THOMAS PALMER, *The admirable secrets of physick and chyrurgery*, edited by Thomas Rogers Forbes, New Haven, Conn., and London, Yale University Press, 1984, 8vo, pp. x, 221, £25.00.

One of the earliest documents of medical practice in the North American colonies is published here for the first time. This is a notebook, containing medical remedies, compiled in 1696 by Thomas Palmer (*c.* 1666–1743), a Massachusetts minister and medical practitioner. Although they have received less attention than the products of more formal academic medicine, remedy collections were always a fundamental resource in medical practice. They provided the content of the practitioner's *vade mecum*, and laymen, too, compiled collections for domestic use. The text edited here is a useful addition to the literature, presenting to the reader the information which a young American practitioner thought most important to his daily work.

Most of the content was transcribed by Palmer from other sources, and at times the editor appears incautious in attributing to Palmer autobiographical statements and opinions which may not have been his own. Sadly, too, a less than admirable secret concerns the whereabouts of the original of Palmer's notebook. T.R. Forbes could not trace it, and worked from one of several known photocopies. This is not altogether satisfactory. Can we, for instance, be entirely certain that the pages missing from the photocopy were really missing or blank in the original? These caveats apart, historians will be grateful to T.R. Forbes for making available a valuable text, for coping successfully with Palmer's lapses into shorthand, and for providing a useful glossary.

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GRAHAM REES and CHRISTOPHER UPTON, *Francis Bacon's Natural philosophy: a new source. A transcription of Manuscript Hardwick 72A with translation and commentary*, Chalfont St Giles, Bucks, British Society for the History of Science, 1984, 8vo, pp. v, 197, illus., £7.90 (paperback), BHSS members £5.60.

The discovery by Peter Beal at Chatsworth House of the manuscript of a hitherto unknown work by Francis Bacon was an important event for philosophers, and in this particular case of more than passing interest to historians of medicine and biology. Graham Rees has now given us an edition of the text with translation and lengthy introduction.

The thirty folio pages of Bacon's early ideas on the ways of death and on postponing old age (*De viis mortis* . . .) are, as Rees writes, a "horrible tangle" of drafts and revisions. Nevertheless, in them one can watch Bacon trying to arrive at a new theory of how natural death, as opposed to death from disease, occurs. Bacon rejected the standard medical theory of radical moisture and heat, where life was likened to a light using up the oil (radical moisture) in a lamp, with the ages of man being a progress from the wetness of youth to the dryness of old age.

Bacon partly reformulated the problem. He argued that we have to discover not only why living organisms die naturally but also why inanimate matter can die (be worn down, decrease, change shape, etc.). To account for death and its opposite, conservation, Bacon produced a complex theory based upon different types of spirits, both inanimate and vital, inhabiting matter, and in some instances spirit as well, and escaping from, conflicting with or being bound into containing matter and spirits. The unity of the worlds of inanimate and living matter and the language of spirits clearly shows the influence of Paracelsian and Neo-platonic philosophy, and in his introduction Graham Rees has carefully set out the structure and origins of Bacon's thinking.

The *De viis mortis* is a significant document for Rees' general thesis, proposed in previous articles, that Bacon was concerned not only with the methods of science but also with developing a speculative philosophy which encompassed all of nature – a philosophy that since the seventeenth century has been forgotten. In *De viis mortis* Bacon is indeed more of a theoretician, applying pneumatic concepts to a set of phenomena, than a philosopher

concerned with how to approach a scientific enquiry. The manuscript also shows Bacon at work, crossing out, amending, and adding to his amanuensis' copy, and its physical state mirrors the tentative, emergent nature of Bacon's thinking, being, as it was, a stepping-stone to the finished *Historia vitae et mortis*.

Rees has produced an excellent introduction and, with Christopher Upton's help, made a flowing yet generally literal translation. A different approach, however, could have been taken by Rees in his introduction where he is perhaps too much of a historian of ideas. Rees depicts Bacon as a deep, complex and frequently original philosopher who writes at a high level of speculative generality (spirits, life, death) in which specifics are few. Yet in *De viis mortis*, Bacon constantly referred to examples culled from medicine, cookery, metallurgy, and other practical sides of life to illustrate his theoretical points: roasted meats last longer than raw, as do well-baked bricks – because fire distributes the inner spirit of things more evenly. The continued ripening of fruit picked when unripe shows the action of spirits, whilst the practice of sealing up liquids and adding oil to them so that no air remains between stopper and liquid confines the spirit of the liquid and this captivity constitutes the "essential foundation of all conservation". Bacon, despite Rees, did dwell upon particulars, and his framework of experience was frequently drawn from the most practical areas of medicine (regimen and diet). Even in his speculative philosophy we can see Bacon's belief in the union of practice and theory. Yet Rees is surely correct to distinguish Bacon the speculator from Bacon the inductivist. For Bacon's examples were not part of a chain of inductive logic but rather provided the phenomena behind which he saw hidden actions. For as he wrote in *De viis mortis*, "the subtlety of experiment is far greater than the subtlety of the senses; and the subtlety of the invisible spirits, of the hidden pores in the parts, and of the imperceptible functions . . .is far greater than the subtlety of the visible fabric of veins, and of fibres . . .and suchlike into which the anatomists search with some acuteness."

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WILLIAM PATON, *Man and mouse. Animals in medical research*, Oxford University Press, 1984, 8vo, pp. xii, 174, illus., £9.95 (£2.95 paperback).

With legislation impending to revise and bring up to date the law on experiments on animals one hopes that this timely book will be widely read. It may help to prevent a viable, and generally well-brought-up, baby being thrown out with the emotional bath water.

Obviously absolutist abolitionist critics will have no need to be confused by the well-presented facts documenting the achievements in improvement of human and animal life stemming from 150 years of experiments on animals. Before returning to their impregnable stronghold, however, they would do well to read the chapter on ethical questions where they share common ground with the pejorative vivisectionists. Here they will find the scientist grappling with the philosophy and morality, whilst eschewing the politics, of the problem; this should, in all but closed minds, stimulate thought.

The often-used slogan of "animal rights" is discussed. The distinction is made between moral agents and moral objects, which underlies the essential difference between man and animal, it is argued. Man, the moral agent, can accept duties and therefore make claim to correlative rights; moral objects (having moral worth) such as animals are those in respect of whom man has duties. However, insofar as moral objects have no duties, cannot make claims, and are not a participant part of society, they do not have rights. In other words, there needs to be some equivalence between rights claimed and duties accepted. Therefore, it would seem more useful and beneficial to replace the term "animal rights", with its false human analogies, by the "moral worth of animal life".

The problem of pain and suffering is fully discussed, together with the measures taken to prevent or limit it. The decline in experiments on animals in the last decade is linked with the use of alternatives to animal experiments and improved design of experiments. The twin safeguards of scientists being subjected to peer review at all stages of research, from funding