

bladed grasses. Group X., hairy grasses. Group XII., ribless bladed grasses. Groups VI., IX., and XI. are separately dealt with, but those above-mentioned will sufficiently show the principle upon which the classification is made.

The figures (diagrams), showing the tapering, obtuse, flat, involute, or imbricate character of the herbage, are exceedingly plain and characteristic, and will be of great assistance to the observer in the field. The leaf-blades, stems, ligules, sheaths, &c., are well shown in cross-sections, and at length.

JOHN WRIGHTSON.

OUR BOOK SHELF.

Facsimile Atlas to the Early History of Cartography, with Reproductions of the most important Maps printed in the Fifteenth and Sixteenth Centuries. By A. E. Nordenskiöld. Translated from the Swedish original by J. A. Ekelöf and Clements R. Markham. (Stockholm, 1889.)

IN this handsome volume there are 142 pages of letterpress in imperial folio, and 51 plates in double folio. It contains reproductions of about 160 of the rarest and most important maps printed before the year 1600. Among these are the 27 maps of Ptolemy, edited by Schweinheim-Buckinck in Rome, 1478 and 1490; maps from Berlinghieri's "Geographia," Firenze, c. 1478; Aeschler's and Übelin's "Ptolemy" of 1513; Reisch Margarita Philosophica, of 1503 and 1515; Lafreri's "Atlas," Romæ, c. 1570; Richard Hakluyt's "Petrus Martyr," Paris, 1587, and "Principal Navigations," London, 1599; maps of the world, by Ruysch, 1508, Bernardus Sylvanus, 1511, Hobmicza, 1512, Apianus, 1520, Laurentius Frisius, 1522, Robert Torne, 1527, Orontius Finacus, 1531, Grynæus, 1532, Mercator, 1538, Girava, 1556, de Judæis, 1593. We find also the first modern printed maps of the northern regions, of the Holy Land, of Central Europe (by Nicolas a Cusa), of France, of Spain, of England, of Russia; the first charts for the use of mariners published in print; 82 general maps, or maps referring to the New World; the first modern printed maps of Africa; the first map illustrating the distribution of religious creeds, &c.

As regards the text, chapters i.-iii. contain researches relating to the influence of Ptolemy on modern cartography, his merits and defects, and the different editions of his geography. Of the editions enumerated in bibliographical works, 27 spurious ones are neglected. In chapter iv. a review is given of ancient maps other than Ptolemaic, of the portolanos and their influence on modern geography. Chapter v. treats of the extension of Ptolemy's *Oikumene* towards the north and north-west, the pre-Columbian maps of Scandinavia and Greenland, the most remarkable of which is one discovered by Nordenskiöld himself in a library at Warsaw (reproduced on Tab. xxx.) Chapter vi. deals with the first maps of the New World, and the then recently discovered parts of Africa and Asia. Here the author draws attention to the hitherto neglected fact that maps from Vasco de Gama's second voyage were printed as early as 1513 (reproduced in the letterpress, Figs. 8-10). Chapter vii. gives an account of early terrestrial globes, and in chapter viii.—on map projection—the author corrects several errors generally adopted in the history of this part of cartography. In chapter ix. he deals with the end of the early period of cartography, and in chapter x. with the transition to, and the beginning of, the modern period. He brings out the importance of the work of Jacopo Gastaldi, Philip Apianus, Abraham Ortelius, and Gerhard Mercator, in the development of cartography. He also gives, besides a catalogue of the maps in Lafreri's "Atlas," a critical review of Ortelius's celebrated "Catalogus Auctorum tabularum geographicarum."

The work is based on Baron Nordenskiöld's private collection of ancient printed maps. This collection he began to make many years ago, and it is now rich in documents from the periods reviewed in the present "Atlas."

The maps have been excellently copied and printed, and the great care taken by the librarian, Mr. W. E. Dahlgren, has secured the correctness of the citations. All geographers who have a right to an opinion on the subject will agree that the work is indispensable to every library in which there is a department devoted to geography.

Light and Heat. By the Rev. F. W. Aveling, M.A., B.Sc. Second Edition. (London: Relfe Bros., 1890.)

THIS is a new edition of a text-book intended to prepare candidates for one of the science subjects of the London matriculation. It has been much improved since its first appearance, but it still treats the subject in a very superficial way. Although no one could seriously study the subject with this as a guide, it is certainly a useful summary of the main facts, and will probably be found serviceable by intending candidates. The coloured plate of spectra has been corrected, but surely this is superfluous in a book which does not even describe an ordinary student's spectroscope. The author has fallen into the very common error of stating that the electric arc gives a continuous spectrum, and he also states that the lines in the spectra of the fixed stars are different from those which characterize sunlight; whereas in a great many cases they are practically identical.

There are numerous diagrams, but they are barely of a quality equal to those which would be produced by a student at an examination. The large collection of questions and answers will be very useful.

Warren's Table and Formula Book. By the Rev. Isaac Warren. (London: Longmans, Green, and Co., 1889.)

WE have in this small work a compact and trustworthy set of tables, facts, and formulæ which come within the scope of an ordinary education. As a reference book, it should prove most useful, the information it conveys being concise and to the point. In addition to the usual tables of weights and measures, &c., we have an account of the physical and electrical units now in use, followed by the most important formulæ used in algebra, mensuration and trigonometry, and tables of exchange, principal units of value throughout the world, and comparative average values of some important coins, the last of which will doubtless be found useful to those travelling abroad. Some of the most important business forms, such as "Form of a Joint Promissory Note," "Form of Foreign Bill of Exchange," &c., are printed in full; and the work concludes with postal and telegraph rates. On the back of the cover are printed diagrams of a square decimetre and centimetre and a square inch, together with scales of centimetres and inches.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

"Panmixia."

THE somewhat strained argumentation which Mr. Romanes has devoted in your issue of April 3 (p. 511) to my defence of Mr. Darwin's position in regard to "cessation of selection" and "economy of growth" does not convince me of the justice of the former's claim to have originated new principles "unfortunately" (to use his own expression) too late for Mr. Darwin to have the advantage of correcting himself by their aid. In his letter of March 13 (p. 437) Mr. Romanes lays great stress in