Grundzüge der Differential- und Integralrechnung. By G. Kowalewski. 4th ed. Leipzig and Berlin, B. G. Teubner, 1928. v+417 pp. Rm 16.

The first edition of this well known text, which appeared in 1909, was reviewed in this Bulletin, vol. 19 (1913), p. 531. The second edition (1919) and the third, which followed soon after, were reprints of the first, with misprints corrected. The same remark holds for the present fourth edition, except that there is a new appendix of eleven pages on Fredholm determinants and integral equations. Here the Fredholm determinants and minors are exhibited as the result of a limit process, their convergence is proved, and (in a page and a half) they are employed in the solution of the linear integral equation of the second kind.

This is a text for the mature student; it will be useful for reference in our courses on functions of real variables rather than in calculus classes. In his introduction the author says, "Ich habe mich bemüht überall möglichst streng zu sein." The standard of rigor is indeed high; one reviewer has complained of the dry brevity that seems to him almost "cold and heartless." Nevertheless, there is true art here.

Even in this fourth edition some annoying misprints remain, but fortunately not many have survived.

D. R. CURTISS

L'Ancienne et la Nouvelle Théorie des Quanta. (Cours de Physique Théorique de la Faculté des Sciences de Paris.) By Eugène Bloch. Paris, Hermann, 1930. 417 pp. 90 fr.

This book is essentially an account of two series of lectures, given at the Sorbonne during 1926–27 and 1928–29. It gives students of the subject an exposition of the historical development of the theory of quanta, and illustrates this by a number of typical examples. It therefore does not claim any other originality than the selection of the material, in which it has very well succeeded.

After a historical introduction comes the Planck radiation law (derived in the way of Einstein, Physikalische Zeitschrift, 1917) and the photoelectric effect, which leads up to the Compton effect. For this a whole chapter is reserved. Then follow the periodical system of the elements, the Bohr theory of the hydrogen atom, and the Sommerfeld quanta conditions with the fine structure. The next chapters deal with atomic magnetism, the Stern-Gerlach experiments, and Goudsmit-Uhlenbeck's theory of the spinning electron. The introductory chapters end with the Zeeman effect and take 195 pages of the book.

The last ten chapters deal with modern quantum theory. A first chapter gives some fundamental results of analytical mechanics. Then comes the Bohr correspondence principle. In Chapter 13, page 244, we find a discussion of the de Broglie waves, in which the Davisson-Germer, G. T. Thomson, Rupp, etc., experiments find their place. The next chapter deals with the Schrödinger equation. Then follow applications to rotator and hydrogen atom, and the statistical interpretation of the Schrödinger function. Chapters 17 and 18, page 321, deal with matrix mechanics. Then comes the principle of indetermination and a last chapter discusses the new statistical mechanics (Bose,