duced a long series of researches published in scientific journals in this country, as well as in Germany. These may be grouped under the following heads:—Absorption and secondary radiation of kathode rays, photoelectric effects, electrical conductivity of gases and of flames, phosphorescence and radio-activity, including its application to medical work. We wish every success to this active and progressive institute.

THE receipt of the notification of the Metropolitan Gas Referees for the current year serves as a reminder that the quality of the gas supplied to the County of London is subject to severe control. The threat of a monopoly caused by the amalgamation of various gas companies led to increased Parliamentary control, and commencing with the City of London Gas Act, 1868, there are several Acts dealing with the London gas supply, the latest being the London Gas Act, 1905. Subject to these Acts, the details of the methods to be used in gas-testing are left to three gas referees, who have to prescribe and certify the situation and number of the testing places, the apparatus and materials for testing the illuminating power, calorific power, purity and pressure of the gas provided by the companies. The notification of the gas referees gives the methods prescribed in detail. The controlling authorities (the London County Council and Corporation of the City of London) have also certain discretionary powers as to the times of testing, and these authorities also appoint the gas examiners.

MESSRS. CHARLES GRIFFIN AND CO., LTD., have published a tenth edition of an "Elementary Manual on Applied Mechanics," by Mr. A. Jamieson. Many new examination questions have been added, and the symbols agreed to by the International Electrotechnical Commission, held in Turin in 1911, have been included.

MESSRS. J. WHELDON AND CO., 38 Great Queen Street, Kingsway, W.C., have just issued a catalogue (No. 60) of books and papers on microscopical science in most of its branches. The catalogue includes a number of valuable works, both ancient and modern, and the classification makes it easy to find the works available in the various departments of microscopy.

OUR ASTRONOMICAL COLUMN.

NOVA GEMINORUM, No. 2.—The photometric and spectroscopic observations of Nova Geminorum, No. 2, made at the Harvard and Arequipa Observatories, are discussed in Circulars 175 and 176 of the Harvard College Observatory.

Prof. Wendell's magnitude observations show several fluctuations, with maxima on March 14, 17, 23, 30, and April 5; the magnitude increased considerably during the night of March 14.

The spectra were taken between March 13 and June 5, 1912, inclusive, and are discussed by Miss Cannon; some are reproduced in the second circular. On March 13 the spectrum was not of the usual nova type, *i.e.* bright lines accompanied by dark lines; but was of the class F_5 (Procyonian) type, with slight variations, having dark lines only; a reproduction of the spectrum of Procyon is placed above the nova spectrum on the plate accompanying the circular, and shows the similarity very strikingly. Miss Cannon remarks on the fact that the earliest spectrum of Nova Persei (2) also lacked bright lines, and that these are the only two novæ of which the spectrum has been secured while the star's light was still rising to its primary maximum. The spectrograms taken on March 14 show the spectrum in a transitional state, the characteristic "nova spectrum" being fully developed on March 16. The bright band at K, faint on March 20, had disappeared by March 22, only a narrow dark line remaining; on March 27 a brightening in the region of the spectrum near λ4640 was noticeable, the continuous spectrum was faint, and the dark hydrogen lines not clearly seen, but on March 30 both the continuous spectrum and the dark hydrogen lines were again more intense, the latter being distinctly double. A spectrum taken on May 10 is stated by Miss Cannon to show increased intensities for bands at λλ4640 and 5016, while a bright band appears on the less refrangible edge of Hγ; this probably represents the appearance of the nebula line 5008 and the line which appeared during the nebula stage of previous novæ at 4365.

THE VARIABLE STAR 87, 1911.—From time to time we have referred in these columns to Mr. D'Esterre's notes describing a possible nova in the constellation Perseus. The star was conspicuous on plates taken by Mr. D'Esterre on November 13 and 21, 1911, but did not appear on three previous dates. Prof. E. C. Pickering now states, in Circular 176, that from an examination of the Harvard photographs, Miss Cannon finds that the star was of the eleventh magnitude on October 30, 1896, September 17, 1899, and January 28, 1902, but was not visible on sixty-eight other plates, including one taken, with sixty minutes' exposure, on November 3, 1885, which shows faint stars.

Prof. Pickering concludes that this object is certainly not a nova, but appears to be a variable star with a large range which is bright during a relatively short portion of its variations; the period does not appear to be uniform, and he suggests that the object possibly belongs to the U Geminorum and SS Cygni class of variable stars.

THE TRANSIT OF MERCURY, NOVEMBER 14, 1907.—Prof. Donitch observed the transit of Mercury which took place on November 14, 1907, from a special station established at Assuan. The chief observations were spectroscopic, the spectra being taken with a special spectrograph, at the times of internal contacts, the slit coinciding with the sun's limb. The resulting spectra show no lines other than those of the solar spectrum, and lead Prof. Donitch to the conclusion that the planet does not possess an atmosphere extending beyond 15 km. from its surface; but for the present he hesitates to consider this conclusion as rigidly established. (*Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg*, No. 17.)

ASTRONOMICAL ANNUALS.—We have received M. Flammarion's "Annuaire Astronomique," for 1913, and the "Anuario" of the Madrid Observatory. In addition to its usual complete series of tables and ephemerides, the former contains useful illustrated reviews of the progress of astronomy and meteorology during 1912, several special articles, and a frontispiece showing six untouched photographs of the annular solar eclipse of April 17, 1912.

The "Anuario," besides the ordinary tables and ephemerides, has a popular article on new stars, a long article on the determination of azimuths in the field, an interesting review of solar physics, with special reference to the development of the spectroheliograph, and a *résumé* of the solar and meteorological observations of 1911 and 1912.