SCIENTIFIC BOOKS

The Sumario Compendioso of Brother Juan Diez. The earliest mathematical work of the New World. By David Eugene Smith. 1921. Boston and London: Ginn and Company. 65 pages. Price $4.00.

Those who are interested in the earlier mathematical developments only in so far as it can be shown that these developments have contributed directly to the present extent of our mathematical knowledge will find little to interest them in the present small volume. It is not claimed that this volume exhibits any decided step forward in mathematics or that it exerted a great influence on later works devoted to the same subject. There are, however, many mathematicians and historians who will doubtless be very glad to have an opportunity to read in their own language the excellent translation which Professor Smith has here provided of what seems to be "the earliest mathematical work of the New World."

It is desirable that the student of the history of arithmetic should be able to consult original sources. By the publication of the "Rara Arithmetica" about a dozen years ago and by the publication of the present volume Professor Smith has rendered very valuable service to those who desire to consult such sources. The historical notes which appear in these works are exceedingly valuable even if they are often less extended than might appear desirable. In the present volume two pages or less of such notes relate to each of the following four subjects: The Mexico of the period, printing established in Mexico, general description of the book, and nature of the tables.

An important oversight should be noted here in order that the reader may not be misled in regard to the time when the book under review, which was first published in 1556, became known to American educators. To establish the fact that the reader is seriously exposed to misconception as regards the point in question and also on account of the interest which these statements may command, we quote the first three sentences of the preface.

> If the student of the history of education were asked to name the earliest work on mathematics published by an American press, he might, after a little investigation, mention the anonymous arithmetic that was printed in Boston in the year 1729. It is now known that this was the work of that Isaac Greenwood who held for some years the chair of mathematics in what was then Harvard College. If he should search the records still farther back, he might come upon the American reprint of Hodder's well-known English arithmetic, the first text-book on the subject, so far as known, to appear in our language on this side the Atlantic.

As some "student of the history of education" may be assumed to have read the "Rara Arithmetica" and noted that on page 286 thereof the work under review was called "the first arithmetic printed in America" it seems strange that such a student should have been overlooked while the said preface was written. One is perhaps still more surprised to find that such an intelligent student was also overlooked when Professor Smith prepared the article relating to the book under review for the last January number of the *American Mathematical Monthly* as well as when he read a paper before an intelligent audience during the recent meeting of the American Association for the Advancement of Science at Chicago. On both of these occasions the substance of the part of the preface quoted above was given without any reference to the fact that one of the most interesting elements relating to the subject under consideration had been noted a dozen years earlier in the "Rara Arithmetica."

The emphasis on this oversight in such a public place seems to be justified by the facts that this emphasis may tend to lessen the danger that readers of the book under review will be misled as regards an interesting historical fact, and that one could not condemn in too strong terms one of the motives which might possibly be ascribed to the translator and editor by the reader after discovering that he had been misled by the statements quoted above. Being forewarned such a reader is more likely to attribute these statements to an astounding oversight by an unusually painstaking and careful writer.

Tables make up the greater part of the original work but as they are no longer of

any importance only one page is shown in facsimile in the present edition. The rest of the text is reproduced on the left hand pages while the translation appears on the following pages. The last six pages are devoted to algebra, chiefly relating to quadratic equations, and, in closing, the author states that he "wished to set down the things which are necessary and familiar in this kingdom." The formula near the bottom of page 37 is not clearly stated. Professor Smith's name is a sufficient guarantee that the work is in an attractive form.

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Introduction à l'étude pétrographique des roches sédimentaires. Par M. LUCIEN CAYEUX. Mémoires pour servir à l'explication de la carte géologique détaillée de la France. Paris: Imprimerie Nationale 1916. Quarto, 1 vol. text, pp. viii + 524, 80 figures; 1 vol. LVI plates.

It is a curious fact that although Sorby, the father of modern petrography, was especially interested in sedimentary rocks, those who followed him, with the exception of a small but persistent succession of workers in his own country, almost abandoned them in favor of the igneous rocks. The author of the book under review has elsewhere suggested that this was perhaps due to the lure of greater mystery in the igneous rocks and to the lack of knowledge, before the *Challenger* expedition, about the sediments of today. The reviewer has always been inclined to attribute the preference for the study of igneous rocks to their greater and more obvious diversity, which made it easier to find something new in them and gave them a greater esthetic attractiveness. Whatever the cause the present work will be the most powerful influence that has yet been brought to bear in changing that tendency. Indeed, in French-speaking countries Cayeux's influence is already very manifest. If the beauty of the sedimentary rocks has been considered inferior the enthusiasm of the author will surely correct that impression.

The work marks an epoch in its field and is written with a breadth of view worthy of the fundamental importance of the sedimentary rocks in the interpretation of the history of the earth. The author not only stands alone in the extent and thoroughness of his monographic investigations in this field, but as the successor of Élie de Beaumont, Fouqué and Michel-Lévy at the Collège de France he is, so far as the reviewer knows, the only person occupying a chair devoted entirely to the teaching of the petrology of sedimentary rocks. On his inauguration the name of the chair he occupies was changed from "Chair of the Natural History of Inorganic Bodies," to "Chair of Geology," but it might well have retained its old name, for as he says in his inaugural address, "The science of the sedimentary rocks is and will remain for us *a natural history of the ancient and modern sediments.*" It is the treatment from this point of view and the enthusiasm and wide personal experience which the author brings to it that gives to a book which one might expect to find dry and technical a freshness, interest, and charm that make it fascinating reading. Furthermore, the book is so full of original observations drawn from the writer's many years of study that no student of sedimentary rocks, be he petrographer or merely stratigrapher, can afford to leave it unread.

The work is divided into two parts. The first deals with methods of analysis of sedimentary rocks, the second with the diagnostic characters of the constituents, which fall into two groups—the minerals and the remains of organisms.

The first part is refreshingly free from pedantry or love of technique as an end in itself, though the artist's pleasure in some refined and delicate method often finds expression. Methods of handling rocks of different types according to their induration or susceptibility to attack by acid are discussed, but the possible complexity of the procedure appropriate to any individual rock and the need of adapting the methods used to the particular rock and to the object of the investigation are pointed out. Quantita-