

The journal promised to give an account of the voyage of the ship from the Clyde to the Thames, and added to its article some notes from a "Scientific Correspondent" who had visited the ship. "Everyone admits," he wrote, "that she is a very handsome vessel; and perhaps the greatest proof of her symmetry is that as she reposes her leviathan bulk on the level shore, she does not appear so enormous as she really is. . . . It was only when I gained the deck of the *British Queen* that I became thoroughly impressed with the truth of her enormous size. The deck is a long promenade, and the distance from stern to stem is a good rifle shot; her breadth on deck being some sixty feet. Descending to the engine room . . . looking up you perceive the men who guide the whole machinery and regulate and direct the combined strength and simultaneous energy of 500 horses, with greater success than the tyrant Philopater and his galley of 3,000 slave power, and feel that you are in the presence of one of the noblest of human creations. . . ."

The *British Queen* was built on the Thames at Limehouse by Curling and Young for the British and American Steam Navigation Company. This company had been founded through the efforts of the American lawyer and business man Junius Smith (1780-1853), who had been greatly assisted by Macgregor Laird (1808-61), the African explorer. She was 275 ft. long from figure-head to taffrail, 40 ft. 6 in. wide between the paddle boxes, and of 1,863 tons, being the largest steamship afloat. She had a two-cylinder side-lever engine, with cylinders 77½ in. in diameter and 7 ft. stroke, driving paddle wheels 31 ft. in diameter.

University Events

BELFAST.—The Senate of Queen's University has decided to confer the following honorary degrees, among others: D.Sc. on Dr. J. H. Smith, until recently head of the Department of Engineering in the Belfast College of Technology; Doctor of Laws on Prof. F. H. Hummel, until recently professor of Civil Engineering in the University; F. W. Ogilvie, formerly vice-chancellor of the University and now director general of the British Broadcasting Corporation.

CAMBRIDGE.—W. Campbell Smith, keeper of minerals in the British Museum (Natural History), has been approved for the degree of Sc.D.

GLASGOW.—The King has been pleased, on the recommendation of the Secretary of State for Scotland, to approve the appointment of Prof. J. W. Cook, professor of chemistry in the University of London (Royal Cancer Hospital), to be regius professor of chemistry in succession to the late Prof. George Barger.

HULL.—The following appointments and promotions, to date from October 1, have recently been made: P. G. 'Espinasse, to be lecturer (grade A) in the Department of Zoology; Dr. W. B. Orr, to be lecturer (grade A) in the Department of Chemistry; Dr. J. Bronowski, to be lecturer (grade B) in the Department of Mathematics; Dr. G. Tatham, to be lecturer (grade B) in the Department of Geography.

LONDON.—G. W. Pickering has been appointed, as from October 1, to the University chair of medicine

tenable at St. Mary's Hospital Medical School. Since 1930 he has worked at University College Hospital, being appointed as assistant in the Department of Clinical Research and, in 1936, as lecturer in cardiovascular pathology. In 1931 he was appointed a member of the permanent scientific staff of the Medical Research Council.

OXFORD.—The appointment of the first twelve fellows of Nuffield College, following on the appointment last year of its warden, Dr. H. B. Butler, marks the beginning of its corporate existence. The six faculty fellows, all of whom are fellows of existing Oxford colleges, are Mr. R. C. K. Ensor, Mr. J. Fulton and Miss Margery Perham, representing the political side, and Mr. G. D. H. Cole, Mr. R. L. Hall and Mr. R. F. Harrod, representing the economic. The six visiting fellows, whose task is "to assist those engaged in the University in research by giving them the fruits of their experience in practical affairs", are Lord Hailey, Lord Cadman, Sir Walter Citrine, Sir George Etherton, Mr. Claude Vickers and Mr. A. P. Young. In two years' time it is hoped that the buildings will be up and its gates open to the kind of persons for whom the College was intended. Apart from the fellows and the distinguished visitors for whom accommodation in the College will be provided, there will be forty students, all of whom will be reading for the degrees of D.Phil., B.Litt., or B.Sc., or engaged in some approved piece of research. These, if men, will be accommodated also in the College. It is expected that after 1941, Nuffield College will become the centre in Oxford for all those who are concerned with the practical or theoretical treatment of social, economic and political problems.

Societies and Academies

London

Royal Society (*Proc.*, A, 171, No. 945, 137-280, May 19, 1939).

SIR C. V. RAMAN and **K. S. VENKATA RAMAN**: Determination of the adiabatic piezo-optic coefficient of liquids.

R. G. W. NORRISH and **E. F. BROOKMAN**: The mechanism of polymerization reactions. (1) The polymerization of styrene and methyl methacrylate.

E. V. APPLETON and **K. WEEKES**: On lunar tides in the upper atmosphere.

K. G. BUDDEN, **J. A. RATCLIFFE** and **M. V. WILKES**: Further investigations of very long waves reflected from the ionosphere.

P. S. H. HENRY: Diffusion in absorbing media.

J. F. ALLEN and **E. GANZ**: Influence of pressure on the thermal conductivity of liquid He II.

G. P. KANE: Influence of nitrogen peroxide on the two-stage ignition of hydrocarbons.

H. FRÖHLICH, **W. HEITLER** and **B. KAHN**: Deviation from the Coulomb law for the proton.

Edinburgh

Royal Society of Edinburgh, May 1.

P. M. S. BLACKETT (Bruce-Preller address): The mesotron: the new unstable cosmic ray particle. Recent work both theoretical and experimental has

shown that the penetrating cosmic rays consist of a new type of particle with a mass of about 160 times that of an electron. It has further been shown that this new particle (mesotron) is unstable and decays when at rest with a mean life of about 2×10^{-8} sec. This instability of the mesotron provides an explanation of many hitherto unexplained facts, such as the failure of the mass absorption law, and the temperature effect of cosmic rays. The mesotron must be produced in the atmosphere by some incident stable particles, but the mechanism of this is still uncertain.

I. M. H. ETHERINGTON: Non-associative combinations. This paper envisages an extension of the elementary theory of permutations and combinations by taking account of the way in which the elements of a combination are associated together.

T. M. MACROBERT: Expressions for generalized hypergeometric functions in multiple series. Various known formulae for the ordinary hypergeometric function are extended to generalized hypergeometric functions. This is made possible by the use of multiple series. Among the formulae discussed are the alternative forms of the hypergeometric function, Saalschütz's theorem, and Gauss's formula for well-poised series.

IAN SANDEMAN: The molecular spectra of the hydrogen isotopes (2). The assumption of a common potential function for the isotopic states. An analysis of one of the states of the isotopic molecules, hydrogen, deuterium hydride, and deuterium (the last two from the measurements of Dieke and Blue), has been carried out by the method of Dunham in order to test whether it is possible to represent the spectroscopic data for the three isotopes by an application of the ordinary mass-effect theory for molecular isotopes. The conclusions are (1) that the internuclear distance in the three isotopic molecules cannot differ very much and (2) that the potential functions of the three isotopes are different. The second implies that the electric field of the deuteron differs appreciably from that of the proton.

N. W. RADFORTH: Further contributions to our knowledge of the fossil Schizaeaceae (*Senftenbergia*). Using the transfer and oxidation methods in an analysis of the fructifications in two Carboniferous fern-like compressions of the plants *Senftenbergia pennaeformis*, and *Dactylothea Sturi*, the dehiscence mechanism is revealed in detail, and the spores, preserved in different developmental stages are extracted. *Dactylothea Sturi*, having annulate sporangia, becomes a member of *Senftenbergia* although remaining specifically distinct. The comparison of the sporangia of both plants with those of *Senftenbergia plumosa*, and of the living Schizaeaceous type *Aneimia*, indicates a series in which progressive structural changes have occurred in connexion with the annulus, and in which spore output has diminished.

F. YATES: Tests for significance in the difference between regression coefficients derived from two sets of correlated variates. The test of significance for the difference between regression coefficients calculated from a sample involving one set of variates is known. The author considers the more general case, which also occurs in practice, of two sets of variates, and derives the appropriate testing formulae. The necessary computations are reduced to a systematic and easily calculable shape, which is illustrated by a worked example.

Paris

Academy of Sciences (*C.R.*, 208, 1369-1444, May 1, 1939).

- E. BOREL: An interpretation of virtual probabilities.
 J. DRACH: Application of the method of Darboux to the equations $s = f(x, y, z, p, q)$: rational invariants.
 J. CHAZY: Action of a circular ring on the perihelion and the node of a planet.
 G. HEILBRONN: Construction of equations $s + f(x, y, z, p, q, r) = 0$ which have an invariant of the second order.
 M. EGER: A characteristic property of some harmonic and biharmonic functions.
 S. WACHS: Pseudo-conformal transformations admitting an invariant boundary point.
 B. KWAL: Equations independent of the theory of the photon.
 R. REULOS: The linear equation of the second order and the differential systems.
 L. HERMAN and MME. R. HERMAN: Existence of oxygen phosphorescence in the spectrum of the night sky.
 F. PERRIN: Calculation relative to the eventual conditions of chain transformation of uranium.
 H. VON HALBAN, JUN., L. KOWARSKI and P. SAVITCH: Simple capture of thermal neutrons and of resonance neutrons by uranium.
 L. GIRAUT-ERLER: Theory of differential potentiometric titration (weak acids and bases).
 J. LECOMTE and R. FREYMAN: Study of the infra-red absorption spectra by the powder method (acetates, formates, oxalates, acetylacetonates, sulphates).
 H. JOLIVET and A. PORTEVIN: Formation of granular structures in the upper transformation domain of steels.
 R. VIELLEFOSSE: Partial hydrolysis of sulphoacetic dichloride.
 R. CORNUBERT and G. MORELLE: Probable existence of three α - α' -dibenzylcyclohexanones.
 M. MOUSSERON, R. GRANGER and M. RONAYROUX: Constitution of the essential and other oils of *Juniperus oxycedrus* L.
 R. CALAS: A new example of passage of the C_6 cycle to the C_8 by pinacolic dehydration.
 F. PRANTL: Silurian Bryozoans of the Black Mountains.
 S. MAZLOUM: Propagation of some hydrometric components in the basin of the Orontes.
 R. BUREAU, M. DOUGUET and PH. WEHRLÉ: Radio soundings in Australian seas. Data were obtained in February and March (Australian summer season) on the altitude and temperature of the stratosphere.
 G. DUBOIS and MME. C. DUBOIS: Micropalaeobotanical characteristics of a peat in Togoland.
 M. CHADEFAUD: Active and inactive mitochondrial elements in diatoms of the genus *Fragilaria*.
 J. and MME. FELDMANN: Alternation of generations in the Bonnemaisoniaceae (Algæ).
 M. SIMONET and M. GUINOCHE: Production by α -monochloronaphthalene and α -monobromonaphthalene of effects produced by colchicine on plant mitoses [namely, polyploidy].
 H. PRAT: Study of the possibilities of submarine respiration.
 A. POLACK: Interpretation of the Le Grand-Geblewicz phenomenon. A large brilliant flickering source of light, coloured or monochromatic, observed by indirect vision, appears continuous and colourless when

the flicker frequency is 40-50 a second. This can be explained on the basis of consecutive images.

MLLE. G. COUSIN : A graphical method for the analysis of hybridization applied to researches on different species of crickets.

MLLE. P. BERTHIER : Variation of the coefficient of specific magnetization of oxyhæmoglobin in the presence of soda and of hydrochloric acid.

P. MEYER : Relation between the concentration and colloid-osmotic pressure of blood serum.

M. DOLADILHE : Contribution to the problem of the extraction of hæmolysin.

M. PRÉRY, J. ENSELME, C. PESCHIERA and P. DONJON : Experimental study of the biological influence of a prolonged stay at a great altitude [Jungfrauoch] : hepatic and muscular modifications. In geese, after six months exposure, there is a distinct lowering of muscle iron and slight lowering of hepatic iron. In rabbits, muscular iron is unaffected and hepatic iron increased.

Cape Town

Royal Society of South Africa, March 15.

J. L. B. SMITH : A surviving fish of the order Actinistia. The sub-class of fishes Crossopterygii is generally sub-divided into three orders, of which two, the Rhipidistia and the Actinistia, are generally stated to have no surviving members. Of the order Actinistia, fishes of the family Cœlacanthidæ originated in the mid-Palæozoic and became very abundant over a wide range, but all were supposed to have become extinct by the close of the Mesozoic, some 50 million years ago. At East London there has recently been discovered a large living Cœlacanthid fish, which is closely related to some of the Mesozoic forms. A general account, in not too great detail, of the specimen, and a figure, are given (see also NATURE of May 6, p. 748).

J. L. B. SMITH : Marine fishes of two families and two genera new to South Africa.

D. D. NIDDRIE : A hitherto undescribed industry from Mfongosi, Zululand.

F. G. CAWSTON : (1) Some observations on the alleged succession of teeth in snakes. (2) Some observations on the arrangement of teeth in fishes.

R. GUELKE : A method of correcting an objective noise meter for use on composite tones.

H. B. S. COOKE and J. DESMOND CLARK : New fossil elephant remains from the Victoria Falls, Northern Rhodesia, and a preliminary note on the geology and archæology of the deposit.

Dublin

Royal Irish Academy, May 22, 1939.

T. THOMSON FLYNN : The egg of the rare marsupial *Sarcophilus*. *Sarcophilus*, the 'Tasmanian devil', a polyprotodont marsupial, now exceedingly rare, agrees with *Dasyurus viverrinus*, *Didelphys* and some other marsupials in producing more embryos than can be accommodated in the pouch. Twenty-two ova were found in the uteri, whereas the pouch has accommodation only for four. The egg is very similar in its structure, particularly in the distribution of deutoplasm, to that of *Phascolaretus*, and in this way helps to confirm Caldwell's description of the egg of the latter marsupial, a description which has been the subject of criticism.

Vienna

Academy of Sciences, February 23.

L. SCHMID and R. LANG : Colouring matter in the yellow spots on diseased potato tubers. The constituents are identified by their chemical properties and absorption spectra.

L. SCHMID and ANNEMARIE POLACZEK-WITTEK : Diffusion of glycogen in liquid ammonia. Glycogen dissolved in liquid ammonia does not pass through a cellulose membrane, and must therefore exist as a colloidal polysaccharide in this medium.

K. GRAFF : Grey cloud in the region β , σ , 103 Tauri. Visual observation of this region reveals a grey cloud, while on photographic plates the same cloud appears black. This is probably due to the photographic technique commonly employed: the usual hard gradation photographs of the Milky Way certainly do not reveal all the objects present.

L. LÄMMERMAYER : Studies of underwood.

H. ZAPPE : Fossil relics of bone-eating animals, particularly the hyæna.

G. GÖTZINGER : Drumlins in the Traun glacier region.

Moscow

Academy of Sciences (C.R., 21, No. 7 ; 1938).

P. A. CHERENKOV : Spatial distribution of visible radiation produced by fast electrons.

I. A. KHVOSTIKOV : Polarization of the green line of the luminescence of night sky.

J. LARIONOV, O. V. NOVIKOVA-MINASH and A. SEIDEL : Fluorescence and absorption of praseodymium salt solutions.

T. BOROVICK-ROMANOVA : Effect of sodium, potassium and lithium salts introduced into the flame upon the intensity of the rubidium line.

A. IMSHENETZKY : Sugar fermentation of cellulose by thermophilic bacteria.

V. N. NIKITIN : Lower limit of the bottom fauna and its distribution in the Black Sea.

M. L. KARP : Influence of intrachromosomal and interchromosomal relations upon results of inbreeding and crossing.

E. N. MAKUSHINA : A new species of wheat, *Triticum armeniacum* (Jacubz.) sp.n.

K. V. and L. V. ARNOLDI : Some relict elements and the coleopteran fauna of the Middle Donetz region.

A. A. WOITKEWITSCH : The question whether or not the structure and form variation of plumage following thyroidectomy may be regarded an index to masculinization.

L. W. POLEŽAJEW : (1) Explantation experiments of extremity rudiments. (2) Induction factors of the early stages of extremity formation in Amphibia.

Tokyo

Imperial Academy (Proc., 15, No. 4, 101-109, April 1939).

MATSUSABURO FUJIWARA : A problem of diophantine approximations in the old Japanese mathematics.

JURO HORIUTI and TAKAO KWAN : Mechanism of the contact hydrogenation of carbonyl groups in the presence of metallic catalyts.