OUR ASTRONOMICAL COLUMN.

DRAWINGS OF MERCURY.—Mr. Percival Lowell, writing (*Astr. Nach.*, No. 3407) of the planet Mercury, says that the markings of the planet are distinct and dark. They are generally of the nature of lines. Both poles, he says, are shaded, and there is a conspicuous dark band cutting off the southern one from the rest of the planet. This band is stated to be continuous for several degrees of longitude, and may possibly girdle the zone completely. The period of rotation of the planet was found to be synchronous with the orbital revolution, thus endorsing Schiaparelli's previously determined period of eighty-eight days. Even from the drawings, several of which are reproduced, a slow period of rotation seems the more probable, while observations made since they were completed confirm this still more.

PROMINENCE PHOTOGRAPHY.—During the last twelve months many attempts have been made to obtain impressions on a photographic plate, showing various solar phenomena, and all of them have had for their basis the well-known action of electrical radiation on a sensitive film. The method consists in wrapping a plate in some opaque material, velvet, tinfoil, paper, &c., and then exposing it to the sun, using either the general diffused light, or the image formed by an object-glass or in a pin-hole camera. In several cases results have been obtained more or less consistent, but in general the impressions have been dissimilar at each trial, thus suggesting accidental causes for the effect. In the *Photogram* for July 1896, Mr. D. Packer gave several photographs of impressions he had obtained on plates exposed in this way, which were supposed to show the details of the solar corona. Results exactly similar to those given have been obtained by the writer, but in every case the effect could be traced to imperfections in the wrapping of the plate, and the consequent spreading of the light thus admitted direct to the film.

Now in the current *Comptes rendus* (p. 459), M. P. de Heen describes the appearance he gets on exposing a covered plate at the focus of a small object-glass. He finds that a ring is produced on the plate, corresponding to the solar atmosphere in size, and thinks that the chromosphere is the seat of electric radiations, while the photosphere is simply the source of luminous radiation, thus suggesting that, if true, this may furnish a method of examining the spots and prominences.

OXYGEN IN THE SUN.—Some time ago (NATURE, vol. lv. p. 303) we pointed out in this column that Herren Runge and Paschen had reason to believe that the three lines of oxygen—7772·26, 7774·30, and 7775·97—in the solar spectrum were probably not atmospheric, and we further mentioned that a crucial test could be made by examining the solar spectrum for motion in the line of sight. Mr. Lewis Jewell has taken up this problem, and contributes the result of his inquiry to the *Astrophysical Journal* (February 1897, p. 99). He found that using a grating, 15,000 lines to the inch, the spectrum was so exceedingly weak to the eye when the slit of the spectroscope was placed near the edge of the sun's disc, that no satisfactory observations of the three lines mentioned above could be made.

Mr. Jewell then turned his attention to investigating whether a high or low sun caused any appreciable difference in intensity of these lines. In this he was more fortunate, and is now able to state that his observations "prove conclusively that the three lines supposed to be due to oxygen in the sun are produced by water vapour in the earth's atmosphere."

THE TOTAL SOLAR ECLIPSE OF AUGUST 8, 1896.—In the January number of the *Bulletin* of the St. Petersburg Imperial Academy of Sciences (5th series, vol. vi. No. 1) appear three accounts of the observations made at Novaya Zemlya. The first is the report of Prof. O. Backlund, whose station was situated at Malya Karmakouly, and whose programme consisted in observing the contacts and sketching the corona. The weather seemed to have been all that could be desired, and all four contacts were obtained. The second report is made by M. S. Kostinsky and A. Hansky, who observed from the same station. This is accompanied by some excellent reproductions taken direct from the enlarged negatives, showing an amount of detail in the streamers that is seldom obtained. One photograph was taken about third contact, and shows that interesting phenomenon known as "Baily's beads," which interferes so much with the estimation of the exact observed time of contact. There is also a plate showing the corona and a large region of the sky around it: conspicuous on this are Jupiter and several stars. An excellent drawing of the details, as gathered from a minute examination of all the photographs taken, is further added. Lieut. Bouchteeff, who was carrying on some hydrographic operations at Novaya Zemlya, observed the eclipse from the Bay of Belougia Gouba. He noted the times of all four contacts, and made a rough sketch of the corona, which are all given in his report published in this *Bulletin*.

THE CHEMISTRY OF THE STARS.—The rapid strides that have been made in the development of spectrum analysis since the time of Wollaston, and the important step taken by Prof. Pickering in the adoption of the prismatic-camera form of instrument, have led many to investigate the spectra of the stars in our universe. Such a survey, although slow to accomplish, is of great importance, since we are able to pass at a bound from terrestrial temperatures, and observe the behaviour of our elements at temperatures far beyond our ken. The chemist is thus left far behind, and is restricted to a very limited range of temperature, while the astronomer has at his disposal temperatures the magnitude of which cannot be even conceived. That the celestial bodies about us vary enormously in their degrees of temperature is now admitted by every one, and some idea of the different kinds of spectra emitted by these bodies may be gathered from Mr. Fowler's interesting article in *Knowledge* (March), which deals in the main with the important work that is being carried on at Kensington under the direction of Mr. Norman Lockyer. That the stars are now being successfully classified in a closed curve—*i.e.* some are increasing and some decreasing their temperatures—is only one of many important advances of the last few years. The recent discovery of the new form of hydrogen, by Prof. Pickering, is another rundle in the ladder of temperature, which seems to indicate that even in those stars within our sphere of the cosmos we may not have examples of the *highest* attainable temperature.

ON ELECTRIC EQUILIBRIUM BETWEEN URANIUM AND AN INSULATED METAL IN ITS NEIGHBOURHOOD.[1]

THE wonderful fact that uranium held in the neighbourhood of an electrified body diselectrifies it, was first discovered by H. Becquerel. Through the kindness of M. Moissan we have had a disc of this metal, about five centimetres in diameter and a half-centimetre in thickness, placed at our disposal.

We made a few preliminary observations on its diselectrifying property. We observed first the rate of discharge when a body was charged to different potentials. We found that the quantity lost per half-minute was very far from increasing in simple proportion to the voltage, from 5 volts up to 2100 volts; the electrified body being at a distance of about 2 cms. from the uranium discs. [*Added March* 9.—We have to-day seen Prof. Becquerel's paper in *Comptes rendus* for March 1. It gives us great pleasure to find that the results we have obtained on discharge by uranium at different voltages have been obtained in another way by the discoverer of the effect. A very interesting account will be found in the paper above cited, which was read to the French Academy of Sciences on the same evening, curiously enough, as ours was read before the Royal Society of Edinburgh.]

These first experiments were made with no screen placed between the uranium and the charged body. We afterwards found that there was also a discharging effect, though much slower, when the uranium was wrapped in tinfoil. The effect was still observable when an aluminium screen was placed between the uranium, wrapped in tinfoil, and the charged body.

To make experiments on the electric equilibrium between uranium and a metal in its neighbourhood, we connected an insulated horizontal metal disc to the insulated pair of quadrants of an electrometer. We placed the uranium opposite this disc, and connected it and the other pair of quadrants of the electrometer to sheaths. The surface of the uranium was parallel to that of the insulated metal disc, and at a distance of about 1 cm. from it. It was so arranged as to allow of its easy removal.

With a polished aluminium disc as the insulated metal, and with a similar piece of aluminium placed opposite it, in place of the uranium, no deviation from the metallic zero was found when the pairs of quadrants were insulated from one another. With

[1] By Lord Kelvin, Dr. J. Carruthers Beattie, Dr. M. Smoluchowski de Smolan. Read before the Royal Society of Edinburgh, March 1.