

BY A NOT-SO-OLD HYDROGRAPHER

'As it Was'

The John Murray - Mabahiss Expedition to the Indian Ocean, 1933-34. In the early years of the 20th century, Sir John Murray, erstwhile Challenger naturalist and author of a controversial theory on the origin of coral reefs (see Hydro 7 (6)) was the top man in oceanography. He was also very rich, having made a fortune as a co-founder of the Christmas Island Phosphate Company. When he was killed in a motor accident in Edinburgh in 1914, he left a bequest of 250 shares in the company to be used for research in oceanography or limnology. By 1931, very little of the bequest having been used, Murray's son, John Challenger Murray enlisted the help of a group of well-known British scientists to help organise a major oceanographic expedition to which £20,000 would be allocated.

It was quickly decided that the area of study would be the Indian Ocean, totally missed by Challenger and known to be a region that Sir John himself had felt to be particularly deserving of attention. And after a few false starts, the vessel to be used was a 138 feet long, 200 tonne deadweight steam trawler, the Mabahiss (Arabic for 'researches') built in 1930 at Swan Hunter's Tyneside yard for the Egyptian Coast-guard and Fisheries Service.

The Scientific leader of the Expedition was Lt. Col. R.B. Seymour Sewell, recently retired from a long career in the Indian Medical Service during which he had served as Director of the Zoological Survey of India and participated as Surgeon Naturalist in a number of cruises of the Marine Survey of India. He was supported by a New Zealand-born chemist, Bill Thompson and two young British Cambridge graduates, Hugh Gilson and Kit Macan, along with two Egyptians, Abdel Fateh Mohamed, a chemist, and Hussein Faouzi, a zoologist who had originally qualified in medicine and therefore also acted as the ship's doctor.

Command of the Mabahiss was given to K.N. MacKenzie, who had sailed on Scott's Discovery during her two BANZAR (British, Australian and New Zealand Antarctic Research) Expeditions to the Southern Ocean under Sir Douglas Mawson, serving as Master during the 1930/31 voyage. Second-in-command and navigator was Lt. Cdr. W.I. Farquarson, seconded from the Royal Navy. Apart from the Chief Engineer and Radio Officer, the remaining officers and all of the crew were Egyptian and mainly recruited from the Coast-Guard Service.

Mabahiss sailed from Alexandria on 3rd September 1933 and returned on 25th May 1934. This was technically in the coolest part of the year, but life aboard the ship was nevertheless extremely uncomfortable. Her less than ample accommodation was further strained by the fact that she carried a total complement of forty, three more than her intended capacity. Furthermore, she carried much more gear than normal and part of her hold space was given over to store extra coal. Consequently, her decks were strewn with equipment, so that moving about was always difficult and often dangerous.

Understandably, relations on board became rather strained, particularly between the public school and Cambridge-educated ex-British Raj Sewell and the self-made Scot MacKenzie. Nevertheless, largely due to the peacemaking skills of Farquarson, who seems to have got on with everybody, the expedition achieved an enormous amount of work. For during the nine month long expedition the Mabahiss sailed some 22,000 miles and worked 209 stations in the Red Sea, Gulf of Aden, Indian Ocean and Gulf of Oman. The main objective, laid down by the organising committee, was the collection of biological samples from the seafloor with trawls and dredges which were used at almost every station, along with a much smaller number of mid-water samples taken with plankton nets.

These collections, preserved in the Natural History Museum in London, were of considerable importance since the deep-sea fauna of the western Indian Ocean was virtually unknown. Consequently, in the expedition's official Scientific Reports, published by the Natural History Museum between 1935 and 1967, more than 7,000 of the total of 8,500 pages are devoted to descriptions of the biological collections, including many new species - often named for John Murray, the ship or expedition participants.

But the bottom samples that failed to collect animals were still more important. For at depths ranging from about 100m to 1,300m off the coast of Arabia, and somewhat deeper in the Gulf of Oman, the trawls and dredges brought up few, if any, living animal; the mud smelled strongly of hydrogen sulphide and the overlying water was virtually devoid of dissolved oxygen. This sub-surface oxygen minimum layer is a characteristic feature of the north western Indian Ocean and several other oceanic regions. It is the result of high uptake of oxygen by abundant organic matter sinking beneath areas of high phytoplankton production, exacerbated in the case of the Indian Ocean by the fact that the inflowing water at intermediate depths is already low in oxygen content.

At the time, the Mabahiss scientists didn't understand this, nor did they or their contemporaries have the theoretical background to realise that the non-biological results were of potentially even greater significance. For example, the ship's crude and temperamental 'Acadia' Admiralty Echo-sounder had been coaxed, largely by Farquarson, into producing continuous records for most of the ship's track, so that the resulting bathymetric charts contain all the major topographical features of the region. These included the demonstration that the Carlsberg Ridge, originally discovered by the Danish research vessel Dana in 1929, had an axial valley running down the centre, now known to be typical of divergent plate boundaries.

Similarly, a series of Northeast to Southwest-trending ridges found in the Gulf of Aden are now recognised as transform faults between the African and Arabian plates, whilst gullies and ridges running parallel to the Makran coast are known to be caused by folding of sediments

as the Arabian Plate slides beneath the Eurasian Plate. During the 1930s the idea of Continental drift, and horizontal movements generally, were very unfashionable among geologists. So these results, and the fact that basalts dredged from the Carlsberg Ridge were quite different from those of the Deccan Fan in India, were interpreted at the time in terms of vertical movements and particularly as arguing against the existence of an ancient land bridge between India and Africa. Their true significance did not become apparent until after the development of the theory of plate tectonics in the 1960s.

Partly due to the outbreak of the Second World War, this expedition did not have the impact in Britain or in the scientific world generally that it might otherwise have had. But its influence in Egypt was much greater, acting as a stimulus for the development of Egyptian marine science and launching several of the participants into successful careers. This was particularly true of Hussein Faouzi. After several years as Director of Fisheries Research in the Coast-Guard Service, he was appointed in 1941 to the newly established University of Alexandria and subsequently given responsibility for building up the university's oceanography department. He ultimately became Permanent under-secretary of State in the new Ministry of Culture in Cairo, a post he held until his retirement in 1960. Thereafter, he became well known to a very wide Arabic public through his contributions to the newspaper Al Ahrām on letters, art and the humanities. Partly as a result of his experiences on the uncomfortable little Mabāhiss, with its international crew, he became an outspoken supporter of cross-cultural exchange and warned of the dangers of fundamentalism, a surprising, but very welcome, spin-off from oceanography!

Further Reading

Deep-Sea Challenge. The John Murray/Mabāhiss Expedition to the Indian Ocean, 1933-34. Edited by A.L.Rice. Unesco, 1986, 336pp.

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