

## Book Reviews

FREDERICK LAWRENCE HOLMES, *Lavoisier and the chemistry of life. An exploration of scientific creativity*, Madison and London, University of Wisconsin Press, 1985, 8vo, pp. xxiv, 565, illus., £38.00.

That we perceive the past through the categories of the historian is a truism never so obvious as when a perceptive historian changes the categories. It is time someone wrote an account of how the historians have constructed the chemical revolution. For it is within this creation that Lavoisier nearly always appears. Somehow the appropriate frame of reference for discussing his work is its relevance to subsequent chemistry. Lavoisier's researches on respiration, fermentation, and animal heat have always been made to take a back seat, as if, because they were slightly less consequential for the future, they were of less importance to the man. It is the great virtue of Professor Holmes's impressive study to have set these subjects at the centre of Lavoisier's interests. Or, more important, to have shown that in the eighteenth century, they cannot be disentangled from something that was later to be called "physical chemistry". Using Lavoisier's notebooks written between the years 1773 and 1792, Holmes has plotted Lavoisier's experimental work and changing conceptions step by step. In a great number of instances he has tried to assemble the evidence confronting Lavoisier and to recreate his theoretical predilections in order to understand why he evaluated results this way or that, or how he inched towards different understandings. The whole text is a delightful, thick description of how Lavoisier shifted his gaze around the chemical field, from the calyx of mercury through asphyxiated birds to the "Pyrophor of Homberg", a sort of spontaneously combusting faeces (p. 102). Exploring this labyrinth, Holmes recreates Lavoisier's journey to his final respiratory theory in which he asserted that respiration is a process similar to the combustion of a candle, in which oxygen is taken from the air, carbonaceous matter burns to give heat, and in doing so produces fixed air and water.

Holmes's important piece of historical reconstruction is not only concerned with experiments, it is also intended to present a more generous interpretation of Lavoisier the man than previous historians have given. Both of these objects, however, are subsidiary to Holmes's main aim, which is to gain insight into "scientific creativity". This is history working in the service of philosophy and it is here that those historians who would rather the boot were on the other foot may wish to part company with him. It is Holmes's contention that by studying laboratory notebooks we can construct the interplay of the experimenter's mind and the experimental data in their day-to-day encounters and this in turn will reveal something of the ongoing process of scientific creativity (by which he means, I think, how fundamental insights into the nature of nature occur). Using these sources Holmes captures the business of creativity as a complex movement involving moments of perspicacity, perplexity, and so forth. The myth of the blinding flash of inspiration is, in Lavoisier's case, far from true. Holmes advocates his method of close scrutiny for sound historical reasons, "unless historians delve as intimately as the record permits, into the connections between each step in an intellectual development, and its nearest investigative counterpart they depict scientific concepts as evolving according to some internal dynamic" (p. 50). At first sight, the rich detail of Holmes's analysis seems to lead away from this approach. However, dealing with what he construes as a *philosophical* problem, scientific creativity, Holmes is finally forced to trade heavily in the language of retrospective judgement. For instance, he identifies such and such a point in Lavoisier's work as an insight because, *at that moment*, Lavoisier's thoughts contain something which contributed to modern chemistry (e.g., p. 19). The reverse of this, of course, is that when Lavoisier is not being insightful he is wrong: "Lavoisier was predisposed to take whatever Priestley reported quite seriously. In doing so, however, he was always in danger of being thrown off the track . . ." (p. 96) (a position which seems dangerously close to an "internal dynamic"). In the end, Holmes invests Lavoisier with epistemological privilege; "By the time he completed these operations Lavoisier knew that he had achieved a major advance in the knowledge of respiration" (p. 67). The "knew" here is stronger than believed, (would one have written it, say, about Gall and phrenology?). Witness the counter-instance where Holmes is obviously surprised at Lavoisier's gullibility in the face of what is now false knowledge, "He even believed that the air in crowded rooms could be 'disinfected' by removing the fixed air

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with fixed alkali” (p. 95). In this book the philosophical question of scientific creativity recurrently gets in the way of a very fine piece of historical work. Surely it is the historian’s job not so much to judge what is a moment of insight but to show us how moments, ideas, thoughts, practices, are *made* historically into breakthroughs, insights, backslidings, etc. Or indeed, to regress further, to show us why we deal in a concept of scientific creativity at all. As long as historians continue to treat as unproblematical the sort of historically loaded terms in which philosophers trade, then the ghost of Voltaire will not be laid. History will still be philosophy teaching by example.

Christopher Lawrence  
Wellcome Institute

ELIZABETH HAIGH, *Xavier Bichat and the medical theory of the eighteenth century*, (*Medical History*, supplement no. 4), London, Wellcome Institute for the History of Medicine, 1984, 8vo, pp. 146, UK £11.00/overseas £15.00.

There has long been a need for a good introductory treatment in English of the work of Xavier Bichat; and the present volume, despite some weaknesses, goes a long way toward answering that need. In its exegesis of Bichat’s writings and its survey of the wide range of predecessors and contemporaries on whose work Bichat drew, the book is clear and informative. One might only fault the title for being somewhat misleading: first, for referring to *the* medical theory of the eighteenth century, when so many discrepant doctrines are surveyed; and second, for referring to *medical* theory, when the great majority of what is discussed is specifically physiological. In fact, the book covers much the same ground as François Duchesneau’s *La physiologie des lumières* (1982) but without the deeper epistemological concerns that permeate Duchesneau’s work. Haigh’s book is consequently less profound but by the same token more readily accessible to students.

After an introductory chapter on the life of Bichat, Haigh outlines the intellectual context of his work in three chapters on the development of animism and vitalism, especially at Montpellier; of irritability and sensibility as explanatory concepts in physiology; and of sensationalist epistemology and methodology. This material is then followed by three chapters describing the essential features of Bichat’s work and a brief concluding chapter on physiology after Bichat. The descriptive chapters highlight repeatedly the dependence of Bichat on the sources identified in the previous three contextual chapters, leading Haigh into a rather ambiguous position when it comes to evaluating Bichat’s contribution.

On the one hand, the more successful Haigh is in identifying the intellectual sources of each element in Bichat’s work, the less original and impressive that work must appear. On the other hand, Haigh is loath to see Bichat reduced to a mere borrower or skilful plagiarist. The way out of this bind is to assert that “in spite of its borrowed elements . . . the complete work is greater than the sum of its parts” (p. 101). Unfortunately, however, the nature of this greatness is never made explicit; it is simply inferred from the reception of Bichat’s physiology: “The success of Bichat’s published writings and the considerable reputation he achieved in a short time attest to the fact that his synthesis and application of physiological theory were unique” (p. 101). But to argue from the success of Bichat’s theoretical work to the intellectual value of that work is only possible if one assumes that theoretical success depends predominantly upon the intellectual qualities of the theory involved. And this assumption is one which, to say the least, is increasingly open to challenge.

As a description of the transmission and appropriation of concepts, then, Haigh’s *Xavier Bichat* offers a thorough treatment of its subject. As an explanatory study, however, it must be considered defective. Students should be referred to this work for its clear exposition, but cautioned against its attempts at evaluation.

W. R. Albury  
University of New South Wales