

## Societies and Academies.

## LONDON.

**Optical Society**, April 10.—H. Dennis Taylor: The feasibility of cinema projection from a continuously moving film. The film picture may be reflected from a series of mirrors suitably mounted on a drum which is rotated at a definite speed relative to the motion of the film. The various oscillations that may be introduced on the screen image can be minimised or eliminated. As compared with the usual type of projection, continuous projection results in a considerable saving of light, much reduced wear and tear of the film, complete freedom from light and dark flickering and consequent eyestrain, and much greater quietness in running.—E. Wilfred Taylor: A new, perfectly anallatic internal focussing telescope. In all surveying instruments, where the distance of an object is deduced from the stadia intercept, the distance so obtained is referred to the "anallatic point," situated either on the axis of the telescope or on the axis of the telescope produced. The introduction of the anallatic lens by Porro automatically referred all distances, deduced from the stadia intercept, to the centre of the instrument, since the latter coincided with the anallatic point. The internal focussing telescope has now been adopted by most instrument makers, and, as the position of the anallatic point varies, a small but variable correction must be made in order to refer distances to the centre of the instrument. A new telescope is now described which, while perfectly anallatic, is of the internal focussing type, and combines the advantages of the Porro construction with those of the internal focussing telescope.

## MANCHESTER.

**Literary and Philosophical Society**, April 1.—A. E. Oxley: Physical research in the cotton industry. Experiments which have been carried out at the Shirley Institute, Didsbury, relating to the evenness of single and doubled yarns, high and low draft yarns, the effects of oscillating stresses on yarns, and the connexion between the twists of single and doubled yarn on lustre were described. The periodic variation of twist hardness is due to the intermittent mechanism of the mule, and is present in all mule yarns. Ring yarns do not show this defect, but on the other hand they show greater variations of evenness due to irregularities of the roving. These variations in both mule and ring yarns are of primary importance when single yarns are doubled, the doubling twist being determined by the variations in twists of the singles. The result of this is clearly brought out in photographs showing the brightness or lustre of the doubled yarns, and has an important bearing on the uniformity of the light reflected from woven or knitted fabrics. Introducing a high draft at the ring spinning frame and leaving out either the intermediate or the rover makes little difference.

## PARIS.

**Academy of Sciences**, April 7.—M. Guillaume Bigourdan in the chair.—Paul Appell: The derivative of the function  $\Psi(x)$  of Gauss, when  $x$  is commensurable.—Marcel Brillouin: The rigorous mathematical expression of waves which have a given caustic surface of revolution.—Gabriel Bertrand and Mlle. Y. Djouritch: A new crystallised chromogen, esculetol, extracted from the horse chestnut. From the fruit of *Æsculus hippocastanum* alcohol extracts about 0.25 per cent. of a substance which, after purification, formed colourless crystals. It is not a glucoside, but behaves as a very easily oxidised phenol. It is rapidly

oxidised by air in the presence of laccase, forming a yellow colouring matter.—S. Winogradsky: The autochthone microflora of arable earth. A study of the micro-organisms present in soil, when the stage representing the rapid action of ferments has been passed, a special point of the method being cultivation in the soil itself and not in the usual culture media.—A. Blondel: Abacus for the calculation of the characteristic constants of high-tension aerial transmission lines.—André Blondel and Jean Rey: The law of perception at the limit of the range of the flashes of luminous signals.—C. Guichard: The image at a point and image in a plane of the networks and congruences of a space of order six. Application to the W congruences.—Serge Winogradsky was elected a foreign associate in succession to the late M. Van der Waals.—Herbert Ory: Complex numbers with  $n^2$  relative units.—A. Pellet: Theorem on equations.—G. Juvet: The most general parallel displacement and the formulæ of Frenet.—Alfred Rosenblatt: Linear complexes of linear spaces of  $k$  dimensions situated in a linear space of  $r$  dimensions.—D. Mordouhay-Boltovskoy: Some arithmetical properties of the integrals of equations of the first order.—M. de Séguier: The maximum divisors of certain Galoisian groups with bilinear or quadratic invariant.—A. Metz: Concerning the interpretation of Michelson's experiment. Reply to a criticism of M. Brylinski.—A. Danjon: The illumination of the eclipsed moon. Reply to criticisms by W. J. Fisher and by E. W. Maunder.—Sigmund Stahl: The secret of the construction of the Italian violin.—Edmond Bauer: Interference methods for determining the duration and law of emission of light by atoms.—H. Buisson: The series of triplets of the arc spectrum of mercury.—R. Fortrat: A new band due to hydrocarbons. A detailed description with measurements of wavelengths of a band in the ultraviolet given by the blue core of hydrocarbon flames ( $\lambda = 3143$ ).—M. Audibert: The mechanism of the explosive reaction. In a previous communication it has been shown that the explosive decomposition of nitroglycerol is not instantaneous but progressive. Mixtures of methane and oxygen, or of hydrogen, oxygen, and nitrogen, are now shown to behave in a similar manner, but the detonating mixture  $2\text{H}_2 + \text{O}_2$  gives an instantaneous explosion. From these experiments, the author draws the conclusion that there is no true safe explosive for a dusty mine; it can only be said that under given conditions of use, some explosives are more or less dangerous than others.—P. Lafitte: The propagation of the wave of shock.—Raymond Charonnat: The stereochemistry of ruthenium.—L. J. Simon and M. Frèrejacque: The action of bromine on the sulphomethyl esters of phenols. The estimation of sulphur in the esters and phenolsulphonates. The action of bromine at the ordinary temperature on the phenol methylsulphonates gives a monobromo derivative. At  $100^\circ\text{C}$ . the sulphonic group is removed as sulphuric acid and replaced by bromine, and the reaction may consequently be applied to the determination of the sulphur in such compounds.—P. Brenans and C. Prost: The iodo-*m*-oxybenzoic acids.—V. Thomas, M. Bathiat, and A. Génét: Contribution to the knowledge of picryl sulphide: the action of the alkalis. Picryl sulphide with alcoholic potash gives potassium picramate, ethyl picrate, and potassium picrate, with some dinitrophenol and tarry products. With sodium isomylate in amyl alcohol, the sulphide gives sodium thiopicrate and amyl picrate as the chief products of the reaction.—Mme. E. Jérémme: Granite and microgranite with graphical structure, near Périers (Manche), and crushed rocks in the neighbourhood of

Coutances.—Léon Bertrand and Léonce Joleaud: Some facts relating to the neogene and quaternary formations in the neighbourhood of Antçirabe (Madagascar).—Paul Corbin and Nicolas Oulianoff: The relations between the massifs of Mont Blanc and the Aiguilles Rouges.—Jacques Bourcart: An hypothesis on the formation of the Adriatic.—P. Lasareff: New observations on the magnetic anomaly of Koursk (Central Russia).—A. Boutaric: The radiation of the atmosphere.—P. Bugnon: Leaf dichotomy in *Viscum album*.—René Souèges: The embryogeny of the Linacæ. The development of the embryo in *Linum catharticum*.—Marc Bridel: The true nature of the glucoside with methyl salicylate existing in the bark of *Betula lenta*. The glucoside extracted by Schneegans and Gerock from *Betula lenta* (gaultherine) is identical with that extracted by the author from *Monotropa Hypopitys*, and named monotroptine. Gaultherine does not possess the constitution assigned to it by Schneegans and Gerock.—C. Charaux: The biochemical hydrolysis of rutine. The hydrolysis of this glucoside from *Ruta graveolens* by a ferment extracted from the seeds of *Rhamnus utilis* gives quercitine and a sugar, rutinose; the latter by hydrolysis with acids gives rhamnose and glucose in equal numbers of molecules.—Mlles. J. Lelièvre and Y. Ménager: The simultaneous determination of mineral and organic iodine in algæ.—Jules Amar: Coagulation and plant life.—Mlle. E. Le Breton and G. Schæffer: Remarks concerning a note by E. F. Terroine relating to the laws which govern the intensity of metabolism in homeotherms.—MM. Averseng, Delas, Jaloustre, and Maurin: The influence of thorium X on the blood formula.—I. A. Christiansen, G. Hevesy, and S. Lomholt: Researches, by a radiochemical method, on the circulation of bismuth in the organism. The use of bismuth in the treatment of syphilis is increasing in importance, and a knowledge of the distribution of this metal in the organism and its elimination is desirable. A radioactive isotope, radium-E, is added to the bismuth salt, and the distribution is followed up by radiochemical measurements. Bismuth is mainly eliminated in the urine. The use of bismuth requires caution, as there is a slow and irregular resorption resulting in poisoning.—L. Mercier: Malformations produced in a fly (*Calliphora erythrocephala*) by the action of naphthalene vapour; reappearance of the anomalies in a second generation raised under normal conditions.—L. G. Seurat: The animal associations of the middle horizon of the intertidal zone of Syrte minor.—Armand Dehorne: The linocytes of the cœlomic liquid of *Glycera convoluta*.—A. Sartory and R. Sortory: The antiseptic power of potassium bichromate and copper bichromate. Copper bichromate has a more powerfully toxic action on the lower fungi (moulds) than potassium bichromate.—Maxime Ménard and Foubert: The treatment of fistula by ultraviolet light.

## CALCUTTA.

Asiatic Society of Bengal, March 5—Sunder Lal Hora: (1) On certain local names of the fishes of the genus Garra. The fishes of the genus Garra (=Discognathus) mostly live in hill-streams, and, to withstand sudden rush of water, are provided with a suction disc on the under-surface slightly behind the mouth. In the hilly tracts of India and Burma these fishes are known under different appropriate names, in which reference is made either to the suction disc, to an elongated proboscis usually present on the snout, to the rounded and sub-cylindrical form of the fish, or to its peculiar mode of feeding and movements. (2) Fish of the Talé Sap, Peninsula of Siam (Part II.). Seventy-two species, of which two are new, are described. Most of the

species are marine, and are widely distributed. The Indo-Australian element predominates in the freshwater forms.—H. W. Fowler: Fish of the Tai-Hu, Kiangsu Province, China. Twenty-nine species are described, none of which are new but several are rare or interesting.—J. Hornell: (1) The boats of the Ganges. The river-crafts used on the Ganges system vary from simple rafts and earthenware pots to the most elaborate cargo carriers, some of which bear a close resemblance to those used on the Nile in ancient Egypt. (2) The fishing methods of the Ganges.—N. Annandale and Sunder Lal Hora: Fish: recent and fossil.

## WASHINGTON.

National Academy of Sciences (Proc. Vol. 10, No. 3, March).—R. C. Tolman: Duration of molecules in upper quantum states. Calculations based on the intensity of absorption lines show that the mean life of a molecule may vary for different quantum states from 1 to  $10^{-8}$  sec. The rate of decay is not a simple function of the frequency of the emitted light.—M. Allen: On thermal emission and evaporation from water. Water in a nickel-plated copper dish resting on a balance pan is heated electrically, and the water vapour is condensed on the blackened inner surface of a cone kept at a constant temperature. Loss of mass gives the amount of water evaporated, and hence the heat required for evaporation, and the difference between that and the heat input gives the thermal emission from the water surface.—G. L. Clark and W. Duane: On secondary and tertiary X-rays from germanium, etc. Using silver and germanium as the secondary radiators, the rays from a tungsten target emerging at right angles to the primary beam show (1) scattered rays of the same wave-length as the K-series in the primary beam (no evidence of Compton effect); (2) fluorescent rays characteristic of the element in the radiator; (3) tertiary rays produced by the impact of secondary photo-electrons on atoms in the radiator. The short wave-length limit of the tertiary rays and the angle of reflection from the spectrometer should, by theory, be independent of the angle between the primary and scattered beams of X-rays. This was confirmed. Similar results previously obtained using graphite as a carbon radiator were reproduced with paraffin wax.—C. Barus: Exhibit of telephonic excitation of acoustic pressure.—J. W. Alexander: (1) New topological invariants expressible as tensors; (2) On certain new topological invariants of a manifold.—A. Bramley: Condition that an electron describe a geodesic.—W. E. Castle: Linkage of Dutch, English, and angora in rabbits. English and Dutch markings are linked, and English is linked with angora coat. It is now found that Dutch marking and angora show about the same amount of linkage.—A. F. Blakeslee: Distinction between primary and secondary chromosomal mutants in *Datura*. Normal diploid ( $2n$ ) plants of *Datura Stramonium* have 12 pairs of chromosomes in the somatic cells; some 25 recurrent mutants are due to a single extra chromosome in one of the 12 sets ( $2n + 1$ ), and can be arranged in 12 groups each consisting of a primary mutant and one or more secondary mutants.—J. Belling and A. F. Blakeslee: The configuration and size of the chromosomes in the trivalents of 25-chromosome *Daturas*. The primary 25-chromosome plants have trivalents in which the open V-type predominates; if detached, the odd chromosome is generally straight. In the secondary forms, the trivalents are usually of the closed V-ring type; if detached, the odd chromosome is often rolled into a small ring. There appears to be no difference in chromosome size between a primary and its secondary.