

Introductory Remarks

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Phil. Trans. R. Soc. Lond. B 1978 **284**, 1-2
doi: 10.1098/rstb.1978.0049

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Introductory remarks

BY C. M. YONGE, F.R.S.

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What we are here to discuss concerns the Great Barrier Reef of Australia. It is very fitting that we should do so in this place, because the Royal Society was intimately concerned with events that led to its discovery in 1770. We go back to 1716, to a communication printed in Latin in the *Philosophical Transactions* by Edmond Halley, then Savilean Professor of Geometry at Oxford and Secretary of this Society. There, and for no less an objective than the more accurate determination of the dimensions of the Universe, he drew attention to the unique opportunities to that end to be presented by observing the transits of Venus across the face of the Sun due on 6 June 1761 and 3 June 1769. In the event international observations in the former year were largely fruitless, giving added reason for adequate observations in 1769. One of the conclusions of the specially appointed Transit Committee of the Society was that one site for observation should be in the South Seas.

A direct appeal to George III produced one of the earliest grants of money for purely scientific purposes, and even more to the point the Admiralty was in almost enthusiastic agreement. Sweeping aside the Committee's proposal that Dalrymple should head the expedition, the Admiralty selected Mr James Cook, previously surveyor of the lower reaches of the St Lawrence and of the coasts of Newfoundland. He was now commissioned Lieutenant of H.M.S. *Endeavour*, and the transit was to be observed from the island of Tahiti recently discovered by Wallis on H.M.S. *Dolphin*.

Our concern with this voyage takes us to the later discovery of the east coast of Australia and to Cook's progress north surveying the coast and naming its geographical features. By 10 June 1770 he had sailed for some 600 miles within the complex of offshore reefs that constitute the southern half of the Great Barrier. At 10 o'clock on that day, Trinity Sunday, he 'hauld off north in order to get within a small low Island which lay 2 Leagues from the Main'. This is the first mention of the coral formation occupied by the Expedition of 1928–9. Disaster came the following day when 'the Ship Struck and stuck fast' on what is now Endeavour Reef. After repair of the vessel Cook's subsequent movements become of particular interest. Viewed from the summit of Grassy Hill, he noted with concern the 'number of Sand Banks and Shoals laying along the coast, the innermost lay about 3 or 4 Miles from the Shore, and the outermost extending off the Sea as far as I could see without my glass, some just appearing above water'. With the Southeast Trades blowing, his only hope of escape lay to the north. He proceeded cautiously in that direction, landing on Lizard Island, where from the 1100 ft high summit, he followed the here dramatically sharp line of the outer barrier reefs, perceiving an opening through which he later entered the open Pacific.

Matthew Flinders, who charted the more southern Cumberland Islands and then passed through Flinder's Passage in 1802, was impressed by the beauty of coral growths, writing of 'wheat sheaves, mushrooms, stagshorns, cabbage leaves, and a variety of other forms, glowing under water with vivid tints of every shade betwixt green, purple, brown and white ...'.

1-2

The first comprehensive survey of the Barrier starting in the Capricorns and finishing at Cape York, and including the outer islands of Torres Strait, was carried out by H.M.S. *Fly* in 1842–3, engaged, in the words of its naturalist, Beete Jukes, in ‘marking out a more secure road through some of these reefs and shoals’. Impressed with Darwin’s recently published work on the origin of reefs, he postulated that the Barrier had grown up on a sloping, slowly subsiding platform.

T. H. Huxley was to come this way on H.M.S. *Rattlesnake* in 1848–9. Strangely oblivious to the supreme zoological interest of what surrounded him, the only comment in his diary when at anchor off Lizard Island concerns a first reading in Italian of Dante’s *Divina commedia*! It was another matter with Saville-Kent. His massive *Great Barrier Reef of Australia*, published in 1893, contains a series of magnificently photographed and no less admirably reproduced views of exposed coral which must largely have been taken during low spring tides in winter.

It may have been Saville-Kent’s success in viewing exposed corals in winter that led him to advise Alexander Agassiz to visit the Barrier during April and May 1896, when in the small *Croydon* he encountered nothing but persistent trade winds and spent most of his time in shelter. He abandoned the cruise at Cooktown, his major conclusion that the reefs had grown up on a submarine plateau formed by erosion and denudation. He was accompanied by A. G. Mayor, later, among so many other reef activities, to survey the fringing reef around Mer Island.

Recent interest in the Barrier springs largely from the activities of the Queensland Branch of the Royal Geographical Society of Australasia, which in 1922 established a Barrier Reef Committee to investigate ‘the origin, growth and natural resources’ of the reefs. Under the energetic chairmanship of H. C. Richards much significant geological work was carried out, but the need for biological work led to the invitation to the British Association which resulted in the Expedition of 1928–9 when we established a marine station on Low Isles and studied the cycle of events over 13 months. An associated geographical party led by J. A. Steers was financed by the Royal Geographical Society; in 1936 he paid a further visit, this time surveying southern reefs as well as northern ones.

The Barrier Reef Committee later established a field station on Heron Island in the Capricorn Group, while the Australian Museum, Sydney, has also been active, first at One Tree Island in the south, and, very recently, at Lizard Island. Transcending all came the establishment by the Commonwealth Government in 1972 of the Australian Institute of Marine Science at Townsville, now building most impressive accommodation 30 miles to the east near Cape Cumberland.

To retrace our steps, however, after the experience of his two expeditions, J. A. Steers realized the need for further information about reef structure, sedimentation and related geomorphological problems, and five years ago, in 1971, formulated proposals which came to the Southern Zone Research Committee of this Society. The interests of the University of Queensland at Brisbane and of the James Cook University of North Queensland at Townsville were obtained, with their agreement that David Stoddart should be the leader of a largely geomorphological expedition to the northern regions of the Great Barrier Reef in 1973. In this case the majority of the expedition members came from Australia, many of whom we are happy to see here today. It is the results of this expedition that are now our concern.