

## Calendar of Discovery and Invention.

January 30, 1826.—A great achievement was brought to a successful termination on Jan. 30, 1826, when Telford's famous suspension bridge over the Menai Straits was opened and the London mail-coach crossed to Anglesey. Hitherto the passage of the Straits by boat had often been difficult and dangerous. Among the most graceful of such structures, the bridge has a central span of 579 feet. Its main features are the sixteen chains formed of flat wrought iron bars 10 ft. long,  $3\frac{1}{2}$  in. wide, and 1 in. thick.

January 31, 1858.—In a decade which saw the Great Exhibition, the discovery of the first coal-tar colours, the invention of the Bessemer process, and the laying of the first Atlantic cable, there was no greater experiment than the building of a steamship to run between England and Australia carrying sufficient coal for the round trip. The *Great Eastern* was begun in 1854 and, after extraordinary difficulties, was launched in the Thames on Jan. 31, 1858. Though a commercial failure, she was a splendid specimen of naval architecture and a worthy monument to her designers, Scott Russell and Brunel.

January 31, 1895.—In a letter to NATURE in September 1892, Lord Rayleigh directed attention to a slight difference in the densities of nitrogen prepared from two different sources. This letter led to the collaboration of Lord Rayleigh and Sir William Ramsay. In April 1894, Ramsay wrote to his wife, "I am at work on nitrogen but not from the commercial point of view. . . . Nitrogen of air is heavier than nitrogen from ammonia in the ratio 251 to 250. That would correspond with the addition of some light gas to the heavy one, or of some heavy gas to the light one." In August 1894 he was able to say, "I have isolated the gas. Its density is 19.075." The new gas was named argon, and the full story of its discovery was told by Rayleigh and Ramsay at a special meeting of the Royal Society held on Jan. 31, 1895.

February 2, 1891.—In 1887, Lord Rayleigh pointed out how particles of silver might be deposited in layers half a wave-length of light apart. Four years later, on Feb. 2, 1891, before the Paris Academy of Sciences, Gabriel Lippmann explained the discovery of the process of colour photography by interference.

February 3, 1851.—The idea of using a swinging pendulum to demonstrate the rotation of the earth was due to Leon Foucault, who described his experiments to the Paris Academy of Sciences on Feb. 3, 1851. Some of his demonstrations were made in the Panthéon, but when, a year or two later, the Panthéon again became a church, the pendulum was shown in motion at the Champs de Mars.

February 4, 1812.—Preserved in the Deutsches Museum, Munich, is the apparatus by which Sömmering in 1809 sent signals by electricity. His attention had been attracted to the subject by the successful use of the semaphore during Napoleon's Austrian campaign. Commencing in 1809 with communicating between points 38 feet apart, on Feb. 4, 1812, he was able to send signals almost  $\frac{3}{4}$  of a mile.

February 5, 1870.—At the Academy of Music, Philadelphia, on Feb. 5, 1870, before an audience of more than 1500 people, Henry Heyl publicly exhibited on the screen a series of posed pictures showing the movements of a couple waltzing. The effect was obtained by placing photographs round the edge of a disc which was driven step by step in strict time with the music of the orchestra. This was the first public motion picture show, and the Academy has been popularly called "the birthplace of the movies."

E. C. S.

## Societies and Academies.

LONDON.

Royal Society, Jan. 20.—J. Topping and S. Chapman: On the form and energy of crystalline sodium nitrate. The total potential energy has been found for a series of configurations of the ions of the crystal, by the addition of the potential energy due to the intrinsic repulsive forces between the various ions, to the electrostatic potential energy, which was calculated in a previous paper. The stable configurations of the crystal corresponding to a minimum value of this energy has been found for various values of the distance  $b$  between the N and O ions of an  $\text{NO}_3$  group. The value of  $b$  suggested is about 0.96 Å.U., which is somewhat larger than the value of 0.72 Å.U. given in the former paper.

C. N. Hinshelwood: Quasi-unimolecular reactions—the decomposition of diethyl ether in the gaseous state. The decomposition of gaseous diethyl ether is a reaction which obeys the unimolecular law at high pressures, but becomes more nearly bimolecular at lower pressures. A sufficient amount of hydrogen completely stops the falling off in the unimolecular velocity constant at low pressures; helium and nitrogen have little or no influence, while the reaction products in considerable excess have a slight retarding influence. There are enough collisions to activate the molecules if the energy of activation is assumed to be distributed among about eight degrees of freedom. These and other 'quasi-unimolecular' reactions are most simply explained on Lindemann's theory.

W. G. Burgers: An X-ray investigation of optically anomalous crystals of racemic potassium chlorosulphoacetate. In an investigation of crystals of racemic potassium chlorosulphoacetate  $\left\{ \begin{array}{l} \text{CHCl} \cdot \text{SO}_3\text{K} \\ \text{COOK} \end{array} \right. + 1\frac{1}{2}\text{H}_2\text{O}$

by F. M. Jaeger, it was shown that these crystals exhibit an anomalous optical behaviour, and that variations occur in the angles between some of their faces. Investigation of the crystals by X-rays shows that the crystals are truly orthorhombic, and that the irregularities of their habit must be caused by a slight difference in orientation of successively crystallised layers. The optical anomalies may be due to strains in the crystals. The space-group of the crystals is  $Q_h^{14}$ , the underlying lattice  $\Gamma_0$ . The dimensions of the unit cell, which contains eight groups of the above formula, are  $a = 8.58$  Å.U.,  $b = 8.60$  Å.U.,  $c = 23.76$  Å.U.

J. Topping: On the mutual potential energy of a plane network of doublets. The mutual potential energy of a set of coplanar doublets with their axes all perpendicular to the plane has been found at the net-points of (1) a square network, and (2) an equitriangular network. If the number of doublets per unit area be the same in both cases, the energy per unit area differs only by about 2 per cent. This result may be applied to a layer of polarised molecules on the surface of a fluid, so that a fairly definite estimate of the energy can be made for any probable mode of packing of the molecules.

D. Buchanan: Periodic orbits of the second genus near the straight-line equilibrium-points in the problem of three bodies. The particular problem considered pertains to periodic oscillations in the vicinity of the Lagrangian straight-line equilibrium-points, when the two finite bodies move in circles and the third body is infinitesimal. The first-genus orbits near these equilibrium-points were first obtained by Darwin. The orbits with which this paper is more particularly concerned are those of Class A of Moulton's 'Oscillating Satellite.' With respect to

rotating axes, they have the shape of the figure 8, with the top and bottom of the 8 bent up from the page. They re-enter after one revolution. The second-genus orbits considered are in the neighbourhood of these figure-8 orbits, but re-enter only after many revolutions. The ratio of periods of orbits of the two genera is a function of distance between them at initial times.

**L. F. Richardson:** The deferred approach to the limit. This is an investigation of the validity of an arithmetical process, here called the ' $h^2$ -extrapolation,' which has previously been used for solving differential and integral equations.

**J. E. Lennard-Jones and B. M. Dent:** Some theoretical determinations of the structure of carbonate crystals. Part 1. This paper provides data for the calculation of the potential energy of any crystal of the calcite type for which the forces between the constituent ions are known. Two crystals, namely,  $MgCO_3$  and  $CaCO_3$ , are considered in detail, and theoretical determinations are made of the size and shape of the rhombohedral cells. In addition, the investigation determines an absolute value for the energy of these crystals is obtained. Part 2. A theoretical relation is obtained between the size of the rhombohedral cell of the carbonate crystals and the magnitude of the forces between the metallic and oxygen ions.

**J. A. Gaunt:** The first step in the approximate solution of differential equations by interpenetrating lattices.

**J. W. McBain and W. B. Lee:** Adhesives and adhesions: true chemical compounds as adhesives. Pure crystalline substances fully rival well-known adhesives in the strength of joint obtainable by them and may yield joints between optically polished metal surfaces the breaking strength of which may approach one ton per square inch. Pure liquids give results of a lower order of magnitude. In all cases the thinner the film, the stronger the joint. This rule holds for ordinary adhesives as well, provided that the film completely fills the space between the surfaces joined. There is direct parallelism between joint strength and the mechanical properties of the materials joined. Joint strength rises with tensile strength and elasticity, and falls with atomic volume and compressibility. Good lubricants with high spreading coefficients are poor adhesives. Joint strength is often much the same, whether tested in tension or in shear. Disorderly arrangement greatly enhances strength and joint strength.

**W. L. Bragg:** The structure of phenacite,  $Be_2SiO_4$ . The structure of phenacite,  $Be_2SiO_4$ , is examined, and an attempt made to find the positions of the silicon and oxygen atoms. The structure proposed resembles the simpler structure of the olivine group ( $Mg_2SiO_4$ ,  $Fe_2SiO_4$ ) in that its form may be explained as a packing together of oxygen atoms whose centres are 2.7 Å.U. apart, with the atoms of metal and silicon between groups of oxygen atoms, but the arrangement is more complex. In phenacite, silicon atoms lie at the centre of tetrahedral groups, and similar positions are probably occupied by beryllium atoms. A rearrangement is achieved at the expense of slight increase in volume associated with each oxygen atom, when the structure is contrasted with such structures as  $BeAl_2O_4$ , where close-packing holds. The structure is determined by 21 parameters, 15 of which are measured.

**P. A. M. Dirac:** The physical interpretation of the quantum dynamics. To interpret physically calculations of quantum dynamics, a number of special assumptions are previously made; for example, that the elements of the matrix that represents the total

polarisation determine the frequencies and intensities of the spectral lines, in analogy with the classical theory, or that the square of the amplitude of Schrödinger's wave-function determines a probability. A general method is given for obtaining physical results from a mechanics that uses non-commutative multiplication. The theory for any number of degrees of freedom is worked out. The results obtained in this way appear to be the most general that can be got from quantum dynamics, and probably give all the information that the physicist requires. For the mathematical investigation a general transformation theory of matrices of matrix mechanics is here worked out.

**T. R. Merton:** On measurement of intensity of spectrum lines. The wedge method of determining the intensities of spectrum lines is discussed, and a new technique is described. A comparator has been constructed for rapidly identifying spectrum lines, and at the same time determining their intensities in terms of a standard continuous spectrum.

**T. R. Merton:** On temperature and pressure regulation in prismatic photographs. The errors in measurement and the loss in definition in prism spectrographs, due to variations in the temperature and barometric pressure, are discussed, and a description is given of methods by which these errors have been overcome.

**Geological Society, Jan. 5.**—**Charles S. Elton:** The nature and origin of soil-polygons in Spitsbergen. Polygonal soils are divided primarily into mud-polygons and stone-polygons. The mud-polygons are formed in two quite different ways: there are larger ones produced by frost-expansion of the soil in winter, and smaller ones formed by drying of the soil in summer. There are probably several factors at work in the formation of stone-polygons. A new factor is described in this paper; mixed materials become differentially arranged in a vertical direction, so that there is mud below, grading into stones on the surface. The mud freezes in winter, expands, and forms regular mud-polygons, invisible from the surface at that stage. Later, as the overlying stones become disintegrated, the centres of the mud-polygons reach the surface, and when they freeze in winter exert a lateral pressure forcing the stones outwards, forming at first, rings, and later, stone networks.—**Frank Dixey:** The tertiary and post-tertiary lacustrine sediments of the Nyasan rift-valley. The series of lacustrine sediments extending along the north-western shores of Lake Nyasa, formerly thought to be of recent age, are now known to include the dinosaur beds of late Jurassic or early Cretaceous age, as well as six groups of beds ranging through Tertiary and post-Tertiary times. These sediments extend over an area 78 miles in length and 12 miles in maximum width, and they occupy the floors of several minor rifts that run parallel with the main rift-valley. The beds extend increasingly farther inland according to their age, and the oldest group (the Sungwa beds) rises to a height of 1000 feet above the present level of the lake. The different groups rest upon the worn edges of the dinosaur beds and all older rocks, and they are themselves separated by a series of unconformities; moreover, the sediments all dip towards the floor of the main rift, and each group is inclined in this direction at a steeper angle than that of the group immediately overlying it.

EDINBURGH.

**Royal Society, Jan. 10.**—**Miss Frances M. Ballantyne:** Air-bladder and lungs: a contribution to the morphology of the air-bladder of fish. A large mass of material, embryological and adult, of ganoids,

lungfish, and teleosts has been examined. The facts brought forward help to complete the evolutionary history of the air-bladder of modern fish from the right lung of the primitive ancestral form.—George Slater: The structure of the disturbed deposits of Møens Klint and Lönstrup, Denmark. The disturbances of Møens Klint are local and superficial and extend for 4 miles. They may be divided into two groups, in each of which the structure shows a definite relationship to a 'core' of chalk, of asymmetrical or drumloid form of roche-moutonnée outline. Thrust planes are developed on the iceward limbs of the 'cores,' and these are associated with drift-deposits intercalated in the chalk. To the south of the area seven squeezed anticlines occur separated by thrust planes. The disturbances south-south-west of Lönstrup extend for  $2\frac{1}{2}$  miles. The material involved consists entirely of drift of two types, 'clay and sand,' constantly repeated, and associated with thrust-planes. The structure differs from that of the Møen area in the fact that the beds have a uniform direction of dip to the north-north-east, but agrees with the phenomena seen at Møen on the iceward limbs of the 'cores.' The Lönstrup sections represent the tectonics of a stagnant glacier as reflected in the lower englacial material.—Errol I. White: The fish-fauna of the cementstones of Foulden, Berwickshire. This fauna consists chiefly of fishes, which, with the exception of a few large, widely distributed species represented by odd scales and teeth, are small local forms not previously described. Five new species are recorded, and of these four belong to new generic types of palaeoniscids to which the names Fouldenia, Aetheretmon, Carboveles, and Strepheoschema are given: these are interesting on account of the specialisation they show in various directions, and specially to be noted are the degeneration of the squamation in Carboveles and the platysomid-like deepening of the body in Strepheoschema.

#### MANCHESTER.

Literary and Philosophical Society, Dec. 14.—F. E. Weiss: Some recent advances in our knowledge of inheritance in plants. In the main, Mendel's work has been confirmed, but irregularities and exceptions have made subsidiary hypotheses necessary. The numerical ratios obtained by Mendel in the segregation of characters have been satisfactorily explained by the separation of the chromosomes in the reproductive cells, and Prof. Morgan and his collaborators in America have worked out a very complete theory of the actual distribution in the chromosome filaments of the material carriers or genes of the unit characters. Though Morgan's views have been generally adopted, they must still be regarded as open to criticism. Recently it has been shown that it is difficult to reconcile them with the fact that in different, closely allied species of *Crepis* the number of the chromosomes is different, yet without apparent loss of important characters. Variation in the number of chromosomes occurs in many plants. Certain giant races possess twice the number of the nuclear constituents, whereas in other cases varying numbers of chromosomes do not appear to have caused fundamental differences in the plant. Very variable genera such as *Rosa*, *Rubus* and *Cratægus* possess multiple numbers of chromosomes. Millardet's original discovery of complete inheritance in certain strawberry hybrids of all the characters of one of the parental plants, and an absence of subsequent segregation, has been confirmed, and occurs in a number of other plants. More attention will probably have to be paid in the future to the 'field' or environment in which the genes develop, and this may also throw some light

on the conditions which produce changes of these genes and result in the formation of variations and mutations.

#### PARIS.

Academy of Sciences, Dec. 20.—E. Goursat: Some partial differential equations.—Maurice Hamy: Some experimental researches. A study of a method for evaluating the errors due to the eyepiece micrometer of meridian telescopes.—L. de Launay: The possible rôle of transmutations in geology. Outline of a theory concerning the formation of the chemical elements and their distribution on the earth.—A. Desgrez, L. Lescœur, and Mlle. S. Manjean: The influence of the ionic reaction on the decomposition of sulphide waters by a current of inert gas: hydrological applications. The effect on the rate of removal of hydrogen sulphide by a current of inert gas from a mineral water the pH of which has been changed by the addition of salts is shown in a series of curves.—Benjamin Segre: The generalisation of the transformation of Laplace.—René Garnier: Certain linear differential equations and the problem of Plateau.—E. Vessiot: Systems of equations and continuous transformations.—Lainé: An equation of the form  $s = p\phi(x, y, z, q)$  integrable by the method of Darboux.—Georges Valiron: The values of the holomorph functions in a circle.—Octave Onicescu: The adjusting an ensemble of values.—Paul Dumanois: Concerning the use in internal combustion motors of slightly inflammable combustibles. A study of the conditions under which a petroleum product such as white spirit (boiling-point range  $130^{\circ}$ - $180^{\circ}$  C.) can be used in an aviation motor.—P. Salet: The constancy of the velocity of light. Reply to the criticisms of La Rosa on conclusions given in an earlier communication.—P. Helbronner: Results of the operations of the meridian chain of Corsica and of the junction of this with the islands of the Tuscan archipelago.—Th. Vautier: Forms and deformations of aerial waves.—Pierre Bricout: The value of the potential at the interior of a cluster of electrons in movement.—G. Bruhat and M. Pauthenier: The surface tension of insulating liquids submitted to the electric field. A thermodynamic proof that the surface tension of an insulating liquid is independent of the electric field.—G. Colange: The mechanism of the electrolytic interruptor. A description of a new type of electrolytic interruptor.—A. Couder: A new type of photographic telescope. An improvement of Schwarzschild's method, using two mirrors with a reflecting telescope.—G. Vaugeois: The influence of the nature of the support on the radon evolved.—Henri Belliot: Photographic inversion by heat.—E. Carrière and Ducasse: Determination of boiling-point and dew-point curves of mixtures of hydriodic acid and water under a pressure of 746 mm. of mercury.—Pierre Chevenard and Albert Portevin: The influence of carbon and silicon on graphite formation in white cast irons. In the alloys studied the carbon varied from 1.7 per cent. to 4.5 per cent., the silicon from 0.2 per cent. to 6 per cent. The results are given in a three-dimension diagram, with silicon, carbon, and temperature of graphite formation as variables.—H. Colin and Mlle. A. Chaudin: The law of hydrolysis of saccharose by acids. A repetition of Wilhelm's research with instruments of high precision on the inversion of sugar by acids (nitric acid, oxalic acid).

The quantity  $\frac{1}{t} \log \frac{a}{a-x}$  increased with time. From

this it is concluded that the hydrolysis of sugar by dilute acids is not a simple monomolecular reaction, neither is it the resultant of two reactions one of which is instantaneous.—Mlle. Suzanne Veil: The evolution of iron sulphide in contact with water. A study of the changes in the magnetisation coefficient of sulphide

of iron produced by heating with water to various temperatures.—J. Cournot and Eugène Pérot: The cementation of aluminium by copper.—B. Bogitch: Concerning the granulation of scoria. In the process of granulating metals or slags by pouring the molten material into water, explosions are fairly frequent. These can be avoided or much reduced in number by taking certain precautions.—Charles Prévost: A closed cycle of reactions concerning some derivatives of erythrene.—Antonin Nemec: The determination of the requirements of agricultural soils in phosphoric acid by the colorimetric method. The influence of lime and iron.—Ch. Brioux and J. Pien: The lime requirements of acid soils. Electrometric curves of saturation and the Hutchinson-MacLennan indices. Buffer action towards bases. Comparison of the results obtained by the Hutchinson-MacLennan calcium bicarbonate and electrometric methods showed good agreement. For soils of equal pH values, clay soils and soils containing much humus require more lime for neutralisation than light sandy soils.—Maurice Azéma: The mechanism of excretion in the Ascidiidae.—Jacques Pellegrin: The disappearance of opposite fins in African fishes of the Clarineae group.—Alphonse Labbe: An experimental phyletic line, *Canthocampus* → *Cyclops*.—Jean Jacques Trillat: The secondary action of the X-rays on micro-organisms. These experiments show the marked influence of the secondary radiations excited by the primary radiation on a metallic radiator placed near the micro-organisms. The bactericidal action is greater the higher the atomic number of the metal forming the radiator.—Henri Hérissé and J. Cheymol: The chemical composition of geine (geoside). The formula given is mainly based on the facts that hydrolysis with gease gives vicianose and eugenol in equal molecules, whilst hydrolysis with acids gives *d*-glucose, *l*-arabinose, and eugenol.—N. Bezssonoff: Is the antiscorbutic action due to two different substances?—J. Meunier and Mlle. G. Saint-Laurens: Human biliary calculi containing a high proportion of copper. Recent work has shown that the presence of copper in plant and animal tissues is fairly general, and its presence can now scarcely be regarded as accidental. The maximum amounts hitherto found are of the order of 60 mgm. per kilogram. The calculi examined contained 3 grams per kilogram.

Official Publications Received.

BRITISH AND COLONIAL.

- Proceedings of the Edinburgh Mathematical Society. Vol. 44 (Session 1925-26), Part 2, December. Edited by Dr. T. M. MacRobert and Prof. H. W. Turnbull. Pp. 57-153+vi. (London: G. Bell and Sons, Ltd.) 5s. net.
- Proceedings of the Geologists' Association. Vol. 37, Part 4, December 21st. Edited by A. K. Wells. Pp. 346-462+plates 17-29. (London: Edward Stanford, Ltd.) 5s.
- Transactions of the Royal Scottish Arboricultural Society. Vol. 40, Part 2, October 26. Pp. 71-182+27-34. (Edinburgh: Douglas and Foulis.) 3s.
- Catalogue of the Seventeenth Annual Exhibition of the Physical Society and the Optical Society, January 4th, 5th and 6th, 1927, Imperial College of Science and Technology, Imperial Institute Road, South Kensington. Pp. 128+xxiv. (London: Physical Society, Imperial College of Science.)
- The Journal of the London Mathematical Society. Vol. 1, 1926. Pp. iv+272. (London: Francis Hodgson.)
- The Optical Convention, 1926. Catalogue of Optical and General Scientific Instruments. Pp. x+326. (London: The Optical Convention, 1 Lowther Gardens.) 6s. net.
- Proceedings of the Optical Convention, 1926. Part 1. Pp. x+491+v+26 plates. Part 2. Pp. viii+493-1051+v+23 plates. (London: The Optical Convention, 1 Lowther Gardens.) 60s. net.
- Department of Agriculture, Federated Malay States and Straits Settlements. Bulletin No. 38: A Preliminary List of Food-Plants of some Malayan Insects. Compiled by B. A. R. Gater, from the Records obtained in the Entomological Laboratory from 1920 to 1926, by G. H. Corbett and B. A. R. Gater. Pp. xvii+95. (Kuala Lumpur.) 50 cents.
- Journal of the Chemical Society: containing Papers communicated to the Society. December. Pp. viii+iv+2071-3243. (London: Gurney and Jackson.)

No. 2987, VOL. 119]

- Catalogue of Indian Insects. Part 11: Brentiidae. By Richard Kleine. Pp. xiii+50. (Calcutta: Government of India Central Publication Branch.) 1.2 rupees; 2s.
- Bureau of Education, India. Occasional Reports, No. 13: Bilingualism (with Special Reference to Bengal). By Michael West. Pp. xiii+354. (Calcutta: Government of India Central Publication Branch.) 2.4 rupees; 4s.
- Aeronautical Research Committee: Reports and Memoranda. No. 1016 (M. 36): Some Physico-Chemical Studies on the Effect of Sunlight on Cotton. By Dr. Guy Barr and Isabel H. Hadfield. (B.I.C. Fabrics-Aeroplanes. 61-62-63.—M.C. 132, T. 1961, T. 2184, T. 2241.) Pp. 22+9 plates. 1s. net. No. 1043 (Ae. 230): Photographs of the Flow round a Model Screw working in Water, especially in the 'Vortex Ring State.' By C. N. H. Lock and H. C. H. Townend. (A.3.d. Airscrews, 92.—T. 2278.) Pp. 5+3 plates. 9d. net. (London: H.M. Stationery Office.)
- Annual Report on the Working of the Museum Department during 1925-26. Pp. xii. (Malta: Government Printing Office.)

FOREIGN.

- U.S. Department of Agriculture: Bureau of Biological Survey. North American Fauna, No. 48: Voles of the Genus *Phenacomys*. 1: Revision of the Genus *Phenacomys*; 2: Life History of the Red Tree Mouse (*Phenacomys Longicaudis*). By A. Brazier Howell. Pp. iv+66+7 plates. (Washington, D.C.: Government Printing Office.) 20 cents.
- Annual Report of the Meteorological Observatory of the Government-General of Työsen for the Year 1925. Compiled by the Meteorological Observatory of the Government-General of Työsen. Pp. iv+156. (Zinsen.)
- The Memoirs of the Imperial Marine Observatory, Kobe, Japan. Vol. 3, No. 1: An Attempt to Detect a Direct Effect of the Solar Activity on the Air Temperature at some Stations in the Central Part of Japan. By Rikiti Sekiguti. Pp. 21+7 plates. (Kobe.)
- Proceedings of the Imperial Academy. Vol. 2, No. 8, October. Pp. xxiii-xxiv+361-458. (Ueno Park, Tokyo.)
- U.S. Department of Agriculture. Farmers' Bulletin No. 1495: Insect Enemies of the Flower Garden. By C. A. Weigel and William Middleton. Pp. ii+54. (Washington, D.C.: Government Printing Office.) 15 cents.
- Department of Commerce: Bureau of Standards. Miscellaneous Publications, No. 75: Annual Report of the Director of the Bureau of Standards to the Secretary of Commerce for the Fiscal Year ended June 30, 1926. Pp. iv+45+3. (Washington, D.C.: Government Printing Office.) 5 cents.
- Proceedings of the United States National Museum. Vol. 69, Art. 4: The Collection of Ancient Oriental Seals in the United States National Museum. By I. M. Casanowicz. (No. 2630.) Pp. 23+20 plates. Vol. 69, Art. 7: Descriptions of New Reared Parasitic Hymenoptera and some Notes on Synonymy. By C. F. W. Muesebeck. (No. 2633.) Pp. 18. Vol. 69, Art. 9: Review of the American Xylotine Syrphid-Flies. By Raymond C. Shannon. (No. 2635.) Pp. 52. Vol. 69, Art. 11: The Chrysotoxine Syrphid-Flies. By Raymond C. Shannon. (No. 2637.) Pp. 20. Vol. 69, Art. 13: American Two-Winged Flies of the Genus *Microphthalma* Macquart, with Notes on Related Forms. By J. M. Aldrich. (No. 2639.) Pp. 8. Vol. 69, Art. 15: Polychaetous Annelids from Fiji, Samoa, China and Japan. By A. L. Treadwell. (No. 2641.) Pp. 20+2 plates. Vol. 69, Art. 16: Identity of Hallowell's Snake Genera *Megalops* and *Aepida*. By Leonard Stejneger. (No. 2643.) Pp. 3. Vol. 70, Art. 2: Descriptions of Larvae and Pupae of Two-Winged Flies belonging to the Family Leptidae. By Charles T. Greene. (No. 2651.) Pp. 20+3 plates. Vol. 70, Art. 3: A Fossil Palm Fruit from the Middle Eocene of Northwestern Peru. By Edward W. Berry. (No. 2652.) Pp. 4+1 plate. Vol. 70, Art. 5: A Collection of Birds from the Provinces of Yunnan and Szechwan, China, made for the National Geographic Society by Dr. Joseph F. Rock. By J. H. Riley. (No. 2654.) Pp. 70. Vol. 70, Art. 6: Nematode Eggs from the Gill Region of a Shark *Carcharhinus milberti*. By G. A. MacCallum. (No. 2655.) Pp. 2. (Washington, D.C.: Government Printing Office.)

CATALOGUES.

- The Francis Lamp Lock. Pp. 4. (London: Francis Lamp Locks, Ltd.)
- Microscope Record. No. 10, January. Pp. 32. (London: W. Watson and Sons, Ltd.)

Diary of Societies.

SATURDAY, JANUARY 29.

- NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS (at Neville Hall, Newcastle-upon-Tyne), at 3.—P. F. Hope: Steam and Electric Locomotives for Colliery Purposes.
- ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Prof. E. W. Tristram: English Medieval Wall-Painting (2).
- INSTITUTE OF BRITISH FOUNDRYMEN (Birmingham, Coventry, and West Midlands Branch) (at Engineers' Club, Birmingham), at 6.30.—T. Teisen: Modern Gas-Fired Annealing and Other Furnaces.
- WEST OF SCOTLAND IRON AND STEEL INSTITUTE.—Sir W. Larke: Steel Commercially Considered.

MONDAY, JANUARY 31.

- CAMBRIDGE PHILOSOPHICAL SOCIETY (at Cavendish Laboratory, Cambridge), at 4.30.—Sir Joseph Larmor: What Determines the Resistance and Tilt of an Aeroplane?—L. H. Thomas: The Effect of the Orbital Velocity of the Electrons in Heavy Atoms on their Stopping of  $\alpha$  Particles.—Dr. F. H. Constable: Surface Adsorption and the Velocity of Chemical Action at Gas Solid Interfaces.—H. D. Ursell: The Evaluation of Gibbs' Phase Integral for Imperfect Gases.—To be communicated by title only.—Prof. G. H. Hardy: Note on Ramanujan's Arithmetical Function  $\tau(n)$ .—Prof. G. H. Hardy and J. E. Littlewood: Notes on the Theory of Series (iv.): On the Summability of the Fourier Series of a Nearly Continuous Function.—R. Vaidyanathaswamy: The Pedal (3, 2) Correspondence.—W. Hunter: Lines and Planes in a Metrical Space.