Review

Author(s): J. M. Child

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Exercises in Woodwork. F. E. DRURY. Pp. xi+215. 2s. 6d. 1912. (G. Bell & Sons.)

This book is a progressive course of exercises, designed to extend over three years, in which sketching, mechanical drawing, geometry and calculations go hand in hand. After discussing it carefully with my colleague, Mr. R. D. Whitehead, who has had over twenty-five years' experience in teaching engineering and building students, the conclusion arrived at was that the book is a distinctly original and valuable contribution towards making "practical mathematics" of *educative* utility. In one sense it is reactionary, for it corroborates the growing body of opinion that it does not matter *what* you teach the present day boy, whether it is plumbing or Greek, so long as you "make the beggar *think*": and this is the one thing necessary to save the teaching of practical mathematics from being the plague-spot in education. First, *thought*; secondly, thirdly and lastly, *accuracy*, if you will; but FIRST, *thought*. And this is just what we have in this book; the arrangement of the practical work is excellent, and the questions preceding each example being a succession of the three fundamentals in teaching—WHY? HOW? and WHAT? The scheme of procedure is, however, in the preface, happily qualified by saying that "it need not be rigid." The proof of the pudding is in the eating; and to many who know the so-called technical student and his ways, the exercises given, especially towards the end, will seem to be of the lightning order of get-wise-quickly species, the fitting requiring a finish such as a first-class cabinet-maker would not be ashamed of: this consumes the time which would be of more use devoted to educative purposes. A great deal will depend on the "individuality of the teacher"; and, still more, even for the first few chapters, on the way in which the student's first lessons in algebra have been presented. If the first steps in algebra have been taken by the modern logical route of generalized arithmetic, well and good; but if algebra has been taught according to the rule-of-thumb tenets of "practical mathematics" (as ordinarily practised) the attainment of good results will necessitate a teacher of exceptional merit.

Two chapters are added on graphs and one on percentage error which materially add to the value of the book. Viewed either from a theoretical or practical standpoint, this book is to be welcomed as a distinctly original effort that cannot fail to arouse interest. It is a great pity that it is put forth in such a modest fashion. Doubled in size, and issued in two parts, elementary and advanced, it would make a bold bid for universal adoption.

Plane and Spherical Trigonometry. J. G. HUN and C. R. MACINNES. Pp. 205. 6s. net. 1911. (Macmillan.)

It is almost sufficient to state of this book of 205 pages, covering the "Elements of Plane and Spherical Trigonometry," that 100 pages are 'Tables and how to use them.' All that is considered necessary for "Trigonometry up to the solution of Triangles," as the phrase goes, is condensed into sixty-two pages. It is essentially a college hand-book, but totally unsuitable for beginners in schools. Two remarks in the preface obtrude themselves. "The fact that the trigonometric functions are ratios of line segments is emphasized, and their representation by means of lengths of lines is used as little as possible." What is the length of a line? Is it not a ratio of one line to another, the length of the second line being called the unit of length?

Again, "Certain of the proofs of theorems are shorter than in many text-books, and, it is hoped, thereby made more clear. Notably the proofs of the formulae for $\sin(A \pm B)$ and $\cos(A \pm B)$." We recently reviewed a trigonometry in which these proofs were half as short, and twice as clear and valid for A, B acute or obtuse so long as $A + B$ is less than two right angles. J. M. CHILD.

Über die Theorie benachbarter Geraden und einen verallgemeinerten Krümmungsbegriff. By W. FRANZ MEYER. Pp. 152. Price 8 marks. 8vo. 1911. (Teubner.)

The generalized curvature bears the same relation to any straight line g through a point P of a curve, as curvature in the usual sense bears to the tangent t ; this substitution of g for t is the main idea on which the book rests. First, there is constructed the "begleitende Dreikant" of g , corresponding to the