

Calendar of Discovery and Invention.

May 8, 1654.—One of the most striking demonstrations in physical science made during the seventeenth century was that of Otto von Guericke, who on May 8, 1654, before the assembled princes at Ratisbon, showed his great experiment with the big Magdeburg hemispheres which, when exhausted of air, could not be pulled asunder by sixteen horses.

May 8, 1795.—Though the planet Neptune was not discovered until 1846, yet it was shown as a star in Harding's Atlas of 1822, and on May 8 and 10, 1795, Lalande had also registered it as a star.

May 9, 1865.—The first application of hydraulic power to machinery was due to Lord Armstrong; but its application to machine tools was due to Tweddell who, on May 9, 1865, patented a hydraulic riveter for fixing the ends of boiler tubes. In the same year he also designed hydraulic riveting plant for a Newcastle firm, enabling machine riveting to be carried out at one-seventh of the cost of hand riveting.

May 10, 1752.—Dalibard, the French botanist, was the first to draw electricity from a thundercloud. By means of an insulated rod forty feet long fixed in a stand, on May 10, 1752, when a thundercloud was overhead, sparks were drawn from the rod, leading Dalibard to write, "Franklin's idea ceases to be a conjecture. Here it has become a reality."

May 11, 1671.—On this day Nehemiah Grew's "Anatomy of Plants begun" was read before the Royal Society and ordered to be printed. It was published the following year, and later was translated into Latin, French, and Italian. In 1682 it was incorporated in the author's larger work, "Anatomy of Plants." With Malpighi, Grew shares the honour of the foundation of plant anatomy.

May 12, 1881.—In the Berlin Exhibition of 1879 an electric railway, one-third of a mile long, was shown in operation, and similar demonstration lines were installed in other exhibitions. The first permanent electric railway was that from Berlin to Lichtenfelde, which was put into operation on May 12, 1881. Electricity at 100 volts was utilised, one rail being positive and the other negative.

May 13, 1731.—After spending some years in effecting improvements in reflecting telescopes, which led to their wide adoption, John Hadley turned his attention to instruments for measuring angles, and on May 13, 1731, read to the Royal Society a paper entitled "Description of an Instrument for taking Angles." By the introduction of the use of two mirrors, Hadley was for the first time able easily to measure angles subtended by distant objects, independently of small changes in the position of the observer.

May 14, 1796.—Jenner's famous experiment in inoculation was made 131 years ago. He had long desired to try the passing of the vaccine virus from a human being to another by the ordinary mode of inoculation, and on May 14, 1796, a boy named Phipps was inoculated in the arm from a pustule on the hand of a dairymaid, Sarah Nelmes, who was infected by her master's cows. Writing a little later, Jenner said, "But now listen to the most delightful part of my story. The boy has since been inoculated for the smallpox which, as I ventured to predict, produced no effect."

May 15, 1836.—It was during the annular eclipse of the sun of May 15, 1836, that Francis Baily saw the phenomena called "Baily's Beads," of which he gave a very striking description. Though in later eclipses the "Beads" were not so vividly seen, Baily's account did much to stimulate attention to the physical aspects of solar eclipses. E. C. S.

Societies and Academies.

LONDON.

Royal Meteorological Society, Mar. 20.—R. A. Watson Watt: The range of atmospheric (Report of the Committee on Atmospherics and Weather). The distances over which an atmospheric may produce disturbance of broadcast reception was discussed. The Committee organised experiments in which observers in the British Isles, Norway, Germany, France, Spain, Morocco, and Madeira recorded disturbance of broadcast talks, while the sources of the atmospheric were identified by radio position-finding by the organisation set up by the Department of Scientific and Industrial Research on the advice of its Radio Research Board. Many of the sources were found to lie in regions of meteorological disturbance. Atmospheric from beyond the Azores have disturbed the reception of Daventry's signals in Paris and of London's signals in Aberdeen, and a thunderstorm at Rome disturbed reception in Spain, France, Madeira, the British Isles, and Norway. Many atmospheric are heard at distances exceeding 1800 miles from their sources, and may reach at least 4500 miles. There is no evidence of the presence of many atmospheric with a short range of disturbing effect.

Geological Society, April 6.—Vincent G. Glenday and John Parkinson: The Kateruk series and associated rocks of the northern Suk Hills (Kenya Colony). A series is described of completely metamorphosed sediments which crop out on or near the Kateruk River, an eastward-flowing tributary of the Turkwal River, situated about 30° 15' long. E. and 2° 37' lat. N., in the north-western part of Kenya Colony. The rocks consist of the metamorphosed representatives of various sedimentary deposits, ashes being included. The constituents indicate a somewhat lower grade of metamorphism than those of the Turoka series of the south, and may prove to be slightly younger.—H. L. Hawkins and Miss S. M. Hampton: The occurrence, morphology, and affinities of the Silurian Echinoidea Echinocystis and Palæodiscus. Church Hill Quarry, near Leintwardine, was re-opened, and a careful record of the sediments was made. A column of rock was excavated to a depth of 12 feet 6 inches from the surface. The beds traversed are all calcareous flaggy mudstones, varying slightly in lime-content. Ripple-marked surfaces were found at two horizons. Fossils are very rare, except in congested bands. The series seems to have accumulated in shallow lagoon-water, and the indigenous fauna of echinoderms and Lingulæ was periodically reinforced by brachiopods, pteropods, and graptolites drifted in during storms. New material of Echinocystis and Palæodiscus, including specimens which show obverse and reverse casts, and others showing upper and under surfaces of the test, has made it possible to solve many of the problems associated with the genera. Echinocystis is revealed as a typical perischoechinoid, with a normal endocyclic apical system and an advanced complexity of ambulacral structure. In Palæodiscus, the indications of an endocyclic apical system seem convincing. The reputed 'Asteroid' ambulacral plates are knob-like ingrowths from the perradial zones of the otherwise normal plates. Both genera are claimed as advanced perischoechinoids—far too specialised to show pre-echinoid features.

Society of Public Analysts, April 6.—C. Ainsworth Mitchell and T. J. Ward: The sequence of strokes in writing. Systematic experiments have been made to determine to what extent one may trust to the appearance of one of two intersecting lines being