

soning, the logic of 'projection', and the idea that a victim will repeat the form of his or her victimization in turn, is familiar today, and comprises part of contemporary 'common sense' on human psychology; but in 1896 it was scarcely emergent. References to 'psychic traumas', and versions of 'depth psychology' proliferate. Indeed, only ideas which bear some relation to what passes as common sense today contribute to their 'psychological' approach to the crimes and their perpetrator. Thus such outmoded, illiberal 'nonsense' as criminal 'atavism' (Lombroso was in reality more influential in the United States at this time than anywhere outside Italy), or degenerationism is either completely ignored or cursorily dismissed.

But are such criticisms fair? The historian has a duty to avoid anachronism, inaccuracy and Whiggism; but should such strictures be imposed upon the writer of popular historical fiction? Perhaps not. The historian who seizes upon anachronistic details in fiction runs the risk of pedantry. However, the insistent intrusion of contemporary common sense into a 'period piece' of this kind is historically significant. It is the historian of the present who should reflect on these intrusions, and their ability to organize experience meaningfully. The narrative's selections and omissions are revealing. They show how an historical novel, which self-consciously takes the formation of psychiatric knowledge as its subject, can defamiliarize the common-sense status of the knowledges which operate today. *The Alienist* is therefore as much an index to current concerns as it is dramatic recreation of an historical past.

ROBERT MIGHALL

*Merton College, Oxford*

R. Steven Turner. *In the Eye's Mind: Vision and the Helmholtz-Hering Controversy*, New Jersey: Princeton University Press, 1994. Pp. xiv + 338. £37.50. ISBN 0-691-03397-8.

In spite of the work of figures such as Isaac Newton, George Berkeley, and Thomas Young, vision research did not become a well-established area of scientific research until the middle of the nineteenth century. The context for this development was Germany where the disciplines of physiology, ophthalmology and experimental psychology were beginning to emerge.

Almost immediately, a bitter controversy arose that was to span several scientific disciplines and last for five decades. The main protagonists in the controversy were Hermann Helmholtz, the doyen of nineteenth-century Germany science who is known for his work in physics, physiology, ophthalmology, and psychology, and Ewald Hering, a prominent physiologist. At the heart of the dispute were differences over the extent to which the eye requires a mind in order to see. Two clearly defined positions began to emerge: the empiricist view, which held that vision was inferential and dependent on experience, and the nativist view, which held that our ability to see was innate and present at birth. Although each position had its intellectual antecedents, it was only around this time that the empiricism-nativism divide became the central issue in vision research. Traditional accounts of the history of vision research have tended to portray it as a trans-historical issue that has constantly divided the field but Helmholtz is largely responsible for this view.

Both Helmholtz and Hering had their supporters and there was also a significant group of non-aligned scientists. The differences between them were fought out in the areas of spatial perceptions and colour vision. Both experimental and clinical evidence were brought to bear on the dispute. The controversy was never resolved and effectively ended with the death of Hering in 1918 and the dissolution of his school in the 1920s. Although the controversy no longer dominates vision research, its influence is still felt today.

Turner provides a thorough and well-researched account of the clashes between

Helmholtz, Hering, and the other prominent scientists, such as Donders, Ebbinghaus, and Wundt, who were involved in the debates. No aspect of the dispute is left untouched. His account covers the personal, social, and intellectual aspects of the controversy and his grasp of the technical details is impressive. The issues are explained in such a way that they are accessible to the non-specialist and the practice of putting a conclusion at the end of chapters prevents the reader from being distracted by the mass of technical detail. Turner's wider aim is to show that controversy is constitutive of scientific change. It does not merely result in the selection of some research programmes and the elimination of others but actively shapes the kind of research that is done and the way in which the results are presented to refute opponents and to win over the neutrals in the dispute. This idea is derived from the work of Martin Rudwick and is an aspect of scientific controversy that has often been overlooked.

Turner analyzes the controversy in terms of 'core sets'—a set of basic assumptions that were taken for granted by each side in the dispute—and shows how the conflict stemmed from deep divisions over conceptions of the nature of life. This type of analysis has already been advocated by Harry Collins and Martin Rudwick. Turner goes on to discuss the notorious concept of incommensurability and shows how the dispute was rife with incommensurable perspectives. The two sides used different experiments, instruments, subjects, mathematical analyses, and different representations of the results. Finally, Turner brings the story up to the present and shows how the internationalization of vision research and the disciplinary fragmentation that occurred led to a change in the fortunes of each point of view. As with the 'pre-history' of the dispute, Turner warns us against making transhistorical generalizations. Modern differences over the empiricism–nativism issue only superficially resemble those of the past.

This is a highly competent piece of research by a historian who is already well known for his work on Helmholtz and nineteenth-century German science. It can be profitably read by historians of science and medicine and by practitioners of the various disciplines that are involved in vision research. Although the theoretical framework which guides Turner's analysis is not original, he offers a wealth of evidence in support of his case.

ADRIAN BROCK

*University College Dublin*

- J. Rosser Matthews, *Quantification and the Quest for Medical Certainty*, Princeton, New Jersey: Princeton University Press, 1995. Pp. x + 195. £32. ISBN 0-691-03794-9.

The publisher's notes on the jacket of this work implies that it is an examination of the development of the clinical trial. This is unfortunate and misleading since the book falls short of this stated objective whilst being far broader in intent. In essence, this is a useful exploration of many of the learned controversies about the role of quantification in medicine over the past two centuries. Only one chapter out of seven is in fact specifically dedicated to the work of Bradford Hill on clinical trials, and can hardly be said to place this in its complete historical context.

Matthews' primary focus is on three debates over the use of comparative statistics in a medical context, these being those between Pierre Louis and Risueño d'Amador at the Paris Academy of Medicine in 1837, that between the mathematician Gustav Radicke and research physiologists conducted in the pages of the *Archiv für physiologische Heilkunde* during the 1850s, and the early twentieth century debate between Major Greenwood and the bacteriologist Almroth Wright over the latter's technique for diagnosing disease by measuring the opsonic index. The clinical trials undertaken by Bradford Hill at the Medical Research Council in 1946 in order to study the effects of streptomycin on tuberculosis, and the international reaction to them, are then discussed in terms of the previous debates. Matthews concludes that quantification became