

### Calendar of Discovery and Invention.

September 5, 1862.—James Glaisher, who was the first superintendent of the magnetical and meteorological department of the Royal Observatory on its foundation in 1840, and was also the founder of the Royal Meteorological Society, made many balloon ascents for scientific purposes, the most notable of which was that made from Wolverhampton on Sept. 5, 1862, when a height of nearly seven miles was attained.

September 6, 1863.—It was on Sept. 6, 1863, that Philipp Reis (1834–1874), a professor of Frankfort-on-Maine, explained to the Emperor of Austria his 'telephon' for transmitting musical sounds to a distance. Reis probably designed ten distinct forms of transmitter and four forms of receiver. Some of his apparatus is to be seen at the Science Museum, South Kensington. A Reis 'telephon' was also experimented with by Hughes, who exhibited the instrument to the Emperor Alexander II. of Russia at Tsarskoye Selo in 1865.

September 6, 1870.—The need for the application of scientific methods in designing and building ships has often been brought home by disasters at sea, of which the loss of H.M.S. *Captain* is perhaps the most notable. Built on the Mersey to the plans of Captain Cowper Coles, the *Captain* was a fully-rigged low-freeboard turret vessel 320 feet long and 6950 tons displacement. She was completed in 1870, and after preliminary trials she joined the Channel Fleet off Finisterre, but on the night of Sept. 6-7 capsized, 475 officers and men being lost. An outcome of the tragedy was the appointment of a Committee of Design, on which Armstrong, Rankine, Kelvin, Woolley, and Froude served, while much more extensive investigations into the question of stability of ships was undertaken than had hitherto been the case.

September 7, 1807.—Winsor's success in lighting Pall Mall with gas in January 1807 had far-reaching effects and also led to extravagant speculation. Winsor himself lectured and gave demonstrations, and on Sept. 7, 1807, Lady Bessborough, writing to the Earl of Granville, said: "Winsor promised a return of 6000 guineas a year for every guinea subscribed. No fewer than 17,000 shares were sold in ten days, and Pall Mall was blocked with people in carriages, on horseback, and on foot rushing to invest."

September 8, 1859.—After many delays, the famous *Great Eastern* proceeded down the Thames on trial on Sept. 8, 1859. She had then been five years under construction. About as large as our present *Mauritania*, her machinery was only about a seventh of the power. She had both screw and paddles, but her combined horse-power was only some 9000 H.P. Moreover, she had but 25 lb. steam pressure in her boilers, and her coal consumption was very high. It was the backwardness of marine engineering that, as much as anything, made it impossible to make her pay.

September 9, 1892.—"On Sept. 9, 1892, Mr. [Prof. E. E.] Barnard was studying Jupiter with the large telescope at the Lick Observatory, which has an aperture of three feet, and as the light of the planet produced too great an illumination of the field of vision, he carefully intercepted it, whereupon he noticed a feeble luminous point nearer than the first satellites. At first he thought it was a small star, but as the days passed all such doubts were removed, and it became clear that here was indeed a fifth moon, situated at no greater distance than 113,475 miles from Jupiter's enormous globe. . . . Few observers are powerfully enough equipped to perceive this tiny world, whose diameter is only some 90 miles" (Moreau).

E. C. S.

### Societies and Academies.

PARIS.

Academy of Sciences, July 27.—André Blondel: Abacus for the resolution of the general equation of the third degree and the discussion of the differential equation of the third order with constant coefficients.—Paul Sabatier and Antonio Fernandez: Dehydrogenations and hydrogenation catalysed by metallic oxides. In previous communications the catalytic behaviour of various metallic oxides has been mainly studied by the reactions with alcohols. Piperidine has now been submitted to similar experiments. The reduction of nitrobenzene and alkyl nitrites by hydrogen in the presence of manganous oxide or zinc oxide has also been studied.—D. Wolkowitsch: A geometrical interpretation of Castigliano's theorem in a particular case.—G. Pfeiffer: The construction from a system of partial differential equations of the first order with an unknown function, of an equation, linear in Jacobians, satisfying Hamburger's conditions, and also of a system of equations, linear in Jacobians, for which the generalised conditions of Hamburger are fulfilled.—Serge Bernstein: The multiply monotone polynomials which deviate the least from zero.—A. Veronnet: The most general movement of an isolated heterogeneous fluid mass, which keeps an invariable form. The trajectories are circular and the level surfaces of revolution.—Swyngedaw: The unfolding of bolts.—D. S. de Lavaud: The stability of the vibrations of the front axle and wheels of a motor-car.—Rebillet: Carburation in internal combustion motors. A general formula is given for the weight of air drawn into the motor in a given time and a mechanism described and illustrated by means of which the petrol injected can be made to follow the same law.—Léon Kirste: The practical limit to increase of size of commercial aeroplanes.—E. M. Antoniadi: Recent observations of the planet Mercury with the Meudon 83 cm. telescope.—Carl Störmer: Remarkable action of sunlight on the height of the aurora borealis. On Sept. 8, 1926, the height of an aurora measured on a 26 kilometre base at Oslo was found to be 300 km.–500 km. above the earth, instead of the average 80 km.–200 km. This aurora was directly exposed to sunlight, and examination of earlier data showed that a high aurora was usual when exposed to the rays of the sun. The spectrum of the high aurora gives lines in the blue and violet which are not shown by the low altitude aurora.—H. Deslandres: Remarks on the preceding communication.—Mlle. J. Clavier: Study of the reflecting power of some unoxidisable steels. Four non-rusting steels were examined and their reflective powers measured for eight different wavelengths. One group of mirrors was exposed to the air for two months; the other group was kept away from air and moisture. The measurements were practically identical and show that these steels possess the qualities of a good material for reflectors.—G. W. Ritchey and Henri Chrétien: Presentation of the first model of an aplanatic telescope.—Edmond Bayle and Lucien Amy: The application of spectrum analysis to the detection of metallic impurities. A modification of the method of Jolibois and Bonnet, in which the metal is first deposited electrolytically. A list is given of the minimum amounts of various metals capable of detection by this method, varying from  $1 \times 10^{-6}$  gm. of silver to  $1 \times 10^{-10}$  gm. of manganese.—L. Dunoyer: The measurement of the gases dissolved in water. The method is based on the evaporation in a high vacuum of a small quantity of water (1 c.c. to 2 c.c.), absorption of the water