

heated up to red glow before being placed in the furnace. Primary currents of 50 or 100 periods and 200 volts are used. When keeping the furnace at its maximum temperature of 1300° C. for ten hours a day, about 2 lb. of barium chloride have to be replenished every day. The furnace lining is said to last about a year; the iron electrodes do not last so long. Barium chloride seems, so far, to be the best material for the extreme temperatures. For lower temperatures mixtures of barium chloride and potassium chloride are used. The crust of fused salt which adheres to the steel peels off at once when the steel is dropped into the cooling liquid. Local super-heating is not to be feared in this kind of furnace, and the application of fused salts is attracting much attention.

An interesting discussion on the advantages and disadvantages of heating buildings with gas stoves of various types, which was held at the meeting of the Royal Sanitary Institute on December 12 of last year, is printed in the March number of the Journal of the institute. Dr. Rideal, in opening the discussion, considered that as soot, carbon monoxide, and hydrogen sulphide are never present in the products of the combustion of coal gas in modern gas stoves, and as the proportion of oxygen in the air of a room is little changed when the heating is effected by a flueless gas stove, the use of flueless stoves was in several cases an advantage, especially when the economy of the heating effect was considered. The amount of carbon dioxide produced was not sufficient to be deleterious, and instead of causing defective ventilation, flueless stoves, especially those of a condensing type, seemed actually to remedy it. Several speakers took part in the discussion, many of them dissenting from the views expressed by Dr. Rideal. In particular, the passage of sulphur acids into the air when a flueless stove is used appears to present difficulties.

MESSRS. JOHN J. GRIFFIN AND SONS, LTD., yesterday entertained a number of visitors at their new premises in Kingsway. New physical and other apparatus were exhibited, and there were demonstrations of the properties of vessels made of silica glass; of the oil-pigment process, velox printing, among modern processes in photography; the wireless transmission of signals, the musical arc, and other physical phenomena. This opportunity of seeing instruments and processes in operation is likely to be appreciated by teachers and others, and Messrs. Griffin and Sons, Ltd., will probably be repaid for their enterprise.

OUR ASTRONOMICAL COLUMN.

DISCOVERY OF A COMET (1907a).—A telegram from the Kiel Centralstelle announces the discovery of a new comet by Prof. Giacobini at the Nice Observatory. The object was of the eleventh magnitude, and its position at March 9d. 10h. 10.9m. (M.T. Nice) was

R.A. = 7h. 4m. 31.4s., dec. = $18^{\circ} 21' 17''$ S.

The daily motion is westward at the rate of $47'$, and northward at the rate of $57'$, per day. The above position lies in the constellation Canis Major, about 20° E. and $1\frac{1}{2}^{\circ}$ S. of Sirius.

SOLAR RESEARCH AT MEUDON.—In No. 5 (1907) of the *Comptes rendus*, MM. Deslandres and d'Azambuja describe, and give some of the preliminary results of, the solar researches carried out at Meudon, with several forms of spectrographs, during the year 1906. One of the principal difficulties encountered by M. Deslandres in his previous experiments has been to obtain a satisfactory

slit so narrow that the finer dark lines of the spectrum might be completely isolated, and this difficulty was, to a great extent, overcome during the recent research by drawing a very fine clear line on the surface of a piece of chemically-silvered optical glass. By having a clear space above and below the slit, the solar spectrum was simultaneously photographed on each plate, thereby enabling the parallelism of the slit and the line, and the exactitude of the setting on the line, to be tested for each exposure.

Photographs taken on the centres of the fine iron lines at $\lambda 4045$ and $\lambda 4385$ are found to differ considerably from those taken on the degraded edges of the lines, for whilst the latter show simply the bright faculic areas, the former show a net-work of bright inequalities of very different form; the photograph with the setting on the centre of the line is supposed to represent the upper layers of the iron vapours. The differences between the images obtained with the K_3 and K_2 lines are not so marked as was expected, although many of the bright areas obtained with the latter are not to be found on the K_3 images. No relation between the K_3 images and the dark calcium flocculi of Prof. Hale's photographs could be established, nor could the similarity of the former with the dark areas produced by photographs on the dark hydrogen lines be recognised.

THE MARKINGS AND ROTATION PERIOD OF VENUS.—Mr. Denning, in continuing his series of articles on the planets in the March number (No. 381) of the *Observatory*, discusses the contradictory results which have been derived from observations of Venus concerning the existence of permanent markings on the planet's surface, and the time it takes the planet to perform one rotation on its axis. He points out that whilst Mr. Lowell records that he has seen the markings when their contours have "had the look of a steel engraving," numerous other very careful observers have failed to distinguish anything which might be recognised as permanent. Similarly, a large number of observers have arrived at the conclusion that the rotation period is about 23h.-24h., whilst others, including Schiaparelli, have concluded that it is about equal to the period of the planet's revolution in its orbit. The spectroscopic results are similarly in opposition.

Summing up the results of the discussion, Mr. Denning concludes that after the earnest application of observers during three centuries, the problems of the configurations and of the axial rotation remain unsolved, the difficulties having, as yet, proved insuperable.

THE ELECTRICAL INFLUENCE OF THE SUN.—No. 8, vol. vii. (February 23), of the *Revue Scientifique* contains an interesting discussion, by Dr. A. Nodon, of the electrical influence of the sun on the earth.

After giving a historical account of the subject, the author proceeds to describe the experimental results obtained by M. Brunhes and by himself, from which follows the deduction that the sun produces, at the earth's surface, a positive electrical induction of variable magnitude. The amount of this induction is far greater than that attributable to the actino-electric action of the luminous radiations, whilst the interposition of clouds before the sun arrests the induction effect. Other possible causes are discussed, and it is shown that independently of these, there still remains an effective induction directly due to the sun's charge alone.

In a second part of the discussion, published in No. 9 of the same journal, Dr. Nodon considers the effect of the solar influence on the planets, on comets, and on the earth in particular, and in conclusion he urges the fundamental importance of the study of solar physics on the grounds that a large number of meteorological phenomena appear to be directly connected with the solar changes.

RECENTLY DISCOVERED ASTEROIDS.—The provisional elements of the orbits of twenty-five recently discovered asteroids are published in No. 4156 (February 21) of the *Astronomische Nachrichten* by Herr J. Bauschinger, of the Astron. Rechen-Institut, Berlin. These asteroids were discovered between August, 1905, and April, 1906, and their designatory numbers range from 570 to 598.