1800 and 1873, and did not attempt to deal with any subject-headings, or any of the past history of the subjects as Mr. Billings has done in his rich and varied Index Catalogue of very nearly all the Medical Literature printed between the fifteenth century and the present day. A. T. MYERS.

OUR BOOK SHELF.

Lehrbuch der Botanik nach dem gegenwärtigen Stand der Wissenschaft. Bearbeitet von Dr. A. B. Frank. Zweiter Band: Allgemeine und Specielle Morphologie. 8vo, 431 pp. with 417 Woodcut Figures in the text, and an Index to Volumes I. and II. (Leipzig: Wilhelm Engelmann, 1893.)

THE first volume of this work, dealing with histology, anatomy, and physiology, was noticed in NATURE, vol. xlvi. p. 610, where some facts may be found connected with its history, scope, and arrangement. The present volume is concerned with general morphology and special morphology, or classification. It is, on the whole, exceedingly well compiled, and, as was said of the first volume, it is written in the clearest and easiest style, with no superabundance of words, such as often render German text-books unnecessarily difficult to the beginner. The illustrations (upwards of 400) are for the greater part borrowed from the works of Sachs, Gœbel, Schenk, Prantl, Pringsheim, Hanstein, Schimper, Strassburger, Hofmeister, De Bary, Tulasne, Bornet, Brefeld, Woronin, and other specialists, but chiefly from the first. These are all duly acknowledged, and, as the author states in his preface to the first volume, he has made the best selection he could, and he has used these familiar figures because he could not substitute better ones. This is, of course, true; yet we put it on record to inform the student that he will find little that is original in this way. General morphology occupies fifty-four pages, under four heads, namely: discrimination of forms in the vegetable kingdom, directions of growth, general laws of the relative positions of the members of the vegetable body, and origin of the members of the vegetable body. The remainder of the volume is devoted to special morphology, or systematic botany; but the large groups are somewhat unequally treated, 179 pages being devoted to cryptogams, as against 140 to phanerogams. Indeed, too much has been attempted in the space. For instance, the very brief diagnoses of the natural orders given at the end of this volume can be of little service to the beginner. Few of them exceed six lines, and many of them are even less, consequently the characters given are often insufficient to include half of the genera. Generally speaking, they are correct as far as they go, but they are often not sufficiently comprehensive. We have said that this is an excellent book, yet here and there one stumbles upon statements that cause no little surprise. Thus the pictures of Nepenthes, Sarracenia, and Cephalotus are described indiscriminately as transformed terminations of tendril-like continuations of the leaves. Then with regard to the bibliography, the selections are by no means critical, and sometimes defective, especially in foreign literature. The indexes, of which there are three, are sufficiently copious. There is an index to the woodcuts, an index to the subjects, and an index to the plant-names. When will authors learn that one general index is preferable to a number of classified references? In this work it would have been much more convenient to have had an index to each volume.

The Elements of Natural Science. Part III. Natural Philosophy. By Dr. H. Wettstein. (London: O. Newmann and Co., 1893.)

THE German edition of this book is obligatory for all the secondary schools of the canton of Zurich, which

partly accounts for the fact that more than seventeen thousand copies have been sold. It is doubtful, however, whether the translation will be so widely appreciated in England. There are already many excellent introductions to science covering practically the same ground as Dr. Wettstein's work. In one feature only is the book superior to the majority of those produced in England; viz. in the abundance of illustrations. As a rule, our text-books of science are very poorly off in this matter, whereas Ganot, and Deschanel, and the book before us, are brightened considerably by the insertion of numerous illustrations.

When we say that in the 138 pages of the book the sciences of mechanics, sound, light, heat, electricity, and magnetism are treated, it will be at once understood that the descriptions are of a rather sketchy nature. In spite of this, however, the book will give its readers a good grounding in the principles of physical science. Though most of the text can be easily comprehended by the average pupil, there are portions which should hardly be inserted without explanation. Thus, on p. 44 we read: " The atmospheric pressure carries our legs and arms, for the condyle of the femur fits air-tight into the acetabulum of the pelvis, and likewise the condyle of the humerus into the articular cavity of the shoulder-blade." And it is misleading to say: " The complete spectrum of sunlight consists of three parts—*the heat spectrum, the light spectrum, and the chemical spectrum*" (p. 71). The table of spectra given in the frontispiece is poor, one of its defects being that the solar spectrum only differs from the spectrum of Sirius by the addition of the three lines A, a, and B. With this exception, however, all the illustrations are very clear and accurate.

A Short Course in the Theory of Determinants. By L. G. Weld. (London: Macmillan, 1893.)

WE have read Prof. Weld's book with much interest, for though there are few, if any, novel results brought forward, he has certainly attained the goal he set before himself, and has developed the theory in a very simple manner. Some of the methods he has employed are new to us. The greater part of the work requires little beyond an intimate acquaintance with the principles of algebra as given in the ordinary school text-books. To confine the treatment within very moderate limits, there is no application of determinants to analytical geometry, but many of the more important algebraical applications find a place. After treating with sufficient detail of the origin and notation of determinants, our author gives a general definition of them, and enumerates and proves the more useful of their properties, and then touches lightly upon their applications to elementary algebra, *i.e.* to matrices and Sylvester's and Euler's methods of elimination. In Chapter vi. he briefly discusses the multiplication of determinants and reciprocal determinants. The last three chapters give a brief account of special forms, and of linear transformation. The text is very clearly printed, and we have detected but few trivial errors. There is a good store of examples, some of which appear to us to be rather " stiff." Due acknowledgment is made in the preface to the sources from which results have been derived.

A Practical Treatise on Bridge Construction. By T. Claxton Fidler, M.I.C.E. Second Edition, enlarged and revised. (London: Charles Griffin and Co., 1893.)

THE first edition of this book was reviewed at length in NATURE, vol. xxxviii. p. 2. Since then the Forth Bridge has been completed, and great advance has been made in the manufacture of steel.

The principal criticism to be added to the former review is that the author should add some remarks on the method of erecting a bridge, large or small. As it is, the structures