

Societies and Academies.

LONDON.

Optical Society, June 14.—T. Y. Baker: The errors of a reflecting prism. A prism with two reflecting faces designed to fulfil a particular purpose in an optical instrument gives rise to errors due to (a) inaccuracy of manufacture, and (b) inaccuracy in mounting the prism in the instrument. The effects of these errors are investigated.—W. D. Wright: A trichromatic colorimeter with spectral primaries. A spectrometer system is used in which two spectra are formed from the same source. From one, three portions to act as primaries are reflected back through part of the dispersing system, so that the mixing of the three radiations is effected by neutralising the prismatic dispersion by which the colours were first separated. From the other, the test colour and a desaturating colour are selected and mixed in a similar manner, and the composite beams are then brought into a simple bipartite field. The Maxwellian method of observing the field of view has been adopted without the introduction of rotating parts into the system, and special precautions have been taken to remove stray light.—T. Smith: (1) The theory of aplanatic surfaces. The necessary and sufficient condition that an optical system should have a pair of aplanatic surfaces is that the eikonal of the system can be expressed as a homogeneous function of the first order in three variables. Methods are given for finding the equations of these surfaces when the eikonal is given and for finding the eikonal when the surfaces are given. In general, only one pair of aplanatic surfaces is possible, but in spherically symmetrical systems two pairs are found. (2) The primordial coefficients of asymmetrical lenses. An easily calculable system of sixteen magnitudes is constructed for the representation of the properties of asymmetrical lenses. All equations are expressed in matrix form and an account of the elementary properties of matrices is included. (3) Note on the use of lenses in series for sight-testing. The series arrangement enables a small number of lenses to be combined to give the correction for any regular defect of form. In general, effective powers are not simply additive, but under certain conditions the error made in regarding them as additive becomes small. With incorrect arrangements serious errors may be made.

Royal Meteorological Society, June 20.—J. Edmund Clark, I. D. Margary, R. Marshall, and C. J. P. Cave: Report on the phenological observations in the British Isles, December 1926 to November 1927. As frequently of late, early warmth, inducing also early bloom on fruit trees, was precursor of destructive cold spells in April, May, and even early June, when sunless drought prevailed as well. Then followed a wet, cool, sunless summer. On all coasts the sea was coldest in February, warmest in August; in the west and south colder in May than November. The mean flowering date was actually early, though after May practically all were late. The early migrants, on the other hand, were retarded two days; the later were a day early. The final results for farming were bad; in many parts, especially in north-east Scotland, disastrous. Only apples and raspberries gave a good fruit crop, but the exceptional wet coolness gave a wealth of herbaceous blossom. October was the only redeeming feature in the latter half of the year.—C. K. M. Douglas: On the relation between temperature changes and wind structure in the upper atmosphere. (*Mem. No. 7, vol. 1.*) Assuming that the

wind velocity is 'geostrophic,' it is known that the horizontal gradients of temperature in the free air can be deduced from the variation of wind with height at a given time, and the temperature changes due to purely horizontal movements readily follow. A comparison is made between the temperature changes thus calculated and temperature changes observed during the years 1920-25 inclusive. The correlation between observed and theoretical changes is a little less than 0.5, both for 6-hour and 24-hour time-intervals, but is higher for large temperature changes.—R. M. Poulter: Simple formulae for computing relative humidity. Formulae are given for the calculation of relative humidity from readings of dry and wet bulb thermometers without reference to tables. For air temperatures around 60° F. the 'relative dryness' of the air is given by

$$\frac{1000}{3} \times \frac{\text{depression of the wet bulb}}{\text{dry bulb reading}}$$

The required relative humidity is given by subtracting this 'dryness' figure from 100. Slight modifications of the factor 1000/3 provide for a range from below freezing point to about 120° F. The formula can be adapted to Centigrade readings simply by adding 17.8 to the dry bulb reading before making the computation.

DUBLIN.

Royal Irish Academy, June 25.—E. T. S. Walton: On the motion of vortices near a circular cylinder in a stream of liquid. The cases of a single vortex and also of a symmetrically placed vortex pair near a circular cylinder in a stream of liquid are investigated. The equations of the paths of the vortices are given and their nature discussed.—J. Doyle and P. Clinch: (1) Further notes on the metabolism of conifer leaves. The groups of the Coniferales are characterised by definite pH values; Abietineæ, Taxodineæ, and Araucarineæ about 3.7, Cupressineæ and Taxaceæ, as a whole, about 5.1. *Sciadopitys* is an interesting exception in its group. No further relation could be established between pH and water-soluble pentosan content. The only oxidising enzyme demonstrable was peroxidase, which seems always present although sometimes masked by an inhibitor, the nature of which has to be analysed. It fades on standing and, though associated with tannin-like substances, seems of a different nature. Autoxidisable substances yielding peroxides are present, their oxidation being normally inhibited by tannins. (2) The catalase content of conifer leaves, with notes on its measurement. The catalase activity of a number of conifers shows a low summer level, rising to a maximum in December and January, and falling again in spring. These findings are directly contrary to those reported by Burge. The wide individual and seasonal variations lend no support to the use of catalase as an index of respiratory activity, although the seasonal variations correspond closely to seasonal variations in starch content already reported. A method is described in which the initial rate of a catalase reaction can be measured and fast reactions followed. The initial rate is proportional to catalase concentration over a wide range, and is proportional to peroxide concentration when dilute, becoming steady with increasing concentration. There is a latent period which varies both with catalase and peroxide concentration. Both at 20° C. and 30° C., variations in the early course of the action seem constant. The initial rate is fast, falls off rapidly, increases again, remaining steady for some time, once more falling off in the normal manner of an enzyme action.

EDINBURGH.

Royal Society, July 2.—J. R. Wilton: The lattice points of a circle. A great deal of interest has of late years centred round the arithmetical function $r(n)$, defined as the number of integer solutions of the equation $p^2 + q^2 = n$, so that, for example, $r(1) = 4$, the four solutions being $(0, +1)$ and $(+1, 0)$. In the great majority of cases the problems considered have been connected with the sum-function

$$R_r(x) = \sum_{n=1}^{[x]} r(n)$$

which is evidently equal to the number of lattice points (*i.e.* points with integer co-ordinates) within and on the circle of radius \sqrt{x} , but excluding the centre (the origin). In the present paper a new formula is formed for the function $R_r(x)$.—H. W. Turnbull and J. Williamson: The invariant theory of the quaternary quadratic complex (Part 2). The complete system. This communication illustrates methods proposed in the earlier part, by giving a list from which all possible invariants can be constructed.

COPENHAGEN.

Royal Danish Academy of Science and Letters, Jan. 20.—C. G. Joh. Petersen: Some biological principles. The true biology may, beside the mechanistic viewpoint, use the 'whole' in the provisional description. The physical qualities of the organisms do not belong to true biology but to psychology (*v.* NATURE, July 14, p. 68).

Feb. 17.—Jakob Nielsen: The fixed point problem in the representation of closed planes. Constant representation of planes of order 0 or 1 can be conceived as generalisations of analytical transformations, and the same applies to the related fixed point problem. For planes of higher order, this is no longer true, since the problem can at present only be stated from the topological viewpoint. The treatment is connected with fundamental problems of group-theory.

ROME.

Royal National Academy of the Lincei, Mar. 4.—L. Tonelli: The definition of the function of two variables with limited variation. In recent communications, Nalli and Andreoli have treated of the definition of the area of a surface, and have arrived at a definition of a pair of functions of two variables with limited variation. Moreover, by applying the general results obtained to the surface given in the form $z = f(x, y)$, they deduce a definition of the function of two variables with limited variation. The relation of such a definition to that given by the author two years ago is now considered.—U. Cisotti: An interpretation expressive of the conditions of Saint-Venant on infinitesimal variations.—N. Parravano and G. Malquori: The reduction of silver sulphide by means of carbon. The method recently used for the study of the equilibrium between sulphur and molybdenum trisulphide is now applied to measure of the pressure of carbon disulphide corresponding with the reaction $2Ag_2S + C = 4Ag + CS_2$ at 1015° and 1050° .—L. Rolla and L. Fernandes: Fractionation of neodymium-samarium mixtures. Crystallisation of the double nitrates formed with magnesium and with manganese furnishes an excellent method for the separation and purification of neodymium from samarium and vice versa.—A. Russo: The varying chromosomic equipment of the cells of Metazoa in relation to sex and the difference in category between mixed individuals and pure gametes in *Cryptochilum echini*. In metazoa, with

a greater amount of nuclear substance, determined by the presence of a chromosome or of several differential chromosomes, there corresponds the development of a female individual, whereas with less nuclear matter, depending on the lack or smallness of these chromosomes, there corresponds a male individual. Similarly, in *Cryptochilum* the difference in quantity of nuclear substances between the individuals of the two categories is the index of their different nature, only that it is determined during the conjugation of the gametes, since one-fourth of the micro-nucleus of the gamete *A* migrates to the gamete *B*, where a third mitosis takes place to furnish the mixed individual *B* with two nuclei, which are equal to one-half of those of the mixed individual *A*.—P. Nalli: The parallelism of Levi-Civita and certain possible extensions.—L. Fantappiè: The linear functionals of the functions of two complex variables (2).—L. Martinozzi: A new model of condensation hygrometer. Ranzi has directed attention to a source of error affecting hygrometric measurements made with condensation hygrometers of the types devised by Regnault, Chistoni, and others, in which the cooling is attained by evaporation of ether in the vessel containing the thermometer bulb. No matter what precautions are taken, the temperature of the bright surface may differ from that of the thermometer bulb by as much as 1° C. Such error may be avoided by making the thermometric body identical with the wall on which the dew is deposited. In the instrument devised by the author, the thermometer body consists of a bimetallic strip of silver and invar steel arranged cylindrically. One edge of the strip—along a generatrix of the cylinder—is fixed to a vertical aluminium column, while to the free edge is fastened by means of screws a rod, which, by a system of levers like that used in registering apparatus, moves a long index over a scale.—G. Todesco: A new method for observing very small double refraction. A highly sensitive method for observing slight double refraction of accidental, magnetic, or electrical origin is based on the use of a photo-electric cell, arranged to receive the light which, by interposition of the doubly refracting body between two crossed Nicols, emerges from the analysing Nicol. The use of such a cell not only renders it possible, owing to a convenient system of amplification, to detect extremely small variations in luminous intensity, but also removes the causes of error and uncertainty involved in naked eye methods, and gives a numerical result (galvanometer reading).—M. Pierucci: Influence of the electric charge on the conductivity of a metallic film.—G. Natta and M. Freri: X-ray analysis and crystalline structure of cadmium-silver alloys (3). Investigation of cadmium-silver alloys, rapidly solidified and tempered by the powder method, reveals a region of α -solid solutions of cadmium in silver, having the lattice of the latter, but deformed regularly according to Vegard's law up to 35 per cent of cadmium. The α -phase occurs in alloys with 0.45 per cent of cadmium, and the side of the elementary cell increases from 4.07 to 4.15 Å. A compound $AgCd$ exists, which has a body-centred cubic lattice and forms with the components β -solid solutions, these being present in alloys with 47.55 per cent of cadmium; the elementary cell has a side increasing from 3.32 to 3.34 Å., and contains one molecule, the calculated density being 9.97 to 9.82. Alloys with 55 to 65 per cent of cadmium are composed of solid solutions of a new phase of complex structure similar to the body-centred; the elementary cubic cell of side 9.96 Å. contains 52 atoms, *i.e.* 4 molecules of the compound Ag_5Cd_8 . With 65-95 per cent of cadmium, a simple compact hexagonal structure appears, the side varying from 3.04 to 3.09 Å., and

the value of $c : a$ being 1.58; these are perfect solid solutions of cadmium and silver in AgCd_3 . Alloys with 95-100 per cent of cadmium are solid solutions of silver in cadmium, and have the lattice of the latter. The compound AgCd is dimorphous and is transformed below 420° into a compact hexagonal modification with $c : a = 1.62$ and $a = 3.01 \text{ \AA}$.—G. Scagliarini and E. Brasi: Additive compounds of halides of divalent metals with organic bases (5). Six compounds of mercuric halides with hexamethylene-tetramine have been prepared.—Giambattista Dal Piaz: The geology of the Grivola group.—G. Cotronei: Factors of morphogenesis in successive times of development.—E. Benedetti: Experiments on the amplification and detection of bio-electric currents by the use of thermionic valves.—U. D'Ancona: Preliminary notices on the larval states of Murenoids collected by Prof. Luigi Sanzo in the Red Sea and in the Gulf of Aden during the cruise of the Italian naval ship *Ammiraglio Magnaghi* in 1923-24.

SYDNEY.

Linnean Society of New South Wales, April 27.—F. H. S. Roberts: A revision of the Australian Bombyliidae (Diptera). (Part I.) Two subfamilies are dealt with, the Exoprosopinae and the Anthracinae. Five genera are placed in the former subfamily, one being described as new. Only one genus belonging to the Anthracinae occurs in Australia, namely, *Anthrax*. Altogether forty-six species are described, eighteen being regarded as new.—C. P. Alexander: Crane-flies (Tipulidae, Diptera) from Barrington Tops, N.S.W. Description of forty-five species taken at a height of approximately 5000 feet during January 1925. Twenty species and two sub-species are described as new.—Rev. H. M. R. Rupp: A review of the Australian species of *Corysanthes* (Orchidaceae). Recognition is sought for seven valid species of *Corysanthes* for Australia. The confusion between certain species in the past dates back at least to Hooker's time. The difficulties of determination are really confined to *C. fimbriata*, *C. diemenica*, and *C. pruinosa*. *C. undulata*, rediscovered in 1924 after being lost for ninety-one years, is clearly a valid species, and the remaining two are very distinct.—A. B. Walkom: Fossil plants from Plutoville, Cape York Peninsula. Description of a small collection of plants which indicate a Cretaceous age for the rocks in which they occur. Eleven species are described, three being new. Two are doubtfully referred to *Lycopodites*, the first record of the genus from Queensland rocks.

VIENNA.

Academy of Sciences, Feb. 16.—W. J. Müller and O. Löwy: The theory of passivity phenomena (2). The relation between passivity current-density and time. The curve is a straight line if time and current-density are plotted logarithmically. The surface layer for iron in ferrous-ferric sulphate or in normal sulphuric acid is ferrous sulphate heptahydrate. Experiments were made with protected, with free-hanging and with agitated electrodes.—S. Strugger: The influence of hydrogen ion concentration on the protoplasm of root hairs in *Hordeum vulgare*. A three-peaked curve was found with maxima for flocculation at pH 6.85-6.90, 7.00-7.05 and 7.35. The percentages of hairs with inhibited plasma streaming gave the same three-peaked diagram.—F. Urbach: On sols in crystals (1).—N. A. Puschin, and D. König: Equilibrium in binary systems containing urea as one component.—O. Gugenberger: Some new cephalopods from the Carnic-Noric mixed fauna of Feuerkogel near Aussee.

Feb. 23.—E. Steinach and H. Kun: The secretion of the male gonad and its dependence on the hormone of the frontal lobe (hypophysis or pituitary). Experiments on infantiles, eunuchoids and seniles. Rats were used. With rats the developmental action of the testicle secretion sets in relatively late, in the ninth or tenth week of infantile life. Tests were made with extract or hormone solutions from the pituitary of rats or cattle, applied by injection. Rats of the same litter were used as controls. The activating impulse for the testicle secretion comes from the pituitary. Pituitary extract provokes bodily and mental precocity.—L. Schmid and A. Waschkau: The constitution of anthochlor from yellow dahlias. Apparently a flavone, possibly 1, 3, 4-trioxyflavone; melting points agree with apigenin.—L. Schmid and M. Zentner: Dehydration experiments on sitosterin. Dehydration of cholesterol by palladium gives a similar but not identical hydrocarbon.—L. Schmid and G. Bilowitzki: Researches on plant sterines. Stigmasterin and sitosterin were found; in *Ulmus* chiefly stigmasterin, in *Ficus* sitosterin, in *Bardana* both sterines.—L. Schmid, A. Waschkau and E. Ludwig: Alkali compounds of polyvalent alcohols and carbohydrates.—L. Schmid and M. Zentner: Methylation of starch.—L. Schmid, E. Ludwig, and K. Pietsch: Cryoscopic determinations of the molecular weight of glycogen in liquid ammonia. A value of about 180 points to the presence of a hexose anhydride. A platinum resistance thermometer and mirror galvanometer were used.—R. Andreash: Rhodanine and related compounds. Rhodanine gives thiazol derivatives on reduction.—E. Göllnitz: Contributions to the theory of quaternions.—A. Kieslinger: Geology and petrography of the Kor Alps (6). Pegmatites of the Kor Alps.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, Vol. 14, No. 4, April).—Burton E. Livingston: Dynamic relations between plant and soil, with special reference to the supply of water and oxygen. The living plant and its environment are regarded as two members of a system, the former allowing material and energy to pass in or out and the latter supplying material and energy. The environment should be described in terms of its power of supplying or removing material and energy. Of the soil conditions, only its supplying powers for water, oxygen, and carbon dioxide have been studied. At Baltimore in summer, a square metre of absorbing root surface (lawn plants) requires 80 gm. of water and 3 mg. of oxygen per hour.—Cecilia H. Payne: On the distortion of the continuous background by wide absorption lines. The continuous backgrounds of the spectra of all stars with strong Balmer lines are distorted in the ultra-violet. Temperature measurements, therefore, should not be based on this region; the phenomenon also affects the colour indices.—E. Bodewig: A case of streaming in a valve. The pressure of water against a trap-valve as a two-dimensional problem.—S. Satina and A. F. Blakeslee: Studies on biochemical differences between sexes in *Mucors*. (5) Quantitative determinations of sugars in (+) and (-) races. The amounts of reducing and total sugars were greater in the (+) races of 74 per cent of the pairs tested and the non-reducing sugars in the (+) races of 66 per cent of the pairs. The amount of reducing sugars found is not sufficient to account for the reduction of potassium permanganate previously demonstrated for (+) races, but the difference of sugar content in (+) and (-) races is believed to be significant.—C. J. Davisson and L. H. Germer: Reflection of electrons by a crystal of

nickel. The electron beam is directed against a {111}-face of the crystals at various angles of incidence, and the intensity of scattering in the incidence plane is measured as a function of bombarding potential and direction. A sharply defined beam of scattered electrons in the direction of regular reflection is obtained whenever the speed of the incident electrons is within a certain range which varies with the angle of incidence. Within each range is an optimum speed giving maximum reflection. The phenomenon is analogous to the selective reflection of X-rays and in accord with the authors' earlier experiments on electron diffraction.—Arthur Edward Ruark: (1) The limits of accuracy in physical measurements. There appear to be definite limits to the accuracy of measurements of length, time, and momentum in single experiments. Statistical results seem to give more information than individual experiments, but they depend on the questionable assumption that the structure of particles is definite and independent of their past history and conditions. (2) A critical experiment on the statistical interpretation of quantum mechanics. The probability functions are considered as referring (a) to the average behaviour of a number of similar systems, or (b) to individual systems having a group effect, such as an atom existing in several quantised states at once. Counts of the γ -rays emitted by radium-B or -C would, in case (b), show that two or more γ -rays were emitted simultaneously from a single atom. Present experimental evidence is against this view.—David L. Webster: (1) Direct and indirect characteristic X-rays: their ratio as a function of cathode ray energy. Earlier work on this subject has been extended, the target consisting of a cadmium block plated with silver or wrapped in silver foil being replaced by a cadmium block with cylindrical surface across which was stretched the silver foil, under tension and backed by aluminium foil. The ratio of the intensity of the K_{α} lines of silver and cadmium gives a measure of the ratio of the direct to the total indirect rays. For silver this ratio is almost constant (1.83 at 35 kv. and 1.96 at 80 kv.), with a probable error of 10-20 per cent. This is not sufficient, however, to vitiate comparisons of line intensities as functions of cathode ray energy. (2) K -electron ionisation by direct impact of cathode rays. The probability of direct K ionisation in silver is 0.9 time the probability of an equivalent quantum emission in the continuous spectrum at all voltages; direct ionisation is not usually an internal photoelectric effect.—R. C. Gibbs and H. E. White: Analysis of spectra arising from quadruply ionised tin, Sn V.—Richard C. Tolman: (1) On the energy and entropy of Einstein's closed universe. Using expressions previously obtained which correspond to the first and second laws of thermodynamics, and assuming that pressure is not negligible compared with the energy density, an expression corresponding to entropy is obtained. (2) On the equilibrium between radiation and matter in Einstein's closed universe.—Oliver R. Wulf: Photochemical ozonisation and its relation to the polymerisation of oxygen. Earlier work, even going back so far as the observations of Dewar and Living in 1889, but more particularly that of Warburg, G. N. Lewis, and Wulf, points to the existence of a polymer of O_2 in oxygen gas; this molecule appears to be O_4 .—Linus Pauling: The shared-electron chemical bond. An extension of London's work showing that an antisymmetric *eigenfunction* symmetric in the coordinates of two electrons, which corresponds to a potential causing the two atoms to combine to form a molecule, can occur only if originally the spin of each electron be not paired with that of another electron in the same atom.

No. 3064, VOL. 122]

Official Publications Received.

BRITISH.

- Air Ministry. Aeronautical Research Committee: Reports and Memoranda. No. 1130 (Ae. 300): A High Speed Wind Channel for Tests on Aerofoils. By T. E. Stanton. (T. 2562.) Pp. 9+6 plates. 9d. net. No. 1136 (Ae. 306): The Theory of Pressure Capsules. Part 1: General Discussion; Part 2: The Complete Flat Disc without Control Spring. By A. A. Griffith. (T. 2541 and A.) Pp. 14+1 plate. 9d. net. (London: H.M. Stationery Office.)
- Commonwealth of Australia: Council for Scientific and Industrial Research. Bulletin No. 35: Kraft Pulp and Paper from *Pinus insignis*. By L. R. Benjamin, J. L. Somerville, R. B. Jeffreys and W. E. Cohen. Pp. 32. (Melbourne: H. J. Green.)
- Empire Cotton Growing Corporation. Report on Cotton Breeding and Seed Supply in Nigeria. By F. L. Engledow and C. N. French. Pp. 32. (London.) 2s.
- Joint Board of Research for Mental Diseases: City and University of Birmingham. Annual Report of the Laboratory for the Year ending March 14th, 1928. Pp. 15. (Birmingham.)
- Colonial Survey Committee. Special Report on the Triangulations of Eastern and Central Africa, including Kenya, Northern Rhodesia, Nyasaland, Tanganyika Territory and Uganda. (Colonial No. 33.) Pp. 58. (London: H.M. Stationery Office.) 4s. 6d. net.
- Public Library, Museum and Art Gallery of South Australia. Records of the South Australian Museum. Vol. 3, No. 4. Pp. 345-500. (Adelaide.) 10s. 6d.
- Air Ministry. Aeronautical Research Committee: Reports and Memoranda. No. 1131 (Ae. 301): Lift and Torque of an Autogyro on the Ground. By H. Glauert. (T. 2502.) Pp. 4+1 plate. 4d. net. No. 1132 (Ae. 302): On the Vertical Ascent of a Helicopter. By H. Glauert. (T. 2546.) Pp. 14+3 plates. 9d. net. (London: H.M. Stationery Office.)
- South Australia: Department of Mines. Mining Review for the Half-Year ended December 31st, 1927. (No. 47.) Pp. 72+7 plates. Geological Survey of South Australia, Bulletin No. 13: Pigment Minerals in South Australia. By R. Lockhart Jack. Pp. 70+5 plates. (Adelaide: Harrison Weir.)
- Liverpool Astronomical Society. Report and Proceedings, Sessions 1924-25 to 1927-28. Pp. 14. (Liverpool.)
- Department of Scientific and Industrial Research. Summary of Progress of the Geological Survey of Great Britain and the Museum of Practical Geology for the Year 1927. Part 1. With Report of the Geological Survey Board and Report of the Director. Pp. iv+82. (London: H.M. Stationery Office.) 1s. 6d. net.
- Canada. Department of Mines: Mines Branch. Silica in Canada: its Occurrence, Exploitation and Uses. Part 2: Western Canada. By L. Heber Cole. (No. 636.) Pp. iii+59. (Ottawa: F. A. Acland.)
- Journal of the Royal Microscopical Society. Series 3, Vol. 48, Part 2, June. Pp. xvi+129-255. (London.) 10s. net.
- Proceedings of the Geologists' Association. Edited by A. K. Wells. Vol. 39, Part 2, June 25th. Pp. 103-221. (London: Edward Stanford, Ltd.) 5s.
- Journal of the Chemical Society: containing Papers communicated to the Society. June. Pp. iv+1401-1740+x. (London: Gurney and Jackson.)
- International Geographical Union. First Report of the Commission on Pliocene and Pleistocene Terraces. Edited by Dr. K. S. Sandford. Pp. 123. (Oxford.)

FOREIGN.

- Japanese Journal of Physics. Transactions and Abstracts, Vol. 4, No. 4. Pp. 159-184+77-105. (Tokyo: National Research Council of Japan.)
- Meddelelser fra Kommissionen for Havundersøgelser. Serie Plankton, Bind 2, Nr. 2: Investigations on the Food of the Herring in Danish Waters. By P. Jespersen. Pp. 150. (København: C. A. Reitzels Forlag.)
- Mémoires de l'Académie des Sciences et des Lettres de Danemark, Copenhagen. Section des Sciences, 5^{me} série, Tome 12, No. 1: The Hydromedusae of the Danish Waters. By P. L. Kraup. Pp. 291. (København: Andr. Fred. Høst and Søn.)
- Société de Propagande coloniale. Bulletin Nos. 3 à 6: Traitée scientifique et industriel des plantes textiles. Les hibiscus (Kétnie): culture et exploitation. Pp. 100. (Paris.) 15 francs.
- The Government of the Philippine Islands. Weather Bureau: Manila Central Observatory. Astronomical and Meteorological Conditions of the Eclipse of the Sun, May 9, 1929, in the Philippines. By the Rev. Miguel Selga. Pp. 24. (Manila: Bureau of Printing.)
- U.S. Department of Agriculture: Weather Bureau. Monthly Weather Review (Supplement No. 30): Forest and Stream-Flow Experiment at Wagon Wheel Gap, Colo. Final Report, on Completion of the Second Phase of the Experiment. By C. G. Bates and A. J. Henry. (W.B. No. 946.) Pp. iv+79. (Washington, D.C.: Government Printing Office.)
- Agricultural Experiment Station: Michigan State College of Agriculture and Applied Science. Special Bulletin No. 173: The Principal Bulb Pests in Michigan. By Eugenia I. McDaniel. Pp. 23. Technical Bulletin No. 88: Investigations on Winter Wheats in Michigan. By E. E. Doon, H. M. Brown, A. J. Patten, O. B. Winter and G. H. Coons. Pp. 35. (East Lansing, Mich.)
- Reports of the Imperial Industrial Research Institute, Osaka, Japan. Vol. 7, No. 17: Dispersoidological Investigations, XII-XVI. By Prof. Dr. P. von Weimarn and Collaborators. Pp. 51+7 plates. 1.50 yen. Vol. 8, No. 6: Dispersoidological Investigations, XVII. By Prof. Dr. P. von Weimarn and Collaborators. Pp. 55+5 plates. 1.50 yen. Vol. 8, No. 13: Dispersoidological Investigations, XVIII-XXI. By Prof. Dr. P. von Weimarn and Collaborators. Pp. 80+10 plates. 2.20 yen. (Osaka and Tokyo: Koseikai Publishing Department.)
- Bulletin of the American Museum of Natural History. Vol. 57, Art. 6: Diptera of the American Museum Congo Expedition. By C. H. Curran. Pp. 327-399. (New York City.)
- Abridged Scientific Publications from the Kodak Research Laboratories. Vol. 11, 1927. Pp. 232+vi. (Rochester, N. Y.: Eastman Kodak Co.)