to be found is the proof of Thue's theorem (1908) that if $g(x, y)$ is an irreducible homogeneous polynomial of degree $n>2$ with integral coefficients, the equation $g(x,y)=a$ for a given integral value of a has only a finite number of solutions. The main purpose of this part is to develop as much of the theory of ideals which is necessary to establish the known results concerning Fermat's famous conjecture that the equation

$$x^n + y^n = z^n$$

has no integral solution x, y, z with $xyz\neq 0$ for $n>2$. In particular the proof of Kummer's theorem that the conjecture holds for $n=p$, a regular prime, is given in full. The concluding part deals with some recent results of Furtwängler (1912), Wieferich (1909), Mirimanoff (1910), and Vandiver (1914, 1919).

The mathematical world owes a great debt of gratitude to Professor Landau for rendering accessible so many of the recent splendid achievements in the theory of numbers.

G. D. BIRKHOFF

THREE BOOKS ON WAVE MECHANICS

Four Lectures on Wave Mechanics. By Erwin Shrödinger. London and Glasgow, Blackie and Son, 1928. viii+53 pp. Price 5 s.

Collected Papers on Wave Mechanics. By Erwin Schrödinger. Translated from the 2d German edition by J. F. Shearer and W. M. Deans. London and Glasgow, Blackie and Son, 1928. xiii+146 pp. Price 25 s.

Selected Papers on Wave Mechanics. By Louis de Broglie and Léon Brillouin. Translated by W. M. Deans. London and Glasgow, Blackie and Son, 1928. 151 pp. Price 15 s.

The wave mechanics proposed by de Broglie and Schrödinger has assumed during the short space of two years such a dominant role in the field of atomic physics that these three books in English by the authors of the new theory will be eagerly welcomed by physicists and mathematicians in England and America.

Schrödinger's *Four Lectures on Wave Mechanics* were delivered at the Royal Institution last March. In them are explained the ideas underlying the wave mechanics and some of the more important applications of these ideas. The exposition is somewhat popular in form, the mathematical details of computation being omitted from the text. The first lecture unfolds the relation between geometrical optics and classical dynamics as exhibited by the correspondence between Fermat's principle and the principle of Maupertuis (least action). It is this correspondence which suggests that classical methods are no more applicable to micro-mechanics than the ray methods of geometrical optics are to problems in diffraction and which leads in atomic problems to the substitution of a wave equation for the Hamilton-Jacobi equation of macro-mechanics. The success of a physical theory is measured by the agreement of its predictions with experi-