reviews

Newton's correspondence

The Correspondence of Isaac Newton. Vol. VII: 1718–1727. Edited by A. Rupert Hall and Laura Tilling. Pp. 522. (Cambridge University Press: Cambridge and London, 1978.) £25.

WITH this seventh volume, the Royal Society's edition of the Correspondence of Isaac Newton, begun under the editorship of H. W. Turnbull (vols 1-3) and continued under J. F. Scott (vol. 4), is now brought to a conclusion. Volume 7 (like vols 5-6) has been edited by A. Rupert Hall and Laura Tilling. The editors observe that very few of the letters included here "may justly be described as scientific". There are exchanges with Varignon and Bernoulli about the calculus, but not its subject matter so much as a rehearsal of the old controversy with Leibniz of a decade earlier over questions of priority in invention. Similarly, an extended set of correspondence with Varignon concerning the Opticks deals not with Newton's experiments and theoretical explanations, but rather with the type fount, the details of printing, the illustrations, and so on. There are letters from Pemberton to Newton about the third edition of the Principia (1727), which Pemberton was seeing through the press. But Newton's replies are lost and, in any event, most of Pemberton's queries to Newton do not concern fundamentals of mathematics or of physics.

Perhaps the most interesting letters in this volume are those written by or to Pierre Varignon, then a professor of mathematics at the Collège Mazarin and an influential member of the Royal Academy of Sciences in Paris. Varignon was considered by both Leibniz and Johann Bernoulli to be a partisan of the Continental mathematicians, but he "maintained at least a superficial impartiality in the debate" and kept up a friendly contact with both Newton himself and Abraham De Moivre, one of Newton's chief spokesmen. Today's reader may still be astonished by both the heat of the debate and the degree of chicanery and plain dishonesty on the part of Newton, Leibniz, and practically everyone who was in any way associated with the issue. For example, Newton told Bernoulli that he had not "ever taken the trouble of spreading opinions

throughout the world", when he had actually written the draft of the report of the Royal Society's committee to examine the question of the true discoverer or first inventor of the calculus. Nor was that all; on the publication of the committee's documentary report in favour of Newton, the Commercium Epistolicum, Newton wrote and published a lengthy (anonymous) summary or 'review' of it in English in the Royal Society's Philosophical Transactions. This was translated into Latin and published in a reprint of the Commercium Epistolicum with an additional preface (also anonymous) by Newton. As to Bernoulli, he said of a famous letter he had written (also published anonymously), "I am not certain of what kind that letter addressed to Mr Leibniz is of which you speak . . . I do not remember having written to him myself that day, yet I would not denv it altogether . . .

On a different level altogether is a brief note to Fontenelle, in relation to the presentation to the Royal Academy of Sciences of the second Latin edition of the *Opticks* (1719). Referring to the novelties introduced in this edition, notably the additional Queries, Newton said that "Here I cultivate the experimental philosophy as that which is worthy to be called philosophy" and he added that in his treatise "I consider hypothetical philosophy not as knowledge but by means of queries."

The volume concludes with a discussion of Newton's genealogy and a lengthy appendix, containing additions and corrections to the first six volumes. A considerable part of these addenda with Newton's activities as deal Warden, then Master, of the Mint. It is thus seen that Newton's post "was clearly no sinecure". Not only did he have the difficult job of supervising the construction and operation of County Mints to "receive and recoin the old hammered money", but he took it on himself to attend to the interrogation and prosecution of counterfeiters. These new letters deal with the chronology of Newton's discoveries in the calculus, chemical experiments made by Boyle, and a draft of a proposition for the revised Principia (1713) dealing with the resistance experienced by a cylinder that moves through a fluid. In a letter of January 1675, Newton

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thanks the Secretary of the Royal Society for the offer of remission of annual dues, explaining that he could no longer afford to remain a Fellow, as "the time draws near that I am to part with my Fellowship, & as my incomes contract." Newton evidently was to resign from his Fellowship at Trinity College in spring 1875, as he could not in conscience go into Orders. as was then required of all Fellows; in April 1675 the Lucasian Professorship -to which he was appointed-was exempted by Royal Patent from the rule about Orders, but for which Newton's professional career would have been severely interrupted.

Scientists and historians and philosophers of science will be grateful to A. Rupert Hall and Laura Tilling on having at last brought to completion the edition of Newton's correspondence, of which the first volume was published in 1959. But any users of this set will regret that the last volume does not contain a comprehensive index to the complete correspondence. Furthermore, the corrections and emendations at the end of vol. 7 apply to all previous volumes, but they neither incorporate the previous list of errata (at the end of vol. 3), nor do they refer the reader to the entries in the earlier list. Thus, every time a letter in vols 1-3 is consulted, the reader must look in two separate lists of errata, which is a great inconvenience.

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Thin-layer chromatography

Practice of Thin-Layer Chromatography. By J. C. Touchstone and M. F. Dobbins. Pp.381. (Wiley-Interscience: New York and Chichester, UK, 1978.) \$27.30; £14.50.

PAPER CHROMATOGRAPHY was taken up slowly and with some fear and trepidation by those brave enough to try it at all because neither the paper nor the solvents and reagents were suitable for the technique; and, indeed, it took some time for paper for chromatography to appear on the market. Conversely, thin layer chromatography