

cation. In the meantime, it would be a serious mistake if those in charge of collections of corals were contented to adopt the *non possumus* attitude of Mr. Bernard and make no serious attempt to arrange their specimens in systematic groups.

One of the most important observations recorded in this volume is that there seems to be a fairly constant difference between the Atlantic and Indo-Pacific specimens of *Porites*. This difference lies simply in "the fact that the trabecular, horizontal and synapticular elements which compose the skeleton are thicker and coarser in the Atlantic and West Indian forms than they are in those of the Indo-Pacific." This difference is one which may prove to be of great importance in the re-arrangement of the species that will be made in the future, and although there are some exceptions (p. 19) that may require special investigation, it will be of interest to inquire how far a difference in the anatomical character of the polyps coincides with this difference in a skeletal character.

Mr. Bernard devotes one chapter of his introduction to what he terms "metameric" growth in *Porites*. This principle of growth is well known to workers in the various groups of corals, but it is not one to which zoologists have hitherto applied the expression "metamerism." The metameric segmentation of a living animal body such as we see, for example, in the developing larva of a *Polygordius* is one thing, a linear series of gemmations in which the last of the series alone survives is another. To confound the two by using the same word for them will certainly not assist in the elucidation of the problems of coral growth. The phenomena of "overgrowth" in corals, as this process may more conveniently be called, are not fully understood, and may be due to several natural and circumstantial causes, but none of them seems to be due to any process that is at all comparable with the metameric segmentation of a worm or of an arthropod.

Although it has been necessary to express freely an opinion as to the value of the method employed in this volume, we may express our admiration of the careful descriptive account of each specimen in the catalogue and of the excellence of the plates.

S. J. H.

REALISTIC SCHOOL MATHEMATICS.

A School Course of Mathematics. By David Mair. Pp. viii+379. (Oxford: The Clarendon Press, 1907.) Price 3s. 6d.

FOR some years past the Civil Service Commissioners have systematically set themselves the task of framing their examination questions so as to make them of practical interest instead of merely being a test of a candidate's capability in abstract mathematics.

Mr. Mair, in the present book, has given a most useful and interesting collection of such of these examples as he considers should be within the range and powers of boys while still at school. These questions are given in sets at the end of the various

chapters, which are devoted to the discussion of a few typical questions. These typical questions are discussed with variations and from different points of view, the discussion being thrown into the form of questions by the teacher, and answers supposed to be given by the pupil.

It is somewhat difficult to realise how these discussions are intended to be made use of unless they are meant only as typical, to be taken merely as suggestions, and not to be followed in detail; it would certainly not do for the class to have the book open during the discussion, and it would take too long for the class to write down the questions to which they are asked to give an answer, and yet in many cases the questions are somewhat difficult to answer unless the pupils can have them in writing. Moreover, in some cases the work involved in the discussion before the pupil has satisfactorily arrived at the generalisation which the teacher is striving to bring him to is so lengthy that it could not be completed in a single sitting, and consequently the continuity of thought required would be seriously interrupted. This difficulty seems not to have been contemplated by the author.

Moreover, he does not seem to have sufficiently realised that the young pupils for whom he is catering in the earlier chapters are incapable of the sustained thought and the considerable efforts of memory and chains of reasoning which he requires, and, most serious defect of all, even if the pupils are brought to perceive and retain the mathematical truths thus presented to them, these truths are so detached from each other and are so various in kind that they do not form in any sense a *mathematical course*.

In spite of this, however, the book will be of very great use. Thus, in some schools it is already being used with the upper army classes for the sake of the excellent examples with which it is crowded, the question and answer part being for the most part ignored with these classes, and, with regard to the text, if the teacher can find time to go carefully through the book, he will find a great deal of help given him as to the best way of bringing home some mathematical facts to boys in a more realistic and vivid manner than he might otherwise be able to do. For example, the author has a special way of his own for introducing boys to logarithms. This method is very carefully worked out, and is particularly worthy of study. Possibly each teacher will elaborate some modification of his own which he prefers, but he certainly should very carefully consider the author's method, which is most ingenious and well worked out so far as he goes, though there is a gap at the end which he has jumped. The author's treatment of questions in solid geometry also is good, giving them a reality and vividness which will make this part most valuable as an introduction or as a companion to the theorems of the eleventh book of Euclid or its modern equivalent.

The impression left on the reviewer's mind is that the book in no way supersedes the regular class books on the various subjects, but that it may be a most valuable adjunct to them in two ways, first, by sug-

gesting methods of presentment of new mathematical ideas by means of concrete illustrations which will bring them home more vividly and interestingly to the pupil, the method of question and answer being often used to make the pupil think for himself—though, indeed, this is generally done now by good teachers as occasion serves—and, secondly, by the teacher taking the class from time to time through a selected set of the examples when they have assimilated the underlying book-work.

There is one thing which the author has touched on, though apparently only in an example (No. 7, p. 293), which one would have liked to see brought into much greater prominence, viz. the graphic solution of a quadratic equation $x^2 - bx + ac = 0$ by drawing lines $OA = a$, $BC = c$, perpendicular to a line $OB = b$, and drawing a circle on AC as diameter, cutting OB in P , Q : the roots being OP and OQ . This method gives the clue to the geometrical solution of many problems some of which would otherwise be difficult; for example, the construction of a triangle of given area when two sides are given in position, and a point in the plane through which the third side is to pass; also the construction of a right-angled triangle from the data given in the book on p. 261; also the division of a line in extreme and mean ratio; and, indeed, any problem the solution of which depends on a quadratic. It is a most valuable link between algebra and geometry. Another method which is applicable to the case of $x^2 \pm bx = a^2$, and is perhaps better than the first for this particular case (though really only a modification of the above general method), is given on p. 264. The book is, in fact, bristling with ideas and suggestions, and we wish it the great success it undoubtedly deserves.

A. L.

EGYPTIAN ANTIQUITIES.

Egyptian Antiquities in the Pier Collection. Part i. By G. C. Pier. Pp. 27+xxi plates. (Chicago: University of Chicago Press, 1906.) Price 17s.

MR. GARRETT CHAFFIELD PIER, of New York, is an amateur of Egyptian antiquities, and has begun to publish a catalogue of his collection, of which the first part has reached us. The book is produced by the Academical Press of the University of Chicago, which, at the instigation of its Egyptological specialist, Prof. Breasted, is beginning to take an important part in Egyptian archaeological work.

We find various traces of Prof. Breasted in Mr. Pier's book. The learned professor's "particular vanities" in the way of transliteration of Egyptian names, such as "Ikhnaton" for Akhenaten, or "Harmhab" for Haremheb, either stamp Mr. Pier as a faithful follower of Prof. Breasted or show that the professor revised Mr. Pier's Egyptology. Mr. Pier's use of the Berlinish algebraic transliteration (e.g. "s;-r' Nb-m; 't-r'-nb-t;wj" for what might just as well be written *sa-ra Neb-maat-Ra neb-tau*, p. 5) points the same way. But Mr. Pier should be careful, if he uses this highly learned transliteration,

to use it consistently, and not write sometimes "Nub-khprw-r'" (p. 19), sometimes "'-hprw-r'" (p. 22), sometimes "Mn-hpr'", sometimes "Men-khepr-r'" (p. 21), or "Ishrw" (p. 6) for "Jšrw," or "Thy" (p. 13) for "Tjj," in such a sentence as "Štn-hmt-wr-mrj-f-Thy (surely, surely, Tjj!) 'nh-ty," which also exhibits confusion between the orthodox Teutonic "j" and the slightly heretical English "y." Thy is the queen whose tomb has just been discovered at Thebes; if the German transliteration is used for her name at all, it must appear as "Tjj," but in reality there is no need whatever to use pedantically, in a guide to a collection of objects of purely anthropological interest, a transliteration of ancient Egyptian which is utilised only by a few German or germanised philologists for purely philological purposes.

Mr. Pier's collection does not, so far as published, appear to contain anything of extreme interest, compared, that is, with such important private collections as those of Mr. Hilton Price or Mr. Macgregor. He seems to be chiefly interested in objects of the prehistoric period and scarabs of the XVIIIth Dynasty, of which he possesses some fine specimens. Of later scarabs he does not appear to own many, which may account for the inaccurate statement on p. 15:—"with the Twenty-sixth Dynasty richer materials are used for scarab seals and plaques, such as carnelian, amethyst, serpentine, &c., rarely, if ever, inscribed." We italicise the erroneous statement, which may well seem odd to those who know how constantly the little stone scaraboid plaques of the Saïte period were inscribed with all manner of sentences, wishing a good new year, invoking Khonsu as a protection, and so forth. But probably Mr. Pier has not yet devoted much attention to these later objects. He is thinking of the fact that the XIIth Dynasty amethyst and other stone scarabs were but rarely inscribed: this is so.

Mr. Pier draws his scarabs extremely well, much better than his flint implements, of which he publishes some scratchy pen-and-ink representations [Plates v.-ix.: Plate ix. (of a slate) is especially bad]. The mirror on Plate x. is also very badly drawn, and the two dishes on Plate xi. are not much better. Mr. Pier would be well advised to reproduce these things by means of photography in future, and to confine his artistic efforts to scarabs and hieroglyphs, which he knows how to draw.

His coloured plates of ceramics are very successful, though not so successful as Mr. Henry Wallis's in his "Egyptian Ceramic Art." Mr. Pier's blues, yellows, and violets do not so perfectly reproduce their originals, and Mr. Wallis's do. But it would be indeed difficult to rival Mr. Wallis's drawings or Mr. Carter's in the publication of the "Tomb of Thout-mosis IV."

So far as the literary part of the book is concerned, quite apart from the usual aberrations of American spelling, Mr. Pier has one or two specialities of his own. One is "faun-colored" (for "fawn-coloured"), which occurs two or three times, and so cannot be a misprint. Presumably Mr. Pier has forgotten what