

Hoppe: Proof of the primality of $N = \frac{1}{3}(10^{19} - 1)$.—Messrs. **Hardy** and **Littlewood**: New Tauberian theorems.—**C. V. H. Rao**: The curves which lie on the quartic surface in space of four dimensions, and the corresponding curves on the cubic surface and the quartic with a double conic.—**Prof. W. H. Young**: (1) The connection between Legendre series and Fourier series. (2) Series of Bessel functions.

PARIS.

Academy of Sciences, November 26.—**M. Camille Jordan** in the chair.—**G. Humbert**: The development of irrational quadratics in a Stephen Smith continued fraction.—**H. Le Chatelier** and **B. Bogitch**: Silica bricks were prepared with different proportions of large quartz grains (4 mm.), and fine (0.1 mm.) or alternatively impalpable (0.01 mm.) quartz powder. The resistance to crushing of the silica bricks was determined at 1600° C., and cold. The substitution of fine quartz for impalpable reduced the strength at 1600° C. in a very marked manner; 75 per cent. of quartz grog to 25 per cent. impalpable quartz powder, with 2 per cent. of lime as cement, gave the best results. The crushing resistances of silica bricks, measured cold, do not necessarily correspond with the resistances measured at 1600° C.—**E. Perrier**: The exchanges of fauna between the sea and fresh water and the consequences from the point of view of sexuality.—**E. L. Bouvier**: The distribution of fresh-water crabs of the family of the Potamonidae.—**C. Guichard**: The C networks such that the Laplace equation which corresponds with them is integrable.—**P. Humbert**: Expression of the Legendre function of the second species.—**F. Ventre**: Theorem on rolling loads.—**Mlle. Y. Dehorne**: The microscopic constitution of the skeleton of the Stromatoporidae.—**J. Feytaud**: The parthenogenetic reproduction of *Otiiorhynchus sulcatus*.—**A. Vernes**: The precipitation of colloidal ferric hydroxide by human serum, normal or syphilitic. If human serum is added in gradually decreasing quantities to the same amount of colloidal ferric hydroxide, with subsequent digestion at 37° C., at first there is no flocculation, then for a certain concentration of the serum there is complete flocculation. The phenomenon is periodic, decreasing amounts of serum giving alternately flocculation and no flocculation. With syphilitic serum the results are different, and it is possible to prepare a fine suspension of a determined stability which will flocculate with a certain amount of syphilitic serum, but will not flocculate with the same amount of normal serum.—**I. Duceing**: The publication of MM. Heitz-Boyer and Scheikevitch concerning the rôle of bone in osteogenesis in the adult, the relations of osteogenesis with infection, and the corresponding applications.

BOOKS RECEIVED.

My Four Years in Germany. By J. W. Gerard. Pp. xiv+320. (London: Hodder and Stoughton.) 7s. 6d. net.

Il nostro Soldato Saggi di Psicologia Militare. By A. Gemelli. Pp. xii+339. (Milano: Fratelli Treves.)

Report on Agricultural Damage by Vermin and Birds in the Counties of Norfolk and Oxfordshire in 1916. By R. T. Gunther. Pp. 92. (London: Oxford University Press.) 2s. 6d. net.

DIARY OF SOCIETIES.

THURSDAY, DECEMBER 13.

ROYAL SOCIETY, at 4.30.—The Formation of Nitrites from Nitrates in Aqueous Solution by the Action of Sunlight and the Assimilation of the Nitrites by Green Leaves in Sunlight: Prof. B. Moore.—The Transition from Rostro-carinate Flint Implements to the Tongue-shaped Implements of River-terrace Gravels: J. R. Moir.
LINNEAN SOCIETY, at 5.—Seeds with a Stony Endocarp and their Germination: A. W. Hill.—*Inter se* Experiments in Pheasant Crossing in evidence of Mendel's Law: Mrs. R. Haig Thomas.
ROYAL SOCIETY OF ARTS, at 4.30.—The Trade of India with Russia, France, and Italy: D. T. Chadwick.

NO. 2511, VOL. 100]

OPTICAL SOCIETY, at 8.—Proposed Standard Optical Notation and Sign Convention: J. W. French.—Optical Nomenclature and Symbolism: T. Smith.

INSTITUTION OF ELECTRICAL ENGINEERS, at 6.—Discussion on the Metric System. Introductory Papers by L. B. Atkinson and A. J. Stubbs.

FRIDAY, DECEMBER 14.

ROYAL ASTRONOMICAL SOCIETY, at 5.—(1) The Determination of Photographic Magnitudes. II.; (2) Prof. Sampson's Note on the Southern Magnitude Distribution: J. Halm.—The Classification of Long-Period Variable Stars: H. H. Turner.—The Resonance Theory of the Origin of the Moon: H. Jeffreys.—Variations in the Fourteen Months' Component of the Polar Motion: Hisashi Kimura.—Further Notes on the General Solution of Hill's Equation: E. Lindsay Ince.—The Errors in a Sum of Tabular Quantities: H. C. Plummer.—*Probable Paper*: The Short-Period Variable RZ Cephei: C. Martin and H. C. Plummer.
INSTITUTION OF MECHANICAL ENGINEERS, at 6.—The Use of Soap Films in Solving Torsion Problems: A. A. Griffith and G. I. Taylor.

MONDAY, DECEMBER 17.

ARISTOTELIAN SOCIETY, at 8.—The Conception of Reality: Dr. G. E. Moore.

ROYAL GEOGRAPHICAL SOCIETY, at 5.—The Drift of the *Endurance*: 2nd Lieut. J. M. Wordie.

ROYAL SOCIETY OF ARTS, at 4.30.—Progress in the Metallurgy of Copper: Prof. H. C. H. Carpenter.

VICTORIA INSTITUTE, at 4.30.—The Mosaic Origin of the Pentateuch: Rev. A. H. Finn.

SOCIETY OF ENGINEERS, at 5.—High-speed Railways: E. W. C. Kearney.

TUESDAY, DECEMBER 18.

INSTITUTION OF CIVIL ENGINEERS, at 5.30.—The Buenos Aires Western Railway Tunnels under the City of Buenos Aires: W. L. L. Brown.

ROYAL STATISTICAL SOCIETY, at 5.15.

ILLUMINATING ENGINEERING SOCIETY, at 5.—Presidential Address: A. P. Trotter.

INSTITUTION OF PETROLEUM TECHNOLOGISTS, at 8.—The Prospective Oil-fields of Barbadoes: E. H. C. Craig.

WEDNESDAY, DECEMBER 19.

ROYAL METEOROLOGICAL SOCIETY, at 5.—Computation of Wind Velocity from Pilot-Balloon Observations: P. Bolton.—The Use of Monthly Mean Values in Climatological Analysis: E. G. Bilham.

ROYAL SOCIETY OF ARTS, at 4.30.—Science and the Cold Storage Industry: Prof. J. Wemyss Anderson.

GEOLOGICAL SOCIETY, at 5.30.

ROYAL MICROSCOPICAL SOCIETY, at 8.—Cytology and Genetics: Prof. W. Bateson.

THURSDAY, DECEMBER 20.

INSTITUTION OF MINING AND METALLURGY, at 5.30.—A Neglected Chemical Reaction and an Available Source of Potash: E. A. Ashcroft.—Syphoning Gravel: J. Jervis Garrard.

CONTENTS.

PAGE

Gold-bearing Conglomerates of South Africa. By C. G. C.	281
Municipal Engineering	282
A Manual on Explosives	282
Our Bookshelf	283
Letters to the Editor:—	
Resonance Radiation and the Quantum Theory.—	
T. K. Chinmayam	284
An Optical Phenomenon — Capt. C. J. P. Cave	284
The Control of the Non-ferrous Metal Industries. By Prof. H. C. H. Carpenter	284
The Rôle of Selection in Evolution. By J. A. T.	285
The Future of the Trade in Colonial Raw Materials	286
Notes	287
Our Astronomical Column:—	
Fall of a Meteorite in Perthshire	291
Observations of Long-period Variables	291
Messier's Catalogue of Clusters and Nebulae	291
Science in India	292
Alkali Soils and Soil Solutions	292
Local Natural History Societies	292
Parasitic Birds	293
Science and its Functions. By A. A. Campbell Swinton, F.R.S.	294
University and Educational Intelligence	299
Societies and Academies	299
Books received	300
Diary of Societies	300

Editorial and Publishing Offices:

MACMILLAN AND CO., LTD.,

ST. MARTIN'S STREET, LONDON, W.C.2.

Advertisements and business letters to be addressed to the Publishers.

Editorial Communications to the Editor.

Telegraphic Address: PHUSIS, LONDON.

Telephone Number: GERRARD 8830.