

General Books

NEWTON IN FRANCE

La Méthode des Fluxions et des Suites Infinies

By Isaac Newton. Traduit par M. de Buffon. Reproduction de l'Édition de 1740. Pp. xxx+150. (Paris: Librairie Scientifique Albert Blanchard, 1966.) 28 francs.

THE chief merit of this translation by Buffon of Newton's treatise on fluxions and infinite series is its preface. The translation of the text is correct, but singularly lacking in elegance—which is surprising for an author so famous for his style. The impression of the original is of poor quality: the text is disfigured by numerous misprints (of which the translator, with some apology, gives a long list), and the diagrams are coarse woodcuts, unclear and sometimes incorrect. The facsimile reproduction is not of the best, and makes some of the smaller type quite illegible. In spite of all this, the book has a real value as a historical document: it shows exactly in what guise Newton's method was made available for the first time to the French mathematical students by the middle of the eighteenth century. Of course, when this translation appeared Newton had already in France a small group of brilliant disciples, such as Clairaut, Maupertuis and Buffon—not to speak of the learned Marquise du Châtelet and the not so learned Count Algarotti. However, Maupertuis had then only just (in Voltaire's words) "flattened the earth and Cassini", while Voltaire himself was doing his share (like Algarotti) by writing his popular exposition of the Newtonian philosophy. Clairaut's masterly treatise on the shape of the Earth was yet to come, as well as the translation of the *Principia*; and as late as 1752, the almost centenarian Fontenelle, that die-hard Cartesian, was still publishing a treatise on the theory of the planetary vortices. Against this background, Buffon's translation appears as the furbishing of a weapon, so to speak, for the arsenal of the Newtonians, and the spirited preface, in which the claims of Newton as the sole inventor of the calculus are vigorously asserted at the expense of Leibnitz, takes on all its significance. There are other points of considerable interest in this preface (where Buffon, unhampered by the necessity of expressing foreign thoughts, displays his full talent): it begins with a discussion of the epistemological aspects of the concepts of infinity and infinitesimal magnitude that is remarkably sound and pointed, and also does justice to the ancient mathematicians; and it ends with a scathingly ironical account of Berkeley's fumbling criticism of Newton's ideas and of Robins's pedantic efforts to explain these ideas better than Newton could ever have done; these polemics had then the savour of topical controversy: Robins is now deservedly forgotten, Berkeley undeservedly still remembered.

L. ROSENFELD

ATTACK ON DESCARTES

The Downfall of Cartesianism 1673–1712

A Study of Epistemological Issues in Late 17th Century Cartesianism. By Richard A. Watson. (International Archives of the History of Ideas, Vol. 11.) Pp. viii+158. (The Hague: Martinus Nijhoff, 1966.) 22.50 guilders.

IN 1663 Samuel Pepys learnt that his brother John, then at Cambridge, had studied Descartes to such good effect that he felt bound to take him to task for neglecting Aristotle, of whose physics John showed deplorable ignorance. Five years later Samuel bought Descartes's "little book on music" in Duck's Lane. At the end of the century

William Whiston complained that at Cambridge Cartesian physics was an obstacle to the introduction of Newton's, and in the general scholium, added to the second edition of the *Principia* in 1713, Newton himself thought it necessary to amplify his opening statement that "the hypothesis of vortices is pressed with many difficulties". Finally, as late as 1723, John Clarke found it worthwhile to translate into English his brother Samuel's Latin version of Rohault's text-book of Cartesian physics which, it must be admitted, Samuel had made to seem rather ridiculous by furnishing the second edition (1702) with a running commentary of footnotes giving a Newtonian interpretation. All this is fairly well known; what is probably less well known is that in 1673 the Abbé Simon Foucher delivered a shattering blow to the epistemological basis of the positive content of Descartes's philosophy—a blow from which, despite the efforts of a number of orthodox followers of Descartes (including Rohault), it never recovered. Of course there need be no important inconsistency in a serious concern with a natural philosophy long after its author's metaphysics has been rejected; our estimate of Faraday's natural philosophy—even the most speculative—does not imply acceptance of his simple Sandemanian faith. But there are several reasons why the nature of the attack on Cartesian philosophy should be better known, for it was directed at the internal contradictions in his representative theory of perception which in turn grew out of the demonstrated nature of sound and heat and the analogical views on light transmission that led Galileo to the implicit acceptance of primary and secondary qualities. A further reason is the absence of a sharp distinction between physical and metaphysical ideas until Newton tried to draw it in the same scholium: Descartes's semi-theological conception of inertia was a better approximation to Newton's than was the more "scientific" appreciation of Galileo. And finally there is Descartes's conclusion that all animals except human beings are unconscious automata, with the corollary that the operation of human will becomes a miracle, virtually conceded in Malebranche's occasionalism, avoided by Descartes only by introducing a pseudo-mechanism of naive artificiality. These are consequences of the philosophical assumptions attacked by Foucher.

I have indicated the significance of this book to scientists rather than attempting the hopeless task of deploying the closely reasoned argument from which Dr. Watson cites numerous (and usually translated) representative passages. The exegesis, which could have been rather arid, is carried out with great skill aided by two appendixes setting out in a schematic form the final Cartesian system and Foucher's criticism. In the "empiricist" rejection of Descartes, the treatment of Berkeley and Hume is a little hurried; but the review of the sustained correspondence between Foucher and Leibnitz brings out admirably the latter's many-sided genius.

WILLIAM P. D. WIGHTMAN

CONSCIOUSNESS OF TIME

Zür Phänomenologie des Inneren Zeitbewusstseins (1893–1917)

By Edmund Husserl. Herausgegeben von Rudolf Boehm. (Husserliana, Band 10). Pp. xliii+484. (Den Haag: Martinus Nijhoff, 1966.) 38.50 guilders.

STUDENTS of phenomenology will accord a warm welcome to this—the tenth—volume of Husserliana, issued from the 'Arkiv' in Louvain. No greater compliment could be