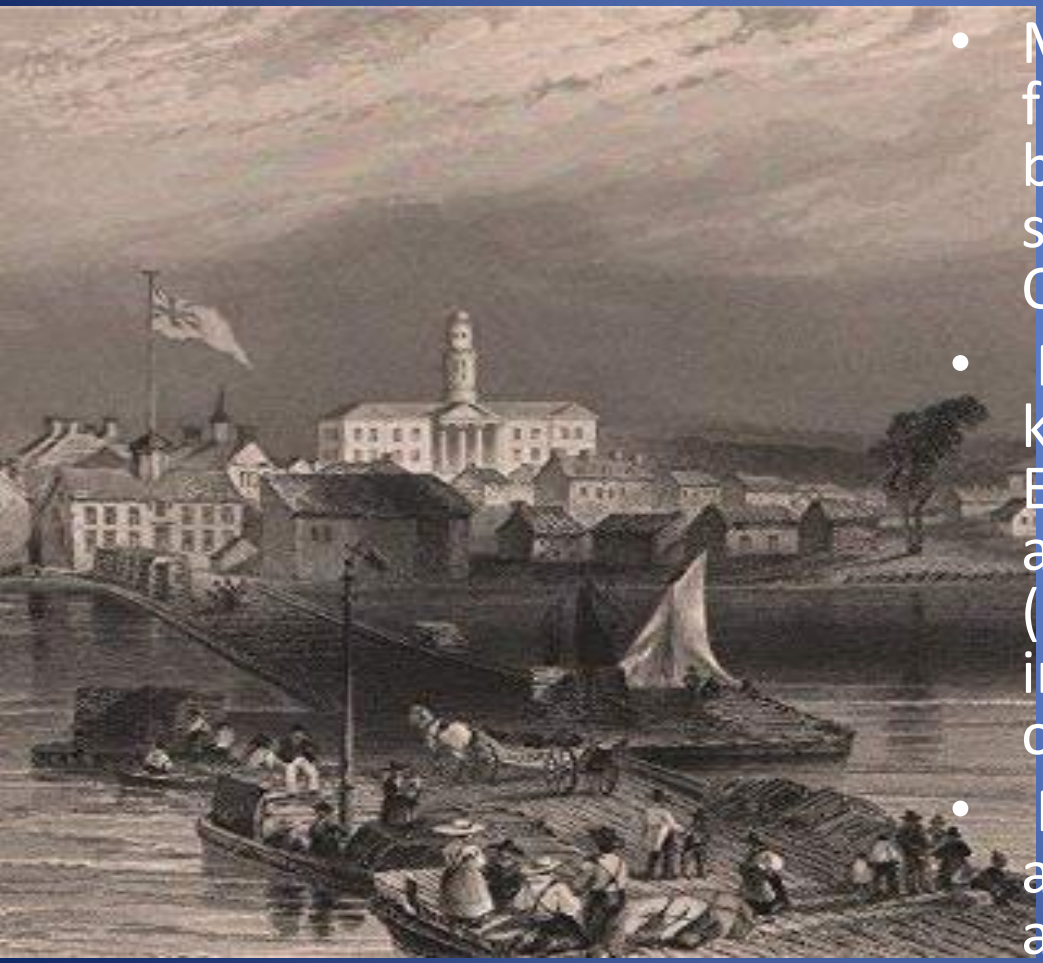
Sir John Murray FRS
Father of Oceanography.

Murray's Canadian Origins



- Murray's parents had migrated from Edinburgh in 1834. He was born in March 1841, the second son of Eliza and Robert Murray in Cobourg Ontario.
- Robert Murray was a book-keeper/ accountant from Edinburgh and not considered acceptable by Eliza's father (stepfather?), a wealthy but very irascible business man in Bridge of Allan, Scotland.
- Robert Murray however was active in business and also played an active part in Canadian politics during the Mackenzie Rebellion.

Childhood in Canada

- John Murray was educated at the public school in London, Ontario and then at the Victoria College, Cobourg.
- He was not an assiduous student and at the age of 17 when his father died was sent to Scotland where his grandfather/? had a small estate in Bridge of Allan, Stirling.

Bridge of Allan

John Macfarlane of Coneyhill

John Macfarlane of Coneyhill (1785-1868) made his fortune in Manchester in cotton and industrial investment. but returned to live in Ivy Lodge Bridge of Allan.

Fascinated by biology he created a large natural history museum in Bridge of Allan.

He also supported the National Wallace Monument, a canal to Loch Lomond, a Free Library and Stirling High School.

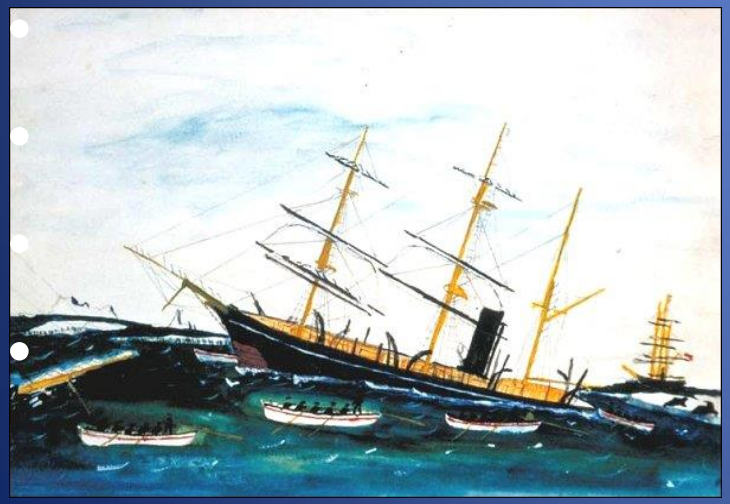
His Trustees created Museum Hall in Bridge of Allan in his memory.

Macfarlane Museum Hall
Bridge of Allan

He attended the High School of Stirling of which Macfarlane was an active financial supporter and then the University of Edinburgh where he studied medicine

The Whaler ‘Jan Mayen’

- In 1867 Macfarlane fell out with Murray who then left University and became ‘surgeon’ on whaler ‘Jan Mayen’
- He enjoyed the experience and made sufficient income to go back to University where he became a friend of RLS and ‘a chronic student attending classes in nearly all faculties but not taking exams or a degree.’



The Challenger Expedition

- The Challenger Expedition of 1872-76 **was the first great voyage of oceanographical exploration**. In forty-one months from December 1872 to May 1876 the wooden steam corvette HMS Challenger visited all the oceans of the world, with the exception of the Arctic. The vessel and crew were provided by the Admiralty, and the naval command was given to Captain George Nares.

The Challenger Expedition.

- The scientific staff were supervised by Sir Charles Wyville Thomson, a Scottish naturalist. The expedition was charged to determine deep sea physical conditions including depth, temperature and ocean currents. Charting, surveying, and biological investigations were also carried out, the expedition covered 68,890 nautical miles, gathering observations from 362 stations and making 492 deep soundings and 133 dredgings.

Murray and the Challenger

- Murray was originally involved in organising equipment for Wyville's expedition.
- Eventually, despite having no formal qualifications, he was offered a berth as assistant naturalist.
- In this role he was responsible for classification and cataloguing of all samples.

Challenger Expedition (1872~1875)

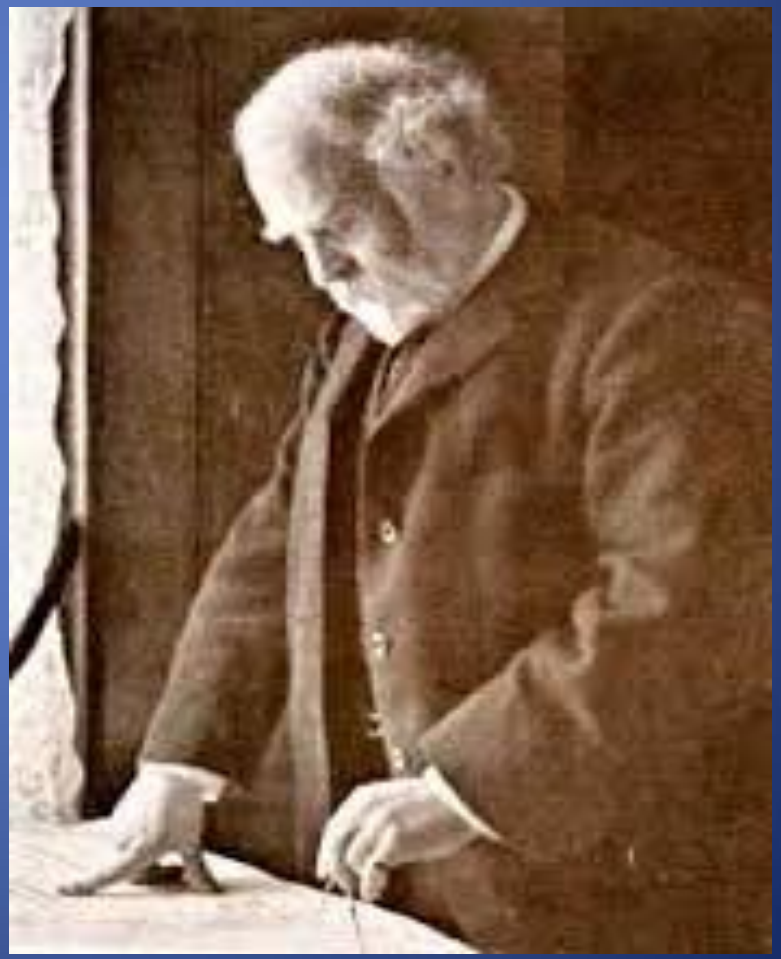
H.M.S. Challenger sampled the ocean across the globe heralding the beginning of oceanography as a science discipline

Route of Challenger

Challenger Report

Murrays Seminal Work

- Invented term Oceanography
- 50 Volume Report took him 19 years to complete, largely at Murrays own expense.
- Catalogued currents and tides, animals and plants
- Found the ‘Challenger Deep’ at 10,000metres.
- Baseline for all modern understanding of the seas



How did he fund it?

- Murray was not particularly wealthy. His grandfather had disinherited him.
- But he had observed during examination of geological specimens from Christmas Island, that there were large deposits of calcium phosphate there.
- He established the Christmas Island Phosphate Company and became very wealthy. His company taxes also repaid the costs of the Challenger Expedition many times over

Fred Pullar (1875-1901)

- Born Bridge of Allan, son of Laurence P Pullar. Director of family dyeworks and Murray's best friend.
- Educated Stirling High School and Glasgow Tech. College then worked with father.
- Interested in science and mentored by Sir John Murray started to investigate depths of lochs.
- Invented the 'Pullar sounding machine' for accurate depth measurement.

Fig. 1.—The late Fred. P. Pullar, F.R.S.E.

Airthrey Curling Club

- From 1878 Curling club used Airthrey Loch when possible. Skating was only allowed when the curlers were present.
- February 1901 Kate Rutherford fell through ice. Three others fell in trying to save her.
- Fred Pullar pulled them out but drowned trying to save Kate.

The Fred Pullar Trust

- Fred Pullar was a national hero.
- His grieving father offered Murray £10,000 in bonds (=C$5million) to continue Fred's loch work .
- Murray agreed and established a team of scientists as with the Challenger Expedition

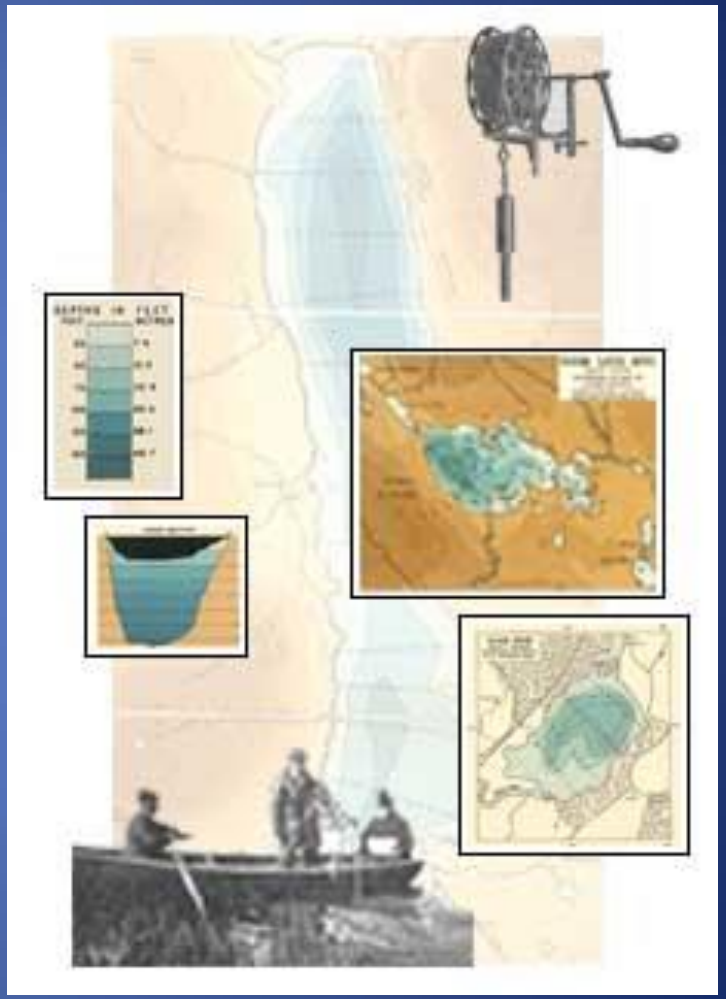
The Murray and Pullar Survey

Fig. 2.—Sir John Murray, K.C.B.

- Result was "The Bathymetrical Survey of the Freshwater Lochs of Scotland"
- Every loch with a boat (562) was surveyed. The 6 volume report had 223 coloured maps. Price five guineas

Significance of the Bathymetric Survey.

- First time freshwater lakes had been studied in detail. Many new discoveries such as seiches, role of algae and minerals.
- Became model for surveys of all the worlds great lakes, from Eyrie to Baikal, Including of course Murray's 'Home Lake ' Lake Ontario. By 1950 all had been completed except one - Lake Turkana (Rudolf) .



Lake Turkana- The Jade Sea

- Worlds largest desert lake.
- Rich in wildlife and fish
- Very hot climate 50°C
- 300km long and 35km wide.
- World Heritage National Park.
- 800 miles inland from Mombasa and sea.

The Last Survey

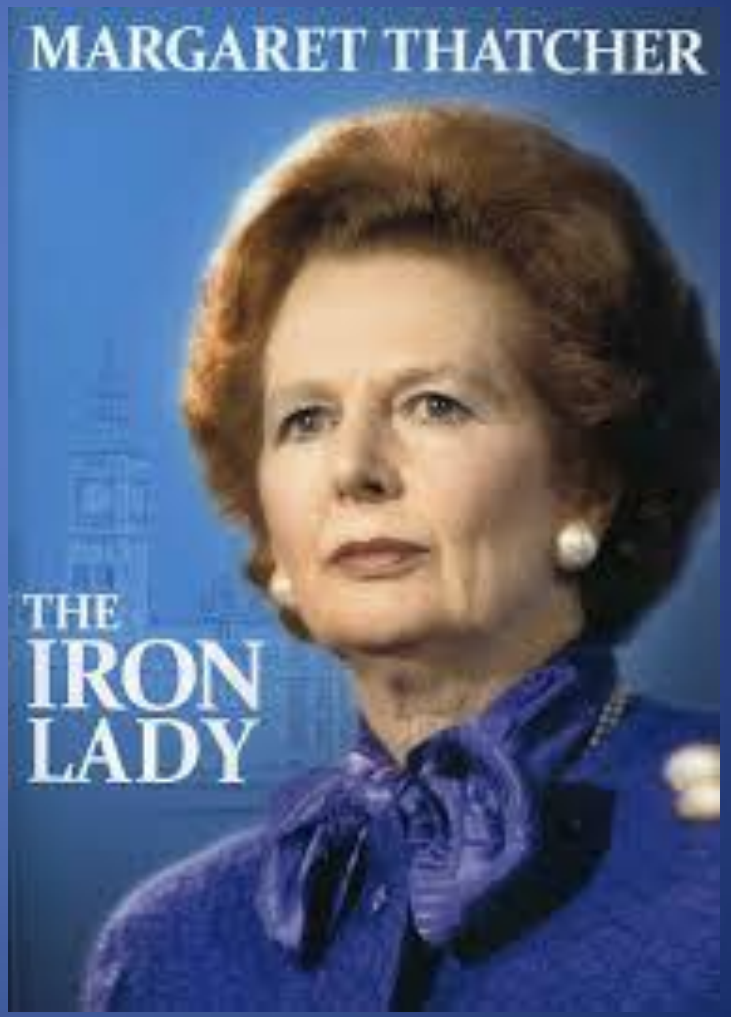
- In 1963 Kenya gained independence.
- As one of independence gifts UK offered fishery survey of Lake Turkana.
- The UK Foreign Office turned specification into a full bathymetric survey to complete the worlds great lake surveys.

The Survey 1971-81

- A 12 man team of scientists, led by Dr A J Hopson, with skipper and technicians worked for up to five years on the project in Kenya, exactly along the same basis as the famous Challenger work.
- Data and samples then transferred to UK where final Report written and completed in 1979.

But-Big Problem

- Once the Report was completed, Mrs Thatcher refused to allow the Foreign Office to pay for the cost of text editing printing and distributing the report, despite it being a Treaty Obligation.
- The Stationery Office had demanded $C120,000 to do it.
- Just like the Challenger Report. Government promises were not kept!!

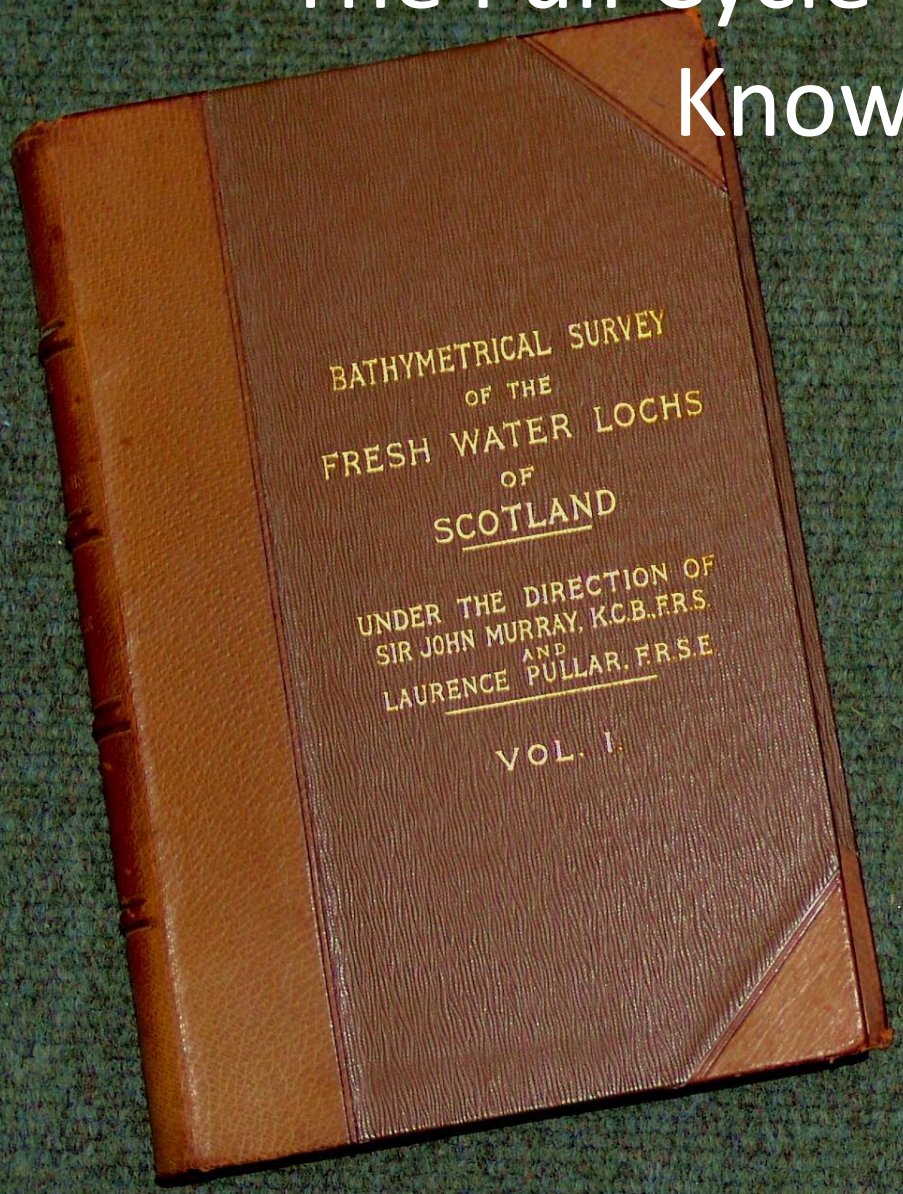


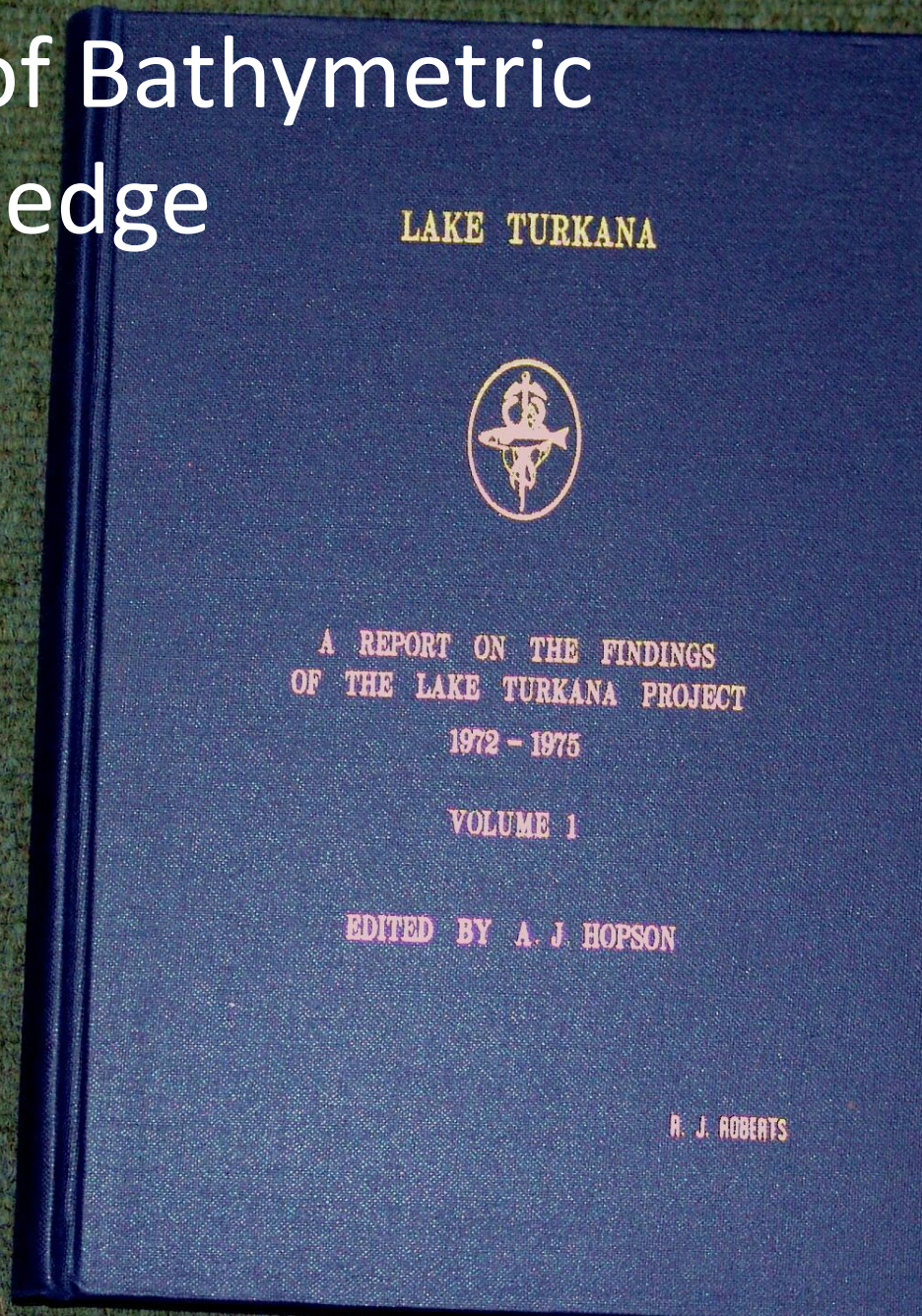
So- Back To Bridge of Allan

UNIVERSITY OF STIRLING

Institute of Aquaculture

The Full Cycle of Bathymetric Knowledge





Sadly Mrs Thatcher declined an invitation to attend the completion of the worlds Bathymetry.

The Only Recognition