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# VOICEPIPE

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The Newsletter of the BIO-Oceans Association

## German Research Vessel visits Halifax


The *Maria S. Merian* tied up on the Halifax Waterfront on a foggy Saturday 28 August 2015.

### My Visit to the *Maria S. Merian*

by Charles Schafer

My Saturday morning visit to the *Maria S. Merian* was punctuated by foggy and humid conditions but by only about 4 minutes of light showers – how about that for a summer weekend day in Nova Scotia? The visit was an eye opener for those of us retirees that are falling behind (but slowly). The ship's complement of handling equipment is best described as relatively gigantic and clearly up to the task of lifting and deploying the suite of massive sampling and seawater measuring systems that were stored around the upper deck. One piece that really impressed me was a gravity corer frame that I was told was part of a sediment sampling system capable of collecting cores of more than 10 m in length. Several Dalhousie University-labelled instruments could be seen among the mix of deck-stored equipment that included a modern version of SeaCycler, a seawater profiling system that was originally developed at BIO. Several of the ship's 14 laboratories that were open to the public featured many flat screen monitor displays of data and maps showing details of the ship's current Labrador Sea mission ("Expedition 45"). The *Maria S. Merian's* cruise track had brought the ship to several Labrador Shelf basins that featured thick accumulations of

**Voyage of Discovery is still for sale and available for holiday gift giving**

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Photos: clockwise from top left; *Maria S. Merian's* forest of cranes, the SeaCycler can be seen on the deck below the funnel; (from the left) Gavin Manson, GSC, BIO, Chief Engineer Benjamin Rogers, and Anna Konopczak, GSC, BIO and the University of Potsdam, Germany below decks in the winch room; and a view of the bridge. The inset photo shows what is essential equipment on the bridge of a German vessel, an espresso machine.

Late and Post-glacial deposits that were depicted on electronic records collected by her 4 kHz hull-mounted reflection seismic system. The ship's bridge is fairly close to what you might expect to see on a Star Wars movie set but I wondered what happens if the ship were to lose power. However, I felt confident that the crew probably have a few compasses, sextants and battery-operated GPS receivers tucked away for such an emergency.

In addition to being located next to a free-on-weekends parking lot, the *Maria S. Merian's* "Open Ship" tour event was well organized. Colour pamphlets describing the ship's mission (basic marine research disciplines), along with profiles of some of her German and Canadian scientists and details of the ship's features, were readily available at a number of tables at the starting point of this well-signed tour. Curiously, one of the paragraphs of the Open Ship tour pamphlet was entitled "Why We Study the Labrador Sea". It was positioned directly below a photo of the Captain (Bjoern Maass) that was captioned "*Maria S. Merian* Research Expedition 45". Although the arrangement of the Captain's photo and the paragraph may not have been deliberate, I thought that it was an innovative way to outline the ship's mission to a public audience. After leaving the ship with my marine surveyor son and granddaughter, I had the impression that Expedition 45 was similar to the sorts of cruises that were witnessed at BIO during the last three decades of the last century i.e., before the days of downsizing, budget cutting and bureaucratic "creep". Expedition 45's primary focus is to gain insights for "understanding climate change and deep sea processes", especially those that are recorded in the marine sediment archive of Labrador Shelf basins. I wanted to say, well I thought we had done all of that but then reminded myself that the new suite of research tools brought aboard for the Expedition would reveal (and give access to) a whole new set of data and core samples, and to high resolution seismic profiles of basin sediments, that 20th century marine scientists could only dream about at that time.

The *Maria S. Merian* is named after a 17th century German-born natural scientist. Its next leg (Expedition 46) will zero in on modern ocean processes and will examine natural changes that have taken place in the Labrador Sea before "heavy human impacts on the environment". The programs of the two Expeditions fall under a Canada-German partnership in ocean science that is said to have "accelerated" following the visit of Germany's Chancellor Angela Merkel to Dalhousie in 2012. During my visit, I was fortunate to be able to touch base with the Chief Scientist (Dr. Ralph Schneider) who was once a student of one of my former Kiel University colleagues (a fellow micropaleontologist, of course).

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## FROM THE PRESIDENT

In my first message as the President of the Oceans Association, I would like to thank all the outgoing members of last year's executive for their work over the last year and I look forward to working with this year's executive as we continue the many activities of the Association. Special thanks go to Past President Mike Hughes, both for his efforts as president and for agreeing to take on the role as events coordinator in the new executive.

This summer we enjoyed a great outing on St. Margaret's Bay on the Four Winds charter vessel, followed by lunch at White Sails Bakery. We all thank David Nettleship for organizing the event and for arranging the flyover by a Northern gannet just to show us the range of seabirds in our own backyard. Mike Hughes has informed us that Tim Lambert will again be organizing the popular bowling outings this fall, so stay tuned for more details on this. Mike will also be looking at other activities throughout the fall and winter.

Sales of the *Voyage of Discovery* continue, we have covered all our costs, but we still have lots of books left for sale. This represents a tremendous prospect to generate more profits that we can use for activities to further the objectives of the OA. I urge all members to think of opportunities for future sales, especially as Christmas is coming (I know, it is too early to talk about Christmas shopping but it's coming). One beauty of this book is that it will never become dated, so it remains as a wonderful gift to anyone with an interest in the oceans, geology, technology development, or scientific research in general.

Charles Schafer, with help from Claudia Currie, Kelly Bentham and Bruce Anderson, finalized a display on the evolution of navigation entitled "How to Navigate When You Lose Sight of Shore," with a collection of tools ranging from a sextant to a Blackberry microchip. The tools and the accompanying poster developed by Deborah Perry provide a historical perspective of the changes in navigation technology through the ages. It can be viewed outside the auditorium on the lower level and is an excellent example of the work of the OA in promoting the preservation of artifacts associated with oceanographic research and the history of BIO, and supporting efforts to increase public understanding of the oceans and ocean science.

Another example of the OA's work in preserving the history of BIO was the event organized by Don Gordon celebrating the 50th anniversary of the arrival of Bill Ford, Lloyd Dickie and Gordon Riley to Halifax. Don coordinated an event at BIO on 30 September to mark the achievements of these three individuals to the Halifax/Dartmouth oceanographic community. Don's article on these visionary leaders of ocean science can be found on page 6.

My final comment relates to the establishment of a committee to examine the purpose and activities of the OA. I was struck by some of the questions raised at our last annual meeting in May about participation in the Association and lack of candidates for executive positions. The organization has been in existence for close to twenty years, we have just finished a major project (the publishing of the *Voyage of Discovery*) and to me, we seem to be at a crossroads in terms of what the organization should be doing. After discussion with the executive, a small group is now reviewing the OA's mandate and its current activities, and it will make suggestions to the Executive as to the direction the OA should take in the future. The group will make its report early in 2016 to allow the Executive time to review the ideas well in advance of our annual meeting in May. The group is a mix of new retirees and current employees of BIO as I think it is important to set the OA up to serve the needs of those who are working now as well as those who have retired in the last number of years.

The OA is a strong organization: we have a solid, committed membership base; a great range of activities; and a healthy financial situation. This exercise simply serves to better prepare the OA for the next phase of the organization's life. We have time to reflect and consider where the OA should go to best meet the needs of present and future members. I welcome all members to become involved in this discussion as the work progresses.

Michael Murphy

President

### My Visit to the *Maria S. Merian (continued)*

I also had an opportunity to meet the Captain and to present him with a copy of the OA's *Hudson 70* coffee table book. All in all, it was a day well spent and a reminder of how much research methodologies have changed even though the overall "fundamental" mission is still about the same.

Photos: Andy Sherin

## St. Margaret's Bay Caper: Cruising and Feasting Around the Bay 5/7 August 2015

by David Nettleship

After thinking about an Oceans Association summer cruise and luncheon event in St. Margaret's Bay for a couple of years, the plan was finally formulated and executed in early August 2015! But not without challenges thrown at us by good ole mother weather. Acquiring the MV *'Four Winds'* (a Transport Canada approved vessel renowned for 20-years of service cruising Halifax Harbour and St. Margaret's Bay) for the 2-hour cruise was straightforward thanks to owners Kenny and Anna Merlin. The arrangement of where to eat after the boat trip was less easy. However, after checking a couple of options of eateries close to 'Shining Waters Marine', the *'Four Winds'* departure/return location, the highly recommended outdoors 'White Sails Bakery & Deli' on Peggy's Cove Road was selected. By early July all was set and ready to go.

As the original cruise date of 5 August approached, the maximum 30-passenger capacity of 'Four Winds' was reached – a full house! But little did we know what lay ahead for us on 5 August – overcast with heavy fog, far from the ideal for a morning cruise on the Bay. With heavy heart, the event was postponed to 7 August, and with it an upset of plans by many subscribers reducing the number of participants from 30 to 21. Such is maritime weather and its impact on activities.

The 'rain date', 7 August, provided perfect weather: at 0730h, bright blue skies, light scattered clouds, winds calm, and the air warm (+15°C), conditions that remained all day with temperatures rising to +24°C in the afternoon. All was set for an enjoyable day on the water in the morning and feasting during the afternoon.

People started to assemble at 'Shining Waters Marine' at 0930h. Our start was at 1000h with everyone aboard

Photos: clockwise for top left; Hardy 'voyagers' cruising the Bay!; Oceanside property, boats, and the sea; and Captain Kenny Merlin describing the route and legs of the proposed sea trip in St. Margaret's Bay. Photos: David Nettleship

'*Four Winds*' and introductions made about the cruise and the vessel's officers - Captain Kenny and 'Admiral' Anna - we departed the wharf to begin our water/nature tour of St. Margaret's Bay. The aim was simply to spend time cruising the Bay and enjoying its scenic wonders – the sea, islands, wildlife (marine birds and mammals) – and some impressive seaside residences and boats. And cruise we did!

Once off the wharf and out the 'Shining Waters' harbour, we passed Mink Island and steamed south past Clam Island, then farther southwest past Strawberry, Wood and Croucher islands seaward to mid-Bay. The sea was calm making progress towards desired targets easy and wonderful for viewing the water and its inhabitants including a few porpoises and seals, and numerous seabirds – Double-crested & Great Cormorants, Common & Arctic Terns, Herring & Great Black-backed Gulls, Ospreys, and even a Northern Gannet that circled

The feasting by some BIO-OA sailors and landlubbers alike – a scrumptious luncheon! Photo: David Nettleship

the boat looking for mackerel. With Ring Dove bell buoy (marking Ringdove Shoal) in sight and Shut-in Island on the horizon we continued southward mid-Bay to the south for a time and then changed course westward towards Mill Cove on the west shore of the Bay. Once our furthest southwest was reached, 'Four Winds' turned northward aiming at Fox Point and Slaughenwhite Ledge near the mouth of Hubbards Cove. Once past Hubbards and Red Bank, we continued our push north towards Queensland and Black Point. Before long, we were past Black Point and passed the island string (Croucher, Wood, Strawberry islands) once again, this time along their western shorelines. After Strawberry Island, Captain Kenny took us past little Potato Island and Clam Island into Head Harbour and northeast to Mason Point and Schooner Cove where, much to our surprise, a land-based greeter held up a sign "Welcome BIO" (person unknown). Unfortunately, this marked the end of the tour and so, '*Four Winds'* turned and headed back to Mink Island and the 'Shining Waters Marine' wharf. Once moored and secured, an elated group of sailors disembarked wishing they could continue exploring the Bay from the sea. But alas, it was time to recapture our 'land legs' and head to the 'White Sails Bakery & Deli'!

At the 'White Sails Bakery & Deli' the challenge was different and twofold: first, to find a place to park the car owing to the over abundance of local holiday folk and tourists who had also discovered this special seaside eatery on a beautiful and hot summer afternoon; the second task was equally difficult, selecting lunch from an outstanding menu ranging from authentic Montreal Smoked Meat (steamed & hand carved), Rueben & Meat platters, homemade soups and sandwiches to certified Angus burgers and fresh cut fries and Poutines – definitely something for every taste and more! Once selected, it was 'chow' time with OA friends and others. Attendance at the Luncheon exceeded the cruise, as many OA members that did not sail on the Bay came to the 'Luncheon Delight' event. Did people enjoy lunch at 'White Sails'? Well, at 1500h, there were still many OA people present continuing to enjoy the food, drinks, friends and conversation, and, of course, the intimate little sea cove with its lounge chairs, tables, and giant-sized hammock. Overall, I believe the summer '2015 St. Margaret's Bay Boat Cruise and Luncheon' can be considered a grand success.

**OA Navigation Display: Up and Running**

by Charles Schafer
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The recently completed Oceans Association (OA) navigation display can be found next to OA's ocean instrument display (constructed several years ago by David McKeown and collaborators) on the third floor just outside the lower entrance of the auditorium. Although the present location of both displays does not allow a complete view of their associated poster presentations, this deficiency can be addressed in several ways before the start of the 2016 season of general public visits to BIO. It might also be nice to move the group of recycle bins that line the wall between the auditorium entrance and the two displays, or perhaps move the displays to another location.

The navigation display poster, together with the display's hardware (optical, magnetic and electronic), attempts to portray the evolution of navigation techniques and hardware - almost from their humble beginnings – through the end of the first decade of the 21st century. The poster's short printed messages were crafted specifically for young adults and grade school-age children. The instruments are housed in a sleek wooden case that was purchased by DFO several years ago.

In the absence of BIO's former graphics resources and talent, the poster part of the display was a collaboration involving the graphics contractor Deborah Perry (who helped to design several other displays found throughout BIO's public areas), Claudia Currie (GSC-A), Scott Hayward (GSC-A), and Laurie Saulnier (NRCan, Fredericton). Dr. Tim Lambert offered his LORAN-C receiver for the project but that unit is being returned to him because one more suitable for a general public display was obtained from another OA member. Send feedback about the display to the author.

## 1965
## A VINTAGE YEAR

by Don Gordon

The 1960s were a period of rapid growth in the Halifax/Dartmouth oceanographic community. The Institute of Oceanography at Dalhousie University (IODal) was created in 1959 while the Bedford Institute of Oceanography (BIO) opened a few years later in 1962. 1965 was an especially important year with the appointment of three directors who had a huge and lasting impact on Canadian oceanography: Gordon Riley at IODAL and Bill Ford and Lloyd Dickie at BIO. This article recognizes their important contributions to our oceanographic research community and provides some background on the factors that brought them to IODal and BIO fifty years ago.

Gordon Arthur Riley (1911-1985)

Gordon Riley was born in Webb City, MO but raised in nearby Springfield, MO in the Ozark Hills far from the sea. As a child he knew nothing about the ocean except what he read in books but from an early age he was interested in natural history. He attended Drury College where he majored in biology and minored in chemistry with the idea of becoming a schoolteacher. This was during the depression when times were tough and jobs scarce. He decided to pursue a scientific career and earned a masters degree at Washington University in St. Louis, MO specializing in embryology. In 1934, he transferred to Yale University in New Haven, CT to further pursue his interests in embryology. It was here that he saw the ocean for the first time. He was profoundly influenced by a limnology course taught by a young professor from England named G. Evelyn Hutchinson and decided to switch fields and become an aquatic ecologist. He had found his calling. For his dissertation, he undertook a study of the cycling of copper in Linsley Pond just outside New Haven. Upon completion of his PhD, he accepted a position with the Bingham Oceanographic Laboratory at Yale that, except for some time spent at the Woods Hole Oceanographic Institution (WHOI), was his affiliation for many years.

Gordon loved going to sea and was one of those fortunate oceanographers that never got seasick. While at Bingham, he led many field programs and had a special interest in nearby Georges Bank and Long Island Sound. During this period, he conducted pioneering work as a quantitative biological oceanographer and developed marine ecosystem models. Using models that were necessarily simple because of the limited understanding of plankton physiology and lack of computers at the time, he evaluated the processes that control plankton stocks, production and nutrient dynamics. His great achievement was not so much in simulating plankton dynamics, which they achieved, but rather advancing the concept of using numerical modelling to investigate the dynamics of marine ecosystems. He was also well known for his research on continental shelf waters and particulate organic matter in seawater (many of tbese classic papers were republished in a special volume published by Dalhousie University in 1982). While at WHOI, he participated in Operation Crossroads by conducting oceanographic studies associated with two nuclear weapon tests conducted by the United States military at Bikini Atoll in mid-1946.

The 1960s were also exciting years for oceanography in the US. Gordon wanted to create a Department of Oceanography at Yale but, to his disappointment, received no support from the university administration. Discouraged, he let it be known that he was interested in moving to another university more supportive of oceanography. Because of his outstanding reputation, offers soon began to flow in, including from the University of Alaska and the University of Rhode Island.

In the autumn of 1964, Gordon learned from Peter Wangersky, also at Bingham, that Dalhousie University in Halifax, NS was looking for a new director of its Institute of Oceanography to replace Ronald Hayes, the founding director, who had left to become the Chairman of the Fisheries Research Board of Canada (FRBC) in Ottawa. Gordon came to Halifax for an interview and immediately hit it off with the President of Dalhousie,

Henry Hicks. He was impressed with what he saw and the potential to expand the university oceanography program to provide the young oceanographers required in Canada. The presence of BIO with its excellent fleet of research vessels across the harbour in Dartmouth was also an attractive feature. An agreement at that time between the National Research Council, Dalhousie and BIO mandated that IODal could have use of BIO ships without cost. He was offered the position and quickly accepted it. Gordon and his family moved to Halifax the summer of 1965 to begin a new life in Canada.

While he continued some research on particulate organic matter in seawater, most of his time was devoted to supervising graduate students, teaching and fostering the growth of the Institute. Running IODal as a cross-departmental institute was a challenge for some of the science department heads were difficult to deal with. Starting with a small staff of biologists based in the Forrest Building and geologists housed in the Dunn Building, he recruited new staff to include the disciplines of chemical and physical oceanography. Several new recruits also had a Yale background, namely Peter Wangersky (also 1965) and Eric Mills. He also played a role in recruiting Bob Conover and Bill Sutcliffe for BIO. During his tenure, he led the planning of the new Dalhousie Life Sciences Centre that opened in 1971. The same year saw the creation of the Department of Oceanography, a dream that he was not able to achieve at Yale. Gordon stepped down as Chairman of the new department in 1974 and retired a few years later. During his retirement years, he wrote a candid autobiography of his career in oceanography that has become an underground best seller.

Soon after they arrived in Halifax, Gordon and his wife Lucy acquired a large tract of woodland with a camp on Cox Lake in Hammonds Plains. This was his first introduction to the north woods and he loved them. He put down roots in a way that he had not since leaving his boyhood home in the Ozarks. Weekends in the country became very important and he found a sense of peace paddling a canoe or tramping in the woods. He also enjoyed making rustic furniture, woodcarving and maintaining a network of trails. Gordon passed away in 1985 after a long battle with cancer.

William (Bill) Ford was born in Montreal, QC but soon after his family moved to British Columbia and he spent most of his childhood in Victoria. Being raised on Vancouver Island, he developed a love of the ocean at an early age. After graduating from Victoria College (now the University of Victoria), he earned a BSc in chemistry

William Livingstone Ford (1913-1992)

from the University of British Columbia (UBC) followed by an MSc in physical chemistry. He then moved to Northwestern University in Evanston, IL where he pursued a doctoral degree in physical chemistry. In 1940, Bill began his professional career as a research chemist with Dupont in Wilmington, DE where he worked in their Nylon Research Center on the development of high strength nylon yarns for defence applications. He was not particularly happy with this job and soon began exploring job possibilities in oceanography in both the US and Canada. In 1944, he moved to the Woods Hole Oceanographic Institution (WHOI) in Woods Hole, MA. While there he worked on various projects including developing a conductivity meter for use in recording bathythermograph (BT) packages for submarines so that data on vertical temperature gradients could be included in ballasting procedures. At WHOI he met Gordon Riley and worked with him during Operation Crossroads at Bikini Atoll in the South Pacific.

In 1948, Bill returned to Canada to work with the newly established Naval Research Establishment of the Defence Research Board (DRB) in Dartmouth, NS. While here, he led the participation of the Naval Research Establishment in Operation Cabot, a multi-ship survey of the Gulf Stream south of Halifax carried out in collaboration with WHOI and the US Navy Hydrographic Office. He also led a team that did pioneering work on variable depth sonar that led to an operational system deployed by the Canadian Navy. After a one-year international training course at the National Defence College in Kingston, ON, Bill moved to Ottawa to become the Director of Scientific Services (Navy) for the Department of National Defence. A few years later, he moved back home to British Columbia to become the Superintendent of the Pacific Naval Laboratory in Esquimalt. He returned to Ottawa in 1959 to become the Scientific Advi-

Scientific staff involved with Operation Crossroads at Bikini Atoll in 1946. In the front row, Gordon Riley is third from left and Bill Ford second from right.

sor to the Chief of Naval Staff and in 1963 he advanced to Chief of Personnel for DRB.

When BIO opened in 1962, William (Bill) English was appointed as the first director.

However, he moved back to the Pacific Naval Laboratory in Victoria, BC in 1964 leaving Earlston Doe as acting director. Bill Ford was offered the position and moved to BIO in 1965. He considered this posting as his dream job. His four years at WHOI and 17 years at various DRB establishments across Canada had helped prepare him for his new responsibilities as a senior federal oceanographic research manager. He felt that BIO had the potential to become a world player in oceanographic research and, after many years in administrative positions, he was eager to get back into a research environment.

Bill was at the helm of BIO during a period of unparalleled expansion. He led the development of BIO into a centre of marine research agencies and strived to ensure that programs were balanced among the various marine science disciplines. He instilled a strong sense of collegiality and cooperation among the various agencies on campus, fostered multidisciplinary research, and was instrumental in building the Institute into a major oceanographic laboratory of international standing. Throughout his time at BIO, Bill was responsible for ensuring that the Institute, comprised of several autonomous laboratories under two or more federal departments, functioned as a synergistic research community. He also nurtured close ties with universities, especially with the Institute of Oceanography across the harbour at Dalhousie University. He visited the laboratories and ships on a frequent basis to learn first hand about how work of the many diverse research programs was progressing.

He suffered a personal tragedy in 1969 when his wife Hazel was killed in a tragic car accident but a year later he married Marjorie Jones who was his faithful partner for the rest of his life.

As well as being an accomplished and effective federal science manager, Bill made numerous scientific contributions during his tenure as BIO director. For example, he played an important role in the organization of Hudson 70 and served as Scientific Coordinator for Operation Oil that dealt with the cleanup of the 1970 Arrow oil spill in Chedabucto Bay.

Bill loved to go to sea and participated in BIO cruises whenever he could arrange to get away from the office. He enjoyed the challenges and rewarding nature of fieldwork, especially in the Arctic, and felt that spending time at sea participating in research programs with colleagues was an important part of his job. Bill was also a passionate sailor who belonged to the Royal Nova Scotia Yacht Squadron. He owned a series of sailboats kept moored off his house in Boulderwood on the Northwest Arm and loved to cruise with friends and colleagues, especially along the Eastern Shore.

Bill retired in 1978 after serving 13 years as director of BIO and received numerous accolades from colleagues for his many accomplishments over a 38-year career as a research scientist and manager. He and Marjorie were able to enjoy eight happy retirement years of travelling, sailing and being with family and friends. Unfortunately, in 1986, he suffered a major stroke that left him partially paralysed and unable to speak. Despite extensive therapy, he was never able to regain his mobility or speech and spent the rest of his life confined to a wheelchair. Amazingly, he maintained an active interest in events and people at BIO up to his death in 1992. Bill's most significant contribution over his long career was his profound and lasting impact on building BIO into the world-renowned oceanographic institution that it became in the 1970s. He instilled a spirit of goodwill and cooperation amongst the BIO agencies and staff that has continued to the present day.

Lloyd Dickie was born in Canning, NS and spent his childhood in nearby Kingsport, NS where his father was a commercial fisherman. After earning a BSc at nearby Acadia University, he went on to obtain a masters degree in zoology at Yale University in New Haven, CT. This was followed by a PhD in zoology at the University of Toronto. Lloyd spent the early part of his profes-

Lloyd Merlin Dickie (born 1926)

sional career working as a research scientist for the Fisheries Research Board of Canada (FRBC) at the St. Andrews Biological Station in St. Andrews, NB. Trained as a fisheries biologist, he conducted a wide range of research projects dealing with bloodworms, shellfish (especially scallops), groundfish and fisheries management.

In 1965, the Atlantic Oceanographic Group (AOG), originally based in St. Andrews but now housed at BIO, expanded and became an independent Fisheries Research Board of Canada laboratory reporting directly to the Chairman of the FRBC. Lloyd was enticed to move to BIO and assume the director's position. This marked the beginning of a new and expanded FRBC program to study physical, chemical and biological processes underlying marine production with special reference to fisheries. Shortly thereafter it became known as the Dartmouth Laboratory of the Fisheries Research Board and was formally named the Marine Ecology Laboratory (MEL) in 1968.

Working closely with Bill Ford and other BIO directors, Lloyd oversaw a period of unprecedented expansion in the multidisciplinary marine ecology program at BIO. Resources were abundant and he was able to recruit new staff, both established scientists from the United States and overseas (e.g. Bob Conover, Ken Mann, Bill Sutcliffe) as well as recent graduates from Canadian universities, to build expertise in all aspects of marine ecology. He encouraged the development of ecosystem level field studies such as the St. Margaret's Bay and Gulf of St. Lawrence programs. Under his leadership, MEL quickly developed an international reputation for excellence in marine ecology and, as a part of BIO, became a dream place for scientists to work.

In 1974, Lloyd took a leave of absence to move across the harbour to become the Chairman of the Department of Oceanography at Dalhousie when Gordon Riley stepped down. He returned to MEL in 1978 as senior research scientist, a position that he held until retirement. During this period, he developed an international reputation for his work on marine production systems including fisheries bioenergetics, genetics, acoustics, theory of search, species interaction, population demography and size-spectrum theory. Lloyd has always had a diverse range of interests. For example he recently published a book (co-authored with Paul Boudreau) entitled Awakening Higher Consciousness (http://awhico.com) that explores creation myths of ancient Sumerian, Egyptian, Babylonian and Hebrew cultures.

Lloyd remains active today at the age of 89, living with his wife Marjorie in the house on the shore of Lake Charles in Dartmouth that they built soon after they arrived at BIO.

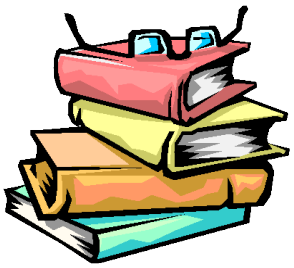
**Summary**

The Canadian oceanographic community owes a huge debt to these three outstanding individuals who arrived in Halifax and Dartmouth within a few months of each other in 1965. They were at the helm of IODal and BIO during a period of unprecedented growth in Canadian oceanography and used their wisdom and experience to develop both institutes into organizations of international standing. They were a perfect fit for the positions they filled and well respected by staff and external organizations. All three were scientists first (both Gordon and Lloyd were elected to the Royal Society of Canada) but were willing to take on a managerial role to advance the field of oceanography. They loved to go to sea and were never seasick. They were good friends who socialized frequently and worked together to build a world-renowned oceanographic community in Halifax and Dartmouth. Once they settled here, they never departed. May their legacy live on forever.

Thanks to the numerous people who reviewed this article including Lloyd Dickie and the daughters of Gordon Riley and Bill Ford.

It was most fitting that the BIO auditorium was officially named the William L. Ford Auditorium on occasion of the 50th anniversary of BIO in October 2012.

[Editor's note: Readers are reminded of the article about Lloyd Dickie in *VoicePipe 57,* January 2013.]



# Noteworthy Reads: Book Reviews in Brief

*David N. Nettleship*
*Book Review Editor*

The ***Noteworthy Reads*** section is an effort by BIO-OA to produce a representative list of recent noteworthy book publications related to the marine sciences and other subjects of general interest. The listing is not intended to be comprehensive or complete, but merely an attempt to highlight a number of 'good reads' that may be of interest to OA members and associates. Most books listed are available at local bookstores and public libraries. Book prices are regular retail in Canadian funds, but discounts of 20-30% are normally available on line at: e.g., amazon.ca or chapters.indigo.ca. Contributions of book reviews to 'Noteworthy Reads' are welcome – send via e-mail to David Nettleship: dnnlundy@navnet.net (phone: 902-826-2360).

## Special Publication:

### Geology of Canada

**Fensome, Robert, Graham Williams, Aicha Achab, John Clague, David Corrigan, Jim Monger, and Godfrey Nowlan (Eds.). 2014. Four Billion Years and Counting: Canada's Geological Heritage.** Nimbus Publishing (with Canadian Federation of Earth Sciences), Halifax, NS. 402 pp. Softcover, $39.95 (ISBN 978-1551099965).- This book is special both in content and presentation, and masterfully delivers the story of Canada's geology in a manner never before attained. Its layout and design with striking illustrations immediately captures the attention of the browser – from professional geologist to casual bystander – and the clarity of the well-written text seals the experience. The editors' pronouncement that the book forms "A fascinating exploration of Canada's geology for everyone intrigued by the landscape and the vital connection between ourselves and what lies beneath our feet" is most appropriate. The text by over 100 specialists unveils the geological history of Canada that spans more than four billion years, and makes this formidable task seem effortless by a careful and ingenious integration of words with over 700 photographs, diagrams, and illustrations. This book is a milestone publication that will stand as a principal sourcebook for information on the geology of Canada for decades to come – an outstanding accomplishment by the Canadian Federation of Earth Scientists, its editors and contributing scientists. Kudos to all!

### General Reviews

**Barnett, Cynthia. 2015**. Rain: A Natural and Cultural History. Crown Publishers, New York, NY. 356 pp. Hardcover, $29.95 (ISBN 978-0804137096).- A riveting introduction to the phenomenon of rain from science and biology to its significance on development of human cultures and beyond. Whether too abundant or scarce, rain is a unifying force that has shaped all of us and will continue to do so through present and future changes in the global climate.

**Beaugrand, Gregory. 2015. Marine Biodiversity, Climatic Variability and Global Change.** Routledge (Taylor & Francis Group), New York, NY. 486 pp. Hardcover, $124.00 (ISBN 978-1844076789).- A much needed and timely update on the known effects of human activities on marine biodiversity including climate change. A pioneering book on a much neglected topic that will likely be the key challenge for marine scientists in the near future. A roadmap to the nature of the problem and needed actions.

**Casey, Susan. 2015. Voices in the Ocean: A Journey Into the Wild and Haunting World of Dolphins.** Doubleday Canada, Toronto, ON. 320 pp. Hardcover, $34.00 (ISBN 978-0385679404).- This well researched and written account of the world of dolphins reveals both the truths and myths associated with this fascinating group of marine mammals, as well as explaining why they elicit such intense emotions and behaviours in humans. A valuable read.

**Costa, James T. 2014. Wallace, Darwin and the Origin of Species.** Harvard University Press, Cambridge, MA. 331 pp. Hardcover, $ 50.00 (ISBN 978-0674729698).- An important read for anyone interested in the history of evolutionary biology and the background leading to the joint announcement by Charles Darwin and Alfred Russel Wallace in 1858 of their independent discovery of natural selection, the mechanism that explains the diversity of life on Earth. Costa concludes the two naturalists to be true equals!

**Eldredge, Niles. 2014. Extinction and Evolution: What Fossils Reveal about the History of Life.** Firefly Books, Buffalo, NY. 256 pp. Hardcover, $45.00 (ISBN 978-1770853591).- A clear and informative review of the basics of evolutionary theory and the contribution that paleontology has made recently to further augment the process and model. The integration of the beautiful 160 colour plates depicting more than 200 fossils and living species with the clear and informative text provide an exciting overview of evolution as revealed by the fossil record.

**Frink, Helen Hiller. 2015. Oil, Ice, and Bone: Arctic Whaler Nathaniel Ransom.** Peter E. Randall Publisher, Portsmouth, NH. 192 pp. Hardcover, $30.00 (ISBN 978-1931807965).- The author, descendent from two families of New England whalers, provides an eye-witness account of mid-19$^{th}$ century whaling based on recently discovered journals of Nathaniel Ransom, a relative and whaler. A vivid account of hunting arctic Bowheads in Alaska for baleen and whale oil, and the massive slaughter and loss of 32 whaling vessels in 1871. An eye-opener on the whaling life and industry.

**Fuller, Errol. 2014. Lost Animals: Extinction and the Photographic Record.** Princeton University Press, Princeton, NJ. 240 pp. Hardcover, $32.80 (ISBN 978-0691161372).- A unique photo collection of 28 extinct animals that mainly disappeared between the 1870s and early 1900s, most from human activities, including the familiar Great Auk, Passenger Pigeon, and Ivory-billed Woodpecker. The story of each animal is given along with details of each photograph presented. Inherent within each example is a warning for the future, showing the ease in which species can be lost.

**Gerald, Michael C. and Gloria E. Gerald. 2015. The Biology Book: From the Origin of Life to Epigenics, 250 Milestones in the History of Biology.** Sterling, New York, NY. 528 pp. Hardcover, $32.95 (ISBN 978-1454910688).- Looking for a refresher in biology? Well, if so, this engaging and colourfully illustrated volume may be the perfect fit. The Geralds present 250 landmarks in the biological sciences that together cover about every major subdiscipline of biology and more. A succinct and authoritative sourcebook on the science of life.

**Harari, Yuval Nooh. 2014. Sapiens: A Brief History of Humankind.** Signal Publishing (McClelland & Stewart), Toronto, ON. 443 pp. Hardcover, $34.95 (ISBN 978-0771038501).- An important overview of key revolutions that shaped world history: cognitive, agricultural, and scientific. This is a magnificent book to read, study, mull over, and enjoy the apparent chaos of history with the challenges our heritage presents to us for our future.

**Hargittai, Magdoina. 2015. Women Scientists: Reflections, Challenges, and Breaking Boundaries.** Oxford University Press, Oxford, England. 384 pp. Hardcover, $32.95 (ISBN 978-0199359981).- An important review of the state of the modern female scientist based on 60 in-depth interviews of accomplished women researchers inside and outside academia from 18 countries on four continents including eight Nobel laureates. Cohesive ideas and insightful conclusions are reached on how women have attained professional success despite the many unique challenges they faced during their careers.

**Hastings, Philip A., Harold J. Walker and Grantly R. Galland . 2015. Fishes: A Guide to Their Diversity.** University of California Press, Berkeley, CA. 336 pp. Hardcover, $65.00 (ISBN 978-0520278721).- 'Fishes' presents a broad overview of the anatomy and diversity of the 82 orders of fishes and more than 150 of the most commonly encountered families, mostly from the archives of the marine vertebrate collection at Scripps Institution of Oceanography. Distinguishing features are identified supplemented with clear photographs and key references for each group. A unique and comprehensive reference for fisheries scientists and students.

**Horwitz, Joshua. 2014. War of the Whales: A True Story.** Simon & Schuster, New York, NY. 448 pp. Hardcover, $34.00 (ISBN 978-1451645019).- A most interesting overview of the relationship between whale strandings and naval exercises performed in the Bahamas to test a sound surveillance system using high-decibel, low frequency sonar signals. Forensic examinations revealed evidence that the signals overwhelmed the whales' biosonar system and caused physiological damage as well. The courts ruled against the US navy and EIS requirements were imposed on all future naval testing and training manoeuvres in marine waters.

**Iselin, Josie. 2014. An Ocean Garden: The Secret Life of Seaweed.** Harry N. Abrams, New York, NY. 144 pp. Hardcover, $14.40 (ISBN 978-1419711701).- The beauty of seaweed is displayed in stunning colour portraits of more than 200 specimens collected from coastal California and Maine. Captivating images made using a flatbed scanner with informative text – a delightful visual treasure of highly adapted marine organisms!

**Jakimchuck, Ronald D., Wayne Campbell, and Dennis A. Demarchi (Eds.). 2015. Ian McTaggart-Cowan: The Legacy of a Pioneering Biologist, Educator and Conservationist.** Harbour Publishing, Vancouver, BC. 416 pp. Hardcover, $49.95 (ISBN 978-1550176230).- A tribute to and celebration of a man whose outstanding scientific, conservation and educational contributions to the documentation of nature within British Columbia and beyond. An invaluable resource for anyone interested in conservation science in Canada.

**Jamieson, Alan. 2015. The Hadal Zone: Life in the Deepest Oceans.** Cambridge University Press, Cambridge, England. 408 pp. Hardcover, $71.00US (ISBN 978-1107016743).- Compiles and reviews existing scientific knowledge on life at ocean depths greater than 6000 metres, and presents 95 b&w images of ultra-deep trenches and the living communities that exist within them. Amazing revelations of the deep ocean.

**Kolbert, Elizabeth. 2014. The Sixth Extinction: An Unnatural History.** Henry Holt, New York, NY. 319 pp. Hardcover, $32.00 (ISBN 978-0805092998).- A book to be read by everyone about the future of life on earth by Pulitzer Prize winner Elizabeth Kolbert. A disturbing account of the current loss of species around the world – aquatic and terrestrial – with the unavoidable conclusion, based on rigorous scientific findings, that a sixth mass extinction (five have taken place over the last half billion years) is underway.

**Kress, Stephen and Derrick Jackson. 2015. Project Puffin: The Improbable Quest to Bring a Beloved Seabird Back to Egg Rock.** Yale University Press, New Haven, CT. 357 pp. Hardcover, $37.95 (ISBN 978-0300204810).- A seabird conservation effort that spans 40+ years of work and monitoring that stands alone in northeastern North America. The story is the realization of a childhood dream of Steve Kress of re-introducing the Atlantic Puffin to an island in Maine where a puffin population had been eradicated by humans in the 1880s, along with most other colonies in the region. A success story that illustrates what can be done to help correct the tragedies of the past given the determination of individuals and encouragement of associated organizations – in this case, the Canadian Wildlife Service and National Audubon.

**Lovelock, James. 2015. A Rough Ride to the Future.** Overlook Press, New York, NY. Hardcover, $32.75 (ISBN 978-0241004760).- This most recent work of 95-year old James Lovelock, the originator of the Gaia theory, while arresting and disturbing, provides glimmers of hope that humans can survive as a species despite the rapidly changing atmosphere. He suggests we accept what is happening and prepare for the inevitable changes to come. His views are, as always, thought-provoking and useful in focusing our attention on climate change and the future.

**Montgomery, Sy. 2015. The Soul of an Octopus: A Surprising Exploration into the Wonder of Consciousness.** Atria Books (Simon & Schuster), New York, NY. 272 pp. Hardcover, $34.00 (ISBN 978-1451697711).- An enchanting exploration of the world of octopuses, showing these alien invertebrates to possess both intelligence and emotions. Part memoir and part science observation and reporting, this book will fascinate and inform about underwater creatures that share many human characteristics. An exciting and informative read on many levels.

**Moore, Peter. 2015. The Weather Experiment: The Pioneers Who Sought to See the Future.** Farrar, Straus and Giroux, New York, NY. 416 pp. Hardcover, $34.50 (ISBN 978-0865478090).- An historical account of the development of weather forecasting and predicting future events by 19th century meteorologists and other scientists. Anyone with an interest in the foundations of scientific weather forecasting will be captivated by this informative and readable summary.

**Nye, Bill and Corey S. Powell. 2014. Undeniable: Evolution and the Science of Creation.** St. Martin's Press, New York, NY. 309 pp. Hardcover, $29.99 (ISBN 978-1250007131).- A well written expose of biological evolution and why it captures our attention both scientifically and philosophically like no other idea generated about the natural world. Author Nye and editor Powell succeed in bringing evolutionary theory to life for everyone.

**Palumbi, Stephen and Anthony Palumbi. 2014. The Extreme Life of the Sea.** Princeton University Press, Princeton, NJ. 256 pp. Hardcover, $34.95 (ISBN 978-0691149561).- An exploration of the sea that reveals how life can flourish under extreme conditions and what it is capable of through time. The authors review the incredible diversity of life forms in the oceans and their ecological roles, highlighting certain species with unique adaptations to the marine environments they inhabit. They end with a warning of the likely negative impact of global warming and pollution on marine diversity. An important overview.

**Parker, Steve (Ed.). 2015. Evolution: The Whole Story.** Firefly Books, Richmond Hill, ON. 576 pp. Hardcover, $39.95 (ISBN 978-1770854819).- A comprehensive, in-depth account of how each of the major groups of living organisms diversified and evolved over time. A story that is presented in a manner that makes the process of evolution easy to understand and stimulating to all readers regardless of previous knowledge of the subject.

**Sardet, Christian. 2015. Plankton: Wonders of the Drifting World.** University of Chicago Press, Chicago, IL. 224 pp. Hardcover, $49.50 (ISBN 978-0226188713).- A beautiful introduction to the incredible world of plankton – a diverse group of ocean organisms that differ in shape, size, and colour, and depend on drifting currents – via hundreds of close-up photographs with a text that explains the biological features of each species presented and their connection to the aquatic food web and larger living world. Overall, a stunning book difficult to put down!

**Weinberg, Steven. 2015. To Explain the World: The Discovery of Modern Science.** Harper Collins Publishers, New York, NY. 417 pp. Hardcover, $35.95 (ISBN 978-0062346650).- A masterful journey through humankind's coming-of-age presented in four parts: Greek Physics, Greek Astronomy, the Middle Ages, and the Scientific Revolution. An insightful examination of the structure of science by a world renowned physicist, and a reminder of how science works and why it matters. A book that should be read by all science professionals and students.

**Whitehead, Hal and Luke Rendell. 2014. The Cultural Lives of Whales and Dolphins.** University of Chicago Press, Chicago, Il. Hardcover, $42.00 (ISBN 978-0226895314).- A unique work and a must read for anyone with an interest in cetaceans – whales and dolphins – and animal behaviour *per se*. Based on decades of research on Sperm and Killer whales, and a careful in-depth synthesis of the literature, Whitehead and Rendell demonstrate the existence of culture, community and social learning in whales and dolphins. This is an exceptional book!

## Picture Essay: Across the Continent and Back in a Vintage Volkswagen Camper

by Ron Macnab

Around mid-June, Mary and I loaded up her 1986 VW Westfalia and set out to attain an objective that had been near the top of our bucket list for a long time: a transcontinental road trip to the west coast of Vancouver Island. As readily attested by anyone who's gone on such a trek, it's a great opportunity to observe our country's eye-filling scenery and to encounter interesting people.

I append below a few photos that illustrate memorable highlights of the trip.

June 10: the trek begins at the Dartmouth Waterfront.

June 12: replacing a failed alternator at a truck stop in Ste. Hélène de Bagot, QC.

June 23: Main street in Erickson, MB, preparing for a tow to Brandon where a failed water pump was replaced. Gotta love that CAA!


July 2: Ready for a half-shaft transplant, Calgary, AB.


July 7: midpoint of the trip, at the western terminus of the Trans Canada Highway, Tofino, BC.


July 23: waiting to replace a loose ball joint, Ottawa, ON.

July 28: back home at last, Dartmouth, NS.

To summarize, altogether we racked up 13,900 kilometres during seven weeks on the road, driving across eight provinces and five states. While it may seem that the voyage consisted of a series of mechanical mishaps, this was really not the case. When travelling in a vintage automobile, one must be prepared for the occasional malfunction or breakdown. Therefore it helps to hit the road in a frame of mind where one expects to encounter difficulties, and then to overcome them with a minimum of fuss in order to move on and to enjoy what's yet to come.

On reviewing the above, I note that I've not said anything about the magnificent scenery that we enjoyed, nor about the friendliness of the people that we met. Neither did I mention the gas tank caps that I managed to leave behind at two gas stations (one with a full set of keys attached), nor the hitchhiking mouse who accompanied us until a borrowed trap put an end to his nocturnal forays. I'll save those stories for another time.

## Springfield Lake, where Science and History meet

by Ned King and Philip Spencer

A sidescan sonar and sub-bottom profile survey was conducted on the weekend of May 23 & 24, 2015 in Springfield Lake, located in Annapolis County, Nova Scotia. This volunteer effort had a three-fold purpose: first to test the survey equipment prior to it being shipped north for the field season, second to further Philip's historical research on the large steam saw mill of the Davison Lumber Company that once ran on the north east shore of this lake, and third, to investigate if thick glacial sediments and a climatically-induced lake-level low-stand in the Dartmouth area might be more widespread.

Figure 1. PFDs were donned and then the makeshift equipment frame was lowered into the water once we were away from the shallow dock. The lake remains shallow and rocky for a considerable distance from shore but our host, Dave, contributed not only his boat but his local knowledge to keep us on target.

The Davison lumbering operation of Bridgewater was purchased by American interests in 1903 for $1.25 M. This saw mill was built on the edge of Springfield Lake in 1905 and until the company failed in 1921, it was the largest lumber mill in Eastern Canada. The DeMone family now make this land their cottage retreat, conveniently located on the edge of the most intensive operations. The family offered the vessel, room, board and manpower towards the effort.

To facilitate the collection of geophysical data, Ned King contributed with his experiences from surveying 19 lakes in Nova Scotia, all done with portable equipment on small boats and canoes.

The devices used were the Imagenix SmartScan sonar and the SyQuest StrataBox, a 7kHz sub-bottom profiler otherwise used for Beaufort Sea coastal studies and loaned to us by Dustin Whalen. Both instruments were secured to a wooden frame to be placed across the bow of a 14 ft boat, driven by a 2HP motor.

The deployment started early Saturday morning. Dodging a short snow-flurry as motor issues were worked out, we soon started surveying. Initially encountering a rocky nearshore, we could not begin a transect until at least 15 metres from the dock. The wind picked up considerably after only an hour and the survey was delayed until the evening. Another hour of evening surveying covered the north parts of the lake and by then we had a sense of both the geology and the mill artefacts. On Sunday morning, still with some wind, another hour and a half of surveying had to suffice as our old motor complained. Ned escaped the onslaught of blackflies as Philip and Dave then gathered water and grab samples from the lake, obtained using a 1 litre Niskin bottle and a VanVeen grab.

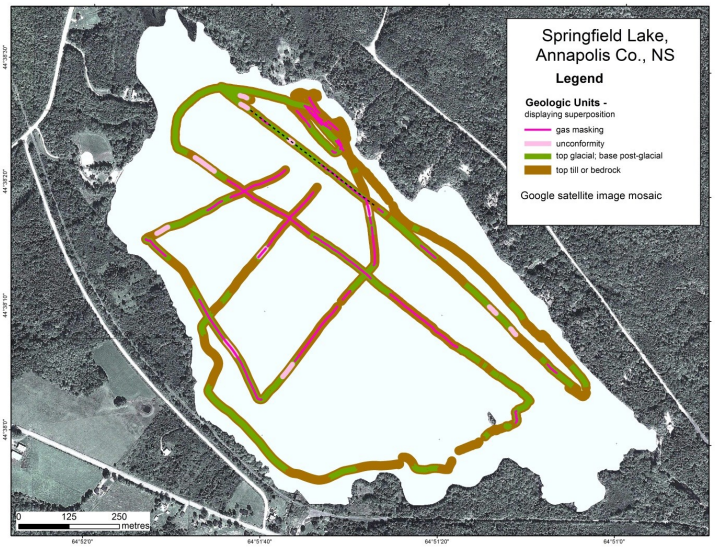



Figure 2. The geophysical survey covered a good portion of the lake and allowed a general mapping of sediment type distribution. The till and bedrock surface is locally nearly three times the water depth, with several sub-basins carved by the glacier. These collected thick glacial muds while the retreating ice front was very nearby. Less than 1 metre of mud has collected since, their base marked by the green. Natural gas has developed in most of these basins.

### Geology

Figure 2 shows the extent of the survey tracks, totaling about 6.5 km. The deepest water depth surveyed is 2.7 m and the deepest till or bedrock surface is 7.5 m below lake level. Figure 3 shows the typical sub-bottom stratigraphy and some features. These include a deeply glacially sculpted base of the lake compared to the present lakebed and muds with an irregular distribution, methane beds, both naturally occurring and mill-log generated, and the logs themselves, both buried and on the lakebed.

The acoustic sedimentary stratigraphy is very similar to that found in lakes surrounding the Dartmouth area. The till or bedrock is overlain by from 0 to 5.5 metres of muds comprising 2 main units. The lower is stratified and draped on the till/bedrock. In Dartmouth this unit was demonstrat-

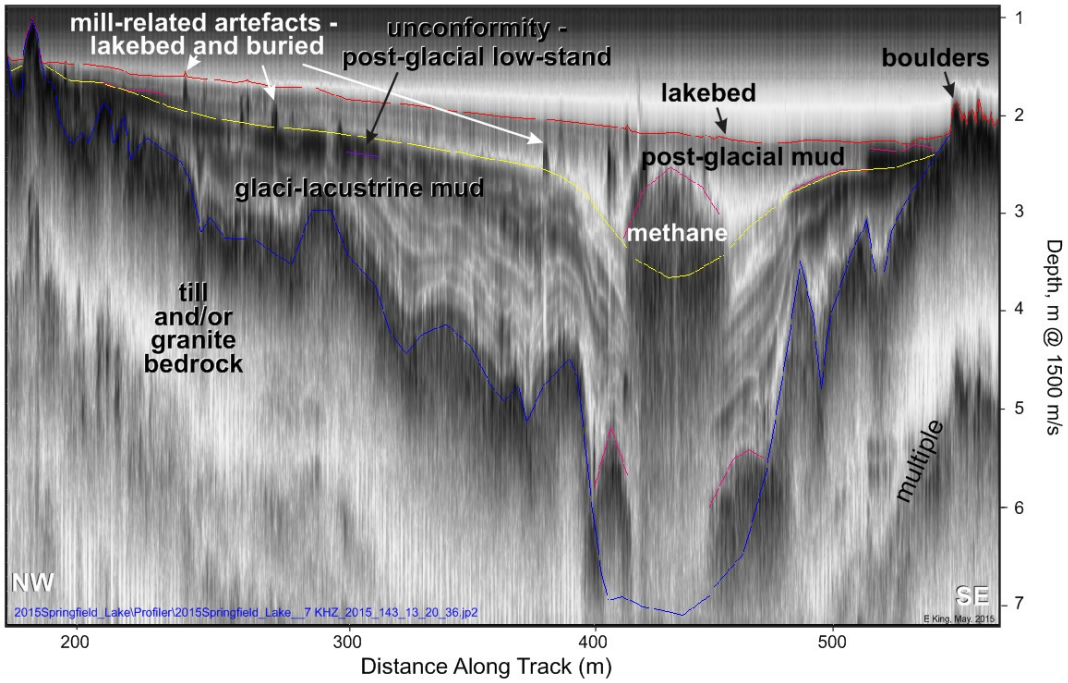



Figure 3. Stratabox sub-bottom profiler transect showing the sediment fill and artefacts. Stratigraphic interpretation builds on knowledge from lake investigations in the Dartmouth/Sackville area. Line of section is just offshore the hot-pond, dashed line in Fig. 2.

ed to be silt and clay barren of fossils, well laminated, related to ice marginal processes in a very low energy but high sedimentation rate environment. In Springfield Lake, as in Dartmouth, this mud is locally truncated in an angular unconformity (pink, Fig. 2). Based on one mid-Holocene age-date in Lake Banook, the removal of the glacial muds down to about 3 m below present lake level is interpreted to represent a much smaller lake in early post-glacial time. At least 3 m less water was identified here too. In Figure 2, the paleo-shoreline would ring the inner extent of the light pink lines; the area was less than half of today's, and there would have been islands. How does this relate to projected climate change and are our Nova Scotia lakes susceptible?

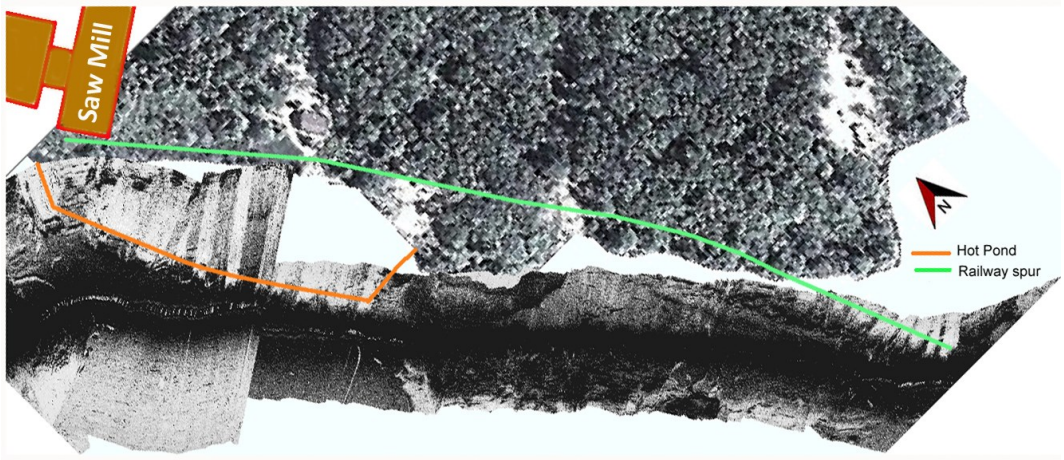



Figure 4. Sidescan sonar identified the aligned foundations (orange) marking the outer part of a "hot pond" which received logs for milling. Also, an extension of the railway spur (for delivering the logs) was imaged.

**Steam saw mill artefacts**

In the lake near the mill location there are several rock piers, aligned, and about 14 m apart that were probably part of the 150 m wall that contained a body of water in which to dump logs. It was heated with waste steam from the mill to permit sawing all year and named the "Hot Pond".

A short distance from the mill site additional rocky piers were found to extend 80 m into the lake and more than 25 m from shore. These were the supports for part of the Springfield Railway, a 100km private railway system operated by the same lumber company.

The Davison Lumber Company operations did not have much impact on the lake, although many logs escaped, then later sank. These can be seen across the entire lake bottom.

Water samples from the area of the Hot Pond, where millions of logs once floated, show very high turbidity near the lake bed where organic matter and mud cloud the water almost constantly. A Secchi disk test indicated that water column visibility is 0 at just over 1.5 m.

The grab sampler picked up numerous pieces of tree bark in thick mud within the Hot Pond which emitted a sulphurous odour.

In the end, the old foundations had been located, an unknown extension of the railway discovered, an old "submerged locomotive" folklore disproven, the local and more widespread mill activity related anthropogenic affects and remains identified, and a few geological phenomena recognized in the Halifax area were proven to be more province-wide, AND Patrick Meslin's upgrades were tested just in time for shipping to the Beaufort Sea for Dustin Whalen's program; not bad for some weekend hobby science!

**Editor's Keyboard:** For *Voicepipe 67*, I was overwhelmed by the number of good articles submitted: serious articles like Don Gordon's Vintage Year and humorus articles like the cross country "break down" saga from Ron Macnab. I could not cut any of them so you have 4 additional pages to enjoy. Don's article reminds us of the vision of earlier leaders in oceanographic science in Canada that built the institutions we have today, institutions which are under pressure but I believe have the resilience to recover their former status. It is yet to be seen if the change in federal administration will make a substantial difference to funding and hiring in ocean research, but I am hopeful we will see a greater reliance on evidence based decision making by our political masters. The stark contrast of the level of investment in ocean research between Canada and other G8 countries was clearly demonstrated by the visit of Germany's *Maria S. Merian*. Germany has an EEZ of only 33,100 km$^2$, Canada's EEZ is estimated to be 1.7 million km$^2$. *Andy Sherin*

## ABOUT THE BIO-OCEANS ASSOCIATION

The Bedford Institute of Oceanography Oceans Association (BIO-OA) was established in 1998 to foster the continued fellowship of its members; to help preserve, in cooperation with the Institute's managers and staff, BIO's history and spirit; and to support efforts to increase public understanding of the oceans and ocean science. Membership is open to all those who share our objectives. Most current members are present or past employees of BIO or of the federal departments of Environment, Fisheries and Oceans, and Natural Resources (or their predecessors) located in the Halifax Regional Municipality. Membership is $10.00 per year, $40.00 for five years, or $150.00 for a lifetime membership.

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**Note: Some contact information on this page has changed from previous issues of the *Voicepipe***

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