

historiography of medical history, which will benefit from the many relevant citations.

William G Rothstein,
University of Maryland Baltimore County

W F Bynum and Caroline Overy (eds), *The beast in the mosquito: the correspondence of Ronald Ross and Patrick Manson*, Wellcome Institute Series in the History of Medicine, Clio Medica 51, Amsterdam and Atlanta, Rodopi, 1998, pp. xxxv, 528, illus., £78.50, \$132.00 (hardback 90-420-0731-1), £24.50, \$41.50 (paperback 90-420-0721-4).

The correspondence between Ronald Ross and Patrick Manson documents one of the legendary collaborations in the history of medicine and science in the nineteenth century. Their four-year collaboration (1894–1898) led to the discovery of the transmission of the *plasmodia* protozoa in the bite of the mosquito. With the advantage of a century of research, it is easy to look back on their achievement as one in a long series of breakthroughs. This was hardly the case. Even Charles Alphonse Laveran, who in 1880 proposed a causal relationship between the presence of pigmented bodies in the blood and malaria disease, faced a chilly reception for five years. Thereafter, researchers in Italy elaborated the asexual stage of the *plasmodia* in the human body. There was still no consensus about the meaning of the crescent and flagella forms, that is the equivalent of the sexual stage of the protozoa outside the bloodstream. In December 1894 Manson inserted himself into a growing international competition. Observing the transformation of the protozoa from crescent to flagella after extraction from the bloodstream, Manson theorized that a suctorial insect, possibly a mosquito, served as its intermediary host.

Asserting this relationship was one thing, proving it was another. The task required illuminating the hitherto unknown biology of a complex protozoa in the mosquito while identifying the proper species of vector. In other words, the theory involved the creation of fundamental knowledge before its demonstration was practically possible. Few individuals in Britain possessed the needed combination of skills or were interested in the malaria problem itself. For his part, Manson's declining health ruled out an open-ended research expedition. Nor did cultivating his practice allow for the concentration needed for basic research. What Manson needed above all was a collaborator. Surgeon-Major Ronald Ross proved to be ideally suited for this role.

Sigmund Freud would have had a field day with Ross. Like other Anglo-Indian parents, Campbell and Matilda sent Ronald at the age of eight to England. A latent sense of parental abandonment turned to betrayal when Ross reached his seventeenth birthday. Instead of allowing him to attend the university which he preferred, his parents decided on a career in the Indian Medical Service. The signs of rebellion subsequently littered his early career in medicine. He neglected his studies at St Bartholomew's Hospital; initially failed the Apothecaries' licentiate examination and secured a low pass score on the Indian Service examination. Rebellion, ironically, condemned Ross to the purgatory of the military branch of the Indian Service where for fifteen years he held only one permanent posting.

As a borderline paranoid, Ross rationalized his stalled career. Convinced that his intellect was unappreciated, he sought the learning denied him. No matter how much he poured himself into mathematics and literature, they failed to satisfy his longing for external validation. In a pattern that would define his research style, Ross oscillated between the promise of confirming his genius and the reality of

his limitations. Yet, the malaria problem would prove to be a task worthy of Ross's relentless search for approval. Quite apart from being a stubborn obstacle to British colonialism in India and elsewhere, the *plasmodia* had become an international phenomenon. It offered Ross a stage for recognition. It also brought Ross and Manson together.

While on furlough in the spring of 1894, Ross solicited Manson's advice when researching his essay for the Parkes Prize competition on 'Malarial fevers: their cause and prevention'. Manson, who served on the selection committee, recruited Ross by stroking his ego with personal gestures of approval. These ranged from invitations to lunch, references to books, demonstrating how to detect the protozoa microscopically, to sharing his mosquito-malaria theory in advance of publication. Even before Ross returned to India, the search for "the beast in the mosquito" had become a consuming preoccupation.

As the new collection of letters between Ross and Manson richly shows, the complexity of the mosquito-malaria relationship required not only a resourceful autodidact but also a flawed personality to follow the theory to its conclusion. Organized chronologically, William Bynum and Caroline Overy have mercifully let Ross and Manson speak in their own words. While the editors do not intrude on the text, they do provide as much context as the reader demands. In addition to a sensible introduction, they furnish a serviceable glossary of technical terms, informative footnotes, a thorough biographical appendix of the men of science referred to in the letters, and an extensive bibliographical appendix. As a resource for the history of discovery, this compelling volume of correspondence will surely interest the professional scholar and lay reader alike.

Douglas M Haynes,
University of California, Irvine

John Sutton, *Philosophy and memory traces: Descartes to connectionism*, Cambridge University Press, 1998, pp. xvii, 372, illus., £40.00, \$69.95 (0-521-59194-5).

It is common for writers on cognitive science and neuroscience to deploy historical statements, especially about Descartes, as part of a rhetorical strategy to expose confusion and error. Most such writers are actually indifferent or even antagonistic to history as disciplined knowledge. This book is different. It contributes to the modern philosophy and science of mind by arguing that distributed processing theories of memory are not vulnerable to the criticisms of philosophers opposed to connectionist accounts of mental representations as traces. But it also seeks a "historical cognitive science . . . to demonstrate that it is possible to attend to contexts and brains at once" (p. 1). To attain these ends, John Sutton makes a huge excursus through the early modern theory of the animal spirits, memory and the self. The result is a thickly detailed dialogue with intellectual history, and it will engage scholars, including medical historians, concerned with animal spirits.

Sutton argues that the animal spirits, maligned by modern scientists as a brake on scientific physiology, both permitted an appreciation of memory as a form of distributed processing and mediated social values in the mind. To make these views plausible, he goes in depth into the interpretation of Descartes, John Locke, David Hartley, Thomas Reid, and other (predominantly English-language) authors on mind from the seventeenth and eighteenth centuries. He is intensively involved with Descartes scholarship, now extremely complex on mind-body questions. This book therefore ambitiously engages modern philosophy and science, and intellectual history, and it references a vast secondary and philosophical literature, which anyone wishing to say anything authoritative about Descartes or Locke now