Science News a Century Ago

Phenology

The study of plant geography initiated by Linnæus and carried on by Humboldt and others was well advanced in the early years of the eighteenth century, but the study of the influence of climate on the growth of plants in different parts of the world was of later date. On January 22, 1834, Mr. John Hogg addressed a letter to the *Philosophical Magazine* "On the Influence of the Climate of Naples upon the Periods of Vegetation as compared with that of some other Places in Europe" (vol. 4, 1834, p. 274), with the view of making the importance of this subject of study better known in England. Most of the observations quoted are extracted from an Italian work on Naples or from Gilbert White, but Hogg was one of the first authors to attempt actually to work out the average dates of germination, flowering, fruiting, etc., of a number of plants in different regions, and to interpret the results in terms of climate, so that he may be regarded as a pioneer of the science of phenology.

Foundation of Electrochemistry

On January 23, 1834, and at meetings in two subsequent weeks, Faraday read before the Royal Society his important Seventh Series of the "Experimental Researches in Electricity". It is particularly in this Series, the outcome of his experiments in the autumn of 1833, that he establishes the principles of definite electro-chemical action upon which the science of electro-chemistry is based. The paper contains his statement of the law "that the chemical power of a current of electricity is in direct proportion to the absolute quantity of electricity which passes", and a tabulation of 'ions' evolved on electro-chemical decomposition and the equivalent proportions in which they are produced, or their 'electro-chemical equivalents'. He describes in it his new instrument, "the only actual measurer of voltaic electricity which we at present possess", the 'volta-electrometer' or voltameter; and he defines the new terms, 'electrode', 'electrolyte', 'anode', 'cathode', 'anion', 'cation', he coined on the advice of Whewell and others.

Magazine of Botany and Gardening

The following is an extract from a review by John Lindley, which appeared in the *Gardener's Magazine* of January 1834. "In Berrow's 'Worcester Journal', I have been shown the following advertisement: 'Published on the 1st of every month, the Magazine of Botany and Gardening, British and Foreign. Edited by J. Rennie, Professor of Zoology, King's College, London, assisted by some of the most eminent botanists in Europe; sixteen quarto pages of *original matter*.'—From the ingenious manner in which this is worded, it must doubtless be imagined by the public, as it was by the person who called my attention to the paragraph, that this original matter is furnished to Mr. Professor Rennie by writers whose names include mine. But, as I am not ambitious of the honour of being considered one of this gentleman's contributors, I shall be very much obliged if you will be so good as to allow me to state, through the *Gardener's Magazine*, that no original matter whatever has been either supplied or promised to Mr. Professor Rennie by me. He has availed himself of some passages in works written by me, as he also has of others in the works of several of the writers mentioned in the advertisement; and this is, I presume, what is meant by being assisted; but, if so, the public should understand it rightly."

Fires in London

In a report on the fires in London in 1833 given in the *Mechanics Magazine* for January 25, 1834, it was stated that there were fifteen stations where men were on duty both day and night, four other stations were engines were kept, and at Kings' Stairs, Rotherhithe, there was a fire float. Although the steam fire engines patented by Braithwaite and Ericsson in 1829–30 had worked gratuitously at several fires in London with great success, there was prejudice against their use. All the engines belonging to the Fire-engine Establishment were hand-worked, and were of the type introduced a century before by Richard Newsham, who by his invention of his "engines for quenching fires" it was said had given "a nobler present to his country than if he had added provinces to Great Britain". In 1834 there was no means of signalling to the fire stations and the watchmen on the bridges were often the first to give the alarm from seeing a reflection in the sky. A shilling was usually given to the person who was the first to report a fire to a station, and by an Act of Parliament there were rewards respectively of 30*s*., 20*s*. and 10*s*. to the first, second and third engines arriving on the scene. The number of fires attended by the Fire-engine Establishment in the year was 458, while there were 59 false alarms and 75 alarms from fires in chimneys. The number of deaths through fire was twelve. The London Fire-engine Establishment was founded by ten of the principal insurance companies on January 1, 1833; the headquarters of this concern was in Watling Street and Mr. Braidwood was the superintendent.

Airy and Groombridge's Star Catalogue

Between January 11 and February 13, 1834, Airy, then Plumian professor of astronomy at Cambridge, was in London recuperating after a sharp attack of scarlet fever. During that time he drew up the papers for the Smith's prizes, which were awarded to Philip Kelland, of Queens' College, and Thomas Rawson Birks, of Trinity College, and began to examine the papers relating to the Star Catalogue formed by Stephen Groombridge. "I believe," he says, in his autobiography, "that it was while in London that I agreed with Mr. Baily on a Report condemnatory of H. Taylor's edition, and sent the Report to the Admiralty." Star catalogues had already been produced by many professional astronomers, including Bradley, Lacaille, Piazzi, Lalande, Argelander and Bessel. They all entailed enormous labour and Airy said of Groombridge's Catalogue that, considering the circumstances, "the work is one of the greatest which the long deferred leisure of a private individual has produced".

Groombridge, who was born at Goudhurst, Kent, on January 7, 1755, was first a linen draper and then a West India merchant in London. At his house in Goudhurst he set up a small observatory, but removing to Blackheath in 1802, he acquired a fine transit circle by Troughton with which in 1806 he began his catalogue. In about ten years he had accumulated some 50,000 observations, and he was engaged in reducing them when in 1827 he was attacked by paralysis. On his partial recovery he

applied to the Board of Longitude for assistance in preparing the catalogue for the press. It ultimately appeared in 1832, the year Groombridge died, but owing to errors was suppressed. Its revision was due to Airy. Elected fellow of the Royal Society in 1812, Groombridge was one of the founders of the Royal Astronomical Society. He died on March 30, 1832 and was buried at Goudhurst.

Societies and Academies

LONDON

Society of Public Analysts, December 6. C. H. CRIBB: A specific gravity apparatus. In order to avoid the necessity for a water-bath with thermostatic control, the bottle, which has a thermometer stopper, is provided with a glass bulb sufficiently heavy to sink in any ordinary fluid and having a diameter about twice that of the neck of the bottle. With this addition, the adjustment of temperature can be made to within a tenth of a degree in the course of a few minutes. G. F. HALL and W. M. KEIGHTLEY: The excretion of aloes. Applying their modification of the Schoutelen reaction, the authors have shown that it is possible in some cases to detect unhydrolysed aloin in the urine for periods up to 60 hours after the aloes have been taken. The unhydrolysed material can be detected at a later period than the hydrolysed drug, since the Schoutelen test is more sensitive than the Bornträger test (for the hydrolysed drug). H. E. COX: Chemical examination of furs in relation to dermatitis. (4). Chemical reactions of dyeing with *p*-phenylene diamine and *p*-amino phenol. A quantitative study of the oxidation of *p*-phenylenediamine by hydrogen peroxide in the presence of fur shows that the principal pigment formed is an azine combined with the fur proteins. Some Bandrowski's base is found on the surface of the fibres, and there exists in the solution in the dye-bath much free *p*-phenylenediamine unoxidised, together with some Bandrowski's base and traces of quinone and ammonia. Similar data are given in respect of *p*-aminophenol, which forms an oxazine in an analogous manner. The occurrence and properties of intermediate oxidation products in relation to dermatitis are discussed. JOHN GOLDING: Use of the air-damped balance for the determination of total solids in milk. Very rapid determinations of milk solids can be made by evaporating about 1 gm. of the milk in an aluminium cap (which cools very rapidly) and weighing the residue on an air-damped prismatic reflecting balance (Oertling). The influence of the time of drying on the results is shown in a series of tables. G. G. RAO and K. M. PANDALAI: Rapid method of determining minute quantities of nitrites. An iodimetric method has been devised in which the iodine liberated by the interaction of nitrous acid and hydrogen iodide is titrated in the presence of carbon dioxide evolved within the liquid itself. This prevents oxidation of the nitric oxide, also formed in the reaction, and expels it from the system, thereby eliminating the action of the resulting nitrogen peroxide on the iodide.

PARIS

Academy of Sciences, December 4 (*C.R.*, 197, 1369–1472). EMILE BOREL: The determination of the probability of series of rainy days and fine weather at the Parc Saint-Maur. HADAMARD: Observations on a recent note of Sixto Rios. Reply to a criticism by Sixto Rios of a result of Mandelbrojt. GABRIEL BERTRAND and MLLE. M. ANDREITCHEVA: The comparative proportions of zinc in green and etiolated leaves. There is a relation between the amount of zinc present in leaves and the coloration by chlorophyll. There is 2–3 times as much zinc in external green leaves as in the internal yellow leaves. Where the etiolation is artificial the difference is greater. LOUIS DE BROGLIE: The density of energy in the theory of light. RENÉ THIRY was elected *Correspondant* for the Section of Mechanics. E. J. GUMBEL: The limiting distribution of the greatest value amongst the smallest. RICHARD OBLÁTH: The theory of cubic constructions. H. AUERBACH: The number of generators of a limited linear group. RENÉ DUGAS: The establishment of Schrödinger's equation. BONNIER and MOYNOT: The possible consequences of the use, in internal combustion engines, of hydrocarbons with a high antidetonating value. The adoption of anti-knock has not the same effect in all engines. In an engine which is normally in detonation, as is the case for many aviation engines, the change of the fuel produces a rise in the temperature of the escaping gases. In engines less pushed, with little or no detonation, the variation of the escaping gas temperature is less marked. JEAN CHAZY: The uniform integrals of the problem of three bodies. JULES GÉHÉNIAU: The fundamental laws of the L. de Broglie wave in the gravific of Th. De Donder. PIERRE VERNOTTE: The absolute measurement of the coefficients of thermal conductivity of gases. The apparatus described avoids the complication due to convection. MICHEL ANASTASIADES: The mechanism of rectification in copper sulphide–magnesium rectifiers. According to the author's theory, cuprous sulphide is produced from the cupric sulphide, and the rectification is mainly due to the contact Mg/Cu_2S. E. THELLIER: The permanent magnetism of fired earths. A brick earth, heated uniformly in a magnetic field, is uniformly magnetised, this magnetisation depending on the conditions of time, temperature and atmosphere of the furnace. The magnetisation is permanent. J. GENARD: The magnetic extinction of the fluorescence of diatomic molecules of sulphur. The action of the magnetic field on the fluorescence of sulphur vapour is complex. Some lines are extinguished, others appear to be unaffected, whilst some are strongly enhanced. E. RINCK: Solidification diagrams of alloys formed by two alkali metals. The sodium-rubidium alloys. No evidence was obtained of the existence of the compound Na_2Rb corresponding to the compound Na_2K. PIERRE AUGER and G. MONOD-HERZEN: The presence of neutrons in cosmic radiation. MARCEL GODCHOT, ETIENNE CANALS and MLLE. GERMAINE CAUQUIL: The Raman spectrum of some substituted cyclenic hydrocarbons. JEAN COURNOT and HENRI FOURNIER: Comparative results of the measurement of corrosion. ALBERT SAINT-MAXEN and EMILE DUREUIL: The absorption spectrum of the diphenols in alkaline medium. The results confirm the hypothesis of Euler and van Bolin, relating to the existence of a compound of quinone structure in alkaline solutions of hydroquinol. AUGUSTIN BOUTARIC, MAURICE PIETTRE and MLLE. MADELEINE ROY: The physicochemical study of the flocculation of myxoprotein by resorcinol. PICON: The titanium sulphides. A description of the preparation and isolation of three new sulphides, Ti_3S_5, Ti_3S_4 and Ti_4S_5. B. BOGITCH: The preparation of ferrochrome in the electric furnace. Description of experiments on the semi-industrial scale on the