

search up to the present time, considers critically the difficulties yet to be surmounted, and suggests several new plans which would possibly prove successful in clearing up outstanding questions. Mr. S. Leonard Bastin discusses the possibility of an intelligence in the plant. The purpose of the paper is to bring together a few instances which seem to point to a limited intelligence in the vegetable kingdom. The cases selected are those not easy to explain as direct response to any special stimuli. The Droseraceæ provide Mr. Bastin with several instances. The study of roots and the opening and shutting of floral envelopes add other interesting examples to a readable article. The same number of the magazine contains some reflections upon English and German education, by Mr. R. B. Lattimer.

THE Proceedings of the Royal Physical Society, Edinburgh, for September (vol. xvi., No. 6), contains an interesting account of certain blood-inhabiting protozoa by Miss Muriel Robertson, including the description of a new trypanosome from a python. Other papers are a note on a rare sponge from the *Scotia* collection, by Prof. Arthur Thomson and Mr. J. D. Fiddes; notes on fossils from the Falkland Islands, by Mr. E. T. Newton; note on the geology of Gough Island, by Mr. J. H. Harvey Pirie; and notes on the petrology of Gough Island, by Mr. R. Campbell.

A SECOND revised edition of Prof. E. Mach's "Erkenntnis und Irrtum" has been published by the firm of J. A. Barth, Leipzig. The original work was reviewed in NATURE of November 30, 1905 (Supplement, p. vii).

THE practical treatise on "Nitro-Explosives," by Mr. P. Gerald Sanford, published by Messrs. Crosby Lockwood and Son ten years ago, was reviewed in NATURE of September 3, 1896 (vol. liv., p. 410). The second edition, revised and enlarged, which has just appeared, embodies accounts of important advances since the publication of the original work, and the chapter on smokeless powders has been considerably enlarged.

OUR ASTRONOMICAL COLUMN.

THE RELATION BETWEEN THE SPECTRA OF SUN-SPOTS AND STARS.—The conclusion arrived at by Sir Norman Lockyer regarding the similarity of the spectra of sun-spots and Arcturian stars (Proc. Roy. Soc., vol. lxxiv., 1904) receives confirmation from a research carried out at the Mount Wilson Observatory. The results of this research are published by Mr. W. S. Adams in No. 2, vol. xxiv., of the *Astrophysical Journal*. During the latter part of June some spectrograms of sun-spots were obtained, including the blue end of the spectrum, and these were compared with a spectrogram of Arcturus secured with the Snow telescope and a grating spectroscope, with a total exposure of twenty-three hours. The comparison showed that a striking resemblance exists between the sun-spot and the star spectra. Not only are the lines intensified in the spot found to be intense in the star, but the absolute intensities are very similar.

From this evidence Mr. Adams concludes, as did Sir Norman Lockyer, that the physical conditions prevailing in the atmosphere of Arcturus are nearly identical with those existing in sun-spot vapours. Hence, on the probable supposition that sun-spots are cooler than the general solar photosphere, Arcturus and similar stars must be placed on a lower temperature level than the sun.

THE MOUNT WILSON SPECTROSCOPIC LABORATORY.—An interesting illustrated account of the spectroscopic labor-

atory attached to the solar observatory on Mount Wilson is given by Prof. Hale in No. 2, vol. xxiv., of the *Astrophysical Journal*. As Prof. Hale points out, it is now necessary, if research in solar physics is to produce the most fruitful results, to be able to imitate, as nearly as is possible in the laboratory, the conditions of temperature, pressure, &c., obtaining in the sun. To this end the laboratory at Mount Wilson has been equipped, and the means are always at hand to obtain, immediately, spectrograms for which the light-source has been subjected to enormous pressure or temperature, or has been placed in a strong magnetic field, is in an attenuated atmosphere, or, in fact, is under any special conditions which may possibly account for peculiarities observed in the solar phenomena.

THE UTILITY OF SHORT-FOCUS REFLECTORS.—In No. 39 of the *Naturwissenschaftliche Rundschau* Dr. A. Berberich discusses the advantages of short-focus reflectors in nebula photography, and describes the results obtained at Potsdam with an astrographically mounted reflector of 41 cm. diameter and 92.7 cm. focal length. The mirror is an exceptionally good one, made by Schmidt, of Mittweida, Saxony, and giving well-defined small images, over a large field, with the full aperture. When the full aperture is used in photographing the Pleiades, the resulting photograph, with thirty minutes' exposure, shows all the details of the nebula secured by Prof. Keeler, with the Crossley reflector, in four hours.

Similarly, forty minutes' exposure on γ Cassiopeiæ shows as much detail in the nebula as was obtained by Dr. Roberts, with his reflector of 51 cm. aperture and 250 cm. focal length, in ninety minutes. With the aperture reduced to 24 cm., the Potsdam instrument will photograph the Orion nebula in one hour, and show all the details and all the stars shown on Dr. Roberts's photograph after an exposure of three hours twenty-five minutes.

PROF. BARNARD'S "UNEXPLAINED OBSERVATION."—In a letter to the *Observatory* (No. 375) Mr. Charles L. Brook suggests that the object seen by Prof. Barnard in 1892, for which he was unable to account by any known object, and therefore published a note on the subject only quite recently, may have been a new star. The reason for suggesting this possibility is that, with but one exception, all the known Novæ have appeared in the Milky Way; and Venus, which Prof. Barnard was examining when he made the unexplained observation, was on that date either on the border of or in the galaxy.

JUPITER'S SIXTH SATELLITE.—As Jupiter is now approaching opposition, the search for the smaller satellites has been commenced at Greenwich. Owing to unfavourable meteorological conditions no photographs were obtained until August 28, but on that date, and on August 31, the sixth satellite was successfully photographed with the 30-inch reflector, giving exposures of twenty-eight and forty-five minutes respectively. Several other successful photographs have been obtained since (the *Observatory*, No. 375).

OBSERVATIONS OF LONG-PERIOD VARIABLES.—In No. 4116 of the *Astronomische Nachrichten* Prof. A. A. Nijland publishes the results of a series of observations of a number of long-period variable stars. The list includes thirteen Algol variables, four short-period and forty-one long-period variables, and the observations were made with the 10-inch telescope and 3-inch finder of the Utrecht Observatory, the "step" method being employed.

THE CONGRESS OF AMERICANISTS AT QUEBEC.

THE fifteenth International Congress of Americanists was held at Quebec on September 10-15 under the presidency of Dr. Robert Bell, of the Geological Survey of Canada. There were about 133 members and associates, most of whom were Canadians; a noticeable and pleasing feature of the congress was the large number of French-