complements their book in a number of ways. The one fundamental principle of modern neuroscience that Clarke and Jacyna do not regard as having been established by 1850 is that of the localization of brain function. *Medicine, Mind, and the Double Brain* takes up this story of localization from the 1860s, with special emphasis on the question of the duality and functional asymmetry of the brain's left and right hemispheres. Harrington's project, however, is concerned not solely with the origin of these concepts but with a whole complex of late-nineteenth-century ideas on or arising from the notion of the bilateral nature of the human brain. Medical questions, and especially psychiatric ones, feature prominently, as does a consideration of the cultural context in which such ideas were formed and debated.

After a preliminary account of the situation before 1860, the book covers the investigation of and speculation about brain duality from the time of Paul Broca's work on the localization of the language faculty to the period of Hughlings Jackson's writings on hemispheric specialization some 15–20 years later. A penultimate chapter, which is really an extended footnote to the one just before it, explores Sigmund Freud's indebtedness to Jackson's concept of the double brain; while the final chapter discusses the apparent decline of interest in brain duality after 1920, and the relatively abrupt revival of this interest in the 1960s following experiments on 'split brain' patients whose corpus callosum had been surgically severed. Having detailed in the main body of her study how the bilateral nature of the brain served in the late nineteenth century as a metaphor for society and social concerns, Harrington notes in passing a similar tendency in post-1960 writing on the subject of the brain's hemispheres.

Harrington is to be commended for including in her book a number of helpful illustrations and an extensive bibliography. Her writing style, however, must be faulted in places for its journalistic excesses, which confuse rather than enliven the discussion. Methodologically, she escapes the problem already raised in connection with Clarke and Jacyna's book by emphasizing that "the nineteenth- and twentieth-century literature on brain duality and hemisphere differences . . . are essentially discontinuous with each other" (p. 284). But she is then left with the complementary problem of the apparently independent development of two scientific traditions with a number of common features. On this matter she offers only a few tentative speculations

The question of conceptual continuity in the sciences is just as problematical as that of conceptual discontinuity — indeed, the two questions are merely opposite sides of the same coin. Given this outcome, one is justified in asking whether the problem can be resolved, even in principle, so long as it is limited to the conceptual sphere. It seems probable that both the immediate social context of scientific research, and the broader social context in which that research is carried out, will have to be integrated coherently with the development of scientific concepts in order for a satisfactory history of science to be written. In the meantime, conceptual histories such as the two reviewed here will continue to raise fruitful questions which a more comprehensive historiography of science will someday have to answer. □

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Bed-time stories

Ian Oswald

Why We Sleep: The Functions of Sleep in Humans and Other Mammals. By James Horne. *Oxford University Press: 1988. Pp.319. £22.50, $49.95*

JAMES HORNE is a psychologist with a primary interest in human sleep or its lack, and who describes his standpoints as heretical. The purpose of his book is the advancement of two arguments.

The first is that "we probably do not really need the last few hours of a typical night's sleep". Horne accepts that the first few hours are important for "essential repair of neurones" but proposes that the remainder of sleep is "optional", "a behaviour for occupying time". The proposition rests heavily on studies with healthy young volunteers who get by without currently measurable defects when repeatedly short of sleep. In discussing the best-known American research of this kind, Horne omits the descriptions of fatigue, with general conservation of energy, easy discouragement and dampening of emotional involvement. He remarks that his own volunteers did not make use of their extra waking hours, but did more "wasting time". Horne's opinion owes nothing to the clinic, the elderly or the sick. Finally, he turns about, says he is not advocating reducing sleep to six hours, and adds a summary of one of the large studies that have now demonstrated that people who believe they habitually sleep six hours or less show a higher rate of mortality from all causes in subsequent years.

Horne's belief in optional sleep also rests on the fact that sleep-deprived people, when catching up, never take as many extra hours of sleep as they originally lost. Sleep may have intensity of restitutive function, not just duration, but this is something upon which he does not dwell.

The second argument set forth in the book is that although sleep is indeed associated with restitution of all the body's tissues in rodents, this is positively not so for human beings. For Horne, only the brain can be repaired during human sleep. The time of the largest and slowest electrical brain waves during sleep is that which Horne would see as bringing restitution of brain: it is, as he says, the time when brain metabolism is lowest. In his wish to aver that restitution will not be taking place in other human tissues at this time, he says it cannot be taking place *because* the body's metabolism is at its lowest, which to me seems to be inconsistent. He does not mention that others have argued that it is because metabolism is low, rest maximal and degradation minimal, that net repair is most possible. Horne's arguments failed to persuade me that human beings should not be on a continuum with other animals. □

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