

the archaeological data are insufficiently appreciated in Donald's book. The subtitle of Mithen's book — "A Search for the Origins of Art, Religion and Science" — is a clear come-on for the general reader, but Mithen stops well short. Donald, on the other hand, who goes on to consider literacy and its effects, and the use of artefacts as memory aids, goes much further down this line.

Of course, as a psychologist, I believe all the archaeology Mithen lays before us, but the psychology remains that of an enthusiast. His notion of acceptable evidence will strike most psychologists as odd. He quotes Oliver Sacks on his impression of an autistic whose "sense of animals' moods and feelings is so strong that these almost take possession of her, overwhelm her at times".

This is taken as "good evidence that the mind has a specialized device for learning about the natural world". Here, as in other examples, Mithen fails to distinguish reliably between genetic evolution and cultural evolution, between specialized cortical devices and the consequences of massed learning of a topic. He also seems unaware of the need to make clear distinctions between specialist skills and the sometimes very abstract specialist cognitive abilities that underlie these skills.

In the end, though, this is a very good read, packed with well-presented information and provocation. □

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Sport on the brain leads to pain

John C. Marshall

Why Michael Couldn't Hit, and Other Tales of the Neurology of Sports. By Harold L. Klawans. *W. H. Freeman: 1996. Pp. 308. \$22.95.*

AN intimate relationship between sport and cognitive neurology has existed since the inception of the discipline. When the 26-year-old Baron Edouard de Rampeau was injured in a fencing accident in 1807, he was referred to the eminent physician Franz Joseph Gall (1758–1828), and a discovery about the brain ensued.

The broken tip of the fencing foil had penetrated to the posterior part of the anterior left lobe of the brain. De Rampeau continued to recognize objects and use them appropriately but, Gall reported, "the memory of names was wholly extinguished". The left frontal region therefore came to be seen as crucial to the exercise of the language faculty.

In Gall's day, limited brain damage in

previously healthy young adults was commonly due to the foil, whether used in sport, jest or earnest. Gall eagerly seized on such cases, regarding them as better suited for showing localized functions of the brain than the more extensive effects of apoplexy (stroke) in the elderly.

Fencing does not figure in Harold Klawans' latest collection of neurological essays for the layman. But boxing does. For the most part, boxing, the only 'sport' whose purpose is to cause chronic progressive brain damage, produces diffuse neuronal injury leading to dementia. In some instances, however, the lesions can be more restricted, although their effects on action, cognition and personality are not necessarily less severe. Klawans' chapter on Muhammad Ali is both a fine tribute to 'The Greatest' and a lucid introduction to the functions of the substantia nigra, damage to which was responsible for Ali's post-traumatic Parkinsonism. The consequences of the speed of Ali's lip were,

if anything, even more disastrous than the sad shuffle of his later years.

Klawans is somewhat ambiguous in his own attitude to boxing. He manages to regard it as "one of our eternal verities", while reminding us that two millennia ago the Emperor Augustus "put an end to boxing because the sport was ruining too many prospective soldiers".

Klawans is also strangely unsympathetic to Primo Carnera, the only native Italian to win the world heavyweight championship. Medically, Klawans is excellent on how Carnera's gigantism (acromegaly) was caused by a tumour of the pituitary gland. But he fails to appreciate Carnera's outstanding intelligence: most of Carnera's fights were won by his arranging for the Mafia to pay his opponents to fall over, and he ended his career playing bit-parts in Hollywood movies.

It is a pity that such sensible career-planning is so little stressed in these essays. Top athletes presumably require superior strategic intelligence at least as much as they need strength and visuo-motor coordination. The issue arises only in the chapter on Roger Bannister, where it is emphasized that the four-minute mile was achieved by serious thought and a profound knowledge of physiology rather than by intrinsic talent and intensive application.

Even in these days of supercharged professionals, the thought of Bannister training for half an hour a day "during his lunch breaks from his duties at the hospital" can still bring a tear of cultural joy to the amateur English eye.

For the rest, the sport in Klawans' book is resolutely American, although the diseases are international: baseball and occlusion of the right subclavian artery when pitching, volleyball and Marfan's syndrome (a disorder of connective tissue), basketball and tics (Gilles de la Tourette's syndrome), American football and myasthenia gravis (a disease of the neuromuscular junction), golf and the dystonias (abnormal, involuntary movements that "move part of a limb into an untoward position and keep it there")... and more and more and more baseball injuries.

Klawans' ability to describe complex medical issues in understandable language is peerless. But the jargon of baseball defeated me to much the same extent that cricket cannot be explained to Americans. I did, nonetheless, come away with the strong feeling that many modern sports (and baseball in particular) are extremely dangerous.

Perhaps we should revert to duelling, a comparatively safe sport and one whose underlying code of honour might enforce higher moral standards in public life. □

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Tragedy in the making: Ali beats Sonny Liston (left) but later succumbs to brain damage.