proprieties of the doctor–patient relationship, and on medical reputations.

Medical men were pressured to take a view: to investigate, explain or reject the new science. The latter course was eased for many when in 1838 Thomas Wakley (founder of *The Lancet*, and a keen exposer of quackery) proved beyond doubt before a large audience that the eminent professor John Elliotson of University College London had been hoaxed. Elliotson resigned. But despite *The Lancet*'s ridicule, public and medical interest seems to have continued unabated.

Neither medicine nor science had a monopoly on investigation, as mesmerizing skills could be acquired relatively easily. Itinerant lecturers took their skills to public and private audiences all over the country. Doctors witnessed them, accepted tuition from and argued with them. Awareness of occasional hoaxes did not nullify the experiences of people who to their own mystification had themselves experienced or witnessed mesmeric phenomena. Professional disarray concerning the status of the evidence for and against mesmerism served to question not only the very nature of evidence but also the scientific credentials of doctors and scientists on all sides of the debate. Accusations of fraudulence were not one-way.

Mesmeric anaesthesia was at first a matter of curiosity in public performances of animal magnetism in which mesmerized subjects seemed oblivious to otherwise painful stimuli, such as being stuck with pins or burnt. Its use in surgery was a logical step, and when tried in 1842 in a case of leg amputation at the thigh, proved an instant success. Fierce controversy ensued. Not surprisingly, patients were keen to try it, and many doctors were keen to assist them. Others simply asserted that anaesthetized patients were fakers.

Winter argues convincingly that the deliberate suspension of pain during surgery was a by-product of mesmeric research, and that its success stimulated the development and the swift and widespread adoption of chemical anaesthesia. The notion that doctors had neglected their patients by failing to ease their pain, and that mesmerism could deliver an effective alternative, was such a spur to doctors suspicious of mesmerism that they disregarded the dangers and fatalities of ether and chloroform, to possess the new medical grail: painless — but 'scientific' — surgery.

This finding looks like a revolution in the history of anaesthesia. It is reinforced with two very different clusters of evidence. First, the leg amputation at the thigh performed by the famous surgeon Robert Liston to demonstrate the first use of ether anaesthesia in the United Kingdom took place in 1847 with triumphal symmetry in the same teaching theatre in which Elliotson had first displayed his mesmerized patients. Liston is reported to have exclaimed, "this Yankee dodge beats mesmerism hollow". Second, there are the published data generated from a surgical production line developed by James Esdaile, a Scottish surgeon, between the mid-1840s and 1850s in the Native Hospital, Calcutta. Here, patients were prepared for the knife by a team of mesmerizing assistants. Sceptics had very properly insisted on reliable and repeatable evidence. But even where this was available (as it evidently was in Calcutta), mesmeric anaesthesia failed to attain 'scientific' credibility.

The problem seems partly to have been that unexplained phenomena that depended on what we call suggestibility was characterized by rationalists as suspect. Mesmerism was responsible for the development of the notion of suggestion, by James Braid, and of unconscious action, in the work of Michael Faraday in investigating table-turning by the inculpation of those whose joined hands involuntarily spun the table.

One of this book's strengths is that it conveys the strangeness — and the newness — of mesmerism, which so puzzled and intrigued contemporaries. Mesmerism's scientific and medical impacts represent only part of the story told in this extraordinary book, which examines its wide cultural repercussions in the arts (*A Christmas Carol, La Somnambula*), including the development of the role of the orchestral conductor, and in politics, the development of the notion of 'consensus'.

The word 'mesmerized' remains highly charged because of what we think we know of the power of the mesmerizer, and because, despite our current knowledge, many of its phenomena seem to remain beyond our understanding: dangerous, *unscientific*. Such reactions indicate the influence the nineteenth century continues to exert over our own intellectual culture, an influence this book brilliantly explains. □

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Mother love and its selective advantage

Maternal Effects as Adaptations
edited by Timothy A. Mousseau and Charles W. Fox
Oxford University Press: 1998. 348 pp. £49.50, $65

Steve Stearns

Mothers love their children, of that we can be sure. Some biologists, who love their mothers as much as anyone, interpret the effects that mothers have on their offspring as adaptations shaped by evolution.

A female parasitoid wasp determines the sex of her haplodiploid offspring by controlling insemination: inseminated eggs become daughters. She lays daughters in large larvae, sons in relatively small ones — the reproductive success of daughters is more dependent on large body size than is that of sons.

A socially dominant red deer hind gives birth to more sons than daughters, probably by selective abortion of female fetuses. Her sons have a better chance of becoming dominant and fathering many grandchildren than do the sons of subordinate females. Subordinate females, on the other hand, have offspring with normal sex ratios. So are maternal effects usually adaptations? The case is clearer for these examples than it is for most of the effects mentioned in this book, and the authors admit as much.

Although there are many such examples, the editors and authors of the book complain that adaptive maternal effects have been neglected and that this must change. How do they arrive at the impression of neglect in the midst of plenty? To an evolutionary quantitative geneticist, taking an effect seriously means studying its genetics. This they do by extending the methods of quantitative genetics to include inter-generational effects of parental phenotypes on offspring phenotypes, and they succeed rather well.

Why did they think that the time was ripe to focus on maternal effects? Here I was less satisfied. Plant and animal breeders have tended to play down maternal effects, and the dominant texts on plant and animal breeding make little mention of them. The neglect has thus not been the fault of evolutionary biologists, but of non-evolutionary quantitative geneticists, who can hardly be blamed for not addressing problems they did not realize they were supposed to solve. I wonder whether one needs a whole book to make that simple point.

Some authors seemed to value complexity for its own sake. Other contributions were more satisfying. Roff's review of methods is clear, useful and concise. The reviews of maternal effects in flowering plants, insects, fish, amphibians and rodents are competent summaries of the state of the art. Denlinger's chapter on the transgenerational control of fly diapause shows how much can be achieved with classical techniques; here the way ahead appears to be molecular rather than quantitative genetics.

In brief, this multi-authored symposium volume has some new, creative contributions to methods, some useful reviews of the state of the art and a few chapters from people who should have done a better job. All the authors are from North America. I hope that this does not declare a prejudice about where significant work is being done. □

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