coordinate geometry to the nature of the general conicoid; in trigonometry to the use of Euler's expressions for the sine and cosine, with a careful treatment of imaginary quantities; in calculus to definite integration and the maxima of a function of n independent variables; together with the pure geometry which is necessary for the other subjects. It has been the intention to include the bulk of the results obtained in pure mathematics which admit of rigid proof of a fairly easy character, and are needed by those who use pure mathematics as an instrument in mechanics, engineering, physics, chemistry, and economics. For this purpose a very great deal that is ordinarily contained in text-books has been thrown aside, and only those theorems and formulas which are of direct practical application or which are necessary to lead to others of direct practical application are retained.

"It has also been the intention to give exact definitions and strict proofs, of a more careful nature than those found in many of the more diffuse and elementary books; only two difficulties have been intentionally glozed over, viz., the nature of continuity and the nature of irrationals."

The considerable number of topics, the discussion of which is brought together in this one book, are treated in separate sections and probably in a larger degree of isolation from each other than most readers would expect in a single volume in which all of them find a place. The exposition, on the whole, is fairly satisfactory; some of the sections are excellent. The section on limits and series is the least satisfactory of all; some of the statements in it are properly characterized as awkward. For examples of these awkward statements the reader may see pages 101, 102, 105, 115.

The book as a whole is a contribution of some value to the pedagogy of that part of the mathematical curriculum with which it is concerned. Some of the controlling ideas in its preparation might well be adapted to the needs of American institutions; but the book itself is probably not well suited to such purposes.

R. D. CARMICHAEL.

Démonstration du Théorème de Fermat. Par E. FABRY. Paris, Hermann et Fils, 1913. 22 pp. 1.50 fr.

Using the theory of Kummer as a basis the author undertakes to prove that the equation

$$x^\lambda + y^\lambda + z^\lambda = 0,$$

where λ is an odd prime, cannot be true for any three integers x, y, z prime each to each, provided that

(1) no one of these integers is divisible by λ;

(2) one of them is divisible by λ but not by λ^2.

In the discussion of the first of these results there occurs an essential error which has already been pointed out by Mirimanoff (*Comptes rendus*, Paris, 157: 491–492). Fabry's second result was already known to Sophie Germain and Legendre (see Bachmann's Niedere Zahlentheorie, II, page 467).

R. D. Carmichael.

Vectorial Mechanics. By L. Silberstein. Macmillan and Company, London, 1913. viii + 197 pp.

There are not in English so many books on vector analysis and its applications that we may not welcome another. The Gibbs-Wilson is the most extended and detailed as regards vector analysis itself, but contains illustrations from geometry, mechanics, and physics rather than applications to them; it has therefore too much mathematics and too little connected application to be entirely ideal for the young physicist. Coffin's is more evenly balanced, and may serve almost equally well as an introduction to vector analysis and to vector physics. Heaviside's genial treatment is embedded in his Electromagnetic Theory. Now comes Silberstein with a work which passes as lightly as possible over formal vector analysis and concentrates on theoretical mechanics. This is a useful variety to introduce. The notation is that of Heaviside; heavy type for vectors, no sign for the scalar product, and a prefixed V for the vector product.

A number of minor complaints may well be made. The Macmillan zero, more insignificant than an "o," is bad. It is unfortunate to use Clarendons for lettering a figure, especially when italics are used in the text. And what can be the advantage of making the figures (usually) run with their positive direction clockwise as they appear on the page? Why take the velocity potential φ so that $\mathbf{v} = \nabla\varphi$ instead of $\mathbf{v} = -\nabla\varphi$, especially now that Lamb in his classic Hydrodynamics has decided in favor of the latter choice? There are a number of instances which show that the author, despite varied linguistic accomplishments, does not sense the meaning of common English words—otherwise he would not call the component of a vector a scalar, nor would he speak of the algebraic product