

Historic Natural Events.

Jan. 12, 1914. Eruption of Sakura-jima.—A violent eruption occurred in the island volcano of Sakura-jima in south Japan. It was preceded by many tremors on Jan. 11, and these led the authorities to order the removal of the inhabitants, and all of them (more than 23,000 in number) were saved. Lava flowing down the east side filled up the narrow strait and converted Sakura-jima into a peninsula. The total volume of ashes and lava ejected was estimated at one-half a cubic mile. New surveys showed that most of the volcano was uplifted, in one place by 41 feet. Outside the island, the ground was depressed by so much as 20 inches within an irregular circle about 28 miles in diameter.

Jan. 14, 1716. High Tide during Frost Fair.—The winter of 1715-16 was very cold in England and over the whole of Europe. At Paris the thermometer fell to -4° F. on Jan. 22. A fair, with booths and printing presses, was erected on the frozen Thames; on Jan. 14 there was an uncommonly high spring tide, which raised the ice fourteen feet without interrupting the progress of the fair.

Jan. 15, 1662. Mild Winter.—Under this date Samuel Pepys records in his diary: "It is a fast day ordered by the Parliament, to pray for more seasonable weather, it having hitherto been summer weather, that is, both as to warmth and every other thing, just as if it were the middle of May or June, which do threaten a plague (as all men think) to follow."

Jan. 16, 1362. Gale.—A gale began about the time of evensong and continued for six or seven days in the south of England, stronger than had been known for many years. It blew down towers, steeples, houses and chimneys, and even the buildings that were not overthrown were rendered unsafe. It was followed by a very wet season in summer and harvest.

Jan. 16, 1614. Frost.—It is recorded in Drake's "Eboracum" that on Jan. 16 "it began to snow and freeze, and so by intervals snowing without any thaw till the 7th of March following, at which time was such a heavy snow upon the earth as was not remembered by any man then living. It pleased God that at the thaw fell very little rain, nevertheless the flood was so great that the Ouze ran down North Street and Skeldergate with such violence as to force all the inhabitants of those streets to leave their houses. . . . Ten days this inundation continued at the height, and many bridges were broken down by it in the country, and much land overflowed."

Jan. 17, 1830. Severe Winter.—On the continent of Europe the winter of 1829-30 was one of the most rigorous known in history. On Jan. 17 the thermometer at Paris fell to 1° F. and public 'warmers' were established in the streets. In Switzerland, instead of snow, small compact crystals of ice fell, as in polar regions. In Normandy the snow was more than six feet deep, and many wood gatherers were lost. The frost was especially severe in Spain, where communications were interrupted, many lives were lost, and many thousands of cattle. Bands of wolves, driven from the mountains by the snow, caused great ravages among the herds and killed many people. In England this winter was not especially severe.

Jan. 17, 1881. Low Temperature in Britain.—On Jan. 7-26 severe frost prevailed over the whole of Great Britain and Ireland, unequalled since the winter of 1814. The lowest temperatures occurred on Jan. 17, when the thermometer fell below zero over the south of Scotland and the north of England, reaching -22° F. at Blackadder (Berwickshire), -16° at Kelso, -15° at Stobo, and -11° at Lauder, all in the

valley of the Tweed. Again on Jan. 26 a temperature of -16° F. was recorded at Blackadder, but there is some doubt whether the exposure of the thermometer at this station was satisfactory. These low temperatures all occurred during a period of light northerly winds.

Jan. 18, 1881. Great Snowstorm.—A barometric depression, which originated off the east coast of the United States on Jan. 10, crossed the Atlantic in a general easterly direction, and on the evening of Jan. 17 it traversed the Bay of Biscay. At 8 A.M. on Jan. 18 it was very intense and lay near the Channel Islands, and throughout that day it moved slowly and rather irregularly over the central parts of the English Channel before passing away to Germany on Jan. 19. Over the Midlands, east and south-east England, the most violent easterly gale on record blew throughout Jan. 18, the velocity at Yarmouth being 73 miles an hour for fifteen minutes between 3 and 4 P.M. The gale was accompanied by heavy snowstorms over nearly the whole of England, and in many places the railway lines were completely blocked for many hours. In London the snowstorm was the worst within living memory, and owing to the high wind curious drifting effects were experienced, some streets being perfectly clear on one side but heavily piled with snow on the other. The fall was especially heavy in the Isle of Wight, where it was quickly followed by a second on Jan. 20; in Cowes there were drifts in the streets 12 feet deep.

Jan. 18, 1926. Hurricane.—A very violent hurricane ravaged all the Canary Isles. Torrential rain overflowed the water-courses and a great deal of damage was done by rain and wind. At Las Palmas scarcely a house was left standing.

Societies and Academies.

PARIS.

Academy of Sciences, Nov. 25.—L. Mangin: Notice of Sir Ray Lankester, foreign associate of the Academy.—Gabriel Bertrand and L. Silberstein: The estimation of sulphur and phosphorus in plants. It was proved that the proportion of sulphur remaining in the ash is always less than that which exists in the plant, the losses ranging from 44 per cent to 76 per cent. There is also a loss of phosphorus during calcination to ash, but the losses are much less, from 0.2 per cent to 7 per cent of the amount present.—J. A. Le Bel: The sparks which are emitted by stalactites when violently struck with a steel tool. It was at first supposed that these sparks were due to the presence of quartz particles in the rock, but it was later proved that no hard particles were present. The phenomenon is probably due to triboluminescence.—G. Friedel and V. Maikowsky: Temperature measurements in borings. The thermometer consists of an ungraduated bulb with capillary tube, with the upper end open and ground to a plane face making an angle of 45° with the tube. The actual temperature at which the tube is exactly full, corresponding to the temperature attained in the boring, is easily determined in the laboratory.—Ernest Esclangon was elected a member of the Section of Astronomy in the place of the late P. Puiseux.—Herbert Ory: The extraction of roots.—H. Milloux: Some properties of meromorph and holomorph functions.—Joseph Pérès: Some results concerning the stability or the regularity of the movement of a viscous liquid.—G. P. Arcay: Contribution to the experimental study of the deformation of the flat spiral. From the experimental evidence given in the paper, it is concluded that the static deformation and the kinematic deformation of

the flat spiral, corresponding to the same position of the balance wheel, are in all cases identical. Consequently, it is legitimate to utilise the method of static deformations as a method of experimental control.—**Louis Hirschauer and Augustin Talon**: The auto-railroad proposition for rapid transport with high duty.—**G. Bruhat and R. Legris**: The rotatory dispersion of tartaric acid and of the alkaline tartrates in aqueous solution.—**Jean Thibaud and Jean J. Trillat**: The effects of filtration of the general radiation on the X-ray diagrams of liquids. The determination of absorption coefficients. The existence of a secondary diffraction ring due to the general radiation, shows the necessity, in researches on the molecular structure of substances radiographed in thicknesses of several millimetres, of precautions against the formation of the secondary ring. For this, either the radiation may be made monochromatic by reflection from a crystal, or an absorbing sector of aluminium may be placed near the film.—**M. Bourguel and Mlle. V. Gredy**: The mechanism of catalytic hydrogenation. Whatever may be the mode of working, the initial velocity of hydrogenation is, for a given substance, independent of the weight of material to be hydrogenated. The activity of the catalyst is a diminishing function of the initial concentration. The results can be best explained by the assumption of an initial action of the hydrogen on the metal (palladium).—**L. Meunier and K. Le Viet**: The hydrophil properties of collagen. Any substance capable of lowering irreversibly the capacity of the collagen for swelling is a tanning substance, and its astringency is measured by the intensity of this lowering.—**Jacques Bardet and Arakel Tchakirian**: Some combinations of germanium oxide and oxalic acid. Experimental evidence is given for the existence of a complex germano-oxalic acid: it was not possible to isolate a definite compound, but $H_2Ge(C_2O_4)_3$ is probably present in the solution.—**Mme. Ramart-Lucas and F. Salmon-Legagneur**: Stability in absorption spectra. The absorption in the ultra-violet of the dibasic acids of the fatty series.—**P. Mondain-Monval and R. Quanquin**: The temperature of spontaneous inflammation of gaseous mixtures of air and saturated hydrocarbons. The influence of the pressure and of preliminary heating. Supplementing earlier work in which the oxidation was carried out under high pressures, experiments at the ordinary pressure are described. With pentane, aldehydes were detected at 200° C., and were produced in quantity at 325° C. The presence of formaldehyde, acetaldehyde, butyraldehyde, and fatty acids was proved.—**G. Dupont and J. Lévy**: The autoxidation of abietic acid. The action of catalysts. In a previous communication the autoxidation of abietic acid was shown to be a typical example of autocatalysis. The influence of the addition of catalysts has now been studied: cobalt abietate proved to be the most active positive catalyst. **Lucien Dupont**: The action of caustic alkalis at high temperatures on albumenoids. The proportions of oxalic, benzoic, and various fatty acids obtained by potash fusion at 325° C. are given for gelatine and for egg albumen.—**J. Grard**: Some reactions of propargyl acetal.—**A. Guyot and M. Fournier**: A new general method for the preparation of primary and secondary amines. The reaction proposed is $R \cdot CH_2OH + R'NH_2 = R \cdot CH_2 \cdot NHR' + H_2O$. This takes place in an autoclave in the presence of reduced nickel at temperatures from 150° to 190° C. If ammonia is used in place of the primary amine, both primary and secondary amine are formed in proportions depending on the temperature. The yields are high and the method appears to be general.—**D. Ivanoff**: Some properties of the true mixed organo-magnesium carbonates.—**L. Royer**: New observations

on the asymmetry of the corrosion figures obtained by an active isotropic liquid.—**E. Raguin**: Subdivisions of the layer of bright schists in Haute-Maurienne.—**Yang Kieh**: The massif of crushed pegmatite situated at the southern edge of the geological sheet of Aigurande (scale 1/80,000).—**Marcel Thorat**: Palæontological discoveries in the Cambrian and Silurian of the mountains of Lacaune to the north of the Montagne Noire.—**J. Thoulet**: Isothermal oceanic liquid cones of whirling.—**R. Combes and M. Piney**: Proteolysis and proteogenesis in ligneous plants during the summer and autumn.—**A. Orékhoft**: The alkaloids of *Anabasis aphylla*. This plant, which grows wild in Turkestan and Transcaucasia, is known to be very poisonous. A new base, anabasine, $C_{10}H_{16}N_2$, has been extracted from the dry plant and prepared pure. Other bases, not so far obtained pure enough for analysis, are also present.—**G. Nicolas and Mlle. Aggéry**: A new example of generalised bacterial infection in plants.—**J. André Thomas**: The phenomena of modification of toxic attack of the *Convolvata* as a function of their grouping.—**Jean Saidman**: Radiotherapy of aërophagy.

Dec. 2.—**Marcel Brillouin**: The dynamical tides of an ocean comprised between two parallels. Law of depth in latitude and longitude. The organisation of the calculations.—**Léon Guillet and Marcel Ballay**: The corrosion of steels after cementation or formation of nitride.—**Charles Nicolle** was elected a non-resident member in the place of the late Ch. Depéret.—**O. Borůvka**: Projectively deformable surfaces which admit a group of ∞ projective transformations in themselves.—**Fatou**: A criterion of stability.—**Nicolas Théodoresco**: The application of a formula generalising the Cauchy integral to a hydro-dynamical question.—**Jean Courrégelongue**: The existence of two families of vortices behind immersed solids.—**L. Ravier**: A general formula for the calculation of the thrust of the soil.—**Paul Woog**: The extension of lubricants on solid surfaces. Molecular influences. The rôle of photolysis.—**Marcel Chopin**: The flow of gas through an orifice in a thin wall at variable temperatures.—**P. Swings**: The resonance series of sulphur vapour.—**L. Goldstein**: The relativist treatment of the problem of several bodies.—**Frédéric Joliot**: The electrochemical properties of polonium.—**Mlle. Dorabalska**: The heat evolved by polonium. The amount of heat evolved, reduced to a quantity of polonium in radioactive equilibrium with 1 gram of radium, was found to be 24 calories per hour. This figure is given with reserve, since it is distinctly below that deduced from the heat measured for radium and its derivatives.—**Maurice Lecat**: The prediction of binary azeotropism.—**Roger Lyon, G. Fron, and Fournier**: The influence of artificial ageing on the mechanical properties of wood. Data are given showing the effects of mild and drastic treatment with ozone on wood.—**Raymond Hocart and Jacques de Lapparent**: The boehmite of bauxites. The identity of Boehm's 'bauxite' with boehmite was proved by the application of Debye and Scherrer's method.—**Constant Ktenas**: New researches on the petrochemical characters of the caldeira of Santorin.—**Maurice Couvreur**: Note on the conformal and non-conformal siliceous epigyny of the testa of Lamelli-branths.—**H. de Böckh and P. Viennot**: The geology of Iraq.—**Raymond Furon**: The position of the palæozoic grits to the north of the middle Niger (French Sudan).—**Y. Milon**: The presence of glauconite in the Pliocene sands of Brittany.—**G. Pontier and R. Anthony**: The presence of four upper incisors in the *Mastodon (Tetrabelodon) turicensis*.—**Georges Malençon**: The first stages of germination of the

spores of the genus *Elaphomyces*.—Paul Guérin : The proportion of hydrocyanic acid in the genus *Lotus*. Determinations of the amount of hydrocyanic acid in twelve species of *Lotus* have been made. The proportions found depend on the time of year the specimens were collected, and also on the climate.—Georges Truffaut and I. Pastac : The chemotherapy of plant diseases by organic colouring matters. It has been proved that certain colouring matters, innocuous to the higher animals, can prevent the development of moulds (*Rhizopus nigricans*, *Penicillium glaucum*). The treatment has been successfully applied to diseases of the vine and of wheat.—Laurent Raybaud : The action of germinated seeds in feeding. Sterile germinated grain has marked beneficial effects when taken with other food. It has proved especially valuable with rickets in children.—Jean Piveteau : A new type of fossil fish from the north of Madagascar.—Émile P. Terroine and Mlle. Thérèse Reichert : The action of mineral substances on endogenous nitrogen metabolism.—P. Vayssiére : The migratory Acridians in French Africa during the year 1929.—L. Lavauden : The wild cat of Corsica.—Ch. Péard : The caoutchouc conger. In the fish market at Paris congers are occasionally sold the flesh of which differs from that of the normal conger eel, resembling india-rubber, hence its name. Analyses of the flesh of the abnormal eel showed that its consistency was due to a reduction in fat, 0.4 per cent instead of 9 per cent, and this was shown to be due to a concentration of the fat in the ovary.—Marc de Larambergue : Cytological study of autofertilisation in *Limnæa auricularia*.—W. Arciszewski and W. Kopaczewski : The buffer power of serum. Human serum can be treated with either acid or base to a concentration of about *M*/2000 without change in the concentration in hydrogen ions or hydroxyl ions. This buffer action extends to other ions. The serum offers resistance to any change in its surface tension.—L. Marchlewski : Researches on phylloerythrin. Phylloerythrin is a product of metabolism of chlorophyll and is identical with the bilipurpurin of Löbisch. Its composition is represented by $C_{33}H_{34}N_4O_3$, and when crystallised from chloroform it gives crystals containing one molecule of chloroform to two molecules of phylloerythrin.—Maurice Piettre : The influence of neutral salts on the separation of proteins by the acetone method. The effect of salts (magnesium sulphate) is very important in the separation of proteins by the acetone method. Small quantities of neutral salts prevent, or at least render difficult, the isolation of the proteins of the globulin group.—Marage : The causes and consequences of the deafness of Beethoven.—Ch. Champy and M. Heitz-Boyer : The mechanism of the action of the electrical knife with high frequency. Thermal and mechanical effects of high-frequency currents on the tissues.

Official Publications Received.

BRITISH.

The Common Commercial Timbers of India and their Uses. By H. Trotter. Pp. x+153+15 plates. (Calcutta: Government of India Central Publication Branch.) 1.12 rupees; 3s.
Canada. Department of Mines: Mines Branch. Investigations of Fuels and Fuel Testing (Testing and Research Laboratories), 1927. (No. 696.) Pp. ii+107+10 plates. (Ottawa: F. A. Acland.)
Air Ministry: Aeronautical Research Committee. Reports and Memoranda. No. 1235 (Ae. 388): The Graphical and Analytical Determination of Stresses in Single Span and Continuous Beams under End Compression and Lateral Load with variations in Shear, Distributed Load and Moment of Inertia. By H. B. Howard. (L.F. 15.) Pp. 30+18 plates. 2s. net. (London: H.M. Stationery Office.)
Survey of India. Geodetic Report, Vol. 3: From 1st October 1926 to 30th September 1927. Pp. xii+163+19 plates. 3 rupees; 5s. 3d. Professional Paper, No. 22: Three Sources of Error in Precise Levelling. By Capt. G. Bomford. Pp. iii+40+5 plates. 1.8 rupees; 2s. 6d. (Dehra Dun.)

No. 3141, VOL. 125]

FOREIGN.

Department of the Interior: U.S. Geological Survey. Professional Paper 158-A: The Occurrence and Origin of Analcite and Meerschaum Beds in the Green River Formation of Utah, Colorado and Wyoming. By Wilmot H. Bradley. (Shorter Contributions to General Geology, 1929.) Pp. ii+7+3 plates. (Washington, D.C.: Government Printing Office.)
R. Osservatorio Astrofisico di Catania. Annuario 1930. Pp. iv+50. (Catania.)
Guide to the Institute of Physical and Chemical Research, Tokyo. Pp. 50. (Tokyo.)
Scientific Papers of the Institute of Physical and Chemical Research. Nos. 214-218: Über Celluloseamin und Celluloseanilin, von Ichiro Sakurada; Benzyläther der Cellulose, von Tadashi Nakashima; Stupeca Fenomeno de la Senakvigo de Kalcio Sulfato, de Sigeru Yamane; On the Difference of Behaviours of Different Parts of Three-Part Spark in Igniting Combustible Gas Mixture, by Torahiko Terada, Kiyohiko Yumoto and Ryūzō Yamamoto; Thermal Conductivity of Snow, by Masao Kuroda. Pp. 113-159. (Tōkyō: Iwanami Shoten.) 65 sen.

CATALOGUES, ETC.

Siemens Loaded Submarine Telephone and Telegraph Cables. (Pamphlet 200A.) Pp. 62. (London: Siemens Brothers and Co., Ltd.)
Calendar for 1930. (Newcastle-on-Tyne: C. A. Parsons and Co., Ltd.)
The Nickel Bulletin. Vol. 2, No. 6, December. Pp. 177-224. (London: The Mond Nickel Co., Ltd.)
Bibliography: a Catalogue of Books, Pamphlets, Tracts, etc., relating to all that concerns the Production, Collection and History of Books. (Catalogue 521.) Pp. 64. (London: Francis Edwards, Ltd.)
B.D.H. Vitamin Products. Pp. 23. (London: The British Drug Houses, Ltd.)
Vancomar Review: including a Résumé of Current Literature on Vanadium, its Alloys and Compounds. Vol. 1, No. 1, October 1929. Pp. 35. (New York: Vanadium Corporation of America.)
The Detection and Investigation of Poisons by Spectroscopy. Pp. 18. (London: Adam Hilger, Ltd.)

Diary of Societies.

FRIDAY, JANUARY 10.

ROYAL GEOGRAPHICAL SOCIETY (at Æolian Hall), at 3.30.—H. G. Watkins: By Canoe and Dog Sledge in Labrador (Christmas Lectures) (2).
ROYAL SOCIETY OF ARTS (Indian Section), at 4.30.—Sir Basil P. Blackett: The Economic Progress of India.
ROYAL ASTRONOMICAL SOCIETY, at 5.—E. A. Kreiken: The Frequency of Double Stars of Different Spectral Types and Absolute Magnitudes.—J. Jackson: The Shortt Clocks of the Royal Observatory, Greenwich, with Special Reference to the Effect of Variation in Arc.—H. Jones: Deviations from Boyle's Law in Stellar Interiors.
MALACOLOGICAL SOCIETY OF LONDON (in Zoological Department, University College), at 6.
NORTH-EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS (at Mining Institute, Newcastle-upon-Tyne), at 6.—L. C. Burrill: Design and Construction of the Rail-car-carrying Steamship *Scatrain*.
SOCIETY OF CHEMICAL INDUSTRY (Manchester Section) (at Engineers' Club, Manchester), at 7.—Dr. E. K. Rideal: Some Aspects of Surface Chemistry and their Industrial Implications.
INSTITUTION OF ELECTRICAL ENGINEERS (North-Western Centre) (at Free Trade Hall, Manchester), at 7.—Capt. P. P. Eckerley: Broadcasting by Electric Waves (Faraday Lecture).
OIL AND COLOUR CHEMISTS' ASSOCIATION (Manchester Section) (at Milton Hall, Manchester), at 7.—Prof. T. P. Hilditch: Recent Research on Fats bearing upon the Drying of Oils in Paint and Varnish.
SOCIETY OF CHEMICAL INDUSTRY (South Wales Section) (at Cardiff Technical College), at 7.15.—E. H. Williams: Graphitic Lubricants.
JUNIOR INSTITUTION OF ENGINEERS, at 7.30.—H. J. N. Riddle: The Track Circuit in Railway Signalling.
GEOLOGISTS' ASSOCIATION (at University College), at 7.30.—J. Pringle: The Geology of Ramsey Island (Pam.).—Papers to be taken as read:—The Palæobotany of the Kent Coalfield, Dr. R. Crookall and J. Pringle; The Preparation of Thin Sections of Friable and Weathered Materials by Impregnation with Synthetic Resins, R. J. Schaffer and P. Hirst.
SOCIETY OF CHEMICAL INDUSTRY (Chemical Engineering Group) (at Burlington House), at 8.—J. R. Booser: Autogenous Welding in Chemical Works.
PHILOLOGICAL SOCIETY (at University College), at 8.—G. G. Loane: Notes on N.E.D.
ROYAL SOCIETY OF MEDICINE (Ophthalmology Section), at 8.30.—Dr. F. W. Edridge-Green: The Influence of the Parafoveal on the Foveal Region of the Retina.—J. D. N. Cardell: Krukenberg's Spindles.—E. Wolff: A Microphthalmic Family.

SATURDAY, JANUARY 11.

BRITISH ASSOCIATION OF MANAGERS OF TEXTILE WORKS (at Manchester Athenæum), at 6.30.—J. R. Wollaston: Recent Developments in Steam Generation.

MONDAY, JANUARY 13.

ROYAL SOCIETY OF EDINBURGH, at 4.30.—G. Bond: The Occurrence of Cell Division in the Endodermis.—D. Catcheside: Chromosome Linkage and Syndesis in *Enothera*.—D. R. R. Burt: A Case of Intersexuality in *Bos indicus*, with a Theory of the Significance of the Genetic Male Intersex.
INSTITUTE OF TRANSPORT (at Institution of Electrical Engineers), at 5.30.—A. Davies: The Co-ordination of Transport.
INSTITUTION OF AUTOMOBILE ENGINEERS (Birmingham Centre) (at Queen's Hotel, Birmingham), at 7.—H. K. Whitehorn: Petrol-Electric Vehicle Characteristics.