Pierre-Simon Girard (1765–1836)

ON December 1, 1836, the eminent French civil engineer Pierre-Simon Girard died in Paris at the age of seventy-one years. Born in Caen on November 4, 1765, he was trained as an engineer and in 1792 attracted attention by his essay on "Locks for Navigation", for which he was awarded a prize by the Paris Academy of Sciences. Thus brought into notice, he was chosen with Monge, Berthollet, Fourier and other scientific men to accompany Napoleon to Egypt, and became one of the members of the short-lived Institute founded in Cairo. On his return to France, he was appointed engineer-in-chief of the Canal de l'Ourcq and entrusted with the water supply of Paris. His "Recherches sur les Eaux Publiques de Paris" published in 1812 contains a historical account of the water supply of the city. Girard was elected a member of the Academy of Sciences in 1813 and six years later superintended the installation of a gas supply for the streets and theatres of Paris.

Opium Eating and Health

IN a lecture on opium eating published in the *Lancet* of December 3, 1836, Dr. George G. Sigmond remarked that a very interesting question had arisen as to the effect of the habit on health and on longevity. He instanced the case of the late Earl of Mar, who had insured his life in an Edinburgh office to a large amount. Although he consumed two to three ounces of laudanum daily, he did not state the fact when he obtained the policy of insurance, and on his death from jaundice and dropsy two years later, the company declined payment of the policy on the grounds that his lordship had concealed from them a habit which tended to shorten life. The bank that held the policy as security for money lent entered on an action, with the result that the insurance office had to pay the amount, not, however, on the ground that the habit was fatal to life, but because the office had not shown the proper degree of caution when the insurance was effected.

St. James's Ornithological Society

IN the last part for 1836 of the quarterly journal the *Analyst* (5, 314), under the heading "St. James's Ornithological Society", it is stated that "this Society is instituted for the purpose of forming a collection of water birds in the garden of St. James's Park; and its operations will subsequently be extended to the waters in the other parks, if the funds of the Society be found sufficient. The first object will be to exhibit a complete collection of British Anatidae, both resident and migratory. . . . It is intended to keep the whole, as far as practical, in a state of nature, and the collection, being formed in the public parks, will, of course, be open to the view of every one. As there is in London no other exclusively Ornithological Society, it is unnecessary to point out to the ornithologist the advantages which may result from an institution possessed of a locality so admirably calculated for a collection of aquatic birds, and for affording facilities for observations on the changes of plumage from sex, age, or season, which are so interesting to Naturalists, and so difficult to be observed elsewhere."

The Earl of Liverpool was president of the Society, and its proceedings were sanctioned by the Commissioner for Woods and Forests.

Societies and Academies

London

Royal Society, November 19.

W. A. BONE and L. E. OUTRIDGE: Some influences of dilution on the explosive combustion of hydrocarbons. Certain effects are dealt with of dilution with inert gases (Ar, He and N_2) upon explosions of equimolecular mixtures of ethylene, or acetylene and oxygen, such as $C_2H_4 + O_2$ and $C_2H_2 + O_2$ which normally give rise to carbonic oxide and hydrogen, without any separation of carbon or steam-formation in accordance with the equations:

$$C_2H_4 + O_2 = 2CO + 2H_2,$$

and

$$C_2H_2 + O_2 = 2CO + H_2,$$

respectively. Chemical, photographic and spectrographic tests show that sufficient dilution of such media, while not much affecting the main result, may induce some secondary carbon deposition and steam-formation on explosion, when the mean flame temperature is thereby reduced to a point well below 2,000° C., such result being probably due to the fall in flame temperature induced by dilution.

W. PAYMAN and W. C. F. SHEPHERD: Explosive waves and shock waves. (4) Quasi-detonation in mixtures of methane and air. Experiments on a small and on a large scale have been carried out to investigate the possibility of detonation in mixtures of methane and air. In small-scale experiments the resulting explosion is in some respects similar to detonation; but it is unlike detonation in that the speed is not uniform and in that the wave or flame front is partly sustained first by the flame and then by hot particles from the detonator. The explosion is described as 'quasi detonation', since the energy maintaining the wave is not wholly derived from the combustion of the methane. An explosion which is similar to detonation was also established in large-scale experiments in which a 9·1 per cent methane-air mixture was contained in a gallery 30·5 cm. in diameter and ignited by means of a charge of high explosive. This quasi-detonation is propagated through quiescent mixture at a uniform rate of 1,900 metres per second, and the flame is intensely luminous and accompanied by high pressure.

Paris

Academy of Sciences, November 3 (*C.R.*, 203, 833–900).

EDOUARD CHATTON and FÉLIX VILLENEUVE: The evolutive cycle of *Eleutheroschizon Duboscqui*. Experimental proof of the absence of schizogony in this form and in *Siedleckia Caulleryi*.

PAUL DELENS: The anallagmatic geometry of the tetrahedron.

P. BONÉT-MAURY: A manometer for high vacua. A modified manometer of the Knudsen type.

PIERRE CHEVENARD: A very small testing machine with photographic recording, and its application to the study of textile fibres. The machine is constructed to test single fibres, with a maximum load of 50 gm. The record shows the relation between elongation and load.

JEAN CHAZY: The almost circular movements due to a nearby force of Newtonian attraction.

EMILE SEVIN: The influence of a magnetic field on the atom of hydrogen.

ROGER MÉRIGOUX: The movement of contaminated liquid surfaces.

FÉLIX EHRENHAFT: The experimental determination of the mobility of small spheres in a gas.

ARCADIUS PIEKARA and BRUNO PIEKARA: Electrical saturation in pure liquids and their mixtures. Study of the influence of the electric field on the dielectric constant of mixtures of benzene and nitrobenzene at varying concentration. The effect of traces of moisture.

OUANG TE-TCHAO: Counting particles in suspension in air.

GABRIEL FOEX and CHARLES FEHRENBACH: The calculation of the magnetic moment of the ions.

NY TSI-ZÉ and WENG WEN-PO: The absorption spectrum of cæsium.

GEORGES BRUHAT and PIERRE GUÉNARD: Study of the circular dichroism of solutions of camphor in water and in acids.

THÉODORE V. IONESCU: The structure of the photon.

LOUIS CARTAN: The application of the methods of electronic optics to mass spectrography.

ROBERT TRÉHIN: The application of certain physical methods to the search for complex compounds in solution. The variation of a physical property of a liquid mixture with the composition is frequently used for detecting the formation of a complex compound. The method fails when more than one complex compound is present, and generally it is not possible to prove or deny the existence of such compounds on such evidence alone.

GUILLAUME RUMEAU: Optical antipodes and velocities of crystallization.

MORDECHAÏ BOBTELSKY and MME. LJUBA BOBTELSKY-CHAJKIN: Mixed catalytic effects in the decomposition of hydrogen peroxide in the presence of sodium tungstate and other catalysts.

MARC ANTOINE FOEX: The action of hydrogen on alkaline glasses at a high temperature. Alkaline glasses suffer marked loss of weight when heated in hydrogen at 850°–1,150° C., and this is due to loss of alkali.

MLLE. MARIE FALINSKI: Study of the system ZrO_2–SO_3–H_2O. The conditions for the existence of a new acid zirconium sulphate, $Zr(SO_4)_2,H_2SO_4,2H_2O$.

MME. LÉONE WALTER-LÉVY: Contribution to the study of the double decomposition between solutions of magnesium sulphate and potassium carbonate at the boiling point.

HENRI LEFEBVRE and R. FAIVRE: Contribution to the study of the oxidation of coal. At temperatures between 150° and 300° C., oxygen rapidly penetrates coal, especially the vitrain. The coal becomes poorer in hydrogen and more resistant to oxidation.

JEAN FELDMANN and ROBERT LAMI: The growth of the mangrove at Guadeloupe.

JEAN CHAZE: Intoxicating rye-grass (*Lolium temulentum*) and the pure culture of its endophyte.

JOSEPH MAGROU: The culture and inoculation of the symbiotic fungus of *Arum maculatum*, the cuckoo-pint.

YVES LE GRAND: Binocular vision through crossed polarizers.

ALBERT VANDEL: The appearance of colourless mutations in *Trichoniscus* (*Spiloniscus*) *elisabethæ* and their hereditary behaviour.

PAUL MEUNIER: The presence and distribution of aluminium in animal tissues. Aluminium is always present in animal tissue, but in much smaller proportions than in plants.

ALBERT PEYRON and HENRI LIMOUSIN: Intravascular polyembryony and the metastases with multiple tissues in the embryomes of the testicle.

ANDRÉ LWOFF and MME. MARGUERITE LWOFF: The physiological role of the co-dehydrogenases for *Hæmophilus parainfluenzæ*.

CONSTANTIN LEVADITI, CARL KLING, MLADEN PAÏC and PEREZ HABER: The approximate size of the poliomyelitic virus.

Washington, D.C.

National Academy of Sciences (*Proc.*, **22**, 525–566, Sept. 15).

ERNST ÖPIK: Meteor heights from the Arizona Expedition. About 22,000 meteors were observed between October 1931 and July 1933; of these, 3,540 were observed simultaneously from two stations and their heights could therefore be calculated. 80 per cent of the objects observed were sporadic meteors and only 7 per cent belonged to the major showers. It is deduced that meteors meeting the earth are vaporized 23 km. higher than those overtaking the earth, due to greater relative velocity. Seasonal variation of height suggests an annual fluctuation of height of the atmosphere of amplitude $3{\cdot}7 \pm 0{\cdot}7$ km. There is no evidence of a hydrogen atmosphere, at least to a height of 130 km.

A. W. BELLAMY: Inter-specific hybrids in *Platypœcilus*: one species *ZZ–WZ*; the other *XY–XX*. The results are discussed from the point of view that there is a single sex differential which prejudices development in the direction of maleness or femaleness.

G. W. BEADLE and BORIS EPHRUSSI: Development of eye colours in *Drosophila*: transplantation experiments with suppressor of vermilion.

G. A. MILLER: Groups containing a relatively large number of operators of the same order.

JOHN H. LAWRENCE, PAUL C. AEBERSOLD and ERNEST O. LAWRENCE: Comparative effects of X-rays and neutrons on normal and tumour tissue. Normal healthy albino mice and pieces of an easily transplantable mouse tumour (Sarcoma 180) were submitted to filtered 200 kv. X-rays and to neutrons from the cyclotron, the doses of the two types of radiation being measured in r units by a Victoreen condenser type r meter. After irradiation, the tumour tissue was implanted into susceptible mice and its development watched. It is concluded that, per unit of ionization, neutrons are much more effective than X-rays in destroying normal mice *in vitro* and Sarcoma 180 *in vitro*.

F. ZWICKY: Characteristic temperatures in supernovæ. A theoretical discussion.

CARROLL C. PRATT: Interaction across modalities: simultaneous stimulation. A lowering of the apparent pitch of musical instruments in a concert hall on dimming the illumination has not been generally remarked. Conversely, an experimental test in which observers compared an illuminated source with a previously illuminated standard source while listening by ear-phones to a high- or a low-pitch tone, showed no significant influence of the sound stimulus on the estimates made of the illumination of the light source. It seems unlikely that two psychological events from different modalities, operating at a sensory level, will influence each other.