

## Societies and Academies.

## LONDON.

**Optical Society, Oct. 13.**—L. C. Martin: Experiments in ultra-violet refractometry. The experiments described have for their object the application of critical angle methods for the refractometry of liquids in the ultra-violet. A thin film of liquid can be held between two quartz hemispheres which are traversed centrally by an approximately parallel beam; the film receives the radiation at the varying angles of incidence resulting on rotation of the system. In this way, analysing the transmitted radiation with the aid of a quartz spectrograph, the critical angles for definite wave-lengths are measured, from which refractive indices can be calculated. The procedure necessary in seeking precise results is discussed, and a series of measurements on glycerine-water mixtures likely to be useful for immersion fluids in ultra-violet microscopy is given. A set of interesting phenomena of the extinction bands is described and explained. —Guy Barr: The construction of wave-length scales for spectrograms. A method is described by which an approximate scale of wave-lengths may be projected geometrically from a uniformly divided scale on to a spectrogram whereon a sufficient number of lines have been identified to enable constants of a Hartmann interpolation formula to be derived. Such a scale is of value in assisting the recognition of other lines between which accurate interpolation may be required.

## ROME.

**Royal Academy of the Lincei, June 1.**—A. Lo Surdo: Thermionic balance.—L. Rolla and G. Piccardi: Ionisation potential of terbium. By comparison with sodium and calcium, the ionisation potential of terbium is found to be 9.74 volts. This value falls into place on the portion of the ionisation potential curve characteristic of the rare earths, and furnishes further confirmation of the conclusion that, in the rare earth group, such potential increases with the atomic number.—A. Angeli and B. Bigiavi: The two *p*-nitroazoxybenzenes. When treated with bromine in the presence of a small amount of iron filings, the two *p*-nitroazoxybenzenes behave differently, the isomeride melting at 148° yielding a tribromo-compound, and that melting at 152° a monobromo-derivative.—G. Bruni and E. Geiger: New derivatives of caoutchouc. The action of nitrosobenzene and other nitroso-compounds on caoutchouc in benzene solution or on the latex of *Hevea brasiliensis* in pyridine solution results in the formation of compounds termed nitrones. These do not react with hydroxylamine, but with phenylhydrazine the nitrone of isocaoutchouc yields the phenylhydrazone of a ketone which contains the carbonyl in the caoutchouc chain.—F. Zambonini and S. Restaino: Double sulphates of rare earth metals and alkali metals. (8) Double sulphates of cerium (cerous) and sodium. The compounds  $Ce_2(SO_4)_3$ ,  $Na_2SO_4$ ,  $2H_2O$  and  $4Ce_2(SO_4)_3$ ,  $5Na_2SO_4$ ,  $8H_2O$  are described.—F. Zambonini and A. Stolfi: Double sulphates of rare earth metals and alkali metals. (10) Sulphates of neodymium and ammonium. Under the various experimental conditions employed, only the compound  $Nd_2(SO_4)_3$ ,  $(NH_4)_2SO_4$ ,  $8H_2O$  could be detected.—L. Cambi: The diazo-hydrates. The available facts concerning the structure of the alkali salts of the normal diazo-hydrates are in no way contradictory to the structural formula attributed to the hydrates by Angeli, but do not agree with Hantzsch's view of this structure. L. De

Marchi: The origin of the thermal waters of Montegrotto.—B. Morpurgo: The influence of inanition on homoplastic grafting.—C. Rosati: The permutable correspondences for an algebraic curve.—L. Labocetta: A general method for replacing an inequality and a limitation by an equation, and its use in analytical geometry. E. Pini: Investigation of the primitive function for functions of several variables.—G. Thomsen: The kinematics of rigid bodies in general relativity.—A. Masotti: Dynamic action which a perfect liquid exercises on a solid cylinder, of any section, movable of itself.—F. Sbrana: Plane motions of an incompressible fluid in which the lines of flow are isotachic.—G. B. Lacchini: A new variable star.—F. Neri: Certain properties and applications of the neon lamp. Observations on the relationship between the effective ignition voltage for a neon lamp under alternating current and the frequency of the current indicate that the phenomenon of ignition requires a certain time and that the ignition of one electrode is profoundly influenced by the state of ionisation in which the medium has been left by the other.—G. Charrier: Organic compounds of quinquivalent bismuth. In hydrochloric acid solution, bismuth trichloride reacts with aryldiazonium chlorides to form stable crystalline compounds which contain quinquivalent bismuth and in which the chlorine atoms are readily replaceable by sulphuric or nitric residues.—G. Malquori: Hydrates of aluminium nitrates. From the cryohydric point for the system,  $Al(NO_3)_3 \cdot H_2O$ , namely,  $-27^\circ$ , to  $73^\circ.5$ , at which temperature the monohydrate melts, the only compound in equilibrium with the saturated solution is  $Al(NO_3)_3 \cdot 9H_2O$ . At higher temperatures, the solubility curve exhibits marked discontinuity, corresponding with the existence of two hydrates poorer in water and the octo- and the hexa-hydrate.—V. Caglioti and A. Stolfi: Double sulphates of bismuth with the alkali metals. (1) Sulphates of bismuth and potassium. Investigation of the system,  $Bi_2(SO_4)_3 - K_2SO_4 - H_2O$ , indicates the existence of the compound  $Bi_2(SO_4)_3 \cdot 3K_2SO_4$ , but not that of  $KBi(SO_4)_2$ .—Remo de Fazi: Alcoholic fermentation of solutions of glucose in water exposed to radiations from a mercury vapour lamp. Exposure of water to the radiation from a quartz mercury vapour lamp results in increase of the velocity of fermentation of a solution of glucose in the water.—A. Cavinato: Dehydration of apophyllite.—E. Remotti: Assumption of vitellin during the embryonic development of the fowl.—B. de Finetti: Conservation and diffusion of Mendelian characters. (1) Panmistic case.—M. Muccioli: Astringent juice of the fruit of the bitter *Diospyros kaki* and its application in China and Japan as an impregnating material for paper and wood.

## BRUSSELS.

**Royal Academy of Belgium, April 2.**—The following grants were made from the Potter Foundation: W. Conrad (2000 francs) to assist him in the pursuit of his researches on the Belgian fresh water flagellates; J. Pasteels (500 francs) for the study, at Wimereux, of the cyto-physiological action of the dilution of sea water on the eggs of lamellibranchs; the "Jardin expérimental Jean Massart" (5000 francs) for the continuation of experiments in plant physiology commenced by the late Jean Massart; Edg. Zuurz (6000 francs) for the purchase of apparatus necessary for his researches on the regulation of glycaemia by the method of pancreatico-jugular anastomosis; Th. De Donder (7500 francs) for assisting in the publication of a work on the theory of integral invariants; Gilta (1000 francs) for the execution of

plates relating to chemical crystalligraphy.—Paul Stroobant: The work on stellar and planetary photography of the Royal Observatory (Uccle).—Fred Swarts: Trifluordimethylketone. This is readily obtained by heating trifluoroacetylacetic ester with 10 per cent. sulphuric acid under a reflux condenser, the products being the above ketone, alcohol, and carbon dioxide. Details of its chemical and physical properties are given.—J. E. Verschaffelt: The physical signification of the second fundamental law of thermo-dynamics.—Th. De Donder: The signification and generalisation of Schrödinger's equation.—Th. De Donder and G. Van Lerberghe: The invariant theory of waves.—R. Moens and A. Juliard: Some chemical reactions in the gaseous phase in high frequency electro-magnetic fields. The gases studied were submitted to high frequency (wave-length about 100 metres) in tubes without electrodes, initial pressure about 12mm. Hydrogen and oxygen combined totally in less than a second; ammonia was produced from hydrogen and nitrogen. No reaction was observed with a mixture of hydrogen and carbon monoxide or oxygen and nitrogen.—T. Van Hove: Some researches on the direct introduction of substituents in the aromatic mercaptans.—L. Van den Berghe: Preliminary note on the stimulation of the cardiac tissue of fishes by momentary extensions.—J. Guillissen: A mode of application of Tammann's method of thermal analysis to the study of reactions between solid phases. To increase the sensitiveness of the method the use of the time-temperature curve has been replaced by the curve temperature-difference of temperatures, using the double galvanometer of Le Chatelier-Saladin. The reaction temperatures of the following mixtures have been determined by this method: lead oxide-copper sulphate, lead oxide-molybdc anhydride, ferric oxide-barium carbonate, ferric oxide-baryta, ferric oxide-calcium carbonate.—J. Guillissen and Richard: The temperature of formation of zinc ferrite starting from the solid constituents.

May 3.—P. Stroobant: An account of the work done by the National Committee of Astronomy during the year 1926.—Seligmann and Maury: The geodesic work of the Institut cartographique militaire in 1926.—Paul Levy: Classical logic. Brouwerian logic and mixed logic.—Louis Giltay: The discovery of a species of *Gobius*, new to Belgium (*Gobius pictus*) and on the ethological conditions of its habitat.

## SYDNEY.

Royal Society of New South Wales, Sept. 7.—A. R. Penfold and F. R. Morrison: The essential oils of *Eucalyptus micrantha* and *E. haemastoma*, part i. The principal constituents were found to be: *E. haemastoma*: Eudesmol, sesquiterpenes (aromadendrene and probably eudesmene), d-a-pinene, cineol (10-15 per cent.) with a very small quantity of phellandrene. *E. micrantha*: l-a-phellandrene, sesquiterpenes, terpineol and piperitol and their Caproic acid esters, d-a-pinene, cineol (less than 10 per cent.), with sesquiterpene alcohols and traces of the aromatic aldehydes. Piperitone, if present, did not exceed 5 per cent. in quantity. Solid eudesmol, a characteristic and constant constituent of the oil of *E. haemastoma*, was found only in the oil obtained from Hill Top; altitude has a considerable bearing upon the production of this solid sesquiterpene alcohol. The presence of solid eudesmol in the coastal material of *E. haemastoma* and the non-detection of phellandrene in the crude oils by the B.P. test, offered a ready means of distinguishing the oils from that of *E. micrantha*.

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## Official Publications Received.

## BRITISH.

- The Journal of the Royal Anthropological Institute of Great Britain and Ireland. Vol. 37, 1927, January to June. Pp. 243+5 plates. (London.) 15s. net.
- Annals of the (Mededelingen van het) Transvaal Museum. Vol. 12, Part 2, 22 September 1927. Pp. 55-189+plates 37. (Cambridge: Printed at the University Press.)
- Empire Cotton Growing Corporation. Cotton Growing in Southern Africa and the Rhodesias: Report on a Tour undertaken in Southern and Central Africa by the Director, Mr. J. S. Addison, and Mr. H. C. Jefferys, April-June 1927. Pp. 81+8 plates. (London.) 2s.
- (University of London): County Councils of Kent and Surrey. The Journal of the South-Eastern Agricultural College, Wye, Kent. Edited by Dr. S. Graham Brade-Birks. No. 24. Pp. 196. (Wye.) 7s. 6d.; to Residents in Kent and Surrey, 3s. 6d.
- Proceedings of the Royal Society of Edinburgh. Session 1926-1927. Vol. 47, Part 2, No. 18: On the Consistency of Cardinal Function Interpolation, Parts i and ii. By W. L. Farrar. Pp. 230-242. 1s. Vol. 47, Part 3, No. 19: Observations on the Fragment of a Horse Skull from an Interglacial Deposit near Pulawy, Poland. By R. Prawoczenski and B. Kaczkowski. Pp. 243-251+1 plate. 1s. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)
- Aeronautical Research Committee: Reports and Memoranda. No. 1003 (Ae. 245): Model Experiments on R.A.F. 31 Aerofoil with Handley Page Slot. By H. B. Irving, A. S. Batson and D. H. Williams. (A.3.a. Aerofoils-General, 168.—T. 2385.) Pp. 8+4 plates. 6d. net. No. 1064 (Ae. 246): The Effects of Stagger and Gap on the Aerodynamic Properties of Biplanes at Large Angles of Incidence. By H. B. Irving and A. S. Batson. (A.2.a. Stability Calculations and Model Experiments, 116 and 123.—T. 2334; T. 2357.) Pp. 37+20 plates. 1s. 9d. net. No. 1094 (Ae. 273): A Full Scale Determination of the Angle of Downwash below an Aeroplane. By E. T. Jones. (A.4.a. Full Scale Work Aeroplanes-General, 135.—T. 2457.) Pp. 6+2 plates. 6d. net. No. 1096 (Ae. 275): Full Scale Measurements of Lift and Drag of the Fokker F. VII-3M Monoplane. By J. K. Hardy. (A.4.a. Full Scale Work Aeroplanes-General, 136.—T. 2459.) Pp. 4+5 plates. 6d. net. (London: H.M. Stationery Office.)

## FOREIGN.

- Report of the Aeronautical Research Institute, Tôkyô Imperial University. No. 26: Some Experiments on Motions of Fluids, Part iv. By Torahiko Terada and Kunio Hattori. Pp. 287-326+plates 8-20. (Tôkyô: Koseikai Publishing Office.) 1.45 yen.
- Institut Royal Météorologique de Belgique. Mémoires, Vol. 2: Sur la distribution de la pluie en Belgique. Par Emile Vanderlinden. Pp. 50+7 planches. (Bruxelles.)
- Bernice P. Bishop Museum. Bulletin 34: Polynesian Religion. By E. S. Craigbill Handy. (Bayard Dominick Expedition, Publication No. 12.) Pp. 842. 3 dollars. Bulletin 35: Geology of Kauia, Nihoa, Necker and Gardner Islands, and French Frigates Shoal. By Harold S. Palmer. (Tanager Expedition, Publication No. 4.) Pp. 35+3 plates. 1 dollar. Bulletin 36: Geology of Mangaia. By P. Marshall. Pp. 48+3 plates. 1 dollar. Bulletin 37: Food Values of Poi, Taro and Limu. By Carey D. Miller. Pp. 25. 1 dollar. Bulletin 38: Fishes of the Tropical Central Pacific. By Henry W. Fowler. (Whippoorwill Expedition, Publication No. 1.) Pp. 32+1 plate. 1 dollar. Bulletin 39: String Figures from Fiji and Western Polynesia. By James Hornell. Pp. 88. 1 dollar. Bulletin 40: Hawaiian Mosses. By V. F. Brotherus. Pp. 37+8 plates. 1 dollar. (Honolulu, Hawaii.)

## CATALOGUES.

- South Africa: Catalogue of Books, Paintings and Drawings, relating to Cape Colony, Transvaal, Orange Free State, Rhodesia, South West Africa, Natal, British Central Africa, Mashonaland, Angola, Matabeleland, Zambesia, etc. (No. 501.) Pp. 45. (London: Francis Edwards, Ltd.)
- High-Tension Cable Testing and Fault Locating. Pp. 24. (London: Watson and Sons (Electro-Medical), Ltd.)

## Diary of Societies.

## SATURDAY, OCTOBER 29.

- MINING INSTITUTE OF SCOTLAND (at Heriot Watt College, Edinburgh), at 3.—D. Davidson: The Treatment of Injured Persons Underground.—Papers open for discussion: Experiments concerning the Relationship between Ventilating Pressure and Air Volumes in Mines, and the Effect of Natural Ventilation, by Prof. H. Briggs, Dr. J. M. Williamson, Dr. J. S. Penman, and H. Hyde; Miners' Nystagmus, by Dr. J. S. Haldane and Dr. T. L. Llewellyn; An Improved Face Conveyor, by A. V. Reis.
- NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS (Associates and Students' Section) (at Newcastle-upon-Tyne), at 3.—W. S. Rider: Feeding and Treatment of Animals below Ground and Stabling.—Paper open for further discussion:—Variable Speed Gears and their Application for Colliery Purposes, by W. S. Armstrong.
- HULL ASSOCIATION OF ENGINEERS (at Municipal Technical College, Hull), at 7.15.—W. S. Burn: Notes on the Development of an Oil Engine (Lecture).

## MONDAY, OCTOBER 31.

- INSTITUTE OF ACTUARIES, at 5.—Sir Joseph Burn: The Eighth International Congress of Actuaries.
- SOCIETY OF CHEMICAL INDUSTRY (Yorkshire Section) (jointly with Institute of Chemistry, Leeds Area Section) (at University, Leeds), at 7.15.—O. C. de C. Ellis: Flame.
- UNIVERSITY OF BIRMINGHAM CHEMICAL SOCIETY.—R. S. Tipson: Poisons.