University Events

CAMBRIDGE.—The Iron and Steel Industrial Research Council has approved of a grant being made by the Alloy Steels Research Committee (a Joint Committee of the Iron and Steel Institute and the British Iron and Steel Federation) at the rate of £500 a year from January 1 for research on corrosion fatigue under the direction of Dr. U. R. Evans. Although this grant is made for one year only, it is understood that there is every intention of renewing it for 1939. A former grant from the Iron and Steel Industrial Research Council in aid of Dr. Evans's research was made in 1936.

At Clare College, W. B. Reddaway, of King's College, has been elected into an official fellowship. He gained a first class in the Mathematics Tripos, Part 1, in 1932, and a first class in the Economics Tripos, Part 2, in 1934.

EDINBURGH.—At a graduation ceremony on December 17, the degree of D.Sc. was conferred on Kalipada Biswas, superintendent of the Royal Botanic Garden, Calcutta, for a thesis entitled "Studies on the Systematic Botany of India", and on Sanford Sterling Munro, for a thesis entitled "Studies on the Genetics and Physiology of Reproduction in the Fowl".

LEEDS.—Dr. Geoffrey Holmes has been appointed to a newly instituted honorary lectureship in medical hydrology.

Mr. Charles Ludwig has been appointed to a demonstratorship in physiology.

OXFORD.—The Herbert Spencer Lecture will be delivered on February 25, at 5 p.m., in the Examination Schools by Prof. Ernest Barker, Laura Spelman Rockefeller professor of political science in the University of Cambridge. The subject of Prof. Barker's lecture will be "Natural Law in the Political World".

Societies and Academies

London

The Royal Society, January 20.

D. KEILIN and E. F. HARTREE. Mechanism of the decomposition of hydrogen peroxide by catalase. A new explanation of the mechanism of the decomposition of H_2O_2 by catalase is proposed. According to this explanation the reaction is brought about by the successive reduction of the catalase iron by H_2O_2 and its reoxidation by molecular oxygen. This explanation is supported by experiments. The inhibitors of catalase can be separated into two groups, those like KCN, H_2S, C_2H_5OOH which inhibit the reduction of catalase iron by H_2O_2 and those like azide, hydroxylamine and hydrazine which inhibit the reoxidation of the reduced catalase by molecular oxygen (Keilin and Hartree, 1936). The decomposition of H_2O_2 by pure catalase preparations is not inhibited by CO in presence of even a very small concentration of oxygen, which shows that the reduced catalase has a much greater affinity for oxygen than for CO. Some catalase preparations have been obtained which show a more or less marked light-sensitive inhibition by CO. Pure catalase preparations become sensitive to CO in presence of a very small concentration of azide, cysteine or glutathione, substances which apparently inhibit the reoxidation of reduced catalase.

H. J. A. DARTNALL, C. F. GOODEVE and R. J. LYTHGOE : The effect of temperature on the photochemical bleaching of visual purple solutions. The theoretical considerations developed previously for the photochemical bleaching of a light-absorbing substance have been extended to include the case where the products absorb light. Twenty-five out of twenty-nine experiments with visual purple were found to be in accordance with the previous theory. In the remaining four, the decomposition of a coloured product, 'transient orange', proceeded at a rate comparable with the rate of bleaching of visual purple. The quantum efficiency of the bleaching process was found to be independent of temperature over the range 20° to 60° and of pH from 7 to 9·2. It is concluded that the quantum efficiency is equal to or not much less than unity, and that the molar extinction coefficient ($\lambda = 506m\mu$) is $1·41 \times 10^4$.

J. W. HUGHES : The monaural threshold : effect of a subliminal contralateral stimulus. The change of threshold intensity in one ear when a note of fixed subliminal intensity is sounded in the other has been determined by direct experiment. The results of the investigation show that for two notes in unison, the total energy required in the two ears at the 'binaural threshold' is equal to the energy required in one ear at the monaural threshold, independently of the actual division of energy between the two ears.

Paris

MARIN MOLLIARD and ROBERT ECHEVIN : The secretion of the fly-catching Caryophyllaceæ. The Caryophyllaceæ present a series of secretions localized in the upper part of the plant, consisting essentially of a sugary material. The secretions vary slightly from one species to another.

DRAGOSLAV S. MITRINOVITCH : The differential equation of the geodesic lines of spiral surfaces.

GEORGES KUREPA : The hypothesis of the continuum and partially ordered ensembles.

STEFAN BERGMANN : A connexion between the theory of elliptical partial differentials and that of the functions of a complex variable.

CAÏUS JACOB : The problem of Dirichlet in two dimensions.

JULIEN KRAVTCHENKO : The problems of conformal representation of Helmholtz : the study of a limiting case in the theory of the (ship's) wake in a perfect fluid.

LUCIEN HIBBERT : The surface of the moduli and automorphy of the polynomials and of integral functions.

J. KAMPÉ DE FÉRIET and A. MARTINOT-LAGARDE : The distribution between the mean motion and motion of agitation of the energy dissipated in the turbulent flow of an incompressible fluid.

ALEXANDRE FAVRE : Study of the Toussaint-Carafoli tunnel and of hydrodynamic movements in two dimensions.

HENRI MINEUR : The equilibrium of star clusters when the differential rotation is neglected.

HERVÉ FABRE : The absolute orbits of Gyldén.

TCHENG MAO-LIN : The spectrophotometric study of the minima of Algol. According to earlier work,

the minimum of Algol is produced later for the blue rays than for the red. This is not confirmed by the author, who concludes from his observations that for all radiations in the interval 3900–6500 A. the minimum of Algol is produced at the same time within 1 or 2 minutes.

CONSTANTIN SALCEANU : The measurement of the velocity of sound in liquids by a resonance method. A modification of Bungetzianu's method has been applied to measuring the velocity of sound in seventeen liquids and the results compared with those obtained by A. Cisman by a direct method.

ALBERT ZMACZYNSKI and ALBERT BONHOURE : The boiling point of water as a function of pressure. Owing to the discovery of an error in the temperature coefficient of the bridge resistances of the platinum thermometers used in earlier work, the formula given (*C.R.*, **189**, 1069) is now corrected.

JACQUES VOROBEITCHIK : A new objective method of heterochrome photometry.

MAURICE PARODI : Study of the transmission of blende and of some halogen derivatives of copper and of cadmium in the extreme infra-red.

MICHAEL DUFFIEUX and JEAN BOLLOT : A method for the study of the hyperfine structure and the width of absorption lines.

RAYMOND RICARD, MARGUERITE GIVORD and FRANÇOISE GEORGE : The spark spectra of cæsium.

JACQUES SOLOMON : The disintegrations produced by electrons of very great energy.

PIERRE JACQUET : The electrolytic polishing of aluminium. The electrolytic method of polishing previously described can be applied with advantage to a soft metal such as aluminium.

G. AUSTERWEIL and A. FIEDLER : The preparation of a purified water comparable with distilled water by the exchange of ions.

MME. RAYMONDE DUVAL and CLÉMENT DUVAL : Differential electro-titration.

PAUL GOISSEDET and ROBERT DESPOIS : Some camphoric *N*-alkyldiamides.

GEORGES ZBYSZEWSKI : The discovery of new deposits of terrestrial vertebrates in the Neogene in the neighbourhood of Lisbon, Portugal.

MLLE. SUZETTE GILLET : The presence of the Pontian in the region of Salonika.

ALBERT ROUBAUX and MARC BERNATZKY : The effect of primary faults during the deposition of secondary strata in Lorraine.

LOUIS DUBERTRET : The marine Pliocene in the neighbourhood of Antioch (Syria).

CHARLES EMILE BRAZIER : Contribution to the study of the relations between the insolation and the components of the total radiation in the climate of Paris.

PAUL ROUGERIE : The study of the lunar effect on the earth currents recorded in the north-south line at the Observatory of Parc Saint-Maur.

PAUL BERTRAND : The successive and sudden appearance of different groups of vascular plants.

FERNAND OBATON : The variations of the quantities of water in the floral peduncle of *Papaver Rhoeas* in relation with its straightening in the course of flowering.

MLLE. MADELEINE FRIANT : The interpretation of the brain of the hippopotamus by the study of an embryonic stage.

MARC ROMIEU, MLLE. GABRIELLE LINAS and GEORGES JULLIEN : The morphological characters of the Purkinje plexus of the human heart.

BARUCH SAMUEL LEVIN and LEO OLITZKI : The diminution of the pathogenic action of some microbial strains cultivated in a medium containing lecithin.

ANDRÉ PAILLOT : A new type of pseudo fat-body observed in the larvæ of *Euxoa segetum*.

Rome

National Academy of the Lincei (*Atti*, **25**, 529–674 ; 1937).

F. SEVERI : Systems of equivalence of any species on one algebraic variety, as rational systems (1).

O. SCARPA : Possibility of the electrolytic working up of very impure copper and on the formation of cathodic tree-like growths in the industrial refinement of copper.

A. STELLA : A gabbro-diorite and kinzigite formation in the Alta Valtellina.

S. CHERUBINO : Application of holomorphous functions of matrices to systems of linear differential equations (1).

B. D'ORGEVAL : An extension of the principle of degeneracy to the theory of algebraic surfaces.

M. GHERMANESCU : Regarding a theorem of Mauro Picone.

F. GIACCARDI : One condition for which a periodic analytical function reduces to a trigonometric polynomial.

R. L. GOMES : A new demonstration of the equivalence of two systems of Dirac.

B. MANIÀ : A notable lemma for the problems of Mayer, and one of its applications.

L. TOSCANO : Secular equation with a circulant matrix.

G. COLONNETTI : Elastic equilibrium of systems in which non-elastic deformations also occur (3).

E. FROLA : Dynamic generalization of the theorem of Betti different from that of Lord Rayleigh.

G. LAMPARIELLO : Vortex rings which generalize the scheme of Bénard-Kármán for the hydraulic resistance.

O. ZANABONI : Evaluation of the maximum error which arises from the application of the principle of de Saint-Venant in an isotropic solid.

G. AGAMENNONE : Scientific results from a large mine explosion.

S. FRANCHETTI : Calculation of the penetration of electrons of some millions of volts (2).

G. RACAH : Isotropic tensors which show particular symmetries (2).

A. BARONI : Sulphides, selenides, and tellurides of thallium (1). Thallium selenides.

L. CAVALLARO : Absorption bands in polar substances at very high radio frequencies (3). Measurements with *n*-propyl and octyl alcohols.

W. CIUSA : Oxidation of α-oxyacids.

A. IANDELLI and E. BOTTI : Crystal structure of compounds of the rare earths with metalloids of the fifth group (4). Compounds of neodymium.

G. TEDESCHI : Velocity of dissolution of lead in acids (1).

P. COMUCCI : A singular rock from the Baltoro glacier (Karakoram) (1).

P. PIEPOLI : Observations on the copper pyrites deposits of Champ de Praz in the Valle d'Aosta.

M. FEDELE : Further remarks concerning the non-existence of a peripheral nervous system in Tunicata.

A. VECCHI : Observations on the gonads of sterile and masculinized hybrid hen-pheasants.

A. DE NIEDERHÄUSERN : Influence of a tropical climate on the consumption of oxygen during working.