

Historic Natural Events.

Sept. 28, 1876. Tornado at Cowes.—A rapidly revolving whirlwind, looking like a waterspout or huge funnel, point downwards, approached the south-west shore of the Isle of Wight between Blackgang Chine and the Needles. It passed north-eastwards across the island and reached Cowes between 7 and 8 A.M., doing damage estimated at £10,000 to £12,000. Corn, light articles, and even bricks were dropped on vessels in the Solent, and on the mainland south of Titchfield.

Sept. 29, 1210. Tay Flood.—Cant, in his notes to the Muses' Threnodie, says: "So violent was the torrent that the whole town [of Perth] was undermined, the houses levelled, and many persons of both sexes lost their lives. The Royal Palace [of William the Lion] did not escape. The King's youngest son, John, with his nurse, were carried down the river and drowned, with about fourteen of the Kings domesticks."

Sept. 29, 1538. Formation of a New Volcano.—Monte Nuovo is a conical hill, 440 feet in height above the sea-level, and lies about 8 miles west of Naples. For two years before the eruption that formed it there had been frequent earthquakes in the district that increased in frequency and reached their maximum on Sept. 27-28, 1538. The next day a fissure opened in the ground, from which scoriæ, lapilli, dust, and mud were ejected and, falling round the fissure, gradually formed a hill similar to many others in the district. The eruption died down in about a week, most of the hill having been formed during the first two days.

Sept. 29, 1915. Hurricane in the Gulf of Mexico.—The most intense hurricane in the history of the Gulf of Mexico struck the coast of Louisiana on Sept. 29. At Burrwood, La., the wind reached a velocity of 140 miles per hour in a gust, the highest ever recorded in the Gulf. In New Orleans nearly every building was damaged and several were totally destroyed, and some neighbouring towns and villages were completely wrecked: there were a number of shipwrecks, and the loss of life amounted to 275. This loss would have been far heavier but for the warnings issued by the U.S. Weather Bureau; in fact the greatest individual catastrophe, at Rigolets, resulted from the complete disregard of specific advice.

Sept. 29, 1927. Rainbow Phenomena.—About 4 P.M. seven distinct rainbows were seen simultaneously near Campbeltown in Kintyre. The three interior bows were the brightest, especially the third.

Sept. 30, 1513. Rockfall in Ticino, Switzerland.—A fall of rock from the Pizzo Magno dammed the lower part of the Val Blenio in Ticino. The waters of the river Brenno accumulated behind this dam and drowned the village of Malvaghe, including its campanile 130 feet high. The dam broke on May 20, 1515, and the valley was entirely devastated, 400 houses destroyed, and 600 persons killed. When the flood reached Lake Langensee immense waves were formed and several shipwrecks occurred.

Sept. 30, 1555. Flood in London.—Holinshed records that "on the last of September by occasion of great wind and rain that had fallen was such great floods that the Kings palace at Westminster and Westminster Hall was overflowed with water".

Oct. 1, 1250. Storm in North Sea.—This gale was very violent in the southern North Sea. It is said that the sea flowed twice without ebbing and the noise of the waves was heard a great distance from the shore; at night it appeared to burn as if on fire. Many ships were wrecked, and at Winchelsea, besides the damage to bridges, mills, and dykes, three hundred houses and

some churches were drowned owing to the height to which the waters rose. Enormous damage was done in Holland and the marshes of Flanders, where the rivers, choked back by the rise of the sea, overflowed their channels.

Oct. 1, 1899. Whirlwind over Wiltshire.—During the passage of a barometric depression from south-west to north-east across England, a whirlwind or tornado about 2.15 P.M. travelled from south-south-west to north-north-east through Wiltshire, the track having a length of nearly 20 miles but a breadth of only about 100 yards. Many trees were uprooted and a great deal of damage done to buildings.

Oct. 3, 1780. West Indian Hurricane.—A violent hurricane developed to the south of Jamaica on Oct. 2 and travelled northwards across Jamaica, Cuba, and the Bahamas. On Oct. 6 and 7, in about 28° N., 74° W., it wrecked Admiral Rowley's squadron of eight or nine vessels and so moved away to the north-west, doing further damage to a squadron off Cape Henry. The wind and the inrush of the sea entirely destroyed the town of Savanna-la-Mar in Jamaica and several ships were left stranded on dry land; the *Princess Royal*, in fact, was afterwards used as a house. The ground half a mile inland was submerged to a depth of ten feet. The dead lay unburied for weeks, and a pestilence carried off many of the survivors. In the town of Lucea only two houses remained standing, and near Montego Bay four men-of-war were lost.

Oct. 4, 1526. Hurricane at Porto Rico.—According to Dr. Juan de Vadillo, "on the night of Oct. 4 there began on the island of Porto Rico such a storm of wind and rain, here called a hurricane, as to destroy the greater portion of the city of San Juan and to do great damage to the estates in the country by overflowing the rivers".

Oct. 4, 1869. "Saxby's Gale."—In 1868 Lieut. Saxby, a British naval officer, basing his prediction on the supposed influence of the moon, foretold a great storm on Oct. 5, 1869, but without specifying the locality. The storm, accompanied by a very high tide, which crossed New Brunswick, Maine, and Nova Scotia on Oct. 4, was popularly hailed as a verification of this forecast and remembered as "Saxby's Gale".

Societies and Academies.

LONDON.

Institute of Metals (Annual Autumn Meeting at Southampton), Sept. 9.—D. Hanson: The use of non-ferrous metals in the aeronautical industry (Autumn Lecture). The present state of aerial transport is in large measure due to the development of suitable alloys and their use in aircraft construction in large quantities. The non-ferrous alloys are strong for their weight, and also possess the advantages that they can readily be used as die-castings, forgings, stampings, and so on, and lend themselves readily to methods of standardised production. Perhaps the most notable feature in regard to aluminium alloys is the extent to which heat-treatment is employed in developing their useful properties. The use of magnesium alloys is of more recent origin, but is rapidly extending. Improvements in melting and casting methods, as well as the discovery of new alloys, have contributed to this extension, and the application of the processes of heat-treatment in suitable instances will probably lead to further improvements.

Sept. 10.—Ernest A. Smith: Rolled gold; its origin and development. The paper deals briefly with the history of the rolled-gold industry from its begin-

ning in Birmingham, in 1817, until the present time.—**W. Rosenhain, J. D. Grogan, and T. H. Schofield**: Gas removal and grain refinement of aluminium alloys. A number of selected volatile chlorides have been passed into molten aluminium and certain alloys. All were found to be efficacious in removing dissolved gas from the metal. Some, particularly titanium tetrachloride, also produce a marked reduction in grain-size. The reduction of grain-size occurs also when titanium is added to aluminium in the form of titanium-aluminium alloy produced by the 'Thermit' process.—**J. D. Grogan**: Pressure die-cast aluminium alloy test-pieces. The behaviour of selected alloys when subjected to the attack of molten aluminium alloy and the method of entry of metal under pressure into a simple cylindrical mould are described. If certain serious technical difficulties can be overcome, the pressure casting process will yield products of excellent mechanical properties.—**N. W. Ageew and Olga I. Vher**: The diffusion of aluminium into iron. The process takes place in two stages: (1) Solution of iron in liquid aluminium; (2) diffusion of the alloy formed into solid iron. Weiss's law of diffusion has been verified for the binary system iron-aluminium.—**K. L. Meissner**: The artificial ageing of duralumin and super-duralumin. The effect of artificial ageing upon duralumin consists, after an initial softening at lower temperatures, mainly in raising the yield-point, whilst the tensile strength is influenced only slightly. At the same time, the elongation, flexibility, and other cold-working properties are decreased very markedly, and, as shown in previous work, the resistance against corrosion is also decreased. In contrast to duralumin, the tensile strength of super-duralumin (duralumin with addition of silicon) is markedly raised by artificial ageing, but the rise keeps behind that of the yield-point, relatively.—**Wm. L. Fink and Kent R. Van Horn**: Lattice distortion as a factor in the hardening of metals. Rockwell hardness measurements and diffraction patterns showed that lattice distortion can be accompanied by appreciable softening in an externally stressed aluminium alloy ('17 S') or α -brass. Maximum lattice distortion and maximum hardness are not necessarily coincident in age-hardened alloys.—**Marie L. V. Gayler**: A study of the relation between macro- and microstructure in some non-ferrous alloys. The results of a previous investigation are confirmed, namely, the higher the temperature from which an alloy is cast the coarser becomes the macrostructure, and at the same time the microstructure becomes finer, but in a less marked degree. The macro- and microstructure of an alloy do not seem to be affected by various gases, provided the casting temperature is kept low. If, however, the casting temperature is raised, the atmosphere to which the molten metal is exposed has a very marked effect on the macrostructure, together with a small effect on the microstructure; thus hydrogen causes the formation of a fine macrostructure in contrast to that obtained on casting under normal conditions. A copper-aluminium alloy which has been previously freed from gas by the nitrogen process and then melted *in vacuo* still shows inverse segregation. Furnace gases have little effect on the 'modification' of aluminium-silicon alloys. 'Modification' of a silicon-aluminium alloy cannot be obtained by casting into a heavy, water-cooled copper mould.

PARIS.

Academy of Sciences, Aug. 4.—**Bigourdan**: The astronomical instruments and observations of Bochard de Saron.—**André Roussel**: The general expression of the infinitesimal increase of a function.—**Georges Giraud**: The principal Cauchy integrals and their

application to certain problems relating to equations of the elliptic type.—**Thadée Banachiewicz**: The determination of the orbit of Pluto.—**Benjamin Jekhowsky**: The trans-Neptunian planet Pluto.—**Maurice Robert**: Starting low tension dynamos.—**Pierre Chevenard and Albert Portevin**: The influence of reheating on the expansion and hardness of tempered aluminium-silicon alloys.—**J. Perreu**: The measurement of the vapour pressures of aqueous solutions of some hydrated salts. Measurements made by a differential method against water are given for solutions of sodium hyposulphite, sodium sulphate, and manganous chloride.—**Chapas**: The solubilities of some substituted benzoic acids in some chloro-aromatic hydrocarbons.—**Maurice Nicloux**: The determination of oxygen in sea water. A modification of Winkler's method requiring only 5 c.c. of sea water.—**Mlle. Jeanne Lévy and J. Sfras**: The action of ammonia and of dimethylamine on the ethylene oxides of allylbenzene, phenylcyclohexene and their homologues.—**E. Urion**: The catalytic decomposition of divinylglycol by reduced copper.—**A. Mailhe and Renaudie**: The transformation of ethylene into liquid and solid hydrocarbons. The ethylene was passed over silica gel heated to 700° C.; a complex mixture of hydrocarbons was obtained with boiling points ranging from 75° C. to 330° C.—**Georges Brus and J. Vébra**: The transformation of camphene into isobornyl esters and the decomposition of bornyl and isobornyl esters into camphene. It is shown that the transformation of camphene into isobornyl esters is a reversible reaction, and consequently cannot be quantitative.—**R. Weil**: Observations on quartz.—**H. Derville**: Napoleon marble and its varieties.—**M. Tenani**: The tides of the eastern Mediterranean.—**G. Guittonneau and J. Keilling**: The separation of two soluble sulphur compounds in a soil rich in organic matter. The presence of hyposulphite and pentathionate has been proved.—**J. Risbec**: The duration of evolution in *Æolidia amœna*.—**A. Sartory, G. Hufschmitt, and J. Meyer**: A new mycosis caused by a yeast of the genus *Debaryomyces*: *Debaryomyces mucosus*.—**G. Cuvier and J. A. Carrère**: The action on cancerous subjects of extracts of tumours, administered by the mouth in small doses.

Aug. 11.—The president announced the death of A. J. Le Bel.—**Bigourdan**: Observations and co-ordinates of the Châtillon tower.—**Alayrac**: Extension of the method of conformal representation to movements in three dimensions.—**L. Brillouin**: Electrons in metals and the classification of the corresponding de Broglie waves.—**Louis Natanson**: The variations of relative intensity in the resonance spectrum of selenium.—**René Truchet**: The reaction of organo-magnesium compounds on the aryl sulphonchlorides. The principal reaction is $\text{ArSO}_2\text{Cl} + \text{RMgX} = \text{Ar}\cdot\text{SO}_2\cdot\text{MgX} + \text{RCl}$, the author confirming the work of Gilman and Fothergill.—**P. Mondain-Monval and B. Quanquin**: The formation of peroxides in the direct oxidation of hydrocarbons by air. Hydrocarbons (pentane, hexane, octane) mixed with air and passed through a tube kept at 300° C. give, besides aldehydes and carbon dioxide, a yellow oily substance. This oil gives the reactions of a peroxide of the type of the methyl hydroperoxide of Rieche and Hitz, $\text{CH}_3\cdot\text{O}\cdot\text{O}\cdot\text{H}$.—**G. Chalaud**: The first phases of the development of the gametophyte in *Lophocolea cuspidata* and in *Chiloscyphus polyanthus*.

Aug. 18.—**G. Bigourdan**: The observations of Méchain and of Saron. The co-ordinates of the Observatory of Colombes.—**Ch. Achard and M. Hamburger**: The proteins of the blood serum in some

anæmic conditions. Details of ten cases giving the number of red corpuscles, total proteins, serine, globuline, and, in five cases, the myxo-protein. In pernicious anæmia the diminution in the number of red corpuscles is always accompanied by a reduction in the serum proteins, and the latter increase when the number of red corpuscles goes up under treatment.—Ch. Achard and I. Ornstein: Some constituents of blood-serum in myxœdema. Analytical details of twelve cases.—C. Gutton and E. Pierret: Radiotelephonic transmission on waves of 17 cm. length. Details of apparatus giving successful transmission over a distance of 6.8 km.—Edouard Calandrea: Remarks on the elastic line of a bar loaded at one end.—Albert Portevin and Etienne Pretet: The influence of deformation on forging or hot rolling on the mechanical properties of steel.—Thadée Banachiewicz: A new method of determination of the orbit of a trans-Neptunian planet.—A. Bogros: The saturated vapour pressure of lithium. A modification of Knudsen's effusion method was employed; vapour pressures for six temperatures between 510° C. and 572° C. are given.—Ny Tsi Zé: The influence exercised by the X-rays according to F. Allison on the magnetic rotatory polarisation and on the properties of inactive liquids. In a field of 21,000 gauss, no confirmation of Allison's effect could be obtained with water, carbon disulphide, or nitrobenzene.—A. Cotton: Remarks on the preceding communication.—B. Nitikin and L. Komleff: The amount of radium in the petroleum waters of Baku and Daghestan.—Mme. Pierre Curie and Georges Fournier: A relation between the disintegration constant of radioactive elements emitting α -rays and their capacity of filtration.—M. Prettre, P. Dumanois, and P. Laffite: The oxidation and inflammation of mixtures of pentane and air. This hydrocarbon shows two points of inflammation, one between 260° C. and 300° C., the second between 660° C. and 670° C. In the first interval the gas mixture shows a blue flame, which disappears when the temperature is raised above 300° C.—L. Bert and P. Ch. Dorier: A new method of synthesis of cinnamic aldehyde and its homologues.—Pan Tchong Kao: The micrography of piezoelectric quartz.—E. Rothé, J. Lacoste, and Mlle. J. Roess: Earthquakes in France in 1928 and 1929. Details concerning five earthquakes in 1928 and eight in 1929.—Pierre Dangeard: A labile iodo-complex produced by Laminaria.—Marc de Larambergue: The cytology of the autofertilisation of *Bullinus contortus*.—H. Pénau and D. Santenise: The isolation and preparation of vagotonine, a new pancreatic hormone.—E. Ducloux and Mlle. G. Cordier: The study of certain humoral modifications arising in the course of experimental bovine marginal anaplasmosis.—C. Labailly, G. Desbouis, and A. Voulland: An efficacious method of treatment of one of the most widespread causes of infantile mortality in crèches: pneumococcal infection.—F. Vlès, A. de Coulon, and J. L. Nicod: New researches on the treatment of tar tumours in mice by certain amino-acids.—Mme. N. Dobrovolskaia-Zavadskaia, and N. Kobozieff: The lethal factor accompanying anuria and brachyuria in mice.

ROME.

Royal National Academy of the Lincei, April 27.—U. Cisotti: Isotropic tensors.—M. La Rosa and L. Sesta: A two-valve circuit emitting trains of discontinuous waves. The mode of action of a two-valve circuit coupled with a resistance amplifier is considered.—G. Barba: The functional equation $f(x).f'(x) = f[f(x)]$ related to a geometrical problem (2). The analytical solution to the problem of determining the form of the intrinsic equation of a curve in order that

this may be similar to its own evolute is now considered in relation to the initial geometrical problem.—F. Sbrana: Characteristic properties of the infinitesimal operation in the group of derivations.—G. Krall: A general method for the approximate evaluation of the critical loads for beams of any type whatever.—G. Natta: The crystalline structure of hydrogen sulphide and hydrogen selenide (2). By means of the powder method and with the help of a special spectrograph adapted for low temperatures, it is found that at -170° solid hydrogen selenide possesses a cubic unit cell of side 6.020 ± 0.005 Å. and volume 218.2×10^{-24} c.c., containing four molecules; the calculated density is 2.456. Hydrogen sulphide and hydrogen selenide exhibit analogous lattices of the fluorite type (spacial group, O_h). Given the analogies in the structure and in the lattice dimensions of these two compounds, their perfect isomorphism may be anticipated. In calculating the intensities of the lines of the photograms of the compounds, better agreement with the experimental intensities are obtained on the assumption of an ionic structure.—A. Ferrari and C. Colla: Chemical and crystalline structures of certain complex nitrites. The triple nitrites of potassium and lead with copper, nickel, and cobalt respectively form monometric crystals, the unit cell containing four molecules. The values of a and of the calculated density are: $K_2PbNi(NO_2)_6$, 10.55 Å., 3.50; $K_2PbCo(NO_2)_6$, 10.49 Å., 3.66; $K_2PbCu(NO_2)_6$, 10.52 Å., 3.56. The lattice of potassium cobaltinitrite is cubic and of the same type as the preceding: $a = 10.32$ Å., calculated density 2.73; the water found on analysis is probably water of impregnation of the lattice and not true water of crystallisation.—C. Andreatta: Bianchite, a new mineral. This mineral, which occurs on the goslarite of an artificial grotto of the Raibl mine, represents a new species of natural hydrated sulphate of the composition $FeSO_4 \cdot 2ZnSO_4 \cdot 18H_2O$. No distinct crystals were obtainable, but the compound appears to crystallise in the monoclinic system. The degree of hydration of the mineral under different conditions has been studied.—A. Belluigi: Physical characteristics of the marginal Apennine plain of Modena.

Official Publications Received.

BRITISH.

- Proceedings of the Geologists' Association. Edited by A. K. Wells. Vol. 41, Part 2, 30th August. Pp. 117-219. (London: Edward Stanford, Ltd.) 5s.
- The Journal of the Institute of Metals. Vol. 43. Edited by G. Shaw Scott. Pp. xii+838+40 plates. (London.) 31s. 6d. net.
- Ceylon. Part 4: Education, Science and Art (G). Administration Report of the Marine Biologist for 1929. By Dr. Joseph Pearson. Pp. 618. (Colombo: Government Record Office.) 40 cents.
- The Indian Forest Records. Entomology Series, Vol. 14, Parts 9 and 10: On the Genus *Xyleborus*. Part 9: Neue *Xyleborus*-Arten (Col. *Scolytidae*) aus Indien, von Hans Eggers; Part 10: The Biology of the Genus *Xyleborus*, with more New Species, by C. F. C. Beeson. Pp. 96+2 plates. (Calcutta: Government of India Central Publication Branch.) 1.6 rupees; 2s. 3d.
- Proceedings of the South London Entomological and Natural History Society, 1929-30. Pp. xx+82+2 plates. (London.) 8s. 6d.
- Air Ministry: Aeronautical Research Committee. Reports and Memoranda. No. 1802 (Ae. 445): The Stresses in a Radially Spoked Wire Wheel under Loads applied to the Rim. By Prof. A. J. Sutton Pippard and W. E. Francis. (T. 2916.) Pp. 43+17 plates. 2s. 3d. net. No. 1808 (Ae. 448): A Micromanometer of High Sensitivity. By E. Ower. (T. 2917.) Pp. 7+3 plates. 9d. net. No. 1812 (Ae. 451): The Stability of a Body towed by a Light Wire. By H. Glauert. (T. 2927.) Pp. 22+2 plates. 1s. 3d. net. (London: H.M. Stationery Office.)
- London County Council. Lectures and Classes for Teachers: Handbook for the Session 1930-31. Pp. 72. (London.)
- Oceania: a Journal devoted to the Study of the Native Peoples of Australia, New Guinea and the Islands of the Pacific Ocean. Published for the Australian National Research Council. Vol. 1, No. 1, April. Pp. 128. (Melbourne and London: Macmillan and Co., Ltd.) 7s. 6d. net.
- Gold Coast Colony. Report on the Survey Department for the Year 1929-1930. Pp. ii+31+5 plates. (Accra: Government Printing Office; London: The Crown Agents for the Colonies.) 2s.
- Journal of the Chemical Society. August. Pp. iv+1709-2036+xii. (London.)