Early Science at the Royal Society.

July 6, 1663. Dr. Wilkins undertook to engage Dr. Power to make that magnetical experiment here, which he had made in the country, according to his written account sent to Dr. Croune for the society, viz., of altering the polarity of a heated and cooled iron, by repercussing the two ends, and of destroying all the magnetism thereof, by striking such an iron in the middle.

1664. Capt. Taylor related, that he had known a Frenchman, who had a secret of tempering and hardening iron so that it would not rust; adding that the steel of a gun, which he produced, had been put in salt water, and was not affected with any rust; and that the same gun had not been oiled since it had been made, viz., for three years. The artist employed a certain water, which he concealed the ingredients of, wherein he quenched the iron eight or ten times, in order to reduce it to this condition.

July 8, 1663. Dr. Charleton presented the society with the plan of the stone antiquity at Avebury, near Marlborough, in Wiltshire, suggesting that it was worth the while to dig there under a certain triangular stone, where he conceived would be found a monument of some Danish king. Col. Long and Mr. Aubrey were desired to make farther enquiry into it.

1675. Mr. Hooke shewed an experiment concerning the resistance of air to a ball moved with and without an expanded area; of which he was desired to bring in a particular account in writing.

1685. A letter of Mr. Musgrave dated at Oxford, July 4, 1685, was read, mentioning, that a great part of the university being in arms [On occasion of the Monmouth rebellion] the Philosophical Society there was broken up for some time.

July 10, 1672. The Society intending to make a recess for some time, the members were desired, that as many of them, as could conveniently, would meet on Fridays in the afternoon at Gresham-college, to discourse of philosophical matters, and prosecute experiments; among which were recommended—Such, as might determine the queries lately sent by Mr. Newton, which involve his theory of light.—Such, as might improve Mr. Newton's reflecting telescope; and particularly to see finished a four-foot telescope of that kind, already recommended to Mr. Cock.—Such observations as might confirm those of Signor Malpighi about the existence of certain tracheæ, or spiral fibres in vegetables, that contain air: as also to endeavour to the finding out of peristaltic motion, affirmed.

1679. Divers discourses were occasioned about the several ways of tanning leather.

July 11, 1666. Dr. Croune produced a letter, written by Nicholas Stens, from Rome, mentioning the emulation between Divini and Campani about optic glasses. That Campani had been mistaken in some of his observations, taking the spots adhering to the body of Jupiter for the shadows of his satellites.

1667. Mr. Hooke reported that Dr. Croune had received from Mr. Richard Townley, Mr. Gascoyne's instrument for measuring the diameter of the stars with great exactness; which instrument was afterwards shewed to the society, with the models of some others.—Mr. Hooke mentioned, that he had invented an instrument of this kind, but upon another principle which would perform the same things better, with more certainty and more ease.

July 12, 1682. A proposal was read of Mr. John Collins for the printing a book of algebra [Thomas Baker's "The Geometrical Key"]. This was well approved of after a long debate concerning it.

Societies and Academies.

LONDON.

Royal Society, June 26.—J. W. **Nicholson**: The electrification of two parallel circular discs. The paper deals with the general application of spheroidal harmonics to the problem of two bodies not belonging to the same confocal system. The special case of two circular discs is reduced to a mathematical necessity for the determination of an infinite set of coefficients in a series involving Bessel Functions of half-integral order. This in turn is reduced to an integral equation of a new type, the kernel of which is

$$K(x, y) = \frac{\sin a(x+y)}{x+y} + \frac{\sin b(x-y)}{x-y}.$$

The equation is solved exactly, and exact expressions are found for the capacity of the double-disc condenser, and for the coefficients of capacity and induction of two discs with any charges.—J. F. **Fulton**: The influence of initial tension upon the magnitude and duration of the mechanical response in skeletal muscle. When the unexcised gastrocnemius, sartorius or semitendinosis muscle of the frog is stimulated through its cut nerve under various degrees of initial passive stretch by 50 break shocks delivered at 70 per second, so long as the circulation in the muscle remains vigorous, the following features are to be observed in the successive responses: The greater the initial tension within physiological limits, (*a*) the greater is the plateau tension of the resulting tetanus; (*b*) the longer the time of ascent to the plateau; (*c*) the greater the duration of the plateau *after* cessation of the stimuli ("after-action"). It seems that the general shape of the tetanus curve is determined by the rate of migration of the H-ions of lactic acid, and that the after-action represents the time spent by the ions in migrating from the place of their origin to the contractile interfaces upon which they act. The enhanced duration of the after-action with increasing tension is believed to result from the effect of the increased internal viscosity of the muscle upon the migration rate of the ions.—J. R. H. **Coutts**, E. M. **Crowther**, B. A. **Keen**, and S. **Odén**: An automatic and continuous recording balance. (The Odén-Keen Balance.) An improved form of automatic and continuous recording balance has been devised by combining electromagnetic control with the addition of small weights. A magnet suspended from one arm is attracted by a solenoid-current which is adjusted to maintain equipoise by the automatic movement of a contact along slide wires. The position of this contact is sufficient to define the effective weight, and is recorded on a rotating drum. On reaching a fixed point the contact is brought back to its original position by the addition of a small phosphor-bronze ball to the balance pan, and the cycle of operations recommences. The records consist of a series of stepped curves and a very open scale is obtained so that the apparatus can be used with no appreciable loss of sensitivity up to the maximum load for an analytical balance. Further, the sensitivity can be very simply adjusted for recording either rapid or slow changes of weight.—R. W. **Lunt**: Chemical studies in gaseous ionisation. Pt. I.: This communication constitutes the introduction to a series. Ionisation in hydrogen is produced by the corona due to alternating electric fields of frequency $1 \cdot 5 \times 10^7$. A new analysis of the Siemens ozoniser is advanced which affords a ready determination of the voltage gradient in the gas, and of the current carried by the ions in the gas. The mean intensity of ionisation is calculated from an equation relating the conduction