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Harry Whitaker, C. U. M. Smith, and Stanley Finger (Eds.). ***Brain, Mind and Medicine: Essays in Eighteenth-Century Neuroscience.*** New York: Springer, 2007. 376 pp. $59.95 (hardcover), ISBN-13: 978-0-387-70966-6.

The editors revealed early that the essays span the "long" eighteenth century, approximately 1660–1820. They failed to reveal that their book was well preceded by Neuburger (1897/1981; translated, edited, and significantly supplemented by Clarke). Neuburger and Clarke covered the same "long" eighteenth century. The book is comprised of 25 essays (by 29 contributors) plus introductions for each of six sections written by the editors. The essays are wide ranging, informative, often detailed and nuanced, and provide an excellent collection. However, in a brief review, it is impossible to give each essay the consideration it deserves. Given the necessity of a relatively brief review, most essays will be mentioned minimally in order to say more about some of those that most pleased this reviewer or those where correction or supplementation may be useful. Some essays are richly illustrated, but most have few or none; illustrations would have helped, for example, Frixione's essay (8), where Brazier's (1959) illustration of Swammerdam's experiments might have facilitated a tedious verbal description. Several essays (e.g., 3, 4, 21, 24) are minimally related to the book's subtitle.

The sections are Introduction (A), Background (B), The Nervous System (C), Brain and Behaviour (D), Medical Theories and Applications (E), and Cultural Consequences (F). This organization is questionable. Electricity, in scientific, medical, and occasional entertainment contexts, is a focus of two essays in section C and three in section E; having them together might make better sense. Ten "long eighteenth century" medical men (Boerhaave, Bonnet, Cullen, Hartley, Haller, Hunter, Parkinson, Petit, Porterfield, and Whytt) are the focal subjects of one or more essays distributed over sections B, C, D, and E, and, generally, it is not obvious

why a given essay would better fit one section than another. Similarly, in the section on Cultural Consequences, with the possible exception of Lorch's essay (24) on Jonathan Swift, the essays have no more nor less to do with the sectional heading than do most of the other essays in the book. Lorch examined brain, medicine, and mind in Swift's writings; Swift knew little about the first two but was *administratively* involved in treating the mentally ill. The difficulty of sorting such varied essays is acknowledged, and no alternative organization is suggested. Section A, Introduction, consists only of the editors' overview of the book and a chronological table comparing scientific and neuroscientific events with cultural events. The introductions to the five succeeding sections consist of little more than a synopsis of the section.

Several essays have in common developments in medical education or, as indicated above, the careers of medical educators and researchers. Neglected by all essayists, but less understandably by those for which it was directly relevant (e.g., essays 3 and 5), is any consideration of the near-total dependence of the medical educational establishment on grave robbers (also known as "resurrection men") for bodies for medical dissection; see Montgomery (1989). There is a hint of this in Stone et al.'s essay (5) about John Hunter, deemed to be the "Founder of Experimental Surgery," who acquired one body of interest "soon after death (1783) in a clandestine fashion at a cost of 500 pounds" (p. 68). Hunter and his brother, William, who founded and conducted anatomy schools in London, are mentioned in Montgomery (1989).

Ford's essay (2) on microscopes and microscopy is one of my favorites. It is historically informative and richly illustrated in ways that enhance the narrative. Ford's expertise and competence are such that after 308 years, he was the first to be allowed to use both optical and scanning electron microscopes to re-examine specimens prepared and used by Antony van Leeuwenhoek, one of the most important microscopists in history.

In section C, among those medical educators and researchers who are well remembered were Albrecht van Haller, a principal subject of essays 8 and 15, and Robert Whytt, a principal subject in essays 6 and 8. Among the largely forgotten was François de Petit (Kruger & Swanson, essay 7). Petit made discoveries later attributed to others, and, for example, he did sophisticated experimental brain ablations on animals a century ahead of Pierre Flourens, whom E. G. Boring declared to be the "father" of experimental ablation.

A topic that is addressed consistently in most of the essays in sections B and C and throughout the book is the role of supernatural (e.g., "animal spirits" or the "soul") versus mechanistic explanations in neural functioning. Both viewpoints are well represented among the leading medical research scholars of the long eighteenth century.

Section D continued an emphasis on the contributions of well- and less-well-remembered men in eighteenth-century neuroscience, with David Hartley (Glassman & Buckingham, 12) and Charles Bonnet (Whitaker & Turgeon, 13) being among the former. Bonnet is also featured in Kaitaro's essay (23), but in ways that suggest that Kaitaro might have benefited from paying better attention to essay 13. Emanuel Swedenborg (Norsell, 14) and Porterfield (Wade, 11) are among the less-well-remembered scholars. Porterfield, a vision researcher, made discoveries later attributed to others, and among other contributions he studied and named "accommodation." Swedenborg, who localized motor function in the cerebral cortex a century ahead of Fritsch and Hitzig, manifested a late-career mysticism that contributed to the obscurity of his scientific contributions. Glassman and Buckingham's otherwise excellent essay (12) is marred slightly, given their multiple use of Brazier (1959), by the curious omission of Brazier's account of Stephen Gray's demonstration in 1731 that the human body can conduct electricity; they referred instead to Hausen's demonstration in 1743; Hausen had copied Gray's experiment.

Foccaccia and Simili's essay (10) on Galvani ably defends him against critics such as Volta who diminished recognition for decades of Galvani's discovery that animals possess intrinsic electricity. They also report that Galvani reflected "a special sensitivity for the intellectual capabilities of women" (p. 151), but they do not report on the validity of the admittedly obscure report (Putnam, 1877, p. 386) that "Mrs. Galvani" discovered and brought to his attention the phenomenon for which Galvani is known.

Among the other essays on electricity, Finger's (17) stands out for its clear exposition of Benjamin Franklin's scientific and medical experiments, as does Berttucci's (19) for its illustrations and discussion of electrical apparatuses.

Storey's beautifully flowing essay (16) on apoplexy (stroke) takes its history from Hippocrates and Galen, who impeded understanding and treatment, to Thomas Willis and others of the seventeeth century, who correctly shifted emphasis to the circulatory system. In the eighteenth century, John Cooke (1756–1838) stood out for his contributions, both good and bad. Cooke favored treating apoplexy upon its occurrence by bloodletting as well as a wee bit of spring and autumn "cupping" to prevent further attacks.

Donat's essay (20) about John Wesley carries special interest because Wesley is best known as a founder of the Methodist Church. Regarding himself to be well self-educated in medicine, Wesley believed the most serious and pervasive nervous disorder was "low spirits" (akin to depression), for which the principal causes were sloth and intemperance. One likely could not be cured without God's help and without following Wesley's five briefly stated items of advice (p. 295); one's choice was to follow them or "Murder yourself by inches."

Lanska and Lanska's essay (21) on Mesmer and animal magnetism (i.e., mesmerism or hypnosis) summarizes Mesmer's career, with considerable emphasis on the French Royal Commission's investigation that concluded that "animal magnetism" did not exist and that "imagination" explained its alleged effects. Some disconcerting observations temper assessment of this essay. Despite 68 references, three account for most of the essay's content, namely, Bloch's (1980) translations of Mesmer, the Royal Commission's report by Franklin et al. (1784, English translation, 1996, which was incorrectly referenced as 1784/1997), and Pattie's book (1994). There is at least one quotation error (p. 304), and Franklin et al. was cited erroneously more than 15 times in the text as 1987 and in the references as 1997 when it should be 1996. The abandonment of mesmerism following Franklin et al.'s report is discussed without mentioning its wide and successful use to achieve surgical anesthesia subsequent to Franklin et al.'s report. Finally, possibly the authors did not read Hilgard's Introduction (pp. xi–xxiii) to Bloch (1980), but someone should point out a significant discrepancy between Hilgard's and Mesmer's accounts of the treatment administered to Fraulein Österlin, Mesmer's most famous case, which was described at length in the essay.

Faber's compelling essay (22) on hysteria begins by summarizing Greek misconceptions that its cause was a "wandering womb." Thomas Willis (seventeenth century) relocated its cause to the brain, argued that men could experience it, and observed that it was often a diagnosis used to "cover up medical ignorance" (Faber's paraphrase, p. 322). Owing to hysteria's many manifestations, almost any conceivable treatment was tried in the eighteenth century. For example, a 24-year-old woman admitted to the Edinburgh Infirmary was (a) purged and vomited; (b) given iron preparations, enemas, and cold baths; (c) dosed with gentian root, draughts of ether and vitriol, laudanum, and rhubarb; and (d) treated with electricity, only to be released after ten days as not cured. Philippe Pinel (1745–1826) is recognized for shifting emphasis in diagnosis and treatment from physical to psychological origins.

Kaitaro's essay (23) is more philosophical than historical. He argued that dualists (Descartes, Chares Bonnet) as opposed to materialists (La Mettrie, Diderot) provided a better foundation for modern neuroscience. La Mettrie refuted dualism in ways that required rejecting the dualists' mechanical interpretations of neural functioning while minimally advancing his own mechanical interpretations. According to Kaitaro, Descartes and Bonnet were the "real mechanists." Might it be that La Mettrie simply believed it was premature to speculate extensively about such poorly understood material mechanisms?

Rousseau's purpose in essay 25 is to "historicize" why Jerome Kagan (contemporary researcher and theorist) made temperament the focus of his research career and to ask whether "the eighteenth century contributed to temperament's historical map" (p. 353). Despite an often distracting writing style, Rousseau mostly accomplishes his goal. However, to quote but one beguiling overstatement: "If, as [Kagan] maintains, temperament is a *neuroscientific* concept, indicating repetition [reliability? replicability?] and verifiability, a predisposition capable of being studied in laboratories in experiments, then the point is momentous" (p. 355). Not so "momentous"—Pavlov was there decades ahead of Kagan, and other Pavlovians investigated the role of nature versus nurture in determining temperament, a question of interest to Kagan (e.g., Gray, 1964; James, 1941; Pavlov, 1941).

Finally, considering, perhaps, too much emphasis above on correction and supplementation, it should be said that this is an excellent collection of essays that make substantial contributions to the histories of neuroscience and psychology. Each essay is useful and interesting, and some are provocative in ways that might instigate related historical research.

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