

## Calendar of Discovery and Invention.

**November 13, 1807.**—The inaugural meeting of the Geological Society was held at the Freemasons' Tavern, Great Queen Street on Nov. 13, 1807. Among the eleven gentlemen present were Davy, Babington, Count Balmton, Greenough, William Allen, and Richard Phillips. At this meeting a resolution was passed "That there be forthwith instituted a Geological Society for the purpose of making geologists acquainted with each other, of stimulating their zeal, of inducing them to adopt one nomenclature, of facilitating the communication of new facts, and of ascertaining what is known of their science, and what remains to be discovered."

**November 14, 1894.**—Ten years after Sir Charles Parsons patented his steam turbine, the pioneer steam turbine vessel *Turbinia* was constructed on the Tyne, and on Nov. 14, 1894, carried out her preliminary trial. The *Turbinia* was 100 feet long and 44½ tons displacement. Her first engine was a single radial flow turbine giving 960 h.p. at 2400 r.p.m., but this was afterwards replaced by three turbines developing 2000 h.p. and giving the vessel the extraordinary speed of 34½ knots. The after part of the vessel and both sets of machinery have recently been presented to the Science Museum.

**November 15, 1850.**—In the ring of Saturn, first observed by Galileo, can be distinguished three rings, an outer ring called A, a middle ring B, and an inner ring C. This inner, or dusky ring, some 11,000 miles across, was first distinguished by Bond on Nov. 15, 1850.

**November 16, 1492.**—In the parish church of Ensisheim in Alsace hangs the oldest known meteorite. Of this a contemporary document says, "On the 16th of November 1492, a singular miracle happened; for between eleven and twelve in the forenoon, with a loud crash of thunder and a prolonged noise, there fell in the town of Ensisheim a stone weighing 260 pounds. . . . It was taken to the church as being a miraculous object."

**November 17, 1893.**—Heaviside's writings are contained in his "Electrical Papers," covering the period 1872 to 1892, and his "Electro-magnetic Theory" containing his work up to 1912. In the latter is his historic paper of Nov. 17, 1893, in which he laid down the principles of the use of inductance coils in telephone circuits.

**November 18, 1846.**—Sulphuric ether had been known in the thirteenth century. It was recommended as an inhalant for asthma by Pearson of Birmingham in 1785, and it is said that Faraday in 1818 noted the effects of inhaling it. It was Prof. Jackson of Harvard who suggested to W. T. G. Morton the possibilities of ether as an anæsthetic, and on Oct. 16, 1846, Morton successfully administered it to a patient in the General Hospital of Boston, while the discovery was made known to the world by Dr. Bigelow on Nov. 18, 1846.

**November 19, 1787.**—"The advance of astronomy in the eighteenth century," wrote Miss Clerke, "ran in general an even and logical course. The age succeeding Newton's had for its special task to demonstrate the universal validity, and trace the complex results of the law of gravitation. The accomplishment of that task occupied just one hundred years. It was virtually brought to a close when Laplace explained to the French Academy, November 19, 1787, the cause of the moon's accelerated motion." With this work, says another writer, "the last anomaly and the last threat of stability thus disappeared from the solar system."

E. C. S.

## Societies and Academies.

LONDON.

**Royal Society, Nov. 3.**—Hans Spemann (Croonian Lecture): Organisers in animal development. The conception of 'organisers in development' has been derived from experiments in amphibian embryos in the earliest stages. The different regions of such an embryo have not the same value for development; most of them are relatively indifferent and do not carry their destiny in themselves. This can be shown by transplantation of these parts into other regions of the embryo; they follow the development of their new environments. But there is a certain region in the embryo, parts of which, when transplanted into an indifferent region of the embryo, do not adapt themselves to their new environment, but retain their own character, and force, as it were, the others to follow them. Such parts organise a new embryo, which is built up partly by the transplanted cells, partly by the cells of the host. Therefore they were called 'organisers,' and the region where they lie together in those early stages of development the 'centre of organisation.' Further experiments have been made to determine the extent of this centre, its origin, its intimate structure, and the nature of the organising influence.

PARIS.

**Academy of Sciences, Oct. 3.**—Mesnager: Observations on a note by M. de Séze.—H. Deslandres: The law of distribution of magnetic storms and of their elements. Consequences to be deduced regarding the constitution of the sun.—Paul Helbronner: The operations of the detailed geometrical description of the French Alps (twenty-third season, 1927).—Paul Montel: Subharmonic functions and their relations with convex functions.—Pierre Humbert: Spherical prepotential.—L. d'Azambuja: The structure of the solar chromosphere.—E. M. Antoniadi: The rotation of the third satellite of Jupiter. Observations made on this satellite during the last year with the 83 cm. telescope at Meudon Observatory show that this moon always presents the same face to Jupiter, except for a possible libration in latitude. It is concluded that the period of rotation of the third satellite of Jupiter is equal to that of its revolution round the planet.—G. W. Ritchey: Some mechanical and other advantages of the small length and compact structure of the Ritchey-Chretien type of a planatic telescope.—Jean Thibaud and A. Soltan: Spectrographic measurements in the intermediate domain (series K, L, M, N).—Fred Vlès: The optical properties of certain colouring matters susceptible of changing colour in concentrated solutions of neutral salts.—W. Ipatieff and B. Mouromtseff: The formation of crystallised silicates in aqueous solution under high temperatures and pressures. Silica gel, after heating for 30 to 40 hours at 310°-320° C., under a hydrogen pressure of 200 atmospheres gives hexagonal prisms and pyramids of SiO<sub>2</sub>. Replacing hydrogen by carbon dioxide, a crystallised hydrate, 5 SiO<sub>2</sub>, 2 H<sub>2</sub>O is obtained. The preparation of crystallised silicates of magnesia, calcium, manganese, and zinc is described.—Erling Botolfson: The sublimation of iron in a vacuum. When iron is heated in a high vacuum at 1300° C., below its melting point, it slowly sublimes. In one experiment under these conditions the velocity of sublimation of iron was 0.07 per cent. per hour.—Jean Cournot and Macedo Soares Silva: The viscosity of nickel, aluminium, and the light alloys.—P. Lebeau and A. Damiens:

The existence of a compound of fluorine and oxygen (NATURE, Nov. 5, p. 672).—René Van Aubel: The genesis of the uraniferous deposits of Kasolo (Katanga). Cubic uraninite is considered to be a pseudomorph. — L. Picard and R. Soyer: The presence of the Jurassic and of the lower and middle Cretaceous on the western slope of Antiliban.—Jacques de Lapparent: The stratigraphical position of the bauxites of the Pays de Fenouillet.—Ch. Jacob and L. Mengaud: The structure of the massifs of Mont-Perdu, Sestres, and the Tendeñera in Haut-Aragon.—Henri Marcelet: The chemical analysis of the mud collected on the upper terrace of the Musée Océanographique of Monaco, following the storm of Oct. 31, 1926. This brown mud left behind after the storm was free from organic matter, and consisted mainly of silica (46 per cent.), calcium, and magnesium carbonates (36 per cent.), with some alumina and oxide of iron.—R. Argaud and G. Billard: The lymphoid stages of the digestive tract.—G. Athanassopoulos: A somatometric character of Nereus.—M. and Mme. A. Chauchard: Cerebral motor localisations in the lower vertebrates.—Alfred Maubert: The influence of thorium X on the activity of emulsin. At very low concentrations the total radiation of thorium X has a slight accelerating effect on the reaction between emulsin and amygdaloidase; at higher concentrations the activity of the emulsin is reduced and finally destroyed. The accelerating influence is proved to be due to the  $\alpha$ -radiation only.—Jean Feytaud and René Dieuzeide: A parasitic fungus of *Reticulitermes lucifugus*.—A. Paillot: Two new Protozoa, parasites of the caterpillars of *Pyrausta nubilalis*.—Edouard Chatton and André Lwoff: The evolutive cycle of the Infusoria *Pactingeria actiniarum*. The necessity for a second crustacean host.—Etienne Wolf: The behaviour and the rôle of the contractile vacuole of a fresh-water amoeba. Experiments are described proving the influence of the osmotic pressure on the contractile vacuole. Its function appears to be that of a regulating organ, designed to increase the osmotic pressure of the internal medium.

Oct. 10.—The president announced the death of Svante Arrhenius, *correspondant* in the Section of Physics.—G. N. Perry: The calculation of the heat evolved by high frequency currents. A theoretical explanation of some results recently given by M. d'Arsonval.—H. Douville: The marble of Sarrancolin and the limestones of Haute-Garonne.—L. Féraud: The  $C_{23}$  correspondences between the surfaces of space in four dimensions.—W. Goloubeff: A limited automorph function.—Grialou: Plane rotational movement of liquid possessing viscosity, the regime being permanent and the trajectories vertical.—Th. De Donder: The fundamental equation of quantic chemistry.—G. P. Arcay and P. Etienne: The rigidity of liquids.—F. Croze and C. Mihul: Abnormal doublets and intercombinations in the spectrum of O II. E. Darms and R. Descamps: The natural rotatory dispersion of the molybdo-malic complexes. An extension of earlier measurements into the ultra-violet. The dispersion found was much higher than that given by the inverse square law.—Pierre Bricout: The quantitative study of the luminescence of mercury vapour excited by electronic shock.—R. de Malle-mann: The electrical double refraction of benzil.—Josef Hrdlička: The action of potassium permanganate on the photographic plate and infringements of the law of reciprocity.—A. Andant: The application of fluorescence spectroscopy to the examination of powdered alkaloids. A detailed account of the

technique of the method is given; extremely small quantities of alkaloids can be examined by this method, which promises to be useful as a means of analysis.—Ed. Chauvenet and E. Duchemin: The purification of beryllia. Starting with commercial beryllia containing 1.5 per cent. of impurities (mainly iron, aluminium, and calcium), heating in a current of phosgene at 450° C. removes the iron and aluminium as volatile chlorides. The residue extracted with water leaves pure beryllia.—J. Bougault: Benzal-phenylethylsuccinic and benzylphenylethylmaleic acids.—Mme. Ramart-Lucas: The mechanism of molecular transformations.—F. Blondel: The geology and metallogeny of the zinc deposit of Cho Dien (Tonkin).—E. Bruet: The nature and the age of the sediment of the plateaux to the north-east of La Ferté-sur-Aube.—Pierre Lesage: Curves of growth and heredity of the precocity character in very different latitudes.—P. Lasareff: The theory of the stimulation of nerves and muscles by electric currents of high frequency and short duration.—Lesbouyries and Verge: The filtering forms of Koch's bacillus in canine tuberculosis.—André Jousset: Researches on pulmonary anthracosis.

## WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, Vol. 13, No. 9, September).—E. S. Castell: The interrelation of the eyes of *Palæmonetes* and concerns retinal pigment migration. Plaster of Paris and lampblack makes a harmless eye covering, and in *Palæmonetes* with one or both eyes covered, the pigment in the covered organ takes up the position occupied by the pigment of eyes adapted to darkness. Leaving one eye uncovered does not affect pigment movement in the covered eye.—Henry Federighi: The blood-vessels of annelids. Annelid blood-vessels generally and vertebrate capillaries are similar both histologically and physiologically. Both consist of an endothelium with a layer of isolated cells. In *Nereis virens*, contraction of contractile vessels is independent of central nervous control and is of two types, (a) peristaltic, due to the endothelium; (b) local, due to the isolated cells (*Muskelzellen*) and actuated by direct stimulation.—Jan Schilt: The effect of a rotation of the galaxy on proper motions in right ascension and declination.—B. Knaster and C. Kuratowski: Remark on a theorem of R. L. Moore. The theorem refers to indecomposable continua.—Gordon T. Whyburn: Concerning the open subsets of a plane continuous curve.—S. Lefschetz: On the functional independence of ratios of theta functions.—E. C. Watson and J. A. Van den Akker: The direction of ejection of X-ray electrons. Magnetic spectra of the electrons ejected by X-rays from exceedingly thin metallic films show that the most probable direction of ejection is a little forward of perpendicular to the direction of the X-ray beam and is the same whatever level in the atom the electron comes from and whether the absorption energy is large or small. It is difficult to explain these results if the electronic orbits are regarded as having physical reality.—William Duane: The character of the general, or continuous spectrum radiation. Electrons from a hot wire cathode were shot into a stream of mercury vapour at very low pressure and the radiation produced by impacts of electrons and mercury atoms was observed by an ionisation chamber. The voltage applied to the tube was less than 12,000 volts (the L-series of mercury require at least 12,300 volts and any M-series radiations were absorbed), so only general radiation was measured. Under these conditions, with many impacts, the electron transfers almost all, if not all, of its kinetic energy to the quantum of radiation produced, which appears to be very nearly mono-

chromatic.—G. H. Dieke and Harold D. Babcock: The structure of the atmospheric absorption bands of oxygen.—Charles E. St. John: Revision of Rowland's preliminary tables of solar spectrum wave-lengths. The starting point of Rowland's system (1893) was the mean wave-length of the  $D_1$  line of sodium as referred to the standard metre by five observers. In 1893, Michelson and Benoit, and in 1907, Benoit, Fabry, and Perot, using a Michelson interferometer, obtained the absolute wave-length of the red cadmium line in terms of the *mètre des archives*, and this was adopted as the primary standard in the international system of wave-lengths. For many years now, measurements have been made at Mount Wilson, one series utilising simultaneous exposures to the centre of the sun and the standard iron arc with the 30 ft. and, later, the 75 ft. spectrograph, and the other interferometer measurements, and the results corrected for the rotation and orbital motion of the earth. The results are to be issued shortly by the Carnegie Institution of Washington as a "Preliminary Table of Solar Spectrum Wave-lengths."—George de Thierry: Application of the law of similitude to hydraulic laboratory research.—A. Keith Brewer: Some factors influencing the ignition of carbon monoxide and oxygen. The ignition point of an explosive mixture of carbon monoxide and oxygen, using a condensed discharge, is, at constant pressure, determined by the energy of the spark, while at different pressures the ignition points are related as the voltage. Water vapour as an impurity lowers the ignition point, the merest trace enabling the reaction to proceed to completion, whereas in the dried mixture there was seldom more than 10 per cent. completion. Other impurities may be (1) inert except that they absorb energy, increasing the ignition potential (nitrogen, carbon dioxide, chloroform, alcohol, etc.), or (2) oxidised in the explosion and thus lower the ignition potential (water, hydrogen, alcohol, carbon disulphide, etc.). The effect of alcohol depends on the amount of oxygen present. It is suggested that the lowering of ignition potential is brought about by the catalytic activity of 'new-born' decomposition products of the impurity.

Air Ministry. Annual Report of the Meteorological Committee to the Air Council for the Year ended 31st March 1927. (M.O. 298.) Pp. 76. (London: H.M. Stationery Office.) 2s. net.  
University of London: University College. Calendar, Session 1927-1928. Pp. lxx+x+476+lxix+ccliv+40. (London: Taylor and Francis.)

## FOREIGN.

Observatoire de Zi-ka-wai. Annales de l'Observatoire astronomique de Zo-sé (Chine). Tome 16: Coopération de l'Observatoire de Zi-ka-wai à la revision internationale des longitudes. Pp. iv+156+17 planches. (Zi-ka-wai.)

Classified List of Smithsonian Publications available for Distribution, September 15, 1927. Compiled by Helen Munroe. (Publication 2922.) Pp. vi+29. (Washington, D.C.: Government Printing Office.)

Department of the Interior: Bureau of Education. Publications available September 1927. Pp. 25. (Washington, D.C.: Government Printing Office.)

Social Research Department. First Annual Report. Pp. 8. (Peking: The China Foundation for the Promotion of Education and Culture.)  
Reale Istituto Lombardo di Scienze e Lettere, Milano. Nel centenario della morte di Alessandro Volta. Discorsi e note del Presidente Berzolari, dei MM. E. Grassi e Murani, e dei SS. CC. Somigliana e Volta. Pp. 149. (Milano: Ulrico Hoepli.)

Smithsonian Miscellaneous Collections. Vol. 79 (whole Volume): World Weather Records. Collected from Official Sources by Dr. Felix Exner, Dr. G. C. Simpson, Sir Gilbert Walker, H. Helm Clayton, Robert C. Mossman. Assembled and arranged for publication by H. Helm Clayton. Published under Grant from John A. Roebling. (Publication 2913.) Pp. vii+1199. (Washington, D.C.: Smithsonian Institution.)

Department of Commerce: Bureau of Standards. Circular of the Bureau of Standards, No. 328: Testing of Measuring Tapes at the Bureau of Standards. Pp. 16. (Washington, D.C.: Government Printing Office.) 10 cents.

Field Museum of Natural History. Report Series, Vol. 7, No. 1: Annual Report of the Director to the Board of Trustees for the Year 1926. (Publication 243.) Pp. 174+20 plates. Botanical Series, Vol. 4, No. 5: i. Various Spermatophytes, by J. Francis MacBride; ii. Mosses of Peru, by R. S. Williams. (Publication 244.) Pp. 99-189+8 plates. (Chicago, Ill.)

Department of the Interior: U.S. Geological Survey. Bulletin 787: Geology and Ore Deposits of the Mogollan Mining District, New Mexico. By Henry G. Ferguson. Pp. vi+100+25 plates. 65 cents. Water-Supply Paper 569: Surface Water Supply of the United States, 1923. Part 9: Colorado River Basin. Pp. v+189. 25 cents. Water-Supply Paper 574: Surface Water Supply of the United States, 1923. Part 12: North Pacific Slope Drainage Basins. C: Lower Columbia River Basin and Pacific Slope Drainage Basins in Oregon. Pp. v+194+li+3 plates. 35 cents. Professional Paper 149: Correlation of Geologic Formations between East-Central Colorado, Central Wyoming and Southern Montana. By Willis T. Lee. Pp. v+80+35 plates. 50 cents. (Washington, D.C.: Government Printing Office.)

Agricultural Experiment Station, Michigan State College of Agriculture and Applied Science. Circular Bulletin No. 104: Flies commonly found in Dwellings. By Eugenia McDaniel. Pp. 15. (East Lansing, Mich.)

Bulletin of the American Museum of Natural History. Vol. 54, Art. 3: The Reptiles of Hainan. By Karl Patterson Schmidt. Pp. 395-465+plate 27. Vol. 54, Art. 4: Notes on Chinese Reptiles. By Karl Patterson Schmidt. Pp. 467-551+plates 28-30. (New York City.)

## Official Publications Received.

## BRITISH.

County Borough of Halifax. Second Annual Report of the Corporation Museums for the Year 1926-7. Pp. 20+2 plates. (Halifax.)

Report of the Marlborough College Natural History Society for the Year ending Christmas, 1926. (No. 75.) Pp. 91+2 plates. (Marlborough.) To members, 8s.; to non-members, 5s.

Journal of the Indian Institute of Science. Vol. 10A, Part 3: Influence of the Sulphur Atom on Optical Rotatory Power. By P. P. Shukla. Pp. 83-41. 8 annas. Vol. 10A, Part 4: The Constitution of the Acid formed by the Action of Sulphuric Acid on Camphorquinone. By Madhay Balaji Bhagvat and John Lionel Simonsen. Pp. 43-55. 8 annas. (Bangalore.)

A List of the Serial Publications available for Consultation in the Libraries and Scientific Institutions of the Union of South Africa. Compiled for the Research Grant Board of the Department of Mines and Industries by A. C. G. Lloyd. New and revised edition. Pp. iv+259. (Cape Town.)

Journal of the Society of Glass Technology. Edited by Prof. W. E. S. Turner. Vol. 11, No. 43, September. Pp. xx+vii+31-45+277-362+229-320+xxi-xxx. (Sheffield.) 10s. 6d.

Colony of the Gambia. The Annual Report of the Department of Agriculture for the Period January 1st, 1926, to March 31st, 1927. Pp. 58. (London: The Crown Agents for the Colonies.) 5s.

British Honduras. Annual Report of the Forest Trust for the Year ended 31st March 1927. Pp. 22. (Belize, British Honduras.)

Report of the Council of the Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne, intended to be presented at the Annual Meeting of the Society, 2nd November 1927. Pp. 40. (Newcastle-upon-Tyne.)

Tanganyika Territory. Report of the Department of Agriculture for the Year ending 31st March 1927. Pp. 46. (London: The Crown Agents for the Colonies.) 2s. 6d.

Wigan and District Mining and Technical College. Report of the Principal on the Work of the Session 1926-27. Pp. 24. (Wigan.)

Battersea Polytechnic, London, S.W.11. Report of the Principal for the Session 1926-27. Pp. 38. Examination Lists, August 1927. Pp. 36. (London.)

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## Diary of Societies.

SATURDAY, NOVEMBER 12.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS (Southern District Meeting) (at Town Hall, Chippenham), at 11.30.

ROYAL INSTITUTION OF GREAT BRITAIN, at 8.—E. Cammaerts: The Main Features of Modern English Literature (II.)

PHYSIOLOGICAL SOCIETY (at Institute of Physiology, Cardiff University)

MONDAY, NOVEMBER 14.

ROYAL GEOGRAPHICAL SOCIETY (at Lowther Lodge), at 5.—Col. H. S. I. Winterbotham: The Triangulation of Africa.

ROYAL SOCIETY OF MEDICINE (War Section), at 5.—Major E. C. Lambkin: Recent Investigations into the Treatment of Gonorrhoea.

BRITISH PSYCHOLOGICAL SOCIETY (Education Section) (at London Day Training College), at 6.—Dr. W. S. Inman: Emotional States and their Relation to Eye Symptoms and Diseases.

INSTITUTION OF ELECTRICAL ENGINEERS (North-Eastern Centre) (at Armstrong College, Newcastle-upon-Tyne), at 7.—A. H. Law and J. P. Chittenden: Higher Steam Pressures and their Application to the Steam Turbine.

INSTITUTE OF METALS (Scottish Local Section) (at 39 Elmbank Crescent, Glasgow), at 7.30.—A. Logan: Brass Foundry Practice.

RAILWAY CLUB (25 Tothill Street, S.W.), at 7.30.—H. A. Vallance: London's First Railway—the London and Greenwich.

ROYAL SOCIETY OF ARTS, at 8.—Prof. H. C. H. Carpenter: Alloy Steels, their Manufacture, Properties, and Uses (Cantor Lectures) (I.)

SURVEYORS' INSTITUTION, at 8.—E. S. Cox: Presidential Address.

INSTITUTION OF ELECTRICAL ENGINEERS (Western Centre) (at Bristol).—A. R. Cooper: Electrical Equipment of Track on the Underground Railways of London.

MEDICAL SOCIETY OF LONDON.—Clinical Evening.

TUESDAY, NOVEMBER 15.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, at 5.—Dr. P. C. Varrier-Jones: Village Settlements and the Tuberculous (Mitchell Lecture).

ROYAL INSTITUTION OF GREAT BRITAIN, at 5.15.—Sir John Herbert Parsons: Light and Sight (III.)

ROYAL SOCIETY OF MEDICINE, at 5.30.—General Meeting.