

that ". . . the theory of cosmic rays is being urged in this connection . . ." is a cumbersome way of saying "the theory of cosmic rays mentioned".

Dr. Julian Huxley is reprimanded for having written ". . . the economic and social forces have taken the bit in their teeth and threaten to pull the fabric of civilization down if not harnessed and controlled". The authors point out that an animal which takes the bit between its teeth and threatens to pull down the fabric of a building must be already harnessed to it; and that it is difficult to imagine a context in which horses or mules taking the bit in their teeth threaten to pull down the fabric of a building. The fair copy runs ". . . forces generated by the interaction of new economic, industrial, military and other systems may now disrupt civilization".

Sir James Jeans is taken to task some sixteen times for various alleged minor offences in a passage of about 150 words taken from his "The Stars and their Courses" (1931). *Inter alia*, he is accused of unnecessary repetition and of disguising it by constant variation of language. According to the authors, "nearly all scientists, at the point where they turn from mathematical or chemical language to English, seem to be relieved of any further obligation to precise terminology": a statement that is probably meant to refer to popular scientific writing.

It would be wrong to infer that the authors show any particular bias against scientific authors. They do not. They level their shafts indiscriminately against all writers who, in moments of temptation or aberration, sin against the light emanating from their forty-one commandments. Everyone who wishes to write well has something to learn from a perusal of this interesting book, whether he be a literary man, a man of science, or a common scribe.

E. H. TRIPP.

## RESOURCES OF THE SEA

### The Fish Gate

By Michael Graham. Pp. 196+16 plates. (London: Faber and Faber, Ltd., 1943.) 10s. 6d. net.

IN the great experiments which made Robert Boyle the 'father of chemistry', we find him saying, every now and then, that his purpose was "the Improvement of Knowledge, and not of Trade", or other words to that effect; for he knew that "both Scholars and Gentlemen are wont to look upon the Enquiry into Manufactures as a *Mechanick* employment, and consequently below them". After two hundred and fifty years we have changed our minds, and come to see that science must pay its way, and stand or fall, like all other occupations, by the measure of its usefulness to mankind. It has been somewhat hard to learn this lesson, and to trim our course to the new concept of 'science'; but we have a plain example in the study of the sea, where many sciences meet together, and do so (if you only leave them alone) to the benefit of all who do their business in the great waters. How this happens is told by Michael Graham in "The Fish Gate", with ample knowledge, industrial and scientific, of the fisheries, with many beautiful illustrations, and with a literary taste and skill which touch art, from the title-page to the end of the book.

The industrial revolution has swept our old fishermen and their boats away; there is not one left in the little towns, like my St. Andrews, where I remember the busy harbour, and the women baiting the lines or mending the nets before their doors. "There are still the small owners", says Michael Graham; but he means the men who "own two or three vessels, which cost about £4,500 apiece when new". It is this modern industry which the author knows by heart which fascinates him, and he describes it to the very life: the pontoon at Grimsby where 500 tons are landed every day, and dispatched to two thousand destinations; the big Hull trawlers following the cod all the way to Novaya Zemlya, making a £2,000 catch in a few hours' fishing, and coming home with their holds half-full lest the market be glutted; the steam-drifters at Smith's Knoll in October, their skippers feeling their way with the echo-sounder, and the sea aboil with the 'swim' of herring, which love the merry moonlight as they have always done.

In these great modern fisheries the catch kept rising, even by leaps and bounds, until a day came when it rose no more. The North Sea alone was yielding 430,000 tons of fish a year thirty years ago—an almost fantastic quantity; twenty years later, with enlarged fleets, more powerful boats, more costly gear, and even a smaller mesh, the annual landings were just a *little less* than before. In short, when the story has been told of enterprise and expansion, of capital invested and fortunes made, there comes the inevitable reaction, a diminution of profits and an undeniable scarcity of fish. Some form of control becomes imperatively necessary, difficult as it may be to enforce it, and yet leave men content and secure. As a first but very considerable beginning, Michael Graham welcomes and applauds the Convention of 1937, which took formal steps towards international regulation of the trawl-mesh; it seems so obvious that if you would have the full-grown fish you must let the little ones go free!

But fish are not like ourselves. The case is not so simple when you deal with creatures which lay a million eggs in order that (normally) one pair may survive and take the places of their parents in the sea; when Nature herself thus slaughters the innocents; and when we know that small plaice and haddock are still plentiful in spite of everything, while the big are all gone and even the middle-sized are scarce indeed. Michael Graham is always candid, and, much as he praises the mesh-regulations, he is ready to concede that they will not suffice of themselves; for sooner or later there must come a self-denying limitation of the actual catch of fish. The coastal waters of the North Pacific teemed with halibut, and the fishery seemed inexhaustible less than forty years ago; but it proved to be nothing of the kind, and presently found itself on the road to ruin. Now a bold and drastic curtailment of the total catch has given a new lease of life to the industry. There is no exception to what Michael Graham calls "the Great Law of Fishing", that *fisheries which are unlimited become unprofitable!* But he has faith and confidence enough to turn the phrase the other way, and say that *limiting the effort will restore profit to a fishery.*

The author touches on every aspect of the fisheries, even, though lightly, on the cookery of fish. But when he tells us that we should fry our cod and boil our herrings, I begin at last to differ from him.

D'ARCY W. THOMPSON.