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contrast to their medical activity, however, most barber-surgeons seem to have shrunk from major (and dangerous) surgical operations. Their lists of clients and patients reveal that they were consulted by the middle and upper classes of society, to which they themselves belonged according to stock books of their property. About one-third of the barber-surgeons held official posts, up to that of village mayor. Finally, Sander shows that their corporation was well-organized, although burdened with inner conflicts that arose from its members' financial interests and striving for prestige. This preoccupation with internal affairs made it easy for the *Collegia medica* (consisting of physicians-in-ordinary or medical professors) to carry through ordinances enhancing the academic physicians' control of the "craftsmen-surgeons". Sander interprets this as the beginning of the end of the barber-surgeons' trade. Totally abolished in the nineteenth century, it was one victim of the so-called professionalization of physicians.

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LAVERNE KUHNKE, *Lives at risk: public health in nineteenth-century Egypt*, Berkeley, University of California Press, 1990, 8vo, pp. x, 233, \$40.00.

This book, one of a series of comparative studies of health systems and medical care, examines the establishments relating to health and medical education that were set up by Mohammad Ali (c. 1769–1849), the Albanian officer who became Viceroy of Egypt in 1805. Whether his efforts were for the benefit of the Egyptians or simply in his own interest is left for us to answer.

The book is divided into nine short chapters with two appendices, and end-notes from a rich variety of sources, which includes official Egyptian newspapers, official reports, the accounts and memoirs of resident or travelling European medics and non-medics in Egypt, and the descriptions of nineteenth-century Egyptian historians.

The book describes the efforts of the French doctor Clot Bey in the establishment of the medical school and the midwifery school, which were unprecedented in Egypt. In the nineteenth century, the country endured a long series of cholera and plague epidemics. One of Mohammad Ali's greatest achievements to counteract them was the establishment of an international quarantine board with members from a variety of countries. The first of its type in the world, it is discussed in relation to Western European pro- and anti-contagion debates. The author argues that it was doomed to fail because of the different interests of its members.

Cholera and plague were not the only threats; smallpox was also endemic. The success in training barber-surgeons and midwives to vaccinate the people shows how different Egypt was from Western Europe in the numbers and types of medical personnel available. However, a longer and more comprehensive comparison between the generally fatalist attitude of the Muslim population to the idea of vaccination and the theoretical debates in the West at that time would have been very useful. Nonetheless the book is valuable for anyone interested in the history of public health, Egypt, and the Middle East.

A map of Egypt showing the cities mentioned, as well as a chronicle of Mohammad Ali's successors, to whom less attention is paid in the book, would have been very helpful.

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CHARLES BAZERMAN, *Shaping written knowledge: the genre and activity of the experimental article in science*, Madison and London, University of Wisconsin Press, 8vo, pp. xi, 356, £15.75, (paperback).

From one point of view, the history of science is the history of attempts to find languages in which to speak more correctly and say more about various aspects of nature, and have them established by displacing pre-existing ones. Because this point of view is still underexplored by historians, when adopted to the exclusion of others it leads quickly and unnecessarily to erroneous assumptions. One is that languages of science have been used essentially to *refer to*

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or *represent* aspects of nature or the language-user's own general or circumstantial experience. In his book Professor Bazerman rarely avoids assuming as obvious the distinction between language and that which language is about, so that statements like the following are typical: "Experimental reports attach themselves to the nature that surrounds the text through the representation of the doings, or experiment" (p. 62). It is not hard to see that if one assumes that scientific language is *about something else*, one is left with little to say about that "something else", for it becomes the choice between two ontological danglers, "experiences" and "things in themselves"—language, apparently, is either about the one or the other. Nor is one left with much to say about language, if it is seen merely as conducive of knowledge rather than integral to it.

Yet, on reflection, nobody reading a scientific article today, whether an account of an experiment in laser optics or a theory of turbulent flow around two-dimensional bluff bodies, thinks that the sense of the article (or its primary function) consists in *referring to or representing* some past or potential state of affairs. (It would be rather like thinking that numerals and operators of arithmetic are about numbers and operations.) Steven Shapin's sense of "virtual witnessing", a style of writing experiments he attributed to Robert Boyle in an article in 1984, brings us closer to a correct conception of the function of language. What makes the reader a virtual witness is that he sees the experiment carried out in front of him in language, he does not see language reaching out to some other realm. (Alternatively, think of language as a calculus with which one does science.) But even though an update on fundamentals would have been welcome, Bazerman does not actually need an attitude on language-world dualism since he intends to argue a very different case, that throughout history scientists have spent their time grappling with the conventions of language and communication. His views emerge piecemeal in a series of well-researched and interesting case studies. In the one on Newton he argues that the *Opticks* "is far from the spontaneous workings of the creative mind. The book is a hard-won literary achievement forged through some trying literary wars" (p. 124). A large part of what constitutes winning a literary war in science according to Bazerman (and what constituted Boyle's genius according to Shapin), is convincing the relevant community that there is just one language in which the common problems of the subject can be expressed properly, and that it should be preferred over others in use.

The one-against-many literary wars are the exception, of course, but through them one may come to see that gradual changes to the literary devices of science, what Bazerman calls "the development of linguistic means for statements that move toward relatively stable meaning and assent among people sharing wide numbers of social variables (even while sharing participation in scientific activity)" (p. 13), betray a constant struggle in the history of science at a level which is easy to miss. For example, his chapter on 'The changing account of scientific doings in the *Philosophical Transactions of the Royal Society, 1665–1800*' should be understood as an analysis at that level. Professor Bazerman, who teaches composition at the City University of New York, is a fine writer although his arguments would have benefited had he kept the book to two-thirds of its length. It may still lead a few to revise their ideas about what needs explaining and what constitutes explanation in the history of science.

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FRANÇOIS DUCHESNEAU, *Genèse de la théorie cellulaire*, Collection Analytiques 1, Montreal, Éditions Bellarmin, and Paris, Librairie philosophique J. Vrin, 1987, 8vo, pp. 388, illus., Can \$25.00.

Despite the importance of cell theory in nineteenth-century biology, it has received relatively little historical attention. This volume provides a synthesis of the origins of cell theory in the period between 1824, when Dutrochet formulated a theory of the common structural units of plants and animals, and 1856, when Virchow pronounced his theory of continuous cell division—*omnis cellula e cellula*. Duchesneau argues that hitherto accounts of the origins of cell biology have been positivistic, seeing developments as responses to improved observations and