

## Voyage of Discovery – Fifty Years of Marine Research at Canada's Bedford Institute of Oceanography

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Volume 43, Number 1, March 2016

URI: <https://id.erudit.org/iderudit/1035664ar>

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### Publisher(s)

The Geological Association of Canada

### ISSN

0315-0941 (print)

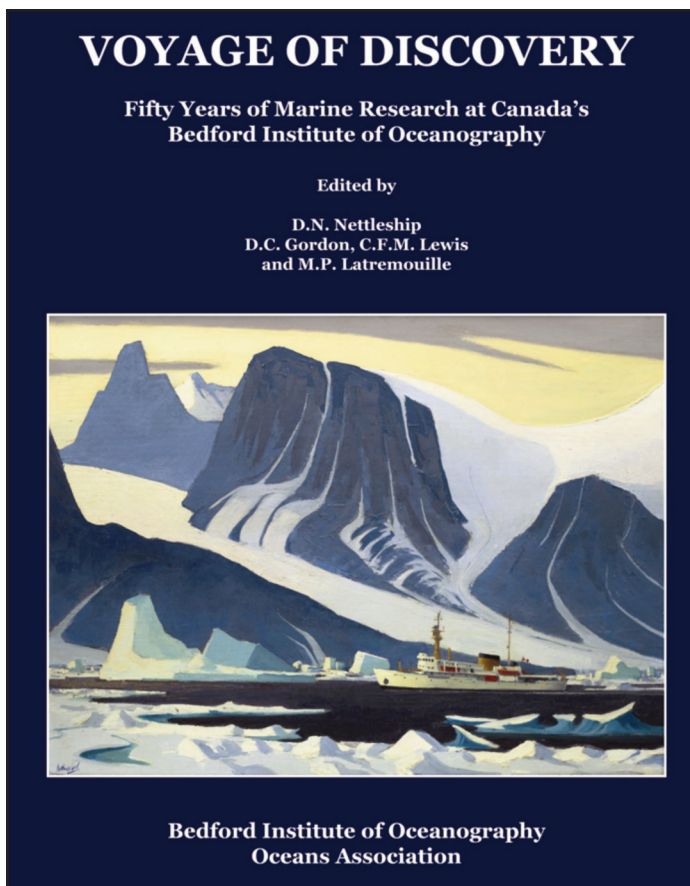
1911-4850 (digital)

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### Cite this review

Tivey, M. A. (2016). Review of [Voyage of Discovery – Fifty Years of Marine Research at Canada's Bedford Institute of Oceanography]. *Geoscience Canada*, 43(1), 91–92.

# REVIEW



## Voyage of Discovery – Fifty Years of Marine Research at Canada's Bedford Institute of Oceanography

D.N. Nettleship, D.C. Gordon, C.F.M. Lewis and M.P. Latremouille (*editors*)

*Publisher: Bedford Institute of Oceanography Oceans Association (a non-profit organization)*

*Published: 2014; 460 p.*

*Price: \$35 (CND); Hardcover*

*Available from the publisher at [www.bio-oa.ca](http://www.bio-oa.ca) or [www.amazon.com](http://www.amazon.com); there are plans for an e-book edition in the future.*

*Proceeds of the book sales are going towards public education about the oceans.*

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It is a daunting task for one book to cover the past fifty years of activity of an eminent research organization such as Canada's Bedford Institute of Oceanography, and to do justice to the contributions by the past and present institute staff in their service to the Canadian Federal Government, to the Canadian public, as well to global science by being a responsible partner in the stewardship of the world's oceans. The book itself is also a physically daunting volume weighing in at 5 lbs (2.2 kg) and printed on high quality, coated, glossy paper with 460 pages in an 8.5 x 11 inch hardcover format. The book succeeds admirably on both counts, by providing a worthy heft as a testimonial to the research and activities of the organization, by being a comprehensive history of the institute to date and by providing concise 'scientific essays' written especially for this volume that address many topical issues of interest to a broad cross-section of the curiously minded. The book is intended for a broad readership from professional oceanographers to environmental and resource managers, decision-makers on ocean policy, marine-science educators and students, and any person interested in the oceans and in Canada's unique position as the country with the longest coastline in the world.

First, however, some brief background on the Bedford Institute of Oceanography or B-I-O as it is known to many. BIO was established in 1962 in eastern Canada on the shore of Bedford Basin, in Dartmouth, Nova Scotia by Dr. William van Steenburgh who was then Director-General for science in the Canadian Federal Government Department of Mines and Technical Services. The objective was to bring together different federal agencies that had, up until that time, overseen various aspects of oceanographic science and resource management that encompassed the relatively young sciences of physical, chemical and geological oceanography, as well as hydrography, fisheries and biological oceanography. The concept was to mirror the successful establishment of oceanographic research institutions in the United States like Scripps Institution of Oceanography in La Jolla, California and Woods Hole Oceanographic Institution in Woods Hole, Massachusetts, which brought together a diverse set of scientists, engineers and dedicated seagoing capabilities to address scientific questions in the inherently interdisciplinary field of oceanography. Unlike those independent research institutions, however, BIO was designed to be a federal research laboratory with the purview to serve the needs of the Federal Government in addressing important issues related to the oceans. Interestingly,

an important area of concern at that time was the Arctic Ocean and, as we know today, the Arctic continues to be an important region environmentally, economically and strategically.

BIO was established by combining the Canadian Hydrographic Service, which brought ships to the table, the Atlantic Oceanographic Group, which was a research arm of the Fisheries Research Board of Canada and the Marine Services Branch, which was part of the Department of Mines and Technical Services overseen by van Steenburgh. The Federal Departments overseeing BIO have varied over the years and today BIO is comprised of the Federal Departments of Fisheries and Oceans Canada, Natural Resources Canada, Environment Canada and the Department of National Defence. BIO has become the largest and arguably the leading oceanographic research institution in Canada, respected around the world for its scientific contributions and its leadership on oceanographic issues.

The volume, *Voyage of Discovery – Fifty years of Marine Research at Canada's Bedford Institute of Oceanography*, as mentioned earlier, is a fitting testimonial to BIO's contributions both internationally, but also critically to national Canadian issues related to the oceans. The volume is arranged into 12 sections. The first section covers the historical aspects of the Institution's formation and evolution and is followed by a discourse on the 1970 circumnavigation of the Americas by the Institution's iconic research vessel CSS Hudson. This is followed by 10 sections that relate past and present research in 48 readable, easily accessible articles that are more like 'scientific essays' on topical subjects that demonstrate the breadth and relevance of ocean science to the modern world. The 10 sections cover the following themes: Arctic Studies, Ocean Life, Ocean Circulation and Chemistry, Hydrography and Seabed Mapping, Geological Oceanography, Fisheries, Ecosystems and Aquaculture, Marine Contamination, Technology and Instrument Development, Energy Developments, and BIO and the Law of the Sea. A final section is an Epilogue written by the editors of the volume who are all past research scientists from BIO. The book ends with a series of 10 appendices with a BIO time line, lists of annual reports, past directors, a campus history, awards, patents, and a list of authors.

Within each of the 10 main science sections are several articles written mostly in a clear and concise fashion for a broad readership and focused on the contributions of BIO in a national context, but often with global implications. These articles are informative and topical for today's world, even when discussing past historical events. I found them easily digestible, clearly articulated, copiously referenced and liberally documented with high quality images. The reader can pick and choose what to read either as a group of articles in a subject section, or by individual article, as each article gives a summary abstract of the content, and the content itself is written with sufficient background information to give the reader the appropriate context. As a practicing marine research scientist in geological oceanography, I found the Arctic Studies section and the following disciplinary sections on Ocean Life, Ocean Circulation and Chemistry, Geological Oceanography and Seafloor Mapping of most interest. The Fisheries section is interesting from a political background as important policy decisions have been made based on science as well as other

factors – perhaps not in that order. The sections on Marine Contamination, Technology Development and Energy Resources will be of historical curiosity to those with interests in those areas. The final section on the Law of the Sea is a good example of why expert advice and in-depth knowledge of a subject area is often needed when it comes to Canada's role in the international arena of global ocean issues. Many of these essays would probably make great introductory material for undergraduate students in survey classes of oceanography, as well as for the interested public. Perhaps more importantly, the volume serves as an important snapshot of oceanographic research for decision makers and managers on how science can inform critical and strategic decisions. I am curious if there is any plan to make the book and or the articles available in digital or PDF format. This would ensure more widespread dissemination and possibly greater impact. Digital copy access would probably be more important for educators perhaps. The physicality of having the book on your desk or coffee table, however, is undeniable and the price of \$35 Canadian is remarkably reasonable (although its shipping weight will cost you!).

In many of the conclusions to the individual articles, and recapitulated in the Epilogue, is the hope that those reading this volume not only gain an understanding and perspective on how valuable these contributions have been, but will also be motivated to act to encourage policy makers and government leaders both nationally and locally to support future science funding at the federal level. There are several activities such as long-term monitoring and national representation on global issues like the Law of the Sea, climate change and sea-level rise that only a national federal laboratory with the facilities and mandate of BIO can undertake on behalf of Canada's future. The *Voyage of Discovery* makes a good case for this.

In summary, the *Voyage of Discovery* will indeed take the reader to many places both geographically and intellectually, showcasing fifty years of Canadian oceanographic science and exploration, making new discoveries and expanding what is known so we can ask questions of where we go from here. The book superbly accomplishes its goal of documenting the first fifty years of the Bedford Institute of Oceanography. May the next fifty years be as productive.

### Information on the book cover painting

*The cover illustration is also worthy of note. The artist of the original oil painting, C. Anthony Law (Lt. Commander, DSC, RCN) was born in London, England in 1906 to Canadian parents and died in 1996. Commander Law was an accomplished artist and well known, both nationally and internationally, for his artwork and writings. He participated on several CSS Hudson research cruises in the eastern Canadian arctic and produced many sketches and paintings including this portrait of the Hudson surveying the East Baffin Land Current in Baffin Bay. (additional information from David Nettleship)*