Vectorial Mechanics. By Louis Brand. New York, John Wiley and Sons, 1930. xvii+544 pp.

This book has been designed as an introductory text in mechanics for students of engineering and physics. As indicated by the title, the vector method has been used consistently throughout the book. Vector algebra is developed in Chapter I, which is followed by four chapters on statics. Chapter VI gives a brief, but sufficient, exposition of vector calculus. This is followed by a chapter on flexible cables, three chapters on kinematics, four chapters on dynamics, and one on impact.

The pedagogical features of the book are excellent. Careful directions to be observed in solving problems are given, each chapter is followed by a concise summary of the principal results, the theory is fully illustrated by worked examples, and a large collection of problems affords ample material for the development of power and insight. Although the introduction states that "nearly all the answers of the problems are given in a list at the end of the book," the answers are published in a separate pamphlet and will be furnished on the recommendation of the teacher.

Without actual classroom experience the reviewer hesitates to pass judgment on the value of the book as a text for an introductory course. Mechanics is always a difficult subject. Some students grasp the physical concepts but have difficulty with the mathematics. Others have most trouble with the physical ideas. It may well be that the condensed vector notation will be an aid to both types. On the other hand the dot product and cross product may only add to the difficulty of grasping the subject. There seems to be no doubt, however, that the book will appeal strongly to those who have some familiarity with the subject, particularly to students described in the preface as those "who, freed from the necessity of making grades, wish to review mechanics thoughtfully and thoroughly, beyond the point of having a few pat rules for solving special types of problems."

W. R. LONGLEY

Théorème de Fermat, son Histoire. By R. Noguès. Paris, Librairie Vuibert, 1932. 179 pp.

The book consists of two parts. The first part is mainly historical, citing in chronological order a number of papers on Fermat's Last Theorem, and including methods employed and results obtained. In the second part, the articles mentioned in the first part are again referred to and details of the proofs of the results are, to some extent, given. The first chapter is devoted to details concerning Fermat's life and his mathematical work in general, as well as to his statements concerning the Last Theorem. The last article mentioned in the book has the publication date of October 12, 1931.

The author has included in his account a number of false proofs of the theorem, in some cases without comment of his own. On the other hand he has omitted reports on many publications which have generally been regarded, by those particularly interested in Fermat's Last Theorem, as being among the principal contributions which have been made to our knowledge concerning the problem. For example, he treats in detail Kummer's article of 1850 concern-

ing the theorem, but Kummer's paper of 1857 is not even listed, although some of the results are mentioned in connection with Noguès' report on the contents of Mordell's pamphlet of 1921, (French translation, 1929).

Chapter XI was designed to cover the period from 1910–1931, but among the nine reports on articles given therein all but two of the authors are French! No mention is made of Frobenius' article of 1914, (except in the report on Mordell), or of the interesting results obtained by Furtwängler, Pollaczek, Beeger, or Morishima, during the period treated.

It appears that little if any use was made by Noguès in the preparation of his book of the *Report on Algebraic Numbers*, II, Bulletin of the National Research Council, 1928, by G. E. Wahlin and the present writer, which treats the class number of an algebraic field and Fermat's Last Theorem.

I have already referred to the fact that incorrect proofs of the Last Theorem have been reproduced by our author in some cases without comment by him. With one exception, this should cause little difficulty to the reader, as the errors may be readily detected. In the case of the report on *Démonstration du Théorème de Fermat*, by E. Fabry, (1913), however, the error in his supposed proof that the Fermat relation is impossible in Case I, lies considerably below the surface. It was pointed out by Mirimanoff in the Comptes Rendus, vol. 157 (1913), pp. 491–492.

The principal value of the book, in my opinion, lies in the fact that the author has given extensive accounts of the work of Legendre, Dirichlet, Lamé, V. Lebesgue, and Mirimanoff.

H. S. VANDIVER

Les Principes de la Mécanique Quantique. By P. A. M. Dirac. Traduit par Al. Proca et J. Ullmo. Paris, Les Presses Universitaires de France, 1931. viii +314 pp.

This translation of Dirac's *Principles of Quantum Mechanics* appears as Vol. 21 of the series *Conférences—Rapports de Documentation sur la Physique.* The English edition was amply reviewed in this Bulletin, vol. 37 (1931), pp. 495–496, and it is only necessary to say here that the French edition contains a useful appendix of nine pages by one of the translators (Al. Proca) giving a summary account of the most important properties of the Poisson and Lagrange brackets of classical mechanics. The translation has been carefully done, and the printing and general appearance of the book are admirable.

F. D. MURNAGHAN