

Calendar of Discovery and Invention.

October 23, 1820.—The general substitution of wrought-iron rails for cast-iron rails in the early railways was brought about by the invention of John Birkinshaw, manager of the Bealington Iron Works. Rectangular bars were first used, but on Oct. 23, 1820, he patented the fish-bellied form of rail, whereby increased bearing and strength were obtained with the same weight of material. He afterwards devised the fish-bellied rail which was used in the Stockton and Darlington Railway.

October 24, 1851.—Lassell, whose discovery of Neptune's single satellite on Oct. 10, 1846, has already been referred to, prosecuted his search for other satellites for many years, but without success, until Oct. 24, 1851, when he discovered the third and fourth satellites of Uranus, and they were named Ariel and Umbriel.

October 25, 1795.—At the height of the revolutionary period in France the various academies in Paris were suppressed, and for two years men of learning had no recognised status or meeting-ground. From the ruins of the academies, however, sprang the Institut National, inaugurated on Oct. 25, 1795 (3 Brumaire, an iv.). The Institut to-day comprises five academies, of which the Academy of Sciences is one. At first it had various homes, but Napoleon housed it in the Collège Mazarin, built in 1663-70, as the Collège des Quatre Nations Réunies. Its anniversary meeting during the restoration was held on April 24, and under Napoleon III. on Aug. 19, but since 1870 it has always been held on the original day, Oct. 25. One of the functions of the Institut is that of "registering discoveries and perfecting arts and sciences."

October 25, 1847.—At a time when photography, though in its infancy, was attracting considerable attention, Niepce de Saint-Victor, an officer in the French Army, following up the discoveries of his uncle, Nicéphore Niepce and Daguerre, discovered a method of photographing on glass. He gave the first account of his process in a paper communicated to the Paris Academy of Sciences on Oct. 25, 1847.

October 26, 1711.—The Board of Visitors which visits the Royal Observatory at Greenwich annually was first appointed by Queen Anne in December 1710, its origin being traceable to the unfortunate misunderstandings that prevailed between Flamsteed and some of his contemporaries. Apparently the first time the Board met the Astronomer Royal was in the rooms of the Royal Society in Crane Court on Oct. 26, 1711. The Board was empowered to demand from the Astronomer Royal a copy of his annual observations and to inspect his instruments. Flamsteed, however, had constructed some of the instruments at his own cost, and it is stated that when on this occasion he was requested to report on his instruments, he declared they were his own and he would suffer no one to concern himself with them.

October 27, 1806.—Napoleon, who had a keen appreciation of the value of scientific discoveries and inventions, often conferred rewards for such work. One instance was his recognition of the invention of the loom for figured weaving by Jacquard, to whom, by a decree dated from Berlin, Oct. 27, 1806, he gave a pension of 6000 francs.

October 29, 1852.—One method of making electro-types was that patented by Paul Pretsch, Oct. 29, 1852, under the name of photo-galvanography. From a transparency a gelatin relief image was obtained, which, being made conductive, was coated with copper. The copper shell was then backed with type metal to produce a printing plate.

E. C. S.

Societies and Academies.

LONDON.

Society of Public Analysts, Oct. 5.—A. Chaston Chapman: The oil of *Centrophorus granulosus*. The liver oil of the Portuguese shark 'barroso' (*Centrophorus granulosus*) contains the unsaturated hydrocarbon, spinacene, an alcohol probably identical with the batyl alcohol found in Japanese shark oils, a liquid alcohol (selachyl alcohol, $C_{21}H_{40}O_3$), cholesterol and glycerol (0.5-0.6 per cent.), together with stearic, palmitic, and oleic acid, and possibly smaller proportions of other saturated and unsaturated fatty acids.—W. R. Schoeller and E. C. Deering: The separation of titanium from tantalum and niobium. The method is based on the dissociation of the soluble tartaric complexes of the metallic acids by a mineral acid; the earth acids are precipitated, whilst the titanic salt remains in solution. The results as yet obtained are approximate.—C. L. Hinton and T. Macara: The determination of aldose sugars by means of chloramine-T, with special reference to the analysis of milk products. Each molecule of chloramine-T is equivalent to two atoms of iodine, both in the oxidation of sugar and in the final liberation of iodine on acidifying. The oxidation proceeds more slowly than that with alkaline iodide solution. The most suitable conditions for the oxidation of dextrose and lactose have been worked out, and the extent of the slight oxidation of sucrose and lævulose under standard conditions has been determined. Under the conditions specified, the action of chloramine-T on the non-sugar constituents of milk serum does not cause an error greater than 0.4 per cent. of the total lactose.

PARIS.

Academy of Sciences, Sept. 12.—(Jean) Perrin: Valency and addition compounds. A summary of various views of electronic valency with some applications to organic compounds.—Mme. Ramart-Lucas: The mechanism of molecular transpositions. An application of the conception of mono-electronic linkage, or semivalence, to the phenomena of intramolecular transpositions. Pierre Viennot: The geology of the neighbourhood of Hasparren (Basses-Pyrénées).—G. Ollivier: *Culleria monovica*, gametophyte of *Aglaozonia chilosa*.—A. Lebediantzev: The reaction to desiccation of different types of soils in the *tchernozem* and *podzol* zones of European Russia.—R. Wilbert: An infectious disease of the chimpanzee, transmissible to man. This disease, which appears to be due to a spirochæte, caused the death of 32 chimpanzees out of 33. The author caught the disease but recovered. His blood contained the same spirochæte as the affected chimpanzees, and its inoculation into a chimpanzee caused its death.

Sept. 20.—Lacroix: The chemico-mineralogical characters of the tertiary intrusive and volcanic rocks of North Africa.—G. Bigourdan: The third general assembly of the International Geodetic and Geophysical Union. An account of the meeting held at Prague on Sept. 3-10, 1927.—T. J. de Seze: The degree of accuracy of common formula of resistance of materials.—Mme. Christine Ladd-Franklin: The visible radiation arising from stimulated nerve fibres.—René van Aubel: The presence of crystallised uraninite in the uraniferous deposits of Kasolo (Katanga).