

Societies and Academies

LONDON

Physical Society, May 19. W. F. FLOYD: Interference tones in superheterodyne receivers. The problem involves the reception of at least three signals, double detection, and a filter action between the two detectors. In the case of rectification by detectors with generalised characteristics, quantitative analysis is extremely complex. The form of the result, however, shows how large is the number of possible sources of interference tones. The specific case of square-law rectification is also considered. W. G. MARLEY: A method of measuring the specific heats of poor conductors. A brief review of existing methods of determining specific heats is given with reference to their suitability for poor conductors. The method of cooling, which has received scant attention in the past, is developed to afford an accurate and ready method. D. BROWN: The demonstration of eddy currents in conductors of various shapes. A method is described whereby it is possible to demonstrate visually the existence of eddy or Foucault currents in masses of conducting material, and the way in which the flow of the currents may be distorted or baffled by suitable slots or laminations. S. TOLANSKY: The absence of fine structure from the arc spectrum of silver. The arc spectrum of silver, produced in a water-cooled hollow-cathode discharge, has been examined for fine structure with a variable-gap silvered Fabry-Perot interferometer in the region 8300-4000 Å. Results for the resonance lines at approximately 3300 Å. are quoted also. Silver consists of two odd isotopes 107, 109, and although *5s*, *6s*, *7s*, *5p*, *6p*, and *5d* terms have been studied, no trace of fine structure has been found, in spite of very excessive over-exposing in many lines. All lines are extremely sharp and are worth considering as wave-length standards, being well distributed. Attention is directed to the fact that the analogous spectrum of CdII also shows no fine structure, so that it is concluded that the absence of structure is probably due to the electron configuration and not necessarily to smallness of the nuclear magnetic moment. This is remarkable, for penetrating *s* electrons are involved in some configurations. W. Y. CHANG and WILLIAM BAND: Thermomagnetic hysteresis in steel. The temperature variation of a new hysteresis of the thermomagnetic electromotive force in a steel wire is described. The hysteresis is of a negative or abnormal form with a maximum amplitude of about 2 microvolts between up and down branches. The accuracy of the apparatus and method is critically examined, and an error of more than 0.5 microvolt in any reading is considered to be unlikely. A qualitative explanation of the phenomenon is given.

PARIS

Academy of Sciences, May 15 (*C.R.*, 196, 1445-1552). HENRI LAGATU and LOUIS MAUME: The comparative composition of the dry material of homologous leaves of fruit-bearing branches and naturally sterile branches of the vine. P. BOUIN and W. BUCHHEIM: The action on the male sexual gland and on the sexual characters of a diet lacking in vitamin A. WILLEM DE SITTE was elected *Correspondant* for the Section of Astronomy in succession to the late A. VERSCHAFFEL. LÉON POMEY: Involutions of the

third order. S. KIERST and E. SZPLRAJN: Certain singularities of uniform analytical functions. ADOLPHE LINDENBAUM: The superpositions of functions representable analytically. GEORGES VALIRON: A class of integral functions admitting two Borel directions of divergent order ρ . H. PAILLOUX: Percussions in wires. A. GAY: Permanent waves in a circular channel of any section. MICHEL LUNTZ and PAUL SCHWARZ: The movement of a viscous fluid round a cylinder in uniform rotation and the law of similitude. MAURICE ROGER: A new indicator of the angle of attack. A. ETÉVÉ: The automatic steering of aeroplanes. PIERRE BRÉMOND: The viscosity of gases at high temperatures. The viscosities of air and carbon dioxide were measured at varying temperatures up to 1134° C. and the results compared with those calculated from Sutherland's formula using a viscosity coefficient determined at low temperatures. Sutherland's formula was found to be applicable within the limits of the experimental error. JEAN-J. PLACINTEANU: The mass of the neutron. AUREL JONESCU: The fine structure of the absorption bands of sulphur dioxide in the ultra-violet. R. ZOUCKERMANN: The high-frequency spectrum of argon in the presence of mercury. C. BÉCHARD: The use of bimetallic anodes in the electrolytic synthesis of alloys. P. SAVAL: The radiations excited by the α -rays in fluorine. S. ROSENBLUM and P. CHEVALLIER: The direct measurement of the fine structure of the α -rays. P. LAFFITE and H. PICARD: The temperatures of inflammation of mixtures of ammonia and air. With the ammonia varying from 8.9 to 57.4 per cent, the temperature of inflammation started at 960° C., fell to a minimum (917° C.-922° C.) with ammonia between 23 and 36 per cent and rose to 1002° C. The results are substantially higher throughout than those of Holm. F. BOURION and Mlle. O. HUN: The cryoscopic determination of the total hydration of the ions of sodium chloride. Mlle. SUZANNE VEIL: The star-shaped precipitation of strontium carbonate. Study of the Liesegang rings formed by the addition of a drop of strontium chloride solution to gelatine impregnated with potassium carbonate. MME. RAMART-LUCAS and RABATÉ: Structure of the heterosides by means of their absorption spectra. E. VELLINGER and G. RADULESCO: The photolysis of petrol produced by cracking. The amount of oxygen absorbed by petrol when exposed to the light from a mercury lamp serves as a measure of the tendency to gum formation. PAUL BAUD: The first French soda factories. From the historical summary given it would appear that Nicholas Leblanc set up the first factory for the large-scale production of soda from sea salt. G. ALLARD: The electronic structure of ethylenic carbon. H. HERLEMONT and J. DELABRE: An improvement of Carnot's method for the determination of fluorine. The silica used in this method is replaced by powdered 75 per cent ferrosilicon. Test analyses are given showing the increased accuracy obtained. GEORGES DENIGÈS: Cholesterol as a microchemical reagent for the acids of the acetic series. Cholesterol is shown to be a very useful microchemical reagent for the qualitative identification of the fatty acids and their halogen derivatives. E. M. BELLET: The decomposition of glycol diacetin by alcohol in weak alkaline solution. LÉON PALFRAY, SÉBASTIEN SABETAY and MARCU ROTBART: Some aldehydes with ether-oxide function. Study of the methods of preparation and purification of aldehydes

of the general formula $RO.CH_2.CHO$. MARCEL GODCHOT, MAX MOUSSERON and ROBERT GRANGER : The preparation of new active amino-cyclanols. FRÈREJACQUE : The acetylsulphate and acid sulphate of camphor. L. GLANGEAUD : The composition of the eruptive massif of Cavallo (province of Constantine). R. C. SABOT : A riebeckite-granulite and a detritic limestone rock from the Niari basin (French Congo). JEAN GOGUEL : The tectonic rôle of the conglomerates of Valensole (Basses-Alpes). A. AMSTUTZ : The tectonic of Mayombe, in the French Congo. J. DUCLAUX : Measurements of the absorption coefficients of the atmosphere. The absorption coefficients were deduced from the brightness of distant objects measured by photographic photometry. ROBERT LEMESLE : The existence of water-bearing tracheids in *Calligonum*. HENRI COUPLIN : The assimilation of the glycydes by pollen tubes. V. HASENFRATZ : The presence of an alkaloid not containing oxygen in *Gelsemium sempervirens*. Sempervirine (Stevenson and Sayre, T. Q. Chou), contains no oxygen and has the composition $C_{19}H_{16}N_2 + H_2O$. The nitrate is nearly insoluble in water. ARMAND DEHORNE : The long pygidial filament of *Sigalion Mathildæ*. Comparison with the caudal tendril of some Heteronemertians and the filiform prolongation of certain heteropod gasteropods. RAOUL HUSSON : Reaction of the pharyngeal resonator on the vibration of the vocal chords during phonation. JEAN SAIDMAN : The visibility of the ultra-violet up to the wave-length 3130 Å. Description of a special filter with a transmission band extending from 3130 to 2800 Å.; 72 persons out of 102 described the appearance of the mercury arc as seen through the screen. Hence it would appear that the crystalline lens is not so opaque to the ultra-violet as has been supposed. The opacity of the lens to ultra-violet light increases with age. J. BASSET, M. LISBONNE and M. A. MACHEBŒUF : The action of ultra pressures on the pancreatic juice. B. GOUZON : The production of urobilin by the action of ultra-violet rays on chlorophyll and the porphyrins. Irradiation by ultra-violet rays of solutions of chlorophyll and of hæmatoporphyrin give a disintegration product presenting all the spectroscopic characteristics and chemical reactions of urobilin. HARRY PLOTZ : The curve of evolution of a culture of the virus of bird plague. G. FLEURY : The coli bacillus in marine mammals. Four specimens of porpoise were examined and found to contain no *B. coli*. As this bacillus is regarded as a constant saprophyte of the mammal intestine, this exception is noteworthy. M. and MME. ANDRÉ PUPIER and RENÉ PRIEUR : New facts showing the effects of thermal action on the bulb. C. IONESCO-MIHAESTI, A. TUPA, B. WISNER and G. BADENSKI : Tabetic anatomo-clinical syndrome following the intraperitoneal inoculation of lympho-granulomatous virus (Nicolas Favre disease).

CAPE TOWN

Royal Society of South Africa, March 15. C. VON BONDE : The class Enteropneusta, with special reference to the South African species. J. P. T. VILJOEN and B. F. J. SCHONLAND : The distribution of the ionising particles of the penetrating radiation with respect to the magnetic meridian. An investigation by a coincidence counter of the direction of arrival of the ionising particles associated with the penetrating radiation has been made at sea-level in Cape Town (mag. lat. 31° S.). It is concluded that any charged particles of extra-terrestrial origin are

accompanied by a larger number of secondary particles generated in the atmosphere by some radiation which is not affected by the earth's magnetic field. The north east difference suggests that the majority of the primary particles are positively charged. T. F. DREYER : Middle Stone Age industries near Bloemfontein.

CRACOW

Polish Academy of Science and Letters, March 7. ARK. PIEKARA : Dielectric polarisation (1). The polarisation of benzene, carbon disulphide, hexane and nitrobenzene. The polarisation of benzene decreases as the temperature falls but increases in the neighbourhood of the solidifying point. The polarisation of hexane and of carbon disulphide increases as the temperature rises but the increase is much less rapid than with benzene. W. SWIETOSLAWSKI : The classification of zeotropic and azeotropic mixtures. K. DZIEWOŃSKI, J. MOSZEW, T. CHECHLIŃSKI and MLE. I. PIETRZYKOWSKA : A new method of synthesis of compounds derived from quinoline (4).

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, 19, 209-275, Feb. 15). WILLARD J. FISHER : The Newton-Denning method for computing meteor paths with a celestial globe. A combination of Newton's and Denning's methods for the case of two observers only. DORRIT HOFFLEIT : A study of meteor light curves. Selected simple meteor trails fall into two groups. The greater the velocity of the meteor, the nearer is the point of maximum brightness to the vanishing point. JOEL STEBBINS : Absorption and space reddening in the galaxy as shown by the colours of globular clusters. Photometric studies with a photoelectric cell of the globular clusters indicates a reddening in low galactic latitudes. Assuming absorption by a thin homogeneous layer near the plane of the galaxy as producing the differential colour effect, it is concluded that some of the clusters in low latitudes are at a distance only one-fourth of that generally supposed. SOPHIA A. GOULD, RAYMOND PEARL, THOMAS I. EDWARDS and JOHN R. MINER : Available food, relative growth and duration of life in seedlings of *Cucumis melo*. Seeds of approximately the same weight were sterilised and different amounts of the cotyledons were cut away; the seeds were incubated in darkness. In no case is a measured character of the seedling proportional to the amount of cotyledon left intact. The duration of life is relatively prolonged over expectation, the proportion of roots to hypocotyl is higher, and the period of most rapid growth is more advanced the more drastic the preliminary operation. ROBERT K. NABOURS and W. R. B. ROBERTSON : An X-ray induced chromosomal translocation in *Apoteitic eurycephalus* Hancock (grouse locusts). RICHARD V. HUGHES : The geology of the Beartooth Mountain front in Park County, Wyoming. A discussion, with sections, a map and references to the literature. R. E. A. C. PALEY and N. WIENER. Characters of Abelian groups. EDWARD KASNER : Geometry of the heat equation. (2) The three degenerate types of Laplace, Poisson and Helmholtz. M. BIOT : Theory of elastic systems vibrating under transient impulse with an application to earthquake-proof buildings. JESSE DOUGLAS : A Jordan space curve which bounds no finite simply connected area. R. E. A. C. PALEY : On lacunary power series. J. W. ALEXANDER : A matrix knot invariant.