

FOUR new volumes have appeared in the Encyclopédie scientifique des Aide-Mémoire series. In one of these—"La Spectroscopie"—Prof. Julien Lefèvre briefly describes the application of spectrum analysis to physics, chemistry, physiology, and astronomy. The different methods employed for the observation of emission and absorption spectra in the laboratory, the solar spectrum, and the constitution of radial movements of stars are described, and a chapter is devoted to phosphorescence and fluorescence. The study of prisms, spectroscopes, and the theoretical side of the subject is treated in a companion volume—"Spectrométrie-Appareils et Mesures"—in the same series. A third volume recently received is entitled "Attaque des Places," by Lieut.-Colonel E. Hennebert. In it the various methods of besieged and besiegers, in past and present times, are set forth for the instruction of military engineers. MM. H. Moissan and L. Ouvrard have contributed to the series a valuable little volume on nickel—"Le Nickel." They describe in succession the physical and chemical properties of nickel, the principal compounds, minerals containing nickel, the metallurgy of nickel, alloys, extraction of nickel by electrolysis, and the principal applications of the metal.

THE additions to the Zoological Society's Gardens during the past week include two White-tailed Deer (*Cariacus leucurus*, ♂ ♀) from Canada, presented by Mr. Richard R. Dobell; a Red-bellied Squirrel (*Sciurus variegata*) from Vera Cruz, presented by Mrs. G. Maria Pullen; a Blue-fronted Amazon (*Chrysotis astiva*) from South America, presented by Mr. A. E. Corsbie; a Black-headed Gull (*Lorus ridibundus*), European, presented by Mr. James Boorne; a Peregrine Falcon (*Falco peregrinus*), caught off the coast of Terra del Fuego, presented by Mr. T. W. Hubble; two Spotted Salamanders (*Salamandra maculosa*), European, presented by Mr. Philip Gosse; a Chimpanzee (*Anthropopithecus troglodytes*), a Temminck's Pangolin (*Manis temminckii*) from West Africa, two Ostriches (*Struthio camelus*, ♂ ♀) from Africa, a Blood-breasted Pigeon (*Phlogothanas cruentata*) from the Philippine Islands, two Hamadryads (*Ophiophagus elaps*), two Indian Pythons (*Python molurus*) from India, three Naked-necked Iguanas (*Iguana delicatissima*) from Tropical America, a Great-billed Rhea (*Rhea macrorhyncha*) from Brazil, deposited; a Crested Pigeon (*Ocyphaps lophotes*) from Australia, purchased.

OUR ASTRONOMICAL COLUMN.

BROOKS'S PERIODIC COMET.—The following search ephemeris for this interesting comet is from a complete one in *Astr. Nach.*, 3361:—

	1896.			App. decl.	Brightness.
	h.	m.	s.		
July 11 ...	22	37	59.13	18° 8' 51.3"	1.06
15 ...	39	0.64	...	18 9 52.8	1.14
19 ...	39	35.58	...	18 12 28.2	1.22
23 ...	39	43.58	...	18 16 28.1	1.31
27 ...	39	24.50	...	18 21 40.9	1.40
31 ...	22	38	38.45	- 18 27 52.2	1.50

Following the above table, the comet should be looked for soon after midnight about 11° north of the 1st mag. star Fomalhaut, which is on the meridian about 3.30 a.m.

MAGNITUDES OF SOUTHERN STARS.—In vol. xxxiv. of the *Annals of the Astronomical Observatory of Harvard College*, a complete and graphic description is given of the expedition sent out from the observatory at Cambridge, Mass., to South America, in order to extend the work of the Harvard Photometry to the stars of the southern hemisphere. Mr. S. I. Bailey, assistant professor of astronomy at the College, was the observer chosen for this duty, and in the report gives an historical account of his journey southward, which began on February 2, 1889, his only companions being his wife and son.

Guided partly by the information furnished by the inhabitants respecting the meteorological conditions of the country, he at last decided to erect a station in Peru, choosing a spot on the summit of a mountain 6600 feet above sea-level, about eight miles north of east from the Chosica station of the Oroya railway. The observations have all been taken with the meridian photometer used for the northern stars, described in vol. xxiv. of the *Annals*. The instrument has two objectives, each of 10.5 cm. aperture and 166 and 145 cm. focal length respectively. Magnifying powers of twenty-eight and twenty-four diameters were used in the measurements. The magnitudes have been obtained by comparing each star separately with  $\sigma$  Octantis, mag. 5.5, this being the brightest star in the neighbourhood of the south pole. The first series of observations were taken on May 24, 1889, and for several months after this the weather proved very favourable, the instrument being used on nearly every clear night. As the summer season of the southern hemisphere approached, clouds became more frequent, and at length almost every evening was cloudy. This being so, the instrument was dismantled, and the observers travelled further southwards, remounting the photometer at a mining village called Pampa Central, near Valparaiso. In March 1890, they returned to Chosica, and again mounted the instrument in its old position, but the weather not proving so suitable as in the previous year, they again removed in September, and set up the station at Arequipa. Thus the measures of the various stars have been made at four stations. Following this introductory description, comes the voluminous catalogue of the magnitudes of 7922 southern stars, arranged on the same plan as the Harvard Photometry for the northern hemisphere.

RUGBY OBSERVATORY.—From the report of the Temple Observatory, Rugby, we learn that double-star observations were continued during last year. These observations are in continuation of the series commenced by Messrs. Wilson and Seabroke in 1871, which now comprises about 5000 complete measures of distance and position angle. The measures have been regularly published. The working list of double stars, which forms part of the report, gives approximate positions and measures for purpose of identification, and will be very useful to other observers who are following the same line of research. The observatory was open on eighty-three nights for the instruction of members of the school.

HARVARD COLLEGE OBSERVATORY.—Prof. Pickering has made the issue of the fifteenth annual report the occasion for furnishing some interesting particulars as to the establishment of Harvard College Observatory, and stating the general policy of the management. One of the statutes states that "the objects of the observatory are to furnish accurate and systematic observations of the heavenly bodies for the advancement of astronomical science, to co-operate in geodetical and nautical surveys, in meteorological and magnetical investigations, to contribute to the improvement of tables useful in navigation, and, in general, to promote the progress of knowledge in astronomy and the kindred sciences." It is noteworthy that no reference is made in the statutes to teaching, and the observatory is therefore primarily an institution of research, although such teaching as does not interfere with the regular work has been undertaken. While precise measures of position have not been neglected, the policy has always been to specially study the physical properties of the stars and other heavenly bodies, since less attention is usually paid to such work than to meridian work in most observatories. Accordingly much attention is given to photography, photometry and spectroscopy. Details as to the manner in which the various instruments have been employed are also given. The revision of the stars in the Harvard Photometry has been completed and is ready for publication, and it is worth noting that as many as 322 stars were observed on one occasion in the space of six hours, roughly one a minute; 107 photographs of the spectrum of  $\beta$  Lyræ have been lent to Prof. Frost for investigation, and this has suggested the possibility of increasing the usefulness of all the photographs which have been taken. Prof. Pickering invites correspondence with astronomers who may desire to borrow any of the photographs, and suggests the investigation of positions, distribution and brightness of stars in clusters, distribution of light in spectra, peculiar spectra, eclipses of Jupiter's satellites, and lunar mountains.