BOOK REVIEWS

Threats to the Reef

The Struggle for the Great Barrier Reef. By Patricia Clare. Pp. 224+15 plates. (Collins: London and Sydney, September 1971.) £2.50.

THE Great Barrier Reef of Australia is a vast complex of coral reefs which extend in length for more than 1,200 miles and occupy widths ranging from 16 to 200 miles off the coast of Queensland. Nobody who has spent more than a year upon it over 40 years ago, as I did, could have dreamt of its ever being endangered or that the question of its conservation could emerge as a major political issue.

But this is certainly what has happened and the sequence of events leading to this is well presented in this book by Patricia Clare. Disregarding a few purple patches, the reader will find a very clearly written story. Although there is no doubt where the author's sympathies lie, she has visited and interviewed widely and judiciously and presents both sides of the argument. This book is first-rate journalism; too good, incidentally, not to have an index.

Relevant additional reading for readers who are particularly interested in the subject, and which is not specifically mentioned in this book, are two articles by Dr D. W. Connell, president of the Queensland Littoral Society (*Biological Conservation*, **3**, 60; 1970; and 249; 1971), and a booklet, *The Future of the Great Barrier Reef*, which consists of a series of contributions presented at a symposium conducted by the Australian Conservation Foundation in the University of Sydney in May 1969.

Dangers facing the reefs are manifold—industrial and agricultural pollution, tourism, mining for coral rock and, most sinister, now also oil prospecting. Tourism is an insidious influence; a gradual spread of often tasteless and wasteful exploitation which largely affects inner and southern reefs but now reaches out to a most northern and offshore base at Lizard Island, a high rocky island within sight of the outermost ribbon reefs and only a little south of Cook's Passage.

Such invasion, which equally affects remote Pacific islands, is unlikely to be stopped, but at least some moderation should be imposed on the indiscriminate collecting of shells and corals, of sport fishing and of underwater spear fishing. These spectacular invertebrates and fishes are often hunted to near extinction. One theory as to the cause of the plague of crown-of-thorns starfish which are destroying reef corals over widely scattered areas in the Pacific attributes it to the collection of the large trumpet shell, *Charonia tritonis*, which preys on these starfish. But the more universal effect of pollutants, notably pesticides, has also been introduced as the chief cause of an underlying ecological imbalance.

Certainly the population explosion of this starfish first drew public attention to dangers affecting the Barrier Reefs, but confrontation came in 1967 when conservation interests, stimulated, as Patricia Clare describes, by action of the devoted few, proved great enough, when backed with soundly based argument, to ensure the rejection in the mining warden's court of an application to mine Ellison Reef for limestone. And this decision was made in spite of the urgent need for lime on the sugar cane fields of North Queensland. The effects of bauxite processing and of open cast mining for coal around Gladstone nevertheless become increasingly apparent.

With the later prospect of oil drilling, both State and Commonwealth Governments come into the picture. A report by Dr Harry Ladd, a most distinguished American reef geologist, approved exploitation under appropriate controls. Early last year, with the scene set for the operation of the oil-rig Navigator, the trade unions took action by threatening a ban on all goods and services. Clash of opinion between State and Commonwealth was resolved by the then Prime Minister, Mr Gorton, who stated that "In my view the slightest danger is too much danger" (a sentence that will surely endear him to all conservationists) and a Royal Commission, now sitting in Brisbane, was set up. The commission is unlikely to report before late in 1972.

This action by the Australian Government can be regarded as a triumph for conservation. Time is probably on that side but the real danger is lack of precise biological knowledge about coral reefs. What some of us began on the Barrier in 1928–29 has, for lack of public interest and money, had little addition. Only the Japanese, at their biological station at Koror in the Palau Isles, took biological studies somewhat further but their laboratory was destroyed in the war. There are now prospects of a Marine Research Institute to be built by the Commonwealth Government at Townsville in close proximity to the vigorous new James Cook University of North Queensland.

There is likelihood too of greater coordination of wider coral reef studies under the auspices of the Pacific Science Association. But knowledge in this field is painfully slow in coming. All interested in conservation generally and in coral reefs in particular must applaud those few Australians whose efforts, so well related in this book, have stimulated the growth of public concern in the conservation of the Great Barrier Reef and so in the study of its richly varied ecosystems.

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Thermogenesis

Nonshivering Thermogenesis. (Proceedings of the Symposium held in Prague, April 1–2, 1970.) Edited by L. Jansky. Pp. 310. (Academia: Prague, 1971.) (Distributed by Butterworths, London.)

THERE is much justification for the popular and cynical view on symposium proceedings that if the contributions are worthy of note they either have been or will be published elsewhere. Thus library and laboratory shelves are cluttered with the neglected literary remnants of scientific symposia. However, it would be a great pity if this particular series of review and research papers by a small group of internationally acknowledged leaders in the field of thermoregulatory thermogenesis were to suffer such treatment.

That heat production in response to cold stress may not always involve the contractile activity of muscles was first proposed by Claude Bernard in 1876, but convincing demonstrations of the phenomenon were reported only ten to twenty years ago. The subsequent quest for the sites and the nature of nonshivering thermogenesis was enlivened, but certainly not resolved, by R. Em. Smith's discovery in 1960 of a special role of brown adipose tissue in the nonshivering thermogenesis of the white rat. Only those researchers directly and intimately involved in the study of cold-induced thermogenesis can be thoroughly conversant with the now vast literature pertaining to this complex and controversial subject. For those of us who are outside this immediate field it has become increasingly difficult to maintain a balanced appraisal of the accumulating evidence. It involves the contribution of different tissues in nonshivering thermogenesis: the relative importance of shivering and nonshivering thermogenesis in different species and in different circumstances; the changes in the balance between the contributions of shivering and nonshivering thermogenic processes during postnatal development and during acclimatization to cold stress; the role of nonshivering thermogenesis during arousal from hibernation and other