

recorder, and several improved forms of electric lamps for lanterns. The catalogue of lantern slides should be seen by all who use the lantern in science lectures. It includes Prof. Boys' photographs of "flying bullets," sixty-three slides illustrating volcanic action, from photographs by Prof. Johnston Lavis; photo-micrographs of rock-sections, and many other subjects. The slides are so numerous, and cover so wide a range, that teachers of any and every branch of science will find some in which they will be specially interested.

WE have on our table a number of new editions of books already reviewed in NATURE. One of these is the second edition of the "Lehrbuch der Botanik" (Jena: Gustav Fischer), by Drs. Strasburger, Noll, Schenck, and Schimper. This important work was first published in 1894, and the quick call for a second edition shows that botanists have not been long in finding out its admirable qualities. Dr. Oscar Hertwig's classic "Lehrbuch der Entwicklungsgeschichte" (Gustav Fischer) has now reached its fifth German edition. A number of new figures has been added, and results obtained by embryologists in the two years that have elapsed since the publication of the fourth edition have been incorporated in the text. Another fifth edition recently received is "Dynamo-Electric Machinery" (E. and F. N. Spon), by Prof. S. P. Thompson, F.R.S. The chief changes that have been made relate to alternate-current machinery. These and other additions have been made necessary by the development of electric machinery since 1892, when the fourth edition of Prof. Thompson's elaborate work appeared. A second edition has been published of "Dynamo Attendants and their Dynamos" (Electricity Office), by Mr. A. H. Gibbings. The book is intended for those practical men who have charge of electric lighting plant without knowing much about electrical principles; it consists, therefore, mainly of hints and advice as to how to manage dynamos, and what to do under those perplexing circumstances which occur in the best regulated dynamo rooms. After six years, a second edition has been published of "Service Chemistry" (W. B. Whittingham and Co.), by Prof. Vivian B. Lewes. The volume is primarily intended to be an exposition of the applications of chemistry in the naval and military services; nevertheless, a fair proportion of its space is taken up with descriptions of the general principles upon which all technical chemistry depends. Messrs. W. Collins, Sons, and Co. have issued a new edition of "A Manual of Inorganic Chemistry," by Prof. T. E. Thorpe, F.R.S. Since this manual was first published, twenty-three years ago, it has been frequently reprinted, but the new edition contains so much new matter, and is so greatly altered, that it is practically a new text-book, which will be found even more serviceable than the original one. The work is published in two volumes, which deal, respectively, with the non-metals and metals; it has been brought thoroughly up to date, and well records the present state of knowledge of the chemistry of the mineral kingdom.

THE additions to the Zoological Society's Gardens during the past week include two Bonnet Monkeys (*Macacus sinicus*, ♂ & ♀) from India, presented by Mr. F. Greswolde Williams; a Common Marmoset (*Hapale jacchus*) from South-east Brazil, presented by Captain Pickthorn; four Pratincoles (*Glaucola pratincola*), four Marbled Ducks (*Anas marmorata*), South European, presented by Lord Lilford; a Snow Bunting (*Plectrophanes nivalis*), European, presented by Mr. J. E. Harting; two Passerine-Parrakeets (*Psittacula passerina*) from Brazil, presented by Mrs. Robert McCabe; a Ring-necked Parrakeet (*Palaornis torquata*) from India, presented by Mr. E. Parrott; a Leadbeaters Cockatoo (*Cacatua leadbeateri*) from

Australia, presented by Mr. B. T. Frere; two Leopard Tortoises (*Testudo pardalis*), two Puff Adders (*Vipera arietans*), an Infernal Snake (*Sepeodon hamachates*) from South Africa, presented by Mr. J. E. Matcham; a Manatee (*Manatus australis*) from Demerara, presented by Captain Edward J. Collings; a Southern River Hog (*Potamocheirus africanus*) from South Africa, presented by Mr. W. Anthony Morgan; a Black-handed Spider Monkey (*Ateles geoffroyi*) from Central America, a — Terrapin (*Hydromedusa tectifera*) from Rio de la Plata, purchased.

OUR ASTRONOMICAL COLUMN.

CELESTIAL PHOTOGRAPHY BY SIMPLE MEANS.—In the hands of Prof. Barnard, the "magic lantern" lens has developed into an instrument of considerable astronomical importance. The lens actually employed by him is a $1\frac{1}{2}$ inch doublet of 4 or 5 inches equivalent focus, and the scale of the pictures is roughly 10° to an inch. Six beautiful photographs of various parts of the Milky Way taken with this small optical aid are reproduced in the *Astrophysical Journal*, vol. ii. No. 5, and they admirably illustrate the value of such an instrument in the delineation of extended nebulosities and in photographing large areas of the sky. They are selected from the more remarkable parts of the Milky Way, but Prof. Barnard has obtained a great number of such photographs, and proposes soon to construct a photographic chart from them. The picture of the new nebulous region in Scorpio shows two very obvious streams or "dark lanes" which are almost void of stars, and various peculiarities are presented by the other photographs.

In the same journal there is a reproduction and an account of a very fine photograph of the nebula near ξ Persei (N.G.C. 1499) taken with an exposure of six hours by means of the 6-inch Willard telescope, at the Lick Observatory, on September 21, 1895. The nebula is very irregular with numerous condensations, and is remarkable for a small dark spot, about 6' in diameter, in its northern part; "doubtless a hole in the nebula," says Prof. Barnard. Attention is drawn to the suggestive fact that this nebula lies on the edge of a region in which there is a comparative absence of small stars, as noticed also in the case of most of the large diffused nebulae lately photographed.

THE CONSTANT OF NUTATION.—A new determination of the constant of nutation has been made by Dr. Chandler (*Astronomical Journal*, No. 361). It is based on a discussion of 20,294 observations of stars with the mural circles of Troughton and Jones at Greenwich during the years 1825-1848. In order to eliminate errors due to possible slow changes of the angle between the pole and the zenith, whether strictly or irregularly systematic, it has been considered necessary to employ a large number of stars, distributed as uniformly as possible over the entire sky; and the Greenwich observations offer this facility, while at the same time possessing the necessary degree of accuracy. The adopted mean value of the latitude of Greenwich is $51^\circ 28' 38''.42$, and assuming that this is the same in all years, the nutation is found to be $9''.197$, after eliminating the short-period terms of the latitude variation. This assumption, however, is not justified, as the observations indicate a pronounced deviation, which cannot be explained by anomalies of refraction, but must be due to a change in the place of the zenith. Although such a change may possibly be subjective, Dr. Chandler thinks it much more likely to be due to an actual slow change of the latitude. The observations favour an inequality of the mean latitude with a period of about twelve years, and a range of about a quarter of a second. To whatever cause this change may ultimately be ascribed, it is at least necessary to take account of it in evaluating the constant of nutation; and when this and all other corrections have been applied, the definitive value of the nutation, from the observations with the Greenwich mural circles, is $9''.192 \pm 0''.012$. Combining this result with all previous ones which are entitled to any weight at all, the final value becomes $9''.202$. The corresponding reciprocal of the moon's mass, in terms of that of the earth, is $81'80$, if $50''.36$ be taken for the luni-solar precession.