

Calendar of Discovery and Invention.

January 30, 1826.—A great achievement was brought to a successful termination on Jan. 30, 1826, when Telford's famous suspension bridge over the Menai Straits was opened and the London mail-coach crossed to Anglesey. Hitherto the passage of the Straits by boat had often been difficult and dangerous. Among the most graceful of such structures, the bridge has a central span of 579 feet. Its main features are the sixteen chains formed of flat wrought iron bars 10 ft. long, $3\frac{1}{2}$ in. wide, and 1 in. thick.

January 31, 1858.—In a decade which saw the Great Exhibition, the discovery of the first coal-tar colours, the invention of the Bessemer process, and the laying of the first Atlantic cable, there was no greater experiment than the building of a steamship to run between England and Australia carrying sufficient coal for the round trip. The *Great Eastern* was begun in 1854 and, after extraordinary difficulties, was launched in the Thames on Jan. 31, 1858. Though a commercial failure, she was a splendid specimen of naval architecture and a worthy monument to her designers, Scott Russell and Brunel.

January 31, 1895.—In a letter to NATURE in September 1892, Lord Rayleigh directed attention to a slight difference in the densities of nitrogen prepared from two different sources. This letter led to the collaboration of Lord Rayleigh and Sir William Ramsay. In April 1894, Ramsay wrote to his wife, "I am at work on nitrogen but not from the commercial point of view. . . . Nitrogen of air is heavier than nitrogen from ammonia in the ratio 251 to 250. That would correspond with the addition of some light gas to the heavy one, or of some heavy gas to the light one." In August 1894 he was able to say, "I have isolated the gas. Its density is 19.075." The new gas was named argon, and the full story of its discovery was told by Rayleigh and Ramsay at a special meeting of the Royal Society held on Jan. 31, 1895.

February 2, 1891.—In 1887, Lord Rayleigh pointed out how particles of silver might be deposited in layers half a wave-length of light apart. Four years later, on Feb. 2, 1891, before the Paris Academy of Sciences, Gabriel Lippmann explained the discovery of the process of colour photography by interference.

February 3, 1851.—The idea of using a swinging pendulum to demonstrate the rotation of the earth was due to Leon Foucault, who described his experiments to the Paris Academy of Sciences on Feb. 3, 1851. Some of his demonstrations were made in the Panthéon, but when, a year or two later, the Panthéon again became a church, the pendulum was shown in motion at the Champs de Mars.

February 4, 1812.—Preserved in the Deutsches Museum, Munich, is the apparatus by which Sömmering in 1809 sent signals by electricity. His attention had been attracted to the subject by the successful use of the semaphore during Napoleon's Austrian campaign. Commencing in 1809 with communicating between points 38 feet apart, on Feb. 4, 1812, he was able to send signals almost $\frac{3}{4}$ of a mile.

February 5, 1870.—At the Academy of Music, Philadelphia, on Feb. 5, 1870, before an audience of more than 1500 people, Henry Heyl publicly exhibited on the screen a series of posed pictures showing the movements of a couple waltzing. The effect was obtained by placing photographs round the edge of a disc which was driven step by step in strict time with the music of the orchestra. This was the first public motion picture show, and the Academy has been popularly called "the birthplace of the movies."

E. C. S.

Societies and Academies.

LONDON.

Royal Society, Jan. 20.—J. Topping and S. Chapman: On the form and energy of crystalline sodium nitrate. The total potential energy has been found for a series of configurations of the ions of the crystal, by the addition of the potential energy due to the intrinsic repulsive forces between the various ions, to the electrostatic potential energy, which was calculated in a previous paper. The stable configurations of the crystal corresponding to a minimum value of this energy has been found for various values of the distance b between the N and O ions of an NO_3 group. The value of b suggested is about 0.96 Å.U., which is somewhat larger than the value of 0.72 Å.U. given in the former paper.

C. N. Hinshelwood: Quasi-unimolecular reactions—the decomposition of diethyl ether in the gaseous state. The decomposition of gaseous diethyl ether is a reaction which obeys the unimolecular law at high pressures, but becomes more nearly bimolecular at lower pressures. A sufficient amount of hydrogen completely stops the falling off in the unimolecular velocity constant at low pressures; helium and nitrogen have little or no influence, while the reaction products in considerable excess have a slight retarding influence. There are enough collisions to activate the molecules if the energy of activation is assumed to be distributed among about eight degrees of freedom. These and other 'quasi-unimolecular' reactions are most simply explained on Lindemann's theory.

W. G. Burgers: An X-ray investigation of optically anomalous crystals of racemic potassium chlorosulphoacetate. In an investigation of crystals of racemic potassium chlorosulphoacetate $\left\{ \begin{array}{l} \text{CHCl} \cdot \text{SO}_3\text{K} \\ \text{COOK} \end{array} \right. + 1\frac{1}{2}\text{H}_2\text{O}$

by F. M. Jaeger, it was shown that these crystals exhibit an anomalous optical behaviour, and that variations occur in the angles between some of their faces. Investigation of the crystals by X-rays shows that the crystals are truly orthorhombic, and that the irregularities of their habit must be caused by a slight difference in orientation of successively crystallised layers. The optical anomalies may be due to strains in the crystals. The space-group of the crystals is Q_h^{14} , the underlying lattice Γ_0 . The dimensions of the unit cell, which contains eight groups of the above formula, are $a = 8.58$ Å.U., $b = 8.60$ Å.U., $c = 23.76$ Å.U.

J. Topping: On the mutual potential energy of a plane network of doublets. The mutual potential energy of a set of coplanar doublets with their axes all perpendicular to the plane has been found at the net-points of (1) a square network, and (2) an equitriangular network. If the number of doublets per unit area be the same in both cases, the energy per unit area differs only by about 2 per cent. This result may be applied to a layer of polarised molecules on the surface of a fluid, so that a fairly definite estimate of the energy can be made for any probable mode of packing of the molecules.

D. Buchanan: Periodic orbits of the second genus near the straight-line equilibrium-points in the problem of three bodies. The particular problem considered pertains to periodic oscillations in the vicinity of the Lagrangian straight-line equilibrium-points, when the two finite bodies move in circles and the third body is infinitesimal. The first-genus orbits near these equilibrium-points were first obtained by Darwin. The orbits with which this paper is more particularly concerned are those of Class A of Moulton's 'Oscillating Satellite.' With respect to