BERNDT, BRUCE C., *Ramanujan's Notebooks*, Part II (Springer-Verlag, Berlin–Heidelberg–New York, 1989), 359 pp., 3 540 96794 X, £55.

The first part of Professor Berndt's edition of Ramanujan's Notebooks appeared in 1985 and was reviewed on pp. 284–285 of volume 29 of these *Proceedings*. It covered Chapters 1–9 of the second notebook, and included a description of Ramanujan's Quarterly Reports to the University of Madras. At that time it was thought that the complete work would occupy three volumes, but it is now known that four will be required. The book under review follows on from Part I and covers Chapters 10–15. These six chapters are among the most interesting chapters in the notebooks. In all they include 605 results, which, as usual, are stated without proof. When a result is known the author gives a reference and, if not known, he provides, where possible, a proof. It is only in a very few instances, where Ramanujan's intent is not clear, that no proof is offered. Professor Berndt emphasizes that many (perhaps most) of the proofs are undoubtedly different from those found by Ramanujan, since mathematical theories with which he was unfamiliar have had to be employed.

Ramanujan rediscovered most of the classical formulae in the theory of hypergeometric series, but Chapters 10 and 11 contain numerous new, useful and highly interesting results on the subject. Chapter 12 contains a large number of new results on continued fractions, such as continued fraction expansions of products and quotients of gamma functions. Ramanujan was undoubtedly the greatest exponent of this subject at a technical level, and it is therefore of interest that, if none of his notebooks and manuscripts had survived, his work in this area would be scarcely known, since only one continued fraction occurs among his published papers.

Chapters 13 and 14 contain many fascinating theorems on integrals, series and asymptotic expansions. Of all the chapters in the volume Chapter 15 is the most unorganized and is devoted to a number of disparate topics including asymptotic expansions and modular forms, in particular Eisenstein series. Berndt remarks that to obtain his asymptotic expansions Ramanujan appears to have used the Euler–Maclaurin sum formula, but in a non-rigorous way, which occasionally led him to make minor errors. However, it is truly astonishing that among such a vast collection of formulae so few errors occur. Part III, which is due to appear shortly, will cover Chapters 16–21. The remaining chapters in the second notebook and the short third notebook will be dealt with in the final fourth part.

The contents of the book have appeared separately in seven papers written by Professor Berndt, who all along has been the main guiding spirit of the enterprise, in collaboration with R. L. Lamphere, R. J. Evans and B. M. Wilson. This last name pays tribute to the man who, together with G. N. Watson, left extensive notes as part of their labours on the notebooks in the 1930s. In addition, acknowledgement is made to other individuals who have made valuable contributions.

R. A. RANKIN

FAUVEL, J., FLOOD, R., SHORTLAND, M. and WILSON, R., *Let Newton be!* (Clarendon Press, Oxford, 1989), 288 pp., cloth 0 19 853 924 X, £17.50; paper 0 19 853937 1, £8.95.

What is a full-page photograph of Harpo Marx doing in a book about Newton? To find out you will have to get hold of this book, something which I recommend for more substantial reasons as well. But clearly this book is no narrow account of Newton's mathematics and physics, though these topics are covered. The twelve authors between them have as much to say about the more neglected aspects of Newton's output, in fields such as alchemy and history, and much is said about the influence of Newton and Newtonianism on his contemporaries and on later generations.

Mention of Harpo Marx draws attention to one gap: nothing is said about Newton's sense of humour. According to Gjertsen (*The Newton Handbook*, London 1986, pp. 263–264) there is not