

OUR ASTRONOMICAL COLUMN.

A LARGE SUN-SPOT.—On Saturday last a very fine spot was visible near the sun's eastern limb, having evidently been brought into view by the sun's rotation. Its full magnitude was revealed a few days later, when the foreshortening was reduced. Changes in the umbra and bright bridges crossing it were detected in the course of a few hours. The spot will be well worth watching during the remaining period of its visibility, especially as many years may perhaps elapse before observers are favoured with another spot of similar size.

THE ATMOSPHERE OF D.M. + 30° 3639.—Prof. Keeler announces, in the *Astrophysical Journal* for August, that he has fully confirmed Prof. Campbell's discovery of a hydrogen envelope around the Wolf-Rayet star D.M. + 30° 3639 (*NATURE*, vol. xlix. p. 210). The observation was made with the spectroscope attached to the 36-inch refractor of the Lick Observatory, and it was found that the $H\beta$ line appeared as a circular fairly well-defined disc when the slit was opened wide, the cylindrical lens being of course removed, and the focus correctly adjusted on the slit plate for light of that wave-length. No such appearance was noticed in the case of the line at 4652, which has almost the same brightness as $H\beta$, thus proving that the disc was not due to irradiation. Further proof that the appearance was not an illusion was afforded by the visibility of the $H\beta$ line when the star itself was thrown off the slit, as in the observation of the solar chromosphere. Prof. Keeler believes that this hydrogen envelope could be observed visually with a large reflector without the aid of a spectroscope, a piece of blue glass, perhaps, being required. With a refractor the disc would be confused with the circles of chromatic aberration.

THE EXTERIOR NEBULOSITIES OF THE PLEIADES.—In connection with the recent discussion concerning the real existence of certain nebulous patches depicted on photographs of the Pleiades taken with a portrait lens, Prof. Barnard has forwarded to the editors of the *Observatory* a copy of a photograph of the same region taken by Dr. H. C. Wilson. This picture was obtained with a 6-inch Brashear portrait lens, the exposure being eleven hours. The coincidence in position of the patches on two perfectly independent photographs is considered strong evidence of their actual existence. The whole group of stars in the Pleiades would thus appear to be involved in scattered nebulosity, with the brightest portions in the neighbourhood of some of the brighter stars.

LUMINOSITY OF GASES IN VACUUM TUBES.—Bolometric measurements made by K. Ångström have indicated that the radiation of a gas rendered luminous by electricity is proportional to the current strength, within the wide limits of his experiments. This relation was equally true for the total and luminous radiation, and it might be expected that the same law would hold good for the luminosity of the separate spectral lines. In the *Physical Review* for July, E. S. Ferry details the results of a photometric study of the changes produced in the spectra of pure gases when subjected to various conditions of current and pressure. An accumulator of twelve hundred elements was employed to render luminous the gas in the discharge tube, experience having shown that the use of a Ruhmkorff coil produces composite spectral lines whose luminosity is influenced by the partial discharges which follow each principal discharge of the secondary coil. The line spectrum of hydrogen and the band spectrum of nitrogen were investigated, and the following conclusion arrived at: (1) With gas pressure from 0.25 mm. to 4.00 mm. of mercury, and current strengths from 1 milliampère to 6 milliampères, the luminosity of the separate spectral lines of gases at a given pressure is directly proportional to the current strength. (2) With constant current, the luminosity of a spectral line of a gas increases as the pressure decreases, at first slowly and then more rapidly. The curve showing the relation between the pressure of the gas and the luminosity of a spectral line is regular, but is different for different lines.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

ON the initiative of the Business Committee of the Glasgow University General Council, a movement has been set on foot to place a stained glass window in the Bute Hall of the University as a special tribute by past and present students of the

University of Glasgow to the memory of the late Prof. Caird. It is estimated that the undertaking will require about 1000*l.*, and the maximum subscription is 1*l.* As there are many former students of the University whom it is obviously impossible to communicate with from any lists at present available, the co-operation of all interested in making the movement known among students of older date is invited. The Secretaries are Mr. John G. Kerr, Convener of the Business Committee of the University General Council, and the Rev. Arthur Stanley Middleton, President of the Students' Representative Council. Mr. Archibald Craig, 156 St. Vincent Street, Glasgow, is Treasurer.

READERS of prospectuses of educational institutions and polytechnics may have noticed that of late years there has been a tendency to convert the teachers into professors. The nature of the institution in which the instructors can rightly use the latter title is apparently a matter of opinion, and it is becoming worth while to define the duties and position of a professor. Miss Catherine Dodd describes in the *National Review* how she asked 105 primary school children, between the ages of ten and fourteen, to give this definition, among others. Here are some of the attempts:—"A man who has passed a high examination." "A very clever man." "One who can do his work easily." "A man skilled in sense." That a professor has a certain social standing is evident from the definitions which describe him as "a man who is well off," and "a man who lives in a nice house." Among the vague definitions are the following:—"A person who professes to do something." "A man who says he can do anything." But the children's general idea is that a professor teaches music, dancing, or languages, or performs conjuring tricks. Thus, "A professor teaches all kinds of instruments." "He is a gentleman that generally plays at balls," and "a man who knows clever tricks." To correctly define a professor would probably prove a difficulty to many children of older growth.

IN April of the present year the New York State Legislature passed an Act authorising the trustees of Cornell University "to create and establish a department in said University to be known as, and called, the New York State College of Forestry, for the purpose of education and instruction in the principles and practices of scientific forestry." In the same Act, provision was also made to establish a Demonstration Forest of not more than 30,000 acres in the Adirondacks, to be purchased out of the funds set aside for the Forest Preserve Board, and to become the property of Cornell University for the term of thirty years, and to be used for demonstrations of practical forestry. The sum of 10,000 dollars has been granted for the organisation and maintenance of the College and Demonstration Forest. A copy of the prospectus of this new institution, the director of which is Prof. B. E. Fernow, has just been received, and it shows that the College will furnish systematic instruction in the science and art of forestry. Scientific forestry has not hitherto received much attention in the United States, so the new College should prove of assistance not only to New York State, but to the whole country, by increasing and extending the knowledge of rational methods of forest management. As the College is in connection with Cornell University, the educational facilities for the studies leading to the degree of Bachelor of the Science of Forestry are of the best; while the large College Forest in the Adirondacks furnishes opportunities for studying practically methods of silviculture and forest administration. Each student as a part of his last year's work will be required to write a thesis, selected with the advice of the director, giving the results of a personal investigation upon some forestry subject. The opportunities for study and investigation in all branches of the natural sciences underlying forestry and in the various departments of Cornell University are ample, while the connection of the demonstration area with the College of Forestry will furnish additional advantage for original work, research and experimentation, in advancing the science and art of forestry. Some time must elapse before the College Forest is in the best shape for demonstrative purposes, but starting under such high auspices, there is every promise that the institution will prove a success.

INTRODUCTORY addresses will be given at many of the metropolitan and provincial medical schools, at the opening of the winter session early in October. At St. George's Hospital (says the *Times*) the session will begin on October 1, with an introductory address by Mr. G. R. Turner, surgeon to the

hospital. At Charing Cross Hospital the session will commence on October 3, when Prof. Virchow will deliver the second Huxley lecture—"Recent Advances in Science and their Bearing on Medicine and Surgery"—at the St. Martin's Town Hall, Charing Cross. The chair will be taken by Lord Lister. At Guy's Hospital the session will begin on October 3. The first meeting of the Physical Society will be held on that day in the new physiological theatre at 8 p.m., when Sir Samuel Wilks will preside and a paper will be read by Mr. W. H. Crosse. At St. Mary's Hospital the session will be opened with an introductory address by Dr. Caley. At the Middlesex Hospital Dr. Arthur F. Voelcker will deliver an introductory address. At St. Thomas's Hospital the session will commence on October 3, when the prizes will be distributed at 3 p.m. by the Bishop of Rochester. At University College an introductory lecture will be given by Mr. Sidney Spokes, dental surgeon to the hospital. The London School of Medicine for Women will open with an introductory address by Dr. J. W. Carr, senior assistant physician to the Royal Free Hospital. The winter session at Mason College, Birmingham, will commence on October 1, when Prof. Michael Foster will deliver an address. At Yorkshire College, Leeds, the session will open with an address by Dr. C. J. Cullingworth, president of the Obstetrical Society. The University College of South Wales and Monmouthshire, Cardiff, will open on October 3, and Dr. Robert Saundby will deliver an address on October 7. The session at University College, Liverpool, will commence on October 1. The opening ceremony in connection with the new laboratories of physiology and pathology will take place on October 8, when Lord Lister will declare the laboratories open. At University College, Sheffield, Dr. Dyson, vice-president of the College, will deliver the introductory lecture.

SOCIETIES AND ACADEMIES.

DUBLIN.

Royal Dublin Society, June 22.—Prof. D. J. Cunningham, F.R.S., in the chair.—Dr. E. A. Letts and Mr. R. F. Blake communicated a paper on the carbonic anhydride of the atmosphere. The first part was read dealing with (1) a brief historical account of the subject, with a discussion of the methods which have been employed in the determinations; (2) a description of the authors' modification of Pettenkofer's process, whereby results of great accuracy were obtained with mixtures of known volumes of purified air and carbonic anhydride; (3) an account of the authors' experiments (qualitative and quantitative) on the action of weak baryta water on glass; and (4) on the disturbing effect produced by soluble silicates on the delicacy of the phenol colour reaction with alkalis.—A paper was next read by Mr. E. St. John Lyburn, of Pretoria, consisting of notes on the minerals and mining in the Transvaal and Swaziland.—This was followed by a paper by Mr. A. Vaughan Jennings and Mr. H. Hanna on *Corallorhiza innata*, R.Br., and its mycorrhiza. The coralloid rhizome is shown to be covered with numerous papillae whereon tufts of hairs arise. The latter enter very closely into relationship with the fungal hyphae growing in the soil, forming a mycorrhiza. Owing to changes taking place in the hairs, bundles of hyphae pass down in the inside of the hairs through the outer layers of cells into the cortex, in the outer layers of which they form a coiled mycelium, and in the deeper layers they undergo a process of degeneration, and are absorbed by the protoplasm of the cells. The evidence indicates that the host plant acts carnivorously towards the hyphae. The hyphae constituting the *mycorrhiza* in this case were traced to one of the higher fungi, *Clitocybe infundibuliformis*.

PARIS.

Academy of Sciences, August 29.—M. Wolf in the chair.—On the measures to be taken for securing uniformity in the methods and control of the instruments employed in physiology, by M. Marey. After discussing the difficulties that have arisen owing to the defective nature of some of the recording instruments in common use, the resolutions adopted at the recent meeting of the International Congress of Physiology at Cambridge are quoted, proposing an international committee. The object of the committee will be to study the means of instituting comparisons between the various types of self-recording instruments, and to introduce some uniformity into the methods employed in physiology.—Observations of the

planet DQ Witt, made at the Observatory of Toulouse, with the 25 cm. Brunner equatorial, by M. F. Rossard.—Observations of some shooting stars which appeared during the nights of August 9, 10, 12, 13, 14, 16 and 18, by Mlle. D. Klumpke.—Modification of the internal pressures exerted in closed, empty receivers and submitted to the influence of electric currents, by M. G. Ségué. Experimental evidence is given showing that the pressure inside a vacuum tube is neither uniform nor constant, so long as it is traversed by a current of electricity.—The modifications undergone by the organs of the body during seventy two hours on the bicycle, studied by phonendoscopy, by MM. A. Bianchi and Félix Regnault. From the variations in the size and shape of lungs and stomach, some therapeutical applications are suggested. The effects of prolonged bicycling exercise are most severely felt by the lungs and heart.

NEW SOUTH WALES.

Royal Society, July 6.—Mr. G. H. Knibbs, President, in the chair.—On the stringy-bark trees of New South Wales, especially in regard to their essential oils, by R. T. Baker and Henry G. Smith. Part i. This paper is the authors' third contribution to a knowledge of the essential oils of the genus *Eucalyptus*. Some notes on the classification of the species of this genus by other authors are given, and the species now investigated are arranged according to their chemical, economic, and botanical affinities. It was shown that the essential oil of the red stringy-bark, *E. macrorhyncha*, besides containing a large percentage of eudesmol (the stearoptene of eucalyptus oil) gives an oil of excellent quality containing over fifty per cent. of eucalyptol, and answering all the requirements of the British Pharmacopœia with the exception of that of specific gravity.—On current observations on the Canadian-Australian route, by Captain Campbell Hepworth, R.M.S. *Aorangi*. This paper showed by observations of ocean current made during sixty-four passages between Australia and British Columbia in the liners *Aorangi*, *Warrimoo*, and *Miwewa*, the general set and strengths of the currents which are experienced, according to the season of the year, by vessels making the passage between these two colonies. The paper was illustrated by twelve charts, one for each month of the year, on which was delineated each current observation recorded, amounting to several thousand observations.

BOOKS AND PAMPHLETS RECEIVED.

BOOKS.—Medical Diseases of Infancy and Childhood: Dr. D. Williams (Cassell).—Catalog der Handbibliothek des K. Zoologischen und Anthropologisch-Ethnographischen Museums in Dresden (Berlin, Friedländer).—Schantung und seine eingangspforte Kiantschon: F. F. von Richthofen (Berlin, Reimer).
PAMPHLETS.—Colony of Natal. Report of the Government Astronomer for the Year 1897 (Pietermaritzburg, Davis).—Arithmetic, Scheme B, Standards 1, 2, 3 (Reading, N.P.S.A., Ltd.).

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