

Societies and Academies.

LONDON.

Optical Society, October 9.—E. T. Hanson: Some problems in the theory of optical diffraction. A semi-infinite plane may be looked upon as a wedge the internal angle of which is zero. The application of Kirchoff's formula in the latter case is considerably extended, it being shown that, through a region of not too small dimensions comprising the whole of the boundary of the geometrical shadow, the solution obtained is identical with the accurate solution. An expression is found for a plane wave incident at any angle upon a semi-infinite screen. An approximate expression is also found for the disturbance distributed over a straight slit due to a wave incident normally. Kirchoff's formula has been applied, apparently for the first time, to an area of disturbance which is non-uniform.—W. M. Hampton: The annealing and re-annealing of glass. Relations connecting the strains present when cooling commences, strain due to gradient, and strain present after cooling, are obtained and the equations are applied to the case of slabs. The considerations affecting the temperature and conditions of annealing are discussed and tables giving annealing temperature, annealing time and rate of cooling for various kinds of glass are included.

PARIS.

Academy of Sciences, September 22.—M. A. d'Arsonval in the chair.—Paul Appell: The order of a non-holonomical system.—E. Mathias: The theory of the lightning flash.—Georges J. Rémondos: Couples of functions of one variable corresponding to the points of an algebraic curve of genus higher than unity and on a generalisation of a theorem of M. Picard.—Benjamin Jekhowsky: The elements of the planet Algiers M=1924 PQ.—E. M. Antoniadi: The retarded decrease of the southern snows of Mars and its coincidence with the solar minimum.—E. Brylinski: On a possible thermal perturbation in Michelson's experiment.—Nicolas Perrakis: A remarkable property of the first differential of the Trouton-de Forcrand law and on the probable value of the electronic entropy.—T. Batuecas: Revision of the compressibility of methyl oxide and the molecular weight of this gas. The pressures exerted by a given mass of methyl ether were measured at five volumes, the results being expressed in the form $pv = a - bp$. From the density of the normal litre previously determined and the coefficient obtained from these experiments, the figure 11.999 is deduced for the atomic weight of carbon. This result proves that the law of limiting densities is rigorously applicable in all cases, provided that the variation of the compressibility with the pressure is taken into account.—J. Locoste: Microseismic movements at Strasbourg. It is shown that there is a relation between the microseismic movements and meteorological conditions (variations of barometer and of wind velocity).—Alfred Carpentier: The fructifications of the Pteridospermeae from the Westphalian of the north of France.—Bezssonoff: The colour reactions of the liposoluble factors. A study of the colour reactions produced with phosphomolybdotungstic acid.—F. Vincens: Possibility of the transmission of pernicious *loque* of bees by the grubs of *Galleria mellonella*.—E. Lesné, R. Turpin, and Ch. O. Guillaumin: Some physico-chemical variations of the plasma during conditions favouring convulsions in the child.—Marc Romieu: Microchemical studies on the granulations of the eosin-fixing leucocytes in man.

ROME.

Royal Academy of the Lincei; papers submitted during the Vacation, 1924.—G. Ricci-Curbastro: Varieties in equal principal invariants.—M. La Rosa: The Doppler effect and the ballistic principle in relation to the velocity of light. A reply to a note by W. De Sitter.—A. Angeli: Constitution of santonin. The compounds resulting from the gradual decomposition of santonin by means of dilute aqueous permanganate are described.—Ferruccio Zambonini: Atomic structure according to Bohr, and the isomorphogenism of metals of the rare earths with those of the calcium group.—Giuseppe De Lorenzo: Coal in the mesozoic strata of Lagonegro in Basilicata.—P. Vinassa de Regny: The mesozoic region of Central Dancalia.—Francesco Tricomi: Numerical resolution of Fredholm's integral equations.—O. Mayer: Transformations between linear elements of two surfaces which retain Levi-Civita's parallelism.—G. Cassinis: Gravimetric comparison of Rome with Bologna and Padua. If the value of g is taken as 980.367 cm. at Rome, the corresponding values at the University of Bologna and at the Royal Astronomical Observatory at Padua are respectively 980.455 and 980.659 cm.—Franco Rasetti: Effect of the magnetic field on the polarisation of resonance radiation. The results of experiments with mercury vapour are described, and the known facts are shown to be capable of simple correlation and to be intimately connected with the Zeeman effect and with the orientation of the atoms in the magnetic field.—A. Cruto: Chemical constitution of insulin. The empirical formula of highly purified insulin confirms the classification of this substance with the proteins, and, in conjunction with its reactions, indicates for it a position among either the globulins or the albumoses.—G. Mazzetti: Thermal dissociation of certain carbonates. The means adopted in the study of these dissociations consisted of thermal analysis and of an arrangement permitting the curve connecting the temperature with the diminution in weight to be traced directly on a photographic plate. Certain of the values obtained for the temperature of initial decomposition differ from those given by previous investigators.—V. Tognazzi: Chalkones and hydrochalkones. In alcoholic solution and in the presence of platinum black, each of the chalkones examined absorbs two atoms of hydrogen, yielding the hydrochalkone.—Carlo Cappelletti: The vegetation of resins. The fungi found in resins are nourished by the impurities always extruded with the resins and are able to tolerate oil of turpentine in relatively high proportions. In a moist climate the slow drying of the resin encourages the establishment of the fungoid vegetation, whereas in a dry climate the resin undergoes rapid superficial drying, invasion of the mycelia being thus checked.—P. Pasquini: Further knowledge of the pelagic fauna of Lake Trasimeno.—U. Pierantoni: New observations on luminescence and symbiosis. III. The luminous organ of *Heteroteuthis dispar*.—M. Sella: Observations on the innervation of the myotome of the murenoids and other Teleostei.

CAPE TOWN.

Royal Society of South Africa, August 20.—Dr. A. Ogg, president, in the chair.—S. H. Haughton: A bibliographic list of pre-Stormberg Karoo reptilia with a table of horizons.—G. W. Cox: On the periodicity of rainfall. A cursory inspection of any table of annual rainfall values discloses irregularities which suggest the results of pure chance. A vital question in long range weather forecasting is whether the values of data follow any law of succession separable from the law of chance. This paper discusses the existence of a cycle in rainfall.