

## Distinguished Arctic explorer

*Sir John Richardson: Arctic Explorer, Natural Historian, Naval Surgeon.* By R. E. Johnson. Pp. xiii+209+33 plates. (Taylor and Francis: London, 1976.) £15.

It is remarkable that this should be the first attempt at a full-length biography of Sir John Richardson since the account by his nephew, John McIlraith, in 1868.

It comes as no surprise to learn that the man who distinguished himself in Arctic exploration, and natural history and introduced reforms in medical practice, was a precocious youth. Apprenticed to a surgeon at the age of thirteen, Richardson began his medical studies at the University of Edinburgh the following year. A little before his twentieth birthday he joined the Royal Navy as an assistant surgeon.

The direction of his life was decided when he was made surgeon and naturalist on an overland expedition to the Canadian Arctic Ocean under Lieutenant John Franklin in 1818. During the next three years this expedition covered 5,500 miles in appalling conditions, losing eleven men, one of whom Richardson was forced to shoot in self-defence. Richardson joined Franklin again as surgeon and naturalist on his second Arctic expedition in 1825, and when Franklin failed to return from his third expedition in 1845, Richardson at the age of sixty-one set out for the Arctic once more in a vain attempt to find his friend.

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Sir John Richardson

Richardson's scientific career began with his zoological and botanical appendices to Franklin's and Parry's accounts of their Arctic expeditions. Sir W. J. Hooker's *Flora Boreali-Americana* (1840) was based principally on the plant collections of Richardson and his very able assistant, Thomas Drummond. His scientific reputation became firmly established through his contributions to the four-volume *Fauna Boreali-Americana* (1829-1837), a pioneer work in Arctic biology.

During his time as physician at the Royal Naval Hospital, Gosport, he created a museum of comparative anatomy and taxonomy which was consulted by scientists as eminent as

Darwin, Lyell, Hooker and Gray. Richardson was a prodigious worker, as the complete bibliography of his books and periodical articles in this book testifies.

Very little seems to have escaped the author's diligent searching for every scrap of information about Richardson. Even the translated text of Richardson's thesis for his doctorate in medicine, *De Febre Flava* (1816), has been included. Research workers in this field will find his list of the main collections of Richardson's letters useful. One of the appendices lists all the known portraits of Richardson followed by the species of animals named by or after him, but through some oversight the plants have been omitted.

In a work that is so full of facts some errors are inevitable: Richardson was elected a Fellow of the Royal Society in 1825, not 1835 (p65); J. E. Gray retired as Keeper of the Department of Zoology at the British Museum in 1874, not 1872 (p114); Sir W. J. Hooker was appointed Director of Kew Gardens in 1841, not 1847 (p114).

Dr R. E. Johnson has methodically assembled all the data necessary for a definitive life of Sir John Richardson. But Richardson does not come alive through his pen, and there is no real assessment of a naturalist who was also one of the outstanding ichthyologists of the nineteenth century.

R. Desmond

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## Process of language understanding

*Computational Semantics: An Introduction to Artificial Intelligence and Natural Language Comprehension.* Edited by E. Charniak and Y. Wilks. Pp. vii+294. (North-Holland: Amsterdam, New York and Oxford, 1976.)

"COMPUTATIONAL SEMANTICS", say Charniak and Wilks in the preface to their book, "is not so much a new subject as a new way of looking at old questions—those concerning meaning, language and understanding. It is based on the assumption that a good way to explicate such difficult notions is to work toward the programming of an automaton, or digital computer, so that it could be said to understand language." This assumption characterises much recent research in Artificial Intelligence (AI), and it is the AI viewpoint which is strongly put forward by this book.

To demonstrate the significance of this viewpoint, Charniak, Wilks and the other contributors to this volume have placed computational semantics within the context of related language disciplines, providing a broad overview of linguistics, the psychology of language and memory, the philosophy of language, AI approaches to language comprehension, and fundamentals of computer programming. In bringing together all of these cognitive science topics in a tutorial format, the editors have taken an important step towards interdisciplinary consciousness raising. Such an ambitious step is not without flaws, of course—the most serious being the use of heavy attacks on straw men within generative semantics and psychology in order to glorify AI approaches to language comprehension. The drawing of these 'battle lines' detracts from an otherwise noble cause.

The book stands strongly on its positive treatment of tother topics—for instance, it provides an excellent survey of AI language comprehension programs, particularly in the second of Charniak's

two chapters on inferencing and the second of Wilks' two chapters on parsing. Both of these chapters provide clear accounts of recent AI research on language understanding, and suggest some new dimensions along which various AI programs may be compared.

Students interested in theories of language, meaning, and understanding would be well advised to read this book, and to develop a familiarity with all of the areas it covers. Psychologists, linguists and philosophers will no doubt find fault with the sections dealing with their own specialities. If they keep an eye out for straw men, however, they will find that the other sections of the book provide a fine background to some of the most exciting contemporary research into the processes of language understanding.

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