Calendar of Discovery and Invention.

February 27, 1706.—On this day John Evelyn, the diarist, died. He is commemorated here for his "Silva, a discourse of forest trees," 1664. It was Evelyn's house, Saye Court, Deptford, in which lived Peter the Great. Evelyn is also known as one of the founders of the Royal Society.

February 27, 1812.—Wilhelm von Biela, an Austrian major, on Feb. 27, 1812, discovered Biela, the comet to which his name was given. The comet had a period of $6\frac{3}{4}$ years, and when it returned in 1846 and 1852 it was seen to have divided into two comets. It then disappeared, but at the end of 1872 showers of shooting stars were observed, and it is believed these were caused by the breaking up of the comet.

February 28, 1838.—A report on Kew Gardens by Dr. John Lindley and two practical gardeners, dated Feb. 28, 1838, recommended that the gardens should be transferred to the care of the nation. They were duly taken over by the Commissioner of Woods on April 1, 1840, and W. J. Hooker was appointed director. It was under his skilful management that the gardens gained the high reputation they now enjoy.

March 1, 1866.—While a journalist in London, Walter Weldon (1832–1885) became interested in industrial chemistry, and though at first ignorant of chemical analysis, on Mar. 1, 1866, he took out the first of several patents connected with the manufacture of soda and chlorine. His introduction of the 'lime-manganese' process in the production of chlorine reduced the price of bleaching powder £6 a ton and, in the words of Dumas, cheapened "every sheet of paper and every yard of calico." The Weldon process has now been superseded by electrolytic methods.

March 2, 1617.—This is the date of the first British patent, but it was the Act of 1623 which for the first time secured "the sole working or making of any manner of new manufactures within this realm to the true and first inventor."

March 4, 1866.—On the memorial to Sir Norman Lockyer in the observatory on Salcombe Hill, Sidmouth, he is described as a "pioneer in the investigation and interpretation of the chemistry of the sun and stars and in the science of astronomical physics." It was on Mar. 4, 1866, that Lockyer first applied the spectroscope to the direct examination of the sun's surface, and in the same year he proposed a new method of observing the 'red flames' of the sun in daylight. A more powerful instrument came into his hands in October 1868, and on Oct. 20 he wrote to the Royal Society: "I have this morning perfectly succeeded in obtaining and observing part of the spectrum of a solar prominence." Janssen had achieved the same result in India, and the joint discovery was recognised by the striking of a medal by the French Government.

March 5, 1874.—Dr. (now Sir) David Ferrier brought before the Royal Society his experiments mapping the surface of the brain of the monkey into regions whence minute electrical stimulation was found by him to evoke precise movements of the face and limbs, characteristic for each region. The experiments were made to test "the theory of Hughlings Jackson that unilateral epilepsies are caused by irritation of the grey matter of the cerebral hemisphere." Ferrier's experiments laid the foundation of the knowledge which guides the physician and surgeon in locating to-day the seat of injury, tumour, etc., in the cerebrum. Moreover, the success of the surgical operations on the monkey's brain obtained in those experiments made clear that similar success might be attained on the brain of man; and in 1884 Rickman Godlee removed a tumour from the human brain. E. C. S.

Societies and Academies.

LONDON.

Royal Society, Feb. 17.—G. C. **Simpson**: The mechanism of a thunderstorm. The theory that the separation of electricity is brought about by the breaking of raindrops is adopted. The orders of magnitude of the meteorological and electrical quantities involved are in accordance with observations. The observations made by Schonland and Craib in South Africa of changes of electrical field strength produced by lightning discharges are in complete accord with the theory.

G. U. **Yule**: Wolfer's sunspot numbers considered as a disturbed periodic series. The series of sunspot numbers is analogous to the data that would be given by the observed departures of a simple pendulum subjected to random (or largely random) impulses. The graph of such a series is very smooth, but amplitude and phase are continually changing, just as with the sunspot graph. The problem of determining period and 'disturbances' for such a series is attacked by two methods: (1) By forming the least-square equation of the form appropriate to a simple harmonic function

$$u_x = ku_{x-1} - u_{x-2},$$

between three consecutive terms. Trial of the corresponding extended equation appropriate to two periods gave no evidence of the existence of any period other than the fundamental. (2) By forming the general least-square linear equation

$$u_x = b_1u_{x-1} - b_2u_{x-2},$$

and solving as a finite difference equation: the solution is a heavily damped harmonic function. The correlations between u_x and the preceding terms up to u_{x-5} again fails to give evidence of any period other than the fundamental. The 'disturbances' (divergences of u_x from the value estimated by the two preceding terms) show two conspicuous characteristics: (*a*) a tendency to be mainly positive and highly variable, mainly negative and much less variable, over alternate intervals of 40 to 42 years; (*b*) a tendency to be mainly positive during the rise of the graph, mainly negative during the fall.

H. **Horrocks**: Meteorological perturbations of tides and currents in an unlimited channel rotating with the earth. As tidal predictions from analysis of observations still differ considerably from observations, this paper aims at throwing light on the type of disturbance to be expected when conditions of wind and atmospheric pressure vary at the ocean surface. The special basin considered is an unlimited rotating channel with atmospheric conditions varying across it, and turbulence in the water is taken into account.

G. M. B. **Dobson**, D. N. **Harrison**, and J. **Lawrence**: Measurements of ozone in the earth's atmosphere and its relation to other geophysical conditions (Part 2). As previously found, there is a marked connexion between the amount of ozone and the meteorological upper-air conditions. Possible reasons for this connexion are briefly discussed and connexions with terrestrial magnetism and possibly with sunspots are indicated.

M. **Bentivoglio**: An investigation of the rate of growth of crystals in different directions. The crystal is grown in a rotating vessel, and relative rates of face-growth are determined for crystals of isomorphous double sulphates of magnesium-ammonium, iron-ammonium, and magnesium-potassium, and potassium and ammonium tartrates. The measurements show that, under conditions of experiments, (i) similar faces of a *simple* form grow at same rate, even when of different sizes. Hence a misshapen crystal, if grown

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