

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  $\gamma$  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-

Canadian clergy and missionaries who attended the conferences; the missionaries were hearty, bronzed, bearded men, mainly in the brown or white robes of their several orders; many of them contributed papers, and several joined in the discussions. An exceptionally large number of papers was promised, but owing to the non-appearance of many authors, most of whom were Americans, the actual number read was not excessive, and there was generally time for a short discussion; it is a common fault of congresses that too much time is occupied by the reading of papers, many of which are of limited interest, and too little time is provided for discussion of problems of general interest; it is scarcely an exaggeration to state that the most valuable discussions were the informal ones that took place on the precipice-poised Dufferin Terrace.

The papers that were read fell into two or three groups, of which the more important were Canadian ethnology and Central American archaeology. The former were mainly provided by missionaries, who, from their long residence among the tribes of whom they treated and their knowledge of the languages, were able to give faithful and detailed accounts of the customs and mode of life of the people; but the scientific hearers could not always feel a perfect reliance upon the interpretation of customs and ideas by certain observers, their point of view being so different.

The genial Father Morice was much in evidence, and he read a long paper on the position of women among the Dénés, or Athapascans, as they are generally termed. He described the five different ways in which marriage may be contracted, and related the deplorable part of the women during the funeral ceremonies which accompany cremation, and during widowhood in general. He repeatedly referred to the slight consideration paid to women, the men treating them no better than dogs; one would like to hear what the women themselves really think of the matter, but this information could only be obtained by sympathetic white women from native women. This side of similar questions has hardly ever been obtained, and it promises most important results. Father Pacifique, a missionary among the Micmacs, considers the *manitus*, or guardian spirits, of that tribe as of "truly diabolical nature," and states that these Indians have now conceived a profound aversion against them, and gained such an attachment to the true God and to the Church that religion has become a second nature to them. The good man apparently has not realised that the Indians were previously saturated with spiritual ideas, and that their religious sense is by no means the result of the foreign doctrine.

The Rev. J. Jetté, S.J., stated that the Ten'a, an Alaskan tribe living on the Yukon River, not only have no chiefs or rulers, but lack a word that signifies chief, or authority, or even family. Individual authority in any form is unbearable to the tribe. They are controlled solely by public opinion, and no individual thinks for himself; as they do act spontaneously they are most untrustworthy, and the stupidity of their obedience is appalling. Wealth and influence make the people who own them the natural advisers of the tribe, but they do not confer any real authority. Dr. F. Boas gave a valuable paper on the most important unsolved ethnological problems in Canada: of particular importance is archaeological investigation of the extreme north-western Arctic region, in order to determine the influence of the Indian and of the Asiatic cultures upon the western Eskimo. The prehistoric distribution of types, as well as the present types, of the interior of Labrador and of the Mackenzie Basin require investigation. The linguistic subdivisions of the Algonquin and the Athapascan are not sufficiently known, and extended collections of linguistic material from the Salish tribes, from the Nootka, as well as from the northern branches of the Kwakiutl of British Columbia, are required. The early history of the eastern Algonquin still presents many obscure points. A particularly promising region is the interior of Labrador.

Prof. McCurdy exhibited a large number of lantern-slides to illustrate an extensive collection of pottery in Yale University from Chiriqui which is decorated with representations of the armadillo, the treatment including all stages from realism to extreme conventionalism, and Dr.

Gordon, of the Philadelphia Museum, illustrated an analogous series of rattlesnake motives in Central American and Mexican art. Miss Angel de Cora, of the Winnebago tribe, described her efforts to revive among the Indian students of the Government school at Carlisle the decorative art of their respective tribes; the experiment has met with great success, and the Indians have begun to recover their national pride and an interest in their legendary lore. Miss Natalie Curtis, who has travelled much in North America and lived among various tribes in order to study their music and songs, sung before the congress a delightful series of various types of Indian songs; these were faithfully rendered with great spirit.

Several papers were given by the veteran Dr. Seler on his recent discoveries in Mexico, and he joined in many discussions; and Senor L. Batres, of Mexico, gave a long, copiously illustrated account of his recent excavations in Teotihuacan. Dr. Tozzer gave an interesting account of his field work in Central America. The Maya of Yucatan are at present all Catholic, but they still retain a considerable number of their old beliefs and customs, although in a modified form. The Lacandonese, who are comparatively free from outside influence, retain many of their ancient customs. They make pilgrimages to ruined cities, where they offer incense to the gods, making offerings of copal placed in the bowls of incense burners. Idols are anointed with blood drawn from the ear. The names and attributes of deities recorded by early Spanish writers have also survived; but no knowledge of the hieroglyphic writing survives, a circumstance which appears to be due to the extinction of the noble and priestly castes; the surviving population probably represents the descendants of the ancient common people, who, while having a general superficial knowledge of ceremonial religion, would not be instructed in esoteric religion or in ceremonial lore.

The above are some of the subjects brought before this congress, and are sufficient to show the range of subjects dealt with; from this point of view the congress was very successful, and not less was this the case from the social aspect. Government officials and private citizens did their best to render the congress a success, and especial thanks are due to the staff of Laval University, who by their assiduity, urbanity, and diplomacy helped to make everything go smoothly. The weather, too, was all that could be desired.

Abstracts of nearly all the papers were printed and distributed to members and associates, who were also provided with a local guide-book and various publications, amongst which may be noted a special number of the Transactions of the Department of Archaeology of the University of Pennsylvania (vol. ii., part i.). The Provincial Government of Quebec gave two volumes dealing with geographical names in Quebec. The Provincial Government of Ontario presented the archaeological report of the Department of Instruction; this contains a number of valuable papers on the archaeology, anthropology, and ethnology of Canada by authors of repute; indeed, it forms a very welcome statement of the present state of our knowledge of these subjects. The University of California contributed a report, by Putnam and Merriam, on cave exploration in California, and the American Anthropological Association a report on anthropology in America since the New York meeting, 1902. A series of publications, by L. Batres, was given by the Commission of Inspection and Preservation of Antiquities of Mexico.

It is to be hoped that one result of the congress will be to encourage the central and provincial governments and the learned societies of the Dominion to take a greater interest in their native peoples. Unfortunately there has been great neglect in this respect, and if those in authority do not bestir themselves it will soon be too late, as the opportunities for successful work are rapidly disappearing. The British Association has given a small grant for many years towards ethnological research in British Columbia, and for the last year or two the Government grant committee has continued this work; valuable results have been obtained, but this is but a drop in the bucket, and ethnologists look to the Canadian governments to complete the work in a manner worthy of a great country.

A. C. HADDON.