.

At a meeting of the University Court on January 25, an offer was received from the University Grants Committee of a non-recurrent capital grant up to a maximum of £15,000 towards the cost of a building for a Students' Union for men and women on the King's Building site at West Mains Road, the building to include a refectory and a gymnasium. The total cost, exclusive of furnishings, is estimated at £20,000, and the Committee has offered the grant on condition that the remainder of the cost be obtained from other sources, and that the scheme should be proceeded with as soon as possible, and in any case within two years from the date of the offer.

Societies and Academies

London

Royal Society, February 4.

R. A. WATSON WATT, A. F. WILKINS and E. G. BOWEN: The return of radio waves from the middle atmosphere. Observations spread over a year from May 1935 have established the existence of sustained stratified electrification, persisting for several days, of such ionization density and gradient as to return radio waves of frequency 6–12 Mc./sec. at vertical incidence, at such heights as 8.5, 9.3, 10.3, 10.75 and 13.5 km. with reflection coefficients of the order of 0.7, giving measurable echoes up to the tenth order, beyond which they are not readily distinguished from ionospheric echoes. Apparently independent stratification at 45–50 km., with a reflection coefficient of 0.3 for 6 Mc./sec. waves, and the *D* region at and above 60 km. are also recorded. Reflections from all these regions are obtained at and above the frequencies proposed for television services. The ionization does not fall to very low values at night, and has no seasonal variation of large amplitude. Evidence is given of replenishment around the 20–30 km. levels by local thunderstorms.

H. J. BHABHA and W. HEITLER: The passage of fast electrons and the theory of cosmic showers. Relativistic quantum mechanics have been used to calculate the number of secondary positive and negative electrons produced by a fast primary electron with energy E_0 passing through a layer of matter of thickness l . The primary electron in the field of a nucleus has a large probability of emitting a hard light quantum which creates a pair. The pair electrons emit again light quanta which create pairs, and so on. The number of secondaries increases rapidly with E_0 . If an electron of 10^{11} e-volts passes through a lead plate of 5 cm. thickness the number of particles emerging from the plate amounts to 1,000 or more. Thus showers can be explained by the ordinary quantum theory. Comparison with experiments shows that Rossi's transition curve and Regener's absorption curve in the atmosphere can be understood on this theory. The penetrating power of fast electrons appears to be very much greater than a straightforward consideration of the energy loss would indicate. The absorption coefficient of the radiation found at a depth of 100 metres of water cannot, however, be understood on the basis of this theory if this radiation is due to primary electrons.

Paris

Academy of Sciences, January 11 (*C.R.*, 204, 77–160).

MARCEL GODCHOT and Mlle. GERMAINE CAUQUIL: The action of hydrocyanic acid on 4-methylcyclohexanone and the preparation of the two stereoisomeric 4-methylhexanol carboxylic acids.

PAUL LÉVY: The arithmetic of the laws of probability.

MARC COURTAND: *Gauche* curves of the third order.

PAUL VINCENSINI: Bodies of constant width in space of three dimensions.

ANDRÉ MARCHAUD: The contingent and paratangent at a point of a simple Jordan surface.

MICHEL GHERMANESCU: Homofocal quadrics.

LOUIS THIBAUDIER: The Poncelet polygons inscribed and circumscribed in two conics.

MAX EGER: The canonical systems of an algebraical variety.

DÉMÉTER MANGERON: Certain boundary problems for a class of partial differential equations of higher order.

NATAN ARONSZAJN and ALEXANDRE WEINSTEIN: The convergence of a variational method of approximation in the theory of encased plates.

ALEX GARDEDIEU: Heterogeneous fluid masses in rotation.

NICOLAS Slioskine: The oscillations of rotation of an unlimited cylinder filled with a viscous liquid.

JACQUES VALENSI: Measurement of the circulation along various sections of a wing.

RENÉ SWYNGEDAuw: The position of the neutral line in homogeneous belts.

JEAN LAGRULA: Measurements of the intensity of gravity carried out in northern Africa during the year 1936.

MME. MARIE ANTOINETTE TONNELAT-BAUDOT: The linearization of the density of energy and of the action function with the assistance of complex vectors.

LOUIS LEPRINCE-RINGUET and JEAN CRUSSARD: Study of the particles of high energy in the cosmic radiation in the magnetic field of the Bellevue electromagnet. In this work a Wilson chamber was placed between the poles of the large electromagnet at Bellevue, giving a field of 13,000 gauss. About five hundred trajectories have been measured and an analysis of the results obtained is given.

MME. NELICIA MAYER: The oxido-reduction potential of reductive acid.

ARAKEL TCHAKIRIAN: The electrolysis of germano-chloroform or germanohydrochloric acid. The experimental results furnish a further proof of the existence of the complex ion $\text{Ge}+\text{HCl}^3$, in agreement with the theory of G. Urbain.

LOUIS BRÜNINGHAUS: A new fluorometer. A modification of the Gaviola instrument, the Kerr cells being replaced by piezoelectric quartz.

GEORGES ALBERT BOUTRY: A new type of photo-emissive cell. Discussion of the causes of the errors of the usual type of photo-cell and suggestions for eliminating them.

MLLE. YVETTE CAUCHOIS: The L absorption spectrum, and the characteristic levels of mercury.

ALBERT PORTEVIN and LOUIS GUITTON: Contribution to the study of the role of inclusions in the corrosion of steels.

CHARLES DUFRAISSE and ROBERT PRIOU: Dissociable organic oxides. The photo-oxide of mesodimethoxyanthracene, $\text{C}_{16}\text{H}_{14}\text{O}_4$. Photo-oxymethoxyanthracene was prepared and, contrary to the authors' expectation, was not dissociable.

RAYMOND QUELET and JEAN ALLARD: The synthetic preparation of ethoxy-methylbenzyl alcohols.

JULES JARROUSSE: Diphenylpyruvic acid. Preparation of the phenylbenzylsuccinic acids.

RENÉ JACQUEMAIN and ALFRED MOSKOVITS: Some compounds obtained with the aid of iodoargentinitrobenzoic complex compounds.

L. CAPDECOMME and G. JOURAVSKY: The indicators of reflective powers of slightly absorbent crystals.

GÉRARD WATERLOT: The structure of the Cambrian massif of Rocroi.

L. PETITJEAN: The comparative variation of the anomalies of barometric pressure and the solar activity. Over the interval 1884-92, the polar air

was more active than the tropical air when the number of sunspots presented a more rapid diminution or a slower increase.

ALEXANDRE DAUVILLIER and ANATOLE ROGZINSKI: The reality of Hoffmann shocks. From the experiments described, the authors conclude that the Hoffmann shocks do not represent a special accidental form of discharge in gases, but they measure effectively the energy of the particles associated with cosmic radiation.

RENÉ SOUÈGES: The embryogeny of the Primulaceae. The development of the embryo in *Samolus Valerandi* (brook-weed).

JEAN LE CALVEZ: The schizogonic process in the foraminifer *Planorbulina mediterraneensis*.

MAURICE ROSE and MLLE. M. HAMON: The dehiscence of some spermatophores of decapod crustaceans.

RAYMOND TURPIN and ALEXANDRE CARATZALI: The influence of twin births and of maternal age on the proportion of the sexes.

JACQUES RABATÉ: Gaultherioside (ethylprimeveroside). Its biological synthesis. In a previous communication, a new heteroside, gaultherioside, was described as obtained from the leaves of *Gaultheria procumbens* (winter-green). It is now found to be formed from primeverose and the alcohol used for the extraction, and probably does not exist in the leaves.

JEAN ROCHE and RENÉ COMBETTE: The osmotic pressure and molecular weight of various erythrocytins (invertebrate hemoglobins).

DENIS BACH: The destruction of the dehydrogenases of the yellow *Staphylococcus* by heat. The protective action of the substrate.

Moscow

Academy of Sciences (*C.R.*, 4, No. 3; 1936).

V. S. IGNATOVSKIJ: The Laplacian transformation (3).

S. LECHNICKIJ: The strains in an endless anisotropic plate weakened by an elliptical hole.

P. A. WALTHER: Pressure on wings, and its momentum at high velocities.

J. WEICHERZ and B. GOUGUELL: A new equation expressing the state of matter.

M. B. NEUMANN and P. M. TUTAKIN: The transition of a cold flame into a hot one at low-temperature auto-ignition of butane.

V. ŠARONOV: Determination of the light-extinction factor and of the field of vision by the data obtained with an apparatus for measuring the haziness of air.

M. A. ROSENBERG, K. E. AVALIANI and F. B. JURKOVSKAJA: Dissolution of the 'vacuum films' of metals in acids. (1) Dissolution of chromium in sulphuric acid.

V. V. TIŠČENKO and M. D. RYDALEVSKAYA: An attempt at the chemical investigation of the humic acids of different soil types.

B. N. FORSCH: Geochemical composition of oceanic and of continental water (the water of Lake Baikal).

A. TARANETZ: Description of three new species of the genus *Icelus* Kröyer (Pisces, Cottidae) from the Sea of Japan and from the Okhotsk Sea.

E. P. SLASTENENKO: Species of the genus *Tripterygion* found in the Black Sea (Pisces, Clinidae).

G. STREICH and E. SVETOSAROV: Significance of temperature and of the sexual hormone in the moulting process of birds.

E. SVETOSAROV and G. STREICH: Factors determining the sexual and the seasonal dimorphism in ducks.

ERRATUM.—The title of the paper by S. Sobolev (NATURE, Jan. 2, 1937, p. 40) should read: The fundamental boundary problem for polyharmonic equations in a domain with degenerated contour.

Prague

Czech Academy of Sciences and Arts, January 17, 1936.

JAR. PETRBOK: Molluscs from the travertine of the Slovak karst formation, from Janovce and its neighbourhood, Spiš and Rušbach.

B. NĚMEC, J. BABIČKA, A. OBORSKÝ: Occurrence of gold in horse-tails. *Equisetum palustre* (having more than sixty per cent SiO_2 in the ash) accumulates gold from soil with 0.2 gm. gold per ton so that its ashes contain 610 gm. per ton. The soil consists of decomposed andesite and rhyolite.

J. MILBAUER: The associated phenomena of catalysis. Pairs of catalysts like Pd, SeO_2 , HgSO_4 , Ag_2SO_4 , CuSO_4 are much more efficient in the oxidation of carbon monoxide by hot concentrated sulphuric acid than single catalysts.

F. VALENTIN: On 3.6-anhydromannite.

March 20.

Z. BAŽANT: The precise solution of the walls of cylinders.

E. VOTOČEK and S. MALACHTA: New transitions from the series of the sugars to those of the pyranes and pyrrols. Methyl-*iso*-pyromucic acid.

J. KOMÁREK: Can the larvæ of food pests produce intestinal diseases?

J. H. KŘEPELKA and V. ŠVARC: Contribution to the extraction and identification of veronal and luminal.

J. BAŠTA: Theory of the fatigue of materials, especially in engineering structures.

L. BOROVIANSKÝ: Sexual dimorphism of the human skull.

F. NĚMEJC: Palæobotanical research on the travertine deposits of the Slovak karst.

V. H. MATULA: The preparation of an accurate emanation standard from pitchblende. This is dissolved in hydrochloric acid, silica is separated and decomposed by hydrochloric acid; any residue is dissolved in nitric acid and added to the solution.

May 29.

J. MILBAUER: (1) Study of carbonyl sulphide. This substance decomposes in concentrated sulphuric acid already at 150° C. In the presence of palladium as catalyst, it reacts at 90° C.; other catalysts show decreasing effects in the series SeO_2 , Pt, Ag_2SO_4 , CuSO_4 , V_2O_5 , HgSO_4 , TeO_2 , SnO_2 , Sb_2O_3 . (2) Remarks on the author's work on catalysts.

K. KAVINA: Allogony of *Salix caprea* L.

V. JANDA: Colour change of transplanted skin, and artificially united body fragments of *Dixippus morosus*.

R. BRDIČKA: Dependence of the polarographic reaction of proteins on hydrogen ion concentration. The catalytic polarographic protein reaction giving a characteristic 'wave' on current-voltage curves is shown not only in the presence of ammonium chloride and ammonia, but also in any buffered solution. The 'wave' depends on the concentration of protein, on the hydrogen ion concentration of the solution, and on the quality and capacity of the buffer.

F. NĚMEJC: Contribution to the recognition of Permo-Carboniferous flora in the coal deposits of the foot of the north-east slope of Velebit (Jugoslavia).

A. VANČURA and V. SUTNAR: The chronological development and pathogenesis of the syndromes inside and exterior to the kidneys in acute nephritis following angina.

B. BOUČEK: Graptolites of the Bohemian lower Ludlow.

A. ŘÍHA: The new bellerophonitids of the Czech Palæozoic.

October 23.

B. NĚMEC, J. BABIČKA and A. OBORSKÝ: New analysis of plant ashes from auriferous ground. The content of gold found in the ashes of plants is in *Equisetum arvense* 576, *Mentha arvensis* 300, *Clematis vitalba* 110 gm. per ton. In *Fagus sylvatica*, *Carpinus Betulus*, *Salix caprea*, *Polyporus fomentarius* only traces. In seeds more gold than in wood; the gold content increases with the silica content.

E. VOTOČEK and Z. ALLAN: The rotation of certain sugar hydrazones with respect to the α -configuration of carbon.

E. VOTOČEK and J. WICHTERLE: The connexion between the rotation of sugar hydrazones and the α -configuration of carbon.

E. VOTOČEK, F. VALENTIN and J. BULFŘ: The constituents of mullein-seed oil.

J. MILBAUER: The minimum quantities of catalysts having maximum effect in concentrated sulphuric acid. In the oxidation of gases by concentrated sulphuric acid at 250° C., homogeneous catalysts (like copper, mercury and silver sulphates) give a maximum effect when their solubility is reached. Heterogeneous catalysts (like the platinum metals) act most through their dissolved portion. Ruthenium, rhodium and palladium are more efficient than osmium, iridium and platinum.

V. HLAVATÝ: The system of Weyl connexions.

J. BAŠTA: Preliminary contribution to the mechanical theory of the equation of state.

P. PACHNER: Sexual dimorphism of the human pelvis, and mutual relations of pelvic measurements.

V. HOVORKA: Separation of lead from sulphuric acid, and determination of lead by means of *o*-hydroxyquinoline.

O. PANKRAZ: Two integral equations.

VRAT. VELICH: Agar and saponin from malt as a preferential culture base for mycodermis.

V. KRYŠTOFEK: The problem of simultaneity and the theory of relativity.

November 27.

B. BOUČEK: Silurian stratigraphy in the Daleje valley.

F. NĚMEJC: (1) The seed cones of *Discinites* K.F. (2) A revision of the Carboniferous and Permian flora of the Central Bohemian coal basin.

O. PANKRAZ: A special condition for the stationary circulation of economic goods.