

in this field, and many more than 100,000 copies have been sold. This book outlines the background and traditions of the chemical engineer.

But if Shreve presents in his treatise and textbook for students the sinew and bone of the culture of the industrial chemist and the chemical engineer, Tooley presents, in a much less rigorous and formal way, the heart and soul of this same culture. He states that his aims are (a) to write primarily as a source book for science teachers, (b) to provide teachers with relevant background material, (c) to keep them abreast of events, and (d) to build a bridge between school and industry.

Tooley, in excellent prose, tells teachers how to butter in between the blocks of scientific facts a smoothing mortar of human interest. Thus he tells hundreds of stimulating stories of historical research and development accomplishments leading to important processes and products. These may or may not involve chemistry in industry. As an example, under "Pain Killers" he recounts that the first surgical operation was only after Adam had been caused to fall into a deep sleep. Then the Lord God removed one of his ribs and closed up the flesh. Next the success of mesmerism as a pain killer is discussed; and the historical, physiological and psychological aspects in the use of pain killers and related drugs are presented with more attention than is given to their chemistry. The broadened picture is well detailed to give another intriguing story.

The volumes are eminently readable with a delightful presentation of facts in most interesting style, here and there illuminated with cuts made one hundred or two hundred years ago as well as numerous photographs and line drawings. As in any book of whatever size which comprehends such a wide scope of the horizons of human knowledge, one finds what one finds—without any surety of prediction. In searching, the reader will, as apt as not, find many other charming stories to fill out his store of knowledge. Thus there are 40 pages on fat technology, 50 pages on detergents and polishes, also 66 pages on cosmetics, more on chemical materials than on their chemistry.

The numerous figures, printing, and binding are well done. The small, almost pocket, size of 5½ in. × 9 in. is convenient.

The books would not be recommended for the textbook of any course, nor as the only source of information for any examination. But they certainly will be excellent and very easily read supplementary material for science or engineering students at any level or for professionals and others who are concerned for any reason with chemistry in industry.

DONALD F. OTHMER

For the Fish Watcher

Fishes of the Sea. By John Lythgoe and Gillian Lythgoe. Pp. 320 (212 photographs). (Blandford: London, October 1971.) £3.

Fishes of the Sea is basically a book for the underwater swimmer and fish watcher. The authors are underwater swimmers of experience and are thus well acquainted with the problems of identifying a fish seen at a distance or at an awkward angle. The coloured photographs are of excellent quality and cover most of the orders included in the book.

From this aspect *Fishes of the Sea* will no doubt be deservedly appreciated, for underwater pictures of fish can be as aesthetically satisfying as they are useful for identification. There seems, however, to be a tendency on the part of publishers to select photographs taken underwater (as opposed to photographs of fish in aquaria) at all costs. This book is no exception, for here we have half-visible fish concealed by benthic growths, as in Fig. 75, of *Crenilabrus cinereus*; fish half seen in the distance (Fig. 88 of *Auxis thazard*), and a whole page picture of a clearly seen swimmer and a shoal of quite indistinguishable fish. If the purpose of the photographs is to help the underwater observer to identify the fish he sees, these pictures fail. There is, moreover, the curious aspect that while pains are taken to suggest that most of the photographs are taken by underwater photographers, a considerable number are quite obviously of captive fish in aquaria. Two are in fact of dead fish out of water! One of the aquarium pictures, of *Remora remora*, is even wrongly identified, for the shark sucker pictured is clearly *Echeneis naucrates*.

The book includes all the common fish (and a number of rather uncommon ones too) found in the coastal waters of Europe, including the Baltic and the Mediterranean. For each species notes are given on distribution and biology, with a formal description of morphology and coloration. Many groups are illustrated by simple outline drawings of the common species with notes on identification side by side on the same page, a useful and thoughtful arrangement to help in identification. The drawings throughout the book are simple outlines with an absolute minimum of detail except for distinctive features of form or colour pattern. In places one feels the simplification has gone too far, as for example in the omission of the lateral line in drawings of about half the wrasses (*Labridae*), and the absence of pelvic fins in *Thunnus thynnus*, *Auxis thazard* (the related species are shown as possessing them), and *Chirolophis ascanii*, all species with well developed pelvic fins. These omissions

can only confuse the inexperienced user of the book.

It is disturbing to find the publishers advancing this book on the dust jacket as "scientifically authoritative", for its text contains a high proportion of errors of one kind or another. For one thing users of a book so described might expect to be spared such unorthodoxies as cartilagenous (thrice), oviperous, ovoviperous, and viviperous (once each) on a single page (22). Distributional data are often incorrect, for example in the failure to indicate that *Callionymus reticulatus* is a North Sea species (where it is fairly common); and to say that Ray's bream (*Brama brama*) is not common north of Biscay, though solitary specimens are usually encountered in winter is not a true picture of its occurrence in northern waters. Other errors, such as the statement that there is only one species in the family Coryphaenidae and that *Alopias* has both nictitating membrane and a spiracle, together with frequent misspellings of scientific names of fishes, destroy any claim of this book to be authoritative.

ALWYNE WHEELER

Josephson Introduced

An Introduction to the Josephson Effect. By B. W. Petley. Pp. 88. (Mills and Boon: London, October 1971.) £2.50.

THIS little book is a careful, authoritative, but simple introduction to this rapidly expanding subject. It is heartening to see a first engineering text in this field of so much engineering promise, and to see it clearly written, free of mistakes, and surprisingly complete on the basic science side.

Having said as much, may I complain that at £2.50 the book is somewhat too little, coming almost precisely to 3p per very small page. At this price I would have liked to see more material, and more of it specifically pointed towards engineers. For example, a discussion of mechanical analogues, which I have found very useful in talking to engineers (and physicists) as well as in thinking about devices, would be in order. Some discussion of McCumber's damping theory (although the use of damping in devices may be too recent to have got in) would be useful. Most of all, it seems to me that the four pages devoted to "Other Applications", such as Matisoo's ideas on switching, are entirely inadequate in a book for engineers.

Let me not close with a negative impression. This will be a very handy book to have on one's shelves as we enter the era of extensive practical applications of the Josephson effect.

P. W. ANDERSON