Calendar of Discovery and Invention.

November 28, 1660.—The first official record of the Royal Society reads as follows: "Memorandum that Novemb. 28, 1660, These persons following, according to the usuall custome of most of them, mett together at Gresham College to heare Mr. Wren's lecture, viz. The Lord Brouncker, Mr. Boyle, Mr. Bruce, Sir Robert Moray, Sir Paul Neile, Dr. Wilkins, Dr. Goddard, Dr. Petty, Mr. Ball, Mr. Rooke, Mr. Wren, Mr. Hill. And after the lecture was ended, they did according to the usual manner withdraw for mutual converse. . ."

November 28, 1867.—In a letter of this date, Gassiott told Tyndall the following story of Davy entering Pepys' shop in the Poultry. Showing him a letter Davy said, "Pepys, what am I to do, here is a letter from a young man named Faraday; he has been attending my lectures and wants me to give him employment at the Royal Institution—what am I to do?" "Do?" replied Pepys, "put him to wash bottles; if he is good for anything he will do it directly, if he refuses he is good for nothing." "No, no," replied Davy, "we must try him with something better than that." The sequel was that Faraday was employed to assist Davy in the laboratory.

November 30, 1845.—One of the most remarkable days in the history of railways was Nov. 30, 1845, the day fixed by the Board of Trade for lodging plans and specifications for new lines. Extraordinary measures were adopted for producing the documents and for getting them to London in time. No fewer than 1200 companies were started that year, the capital represented by the schemes amounting to £560,000,000. In 1846, 600 railway bills were actually brought forward, and it was then that 'the battle of the gauges' set in. It was, however, only on Brunel's Great Western line that the 7-foot gauge was used.

December 2, 1846.—Some of the earliest experiments in arc lighting were made by Staite and Petrie, who worked together at various problems. To Petrie was due the invention of the first truly self-regulating arc light, while on Nov. 28 and Dec. 2, 1846, he demonstrated the use of his light from the portico of the National Gallery.

December 2, 1856.—On this day Friedrich and Wilhelm Siemens took out the British patent for their regenerative furnace, which a few years later found its most important application in the open hearth method of making mild steel by the Siemens Martin process—a process by which to-day more than 80 per cent. of the steel of the world is produced.

December 2, 1857.—"The advantages of science in nautical affairs," said Mr. Fillmore, President of the United States, on Dec. 2, 1857, "have rarely been more strikingly illustrated than in the fact stated in the report of the Navy Department, that by means of the Wind and Current Charts projected and prepared by Lieutenant Maury, the Superintendent of the Naval Observatory, the passages from the Atlantic to the Pacific ports of our country have been shortened by about forty days." A writer three years later calculated that Maury's work saved the country more than 2,000,000 dollars per annum, and that a British sailing vessel on passage from England to Australia saved £1200 by the use of his charts.

December 3, 1847.—It was on Dec. 3, 1847, that Lyon Playfair wrote to James Young telling him of a petroleum spring in Reddings Colliery, Alfreton, Derbyshire, and suggesting he might turn it to account. The flow of oil was only about 300 gallons a day and this rapidly diminished, but it was through this enterprise that Young was led to experiment on the distillation of oil from coal, and thus laid the foundation of the shale oil industry. E. C. S.

Societies and Academies.

LONDON.

Royal Society, Nov. 10 (*continued from p. 754*).

EXPERIMENTAL PHYSICS.

R. S. Edwards: On the effect of temperature on the viscosity of air: New measurements have been made on the variation with temperature of the viscosity of air over the range of 15° C. to 444° C., to test the accuracy of the results obtained by F. A. Williams. The present measurements corroborate those of previous observers and not those of Williams. It is concluded that there is no breakdown of Sutherland's law in the region of 250° C., and that Sutherland's constant is constant over the whole of the range mentioned above.

P. Kapitza: Further developments of the method of obtaining strong magnetic fields. These fields are obtained for a short period of time only, as it is thus possible to apply large powers to the coil without overheating it. In this manner fields of 100,000 gauss have been obtained. It is now possible to use larger powers. In the place of accumulators a large generator by means of which powers up to 50,000 kilowatts can be obtained in the coil for $\frac{1}{100}$ sec. has been used. Up to the present, magnetic forces up to about 350,000 gauss have been obtained in a volume of 2 c.c.

F. H. Rolt and H. Barrell: Contact of flat surfaces. The object of this investigation was to inquire into the phenomenon of 'wringing' which is used extensively in forming combinations of gauge blocks of the Johansson type. These gauges, which are of hardened steel, have their important surfaces finished to a high degree of flatness, and when brought into intimate contact are found to adhere together very strongly. The adherence depends to a large extent upon the smoothness of the surfaces; so much so, that gauges having optically polished surfaces can be made to adhere when quite clean, whereas those having a 'lapped' finish require the introduction of a very fine film of oil or other liquid to produce the effect. Repeated wringing together of gauges causes slight but measurable wear of their surfaces. The adherence is explained as the molecular attraction between the surface molecules of the gauges. In the case of lapped surfaces, the average separation between the molecules on the two surfaces is considerably greater than with smooth surfaces, and the function of the oil film in the former case is to act as a link between the more widely separated molecules.

W. Mandell: The determination of the elastic moduli of the piezo-electric crystal Rochelle salt by a statical method. Rochelle salt possesses piezo-electric properties, the magnitude of the effect being several hundred times greater than with quartz. The effect is associated only with crystals having an asymmetric structure, and occurs when the crystal is submitted to mechanical stresses. It would therefore appear that the phenomenon may be closely related to its elastic properties. Elastic surfaces were obtained giving a numerical measure of the extension per unit length for unit tension for all directions in the crystal, whilst other surfaces give the amount of torsion per unit couple. Rochelle salt almost loses its piezo-electric properties in a very abrupt manner on raising the temperature above 23° C. The elasticity was measured by the 'bending-beam' method for temperatures above and below this critical point, but any change in elasticity due to molecular re-arrangement was too small to be measured by this method. Piezo-electric crystals exhibit a change in double refraction