

examples of societies among insects such as bees, ants and termites with huge colonies and multitudes of sterile workers, I would have also dwelt on the beautiful work on primitive social wasps that have only a few individuals in a colony, perhaps just a group of potential queens that come together in a simple primitive nest. These small wasp colonies have provided a wonderful testing ground for models of how insect societies might have arisen, and have produced exciting recent discoveries. It is exactly what is needed in a chapter on the rise of animal societies.

Finally, I wish the authors had concluded with a grand comparison of the different steps of increasing complexity. They do this a bit at the beginning and now and then along the way, but I would have added something at the very end for which they seem to have perfectly set the stage: a small section on comparative transitionology. But this is their book, not mine. They have looked at the great panorama of biological evolution from the point of view of theoretical biologists, and the end result is both rewarding and fascinating. □

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The Boyle we have lost

P. M. Rattansi

Robert Boyle by Himself and His Friends. Edited by Michael Hunter. *Pickering and Chatto: 1994. Pp. 188. £49.95.*

ROBERT Boyle, according to John Evelyn the diarist, had become almost a national monument in his later years. "There was no man whose Conversation was more Universally sought after, courted, & cultivated, by persons of the highest rank & quality: Princes, Ambassadors, Forrainers, Scholars, Travellers, & Virtuosi. . . So as one who had not seen Mr Boyle was look'd-on as missing one of the most valuable Objects of our Nation: It was in his Philosophical Apartment, Tapissured & furnish'd with Instruments for Trials & natural Experiments. . . that he often Entertain'd those who came to visit him."

Soon after Boyle's death in 1692, there were plans to publish a comprehensive biography, offering "this bright example" of a life spent selflessly in the study of God's works to a "degenerate age", where "Lewdness and Irreligion" were rampant. As Michael Hunter shows in the fascinating introduction to his collection of texts, all these attempts came to naught. Bishop Burnet (well known for his *History of My*

Own Time) had kept notes on his conversations with Boyle for a period extending over three decades. He was able to use them with great effect in the funeral sermon he preached on Boyle's death. That sermon, according to Hunter, established the image of Boyle that we have inherited. Thomas Birch conveyed to posterity his standard edition of the works of Boyle, published in five folio volumes in 1744 and in a revised six-volume edition in 1772.

Burnet himself was unable to implement his intention of writing a fuller biography. He eventually secured the interest of a young protégé, William Wotton (1666–1726), whom Swift was to cast as the champion of the Moderns in *The Battle of Books* (1704). Wotton's plan was ambitious and would have resulted in the first real intellectual biography in English, had it been realized. But the sheer bulk of the material defeated Wotton. Wotton had confided to Evelyn his wish not merely to describe Boyle's scientific discoveries but to compare them with "what has bin since raised upon his Foundation". This involved contending with more than 20 scientific works published by Boyle in his lifetime, besides others on morals and theology, as well as the many manuscript tracts and a huge correspondence to which Boyle's executors had given

him access. The long and hitherto unpublished 'chapter' from Wotton's uncompleted biography in the present volume illustrates his difficulties. It deals with Boyle's air-pump experiments. Once Wotton had summarized the tedious detail in Boyle's "scrupulous" account, added comments on the more recent ones by the Newtonians, Keill and Hauksbee, and discussed the implications of Newtonian attraction for the "vacuist" explanations Boyle had offered, he had written no less than 40,000 words on a single if important set of discoveries. It is perhaps hardly surprising that he abandoned the project even before disgrace for "sundry indecencies" forced him to give up his ecclesiastical living at Milton Keynes and take refuge in Wales.

Hunter seeks to persuade us that "The Boyle we have Lost" re-emerges from the shade as we study the material he has painstakingly reassembled from manuscript sources. How much of the material is really new? "An Account of Philaretus", an autobiographical account of the first 16 years of Boyle's life, was printed by Birch and the full text made accessible by R. E. W. Maddison in his *Life of Boyle* in 1956.

Burnet's funeral sermon on Boyle was printed soon after its delivery. The Evelyn letters have been available in Bray's edition of Evelyn's *Diary and Correspondence* (1850–52). Three of the substantial documents are therefore well known. Of the other material, the most important is the Burnet memorandum for the new light it casts on various aspects of Boyle. Nearly half of it describes Boyle's various encounters with others who claimed to have learnt alchemical secrets by summing supernatural and demonic aid. Hunter has already discussed in print their possible bearings on Boyle's view of magic and alchemy. He also prints the notes pre-

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Robert Boyle — bright example for a degenerate age.

pared by Sir Peter Pett to assist Burnet. They dwell in part on Boyle's practical interests, played down in Birch, but at the same time discourage any simplistic reading of Boyle as champion of the post-Restoration mercantilist state. The long Wotton chapter is a disappointment, after raising hopes of a new kind of history. When it is omitted from the count, only a third of the documents can be said to offer material for a fuller, if not wholly novel, view of Boyle.

Hunter has nevertheless placed us in his debt by making available in a convenient format the primary biographical sources of information on Boyle. His introduction to the documents teases out a great deal that is new and the volume is a suitable curtain-raiser for his larger Boyle project, which is to include all of Boyle's published works (12 volumes) as well as a far more complete edition of his correspondence than in Birch's standard edition. □

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