



BIO-OCEANS ASSOCIATION NEWSLETTER

Issue 34, April 2007

FROM THE PRESIDENT

I have promised our newsletter editors that I will keep this column short in order to give more space to all the wonderful items to follow – especially the first of our reports on the MEL Reunion of last autumn. The past three months have seen a wide range of BIO-OA and BIO-OA-sponsored social and educational events.

We began on 31 January by sponsoring a showing of Al Gore’s film, *An Inconvenient Truth*, at BIO followed by a panel discussion. BIO oceanographer Peter Smith chaired the discussion and the panelists included Valerie Bradshaw, James Calvesbert, and BIO-OA members Dale Buckley and Allyn Clarke. The BIO Auditorium was standing room only for the event. Later that day, about 30 of us went to the Newfoundland Club in Dartmouth “for something completely different”, an evening of entertainment, drinks, and dancing to George Anderson and his music. Your illustrious president was among those made honorary Newfoundlanders in the “Kiss the Cod” Newfoundland Ceremony.

On 15 March, we co-sponsored, with a number of other organizations, a public lecture entitled *The Orphan Tsunami of 1700: A TransPacific Detective Story* by Brian Atwater of the U.S. Geological Survey. Last, but not least, was the Association’s “Spring Celebration and Special Seminar” on 25 March featuring Chris Mills’ talk on Nova Scotia lighthouses. All in all, an active winter! And we have a tour of George’s Island coming up in June.

Finally, I hope to see most of you at our Annual General Meeting and the 2007 Beluga Award presentation on Thursday 31 May, beginning at 9:00 a.m. Until then...*Betty Sutherland*



George Anderson entertains at the Newfoundland Club.



*President Sutherland’s introduction to Newfoundland screech!
(Photos by David Sutherland)*



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Editor’s Note:
Contributions are invited for our next issue to be published in July. The manuscript deadline for that issue will be Tuesday 26 June 2007.

BENTHIC HABITAT STUDIES: AN ENGINEER'S PERSPECTIVE – PART VI

David McKeown

When I started this series, my goal was to provide personalized descriptions of some of our benthic habitat cruises over the past decade and a half. However, I find I have repeatedly drifted into a description of some of the equipment development that was so important to our successes and once again, in this article, I find myself doing the same thing. What else would you expect when an engineer attempts to reminisce? So here I go again!

While BRUTIV performance improved over the years, keeping it functional and completing survey tows successfully was always a major struggle. Then Dave Harvey, who almost single-handedly had kept it operating, retired. As there was no one available to replace him, we decided to use a simpler technology that could more readily be supported by our diminished manpower resources. Instead of the BRUTIV system that employed an onboard closed-loop control system to change the wing angle and thus cause it to fly at a constant height above the seafloor, we decided to feed the altimeter signal up the cable and use it to cause the towing winch to haul in or payout cable in order to maintain a constant height off the bottom. Scott Young, Glen Morton, George Steeves, Kelly Bentham, Garin Awalt, and Nelson Rice created this new vehicle, which was dubbed Towcam. They installed a video camera, lights, an acoustic altimeter, and an electronics package on a simple aluminum variant of the Batfish that had been resurrected from the 'Boneyard' and modified a Swann winch to accept computer control of haul in and payout. Al-

though the effectiveness of this new approach to altitude control decreased as the sea state worsened, it was much simpler to implement and could be depended upon to work every time we launched it. Furthermore, as the lights were no longer battery powered, there was no longer any limit on tow duration.

Our first cruise with this new device took place on CCGS *Hudson* in 1999. On that first phase of this trip we were able to complete 14 tows at depths down to 250 m over durations as long as 5 hours at various locations on the Scotian Shelf. After a staff change in Sydney, we proceeded to the Hibernia site to explore the impact of drilling activity on the benthic communities.

On our second tow, late on a very foggy evening, Kee Muschenheim, Tim Lambert, and I were all alone in the after-lab when we noted that the fog was turning a bright orange from the reflected glow of the flare on the Gravity Based Structure (GBS). Sensing something was wrong, Kee headed for the bridge. Shortly thereafter we felt the screws go into panic reverse followed immediately by a call over the intercom from the mate to get the tow fish in as quickly as possible. Tim and I ran out on deck and I grabbed the winch control while he leaned over the stern to warn me when the fish reached the surface. To our horror, we watched the tow wire go vertical then head in under the stern. Tim ducked behind the bulwark and I behind the winch. Shortly thereafter there was a mighty bang and the cable went slack as the port screw cut through it. Later examination of our navigation data indicated that

the bow of the ship had been less than one ship's length from the GBS when we began to make way astern. Fortunately, we had brought the carcass of BRUTIV along and through the ingenuity and hard work of Dwight Reimer, Peter Vass, and Kelly Bentham, it was re-activated in spite of the fact that key components were now at the bottom of the sea at Hibernia. This allowed us to complete the planned video survey program on Western Bank during our homeward journey. Perhaps in an effort to demonstrate that our decision to replace it was wrong, it performed extremely well during several deployments at our study site on the Western Bank later in the cruise.

During the winter of 1999/2000, a replacement Towcam was built. While it was, as far as we could determine, identical to the first one, it never towed as well. Also, we suffered a number of catastrophic electronic failures at sea. For two years running, Dwight Reimer had to substantially rebuild the electronics at sea using parts from his spares box plus critical components ferried out to us by helpful Canadian Coast Guard SAR lifeboats along the coast. By 2002, we had decided that we wanted to add several additional items of equipment and so a larger body, Towcam II, was built. In the photos on page 3, Tommy Richards is seen launching Towcam I and Dwight Reimer and John Bray (2006 Beluga-Award winner Capt. Joe Bray's son) are handling Towcam II.

A local graphic artist, Susan Feindel, participated in the 1999 cruise. She produced a large number of paintings, sketches, and other works of art that were eventually the subject of a gallery show. Some of these were created on board using material such as echo-sounder re-

cords and bottom samples, and it was very interesting to observe this artistic process. At the conclusion of the cruise Susan offered this observation:

“Life on the ship created the longest days I have experienced in recent years. I was grateful for this impression. As the scientists worked around the clock I followed their schedule, alternating my studio

work with first time glimpses and documentation of benthic habitat. The profusion of hybrid-animalistic, mechanical-electrical equipment used to collect images, water and benthic specimens was a constant reminder of the ingenuity and eccentricities of mankind! I enjoyed the dedication and creativity of individual scientists.”

During the latter part of the 1990s, we conducted several surveys at The Gully with the Campod, Towcam, and sidescan. The Campod video from some of the steeper slopes was spectacular. The structure of the canyon wall looked very much like a miniature version of Indian cave dwellings built into cliffs in the American southwest. It was during one of these operations



Towcam I



Towcam II

that we experienced an odd visual effect. We had Campod over the side and were drifting along the side of a steep slope when we encountered a large number of redfish. The strange thing was that they appeared to be lying on their sides rather than floating vertically as fish normally do. As this was counter-intuitive to us, our first thought was that the camera had tipped on its side. However, after careful consideration we realized that the Campod was OK and that the fish were happily floating this way. Perhaps they were sleeping?

In the “good old days”, social activities on board included crib and bridge tournaments, Saturday night

bingo, etc. With the advent of DVD’s and satellite TV, the social highlights of these trips have been reduced to ping-pong tournaments and a barbeque. I remember one outstanding example of the latter. It took place as we steamed past Sable Island on a warm, sunny day. The Captain took the ship in so close we could see the seals on the beaches and the ponies on the sand dunes.

There were, of course, the other trips when the ping-pong table would tilt crazily and we nearly froze to death in the hanger having our barbeque as the rain poured down but, fortunately, we forget those bad times sooner than the good ones.

BIO TO BENEFIT FROM NEW GOVERNMENT INVESTMENTS

On 9 March 2007, the Department of Fisheries and Oceans announced a \$17 million investment to upgrade and modernize BIO’s van Steenburg Building with work to be

completed over 3 years by 2010.

On 12 April 2007, the Department announced details of its substantial investments in the renewal of the Canadian Coast Guard Fleet. A part of this will involve building three new fishery science vessels to replace aging ships. One of these new vessels will be deployed to the Maritimes Region with delivered expected in 2012. Another part of the

initiative will see construction of an offshore oceanographic science vessel to replace the CCGS *Hudson*. Delivery of this vessel is expected in 2014.

For further information on the many investments announced by the Department over the past few months, go to www.dfo-mpo.gc.ca/media/news-presse_e.htm.



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 HRM 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:

LIFE IN THE DARK IMMENSITY OF THE DEEP SEA

Nouvian, Claire, ed. 2007. *The Deep: the Extraordinary Creatures of the Abyss*. University of Chicago Press, Chicago, IL. 256 pp. Hardcover, \$52.00 (ISBN 0226595668). – Here is a book that demands attention and refuses to let go. It is essentially a photo essay, a visual exposé that takes the reader to the black depths of the sea to reveal the diversity and richness of life forms beyond the photic zone. Each of the more than 200 photographs presented is in colour, a stunning matrix of the complete colour spectrum ranging from the dull to the magnificent. The often bizarre creatures depicted – comb jellies, viperfish, spookfish, sea butterflies, squid, tube worms, and octopi to name but a few – leap off the black page in such a luminescent manner that the customary view of the "blackness" of the ocean depth is a misnomer. Each photo is accompanied by a caption that provides details of the organism's lifestyle and habitat, while 15 short essays by eminent scientists and additional text by science journalist Nouvian give background information on the deep ocean and its exploration. Only a few deep-dwelling species were known before the recent development of submersibles, and even now oceanographers estimate that there remain 10-30 million new species in the deep waters to be found and described. And in some cases, the photographs presented show organisms for the first time anywhere. This is a beautiful coffee-table book that celebrates the world's

oceans and opens the mind to the existence, diversity, and absolute beauty of sea life at great depths, a visual treasure to behold.

GENERAL REVIEWS

Boileau, John. 2006. *Samuel Cunard: Nova Scotia's Master of the North Atlantic*. Formac Publishing, Halifax, NS. 96 pp. Softcover, \$24.95 (ISBN 0887807127). – Clearly, the name 'Cunard' is synonymous with shipping and international ocean transport. This book by marine historian John Boileau, his most recent publication, takes Samuel Cunard's story and the history of his company to a new and exciting high by integrating more than 150 colour and black-and-white illustrations with an informative and readable text. It effectively traces the entrepreneurial rise of Cunard in the world of shipping while ruling a cargo and passenger shipping empire on the North Atlantic. Overall, the volume makes for a fascinating read and visual treat, particularly for anyone with an interest in maritime history, ships and ocean transport, and the transformation from sail to power. [Also see below, Langley 2006.]

Carroll, Sean B. 2006. *The Making of the Fittest: DNA and the Ultimate Forensic Record of Evolution*. W.W. Norton & Co., New York, NY. 301 pp. Hardcover, \$32.50 (ISBN 0393061639). – Without question, Sean Carroll is our plainspoken emissary from the next great revolution in biology. He offers glimpses of what molecular genetics is revealing about the process and the course of evolution, and how DNA contains a detailed record of evolution and its processes. In this highly readable and fascinating work, Carroll takes the general reader on a tour of the massive DNA record of three billion years of evolution to reveal how the 'fittest' organisms are produced. What a lucid and 'eye-opening' tour it is, one that shows clearly the function and immortal nature of genes, past and present, in the history of life. This book is essential reading for anyone interested in life and its development, evolutionary biologist or not!

Clover, Charles. 2006. *The End of the Line: How Overfishing is Changing the World and What We Eat*. The New Press, New York, NY. 384 pp. Hardcover, \$33.95 (ISBN 159558109X). – This is a must read for anyone interested in the world's oceans and their future welfare. We all are aware that the oceans are in trouble, have been for some time, owing largely to our own activities. Overfishing, habitat destruction and pollution have changed conditions in the seas worldwide. Pres-

ently, more than 75 per cent of all fish stocks are either fully-exploited, over-exploited, or depleted, and food fish are declining globally. But British science journalist Charles Clover, concerned about the rampant overfishing and continued demand for fish by all nations of the world, decided to review the status of marine fish populations around the globe. The results are presented in this book, first published in the United Kingdom in 2004, and now updated and extensively revised for the 2006 North American edition. The work is comprehensive and very well researched, with the story written and presented in a most gripping and revealing manner. Not only does it show the destruction of some of the world's greatest marine assets and the disasters from fisheries mismanagement leading to the collapse or elimination of species, but also points to the direction that commercial fisheries must take and to solutions. Clover argues effectively that if commercial fishing is going to continue, cautionary management must be employed to the maximum to prevent the extinction of species and irreversible destruction of entire ecosystems. [Also see below, Knecht 2006.]

Dawkins, Richard. 2006. The God Delusion. Houghton Mifflin Co., New York, NY. 416 pp. Hardcover, \$35.95 (ISBN 0618680004). – Richard Dawkins needs no introduction, a British evolutionary biologist that took the world by storm in 1976 with the publication of “The Selfish Gene”, and is today one of the world's most influential scientists. In this his latest ground breaker, he uses his sharp intellect and wit to take the reader from the mundane subject of whether God exists to the reality that belief in a higher being who sanctions horrors is, today, the single biggest threat to the survival of humankind. Religious fundamentalists, present in both eastern and western cultures, and their pathological beliefs constitute an “apocalypsis” presence, one that wreaks terror worldwide. Dawkins moves through the inane topic of evolution versus creationism in school curriculum, and goes directly to the major issue of sanity in the world. He dismisses the view of allowing religion to influence governments and terrorists, sanction persecution of women and minorities, and all other cruelties perpetrated in the name of religion. Instead, a view is elegantly presented that shows conclusively how moral behavior and justice can exist without religion. Dawkin's message of the “god delusion” is powerful and most timely, but will it reach those who most need to hear it? The reality is deadly. [Also see below, Grafen and Ridley 2006.]

Grafen, Alan and Mark Ridley, eds. 2006. Richard Dawkins: How a Scientist Changed the Way We Think. Oxford University Press, Oxford, UK. 283 pp. Hardcover, \$26.95 (ISBN 0199291160). – A collection of essays, published to coincide with the 30th anniversary of the publication of the “Selfish Gene” (1976), reflects on Richard Dawkins' contribution and influence as a scientist, rationalist, writer and public intellectual. The 25 essays presented are by authors, mostly academics, from a broad cross-section of society that includes scientists, philosophers, historians and religious scholars. Not all of these essayists support the ‘selfish gene’ interpretation – that natural selection operates on the gene and not the organism -- but they remarkably all share the view that Dawkins' argument did change their thinking about evolution and did have a profound effect within their specialty. Although the book neither provides a complete biography of Dawkins' life nor a comprehensive appraisal of his science, it does reveal how influential his views have been on today's society and on some of the key issues at the forefront of modern intellectual debate. Overall, the book stands as a tribute to Richard Dawkins -- an outstanding scientist and modern thinker who has certainly changed the way we think.

Knecht, G. Bruce. 2006. Hooked: Pirates, Poaching, and the Perfect Fish. Rodale Press, Emmaus, PA. 328 pp. Hardcover, \$33.95 (ISBN 1594861102). – Here is a gripping tale of a trash fish species, the toothfish, that is converted to a fad-food delicacy with the usual outcome of a short-lived boom ending with overfishing and another threatened ocean species. Author Knecht traces the commercial history of the toothfish – a large, unattractive, dark-skinned and tasteless fish with a name that comes from its undershot mouth and needle-sharp fangs – from its ‘discovery’ in Chile in 1977 by Los Angeles fish merchants, the ensuing imaginative marketing scheme under the exotic name ‘Chilean sea bass’ that made it the hottest restaurant craze in America, to its recent demise and threatened species designation. This is a true high-seas adventure, one that displays the almost lawless world of commercial fishing, the continued plundering of a limited resource, the battle between mercenaries for a common target fish, and the inadequacies of fisheries regulations and enforcement. Conservation efforts by governments and environmental activists are also reviewed, but finding answers to balance demand and short-term economic benefits with sustainable fishery practices seem distant. [Also see above, Clover 2006.]

Langley, John G. 2006. Steam Lion: A Biography of Samuel Cunard. Nimbus Publishing, Halifax, NS. 224 pp. Hardcover, \$29.95 (ISBN 155109584X). – Here is a book for everyone with an interest in ocean transport and travel, and the changes brought about by Samuel Cunard and his company. John Langley does a superb job in telling us about this Halifax native and how he changed the face of international travel and shipping. Cunard, born in Halifax in 1778, created the most successful ocean liner in history, a legacy that continues on today as evidenced by the *Queen Mary II*, the largest ocean liner in the world. Overall, ‘Steam Lion’ is a biography of Samuel Cunard that traces his development as both a hard-working and focused businessman and risk-taker, and provides a clear picture of the “man behind the legend”. [Also see above, Boileau 2006.]

Leonard, Beth A. 2006. Blue Horizons: Dispatches from Distant Seas. International Marine (McGraw-Hill), Camden, ME. 176 pp. Hardcover, \$28.95 (ISBN 0071479589). – Anticipating some cruising at sea this summer? Whether you are or not, this book by blue water sailor Beth Leonard will take you on a world cruise based on her voyages made over a six-year, 50,000 mile circumnavigation to the ends of the earth and back, with her husband, Evans Starzinger. The story begins with the building of a new sailboat, a 47-foot aluminum Van de Stadt sloop named ‘Hawk’. An account of their travels first appeared as a series of lyrical essays written by Leonard while en route and published in her popular monthly column in ‘Blue Water Sailing’ magazine. Now, the author brings those essays together into an integrated single travel log that transports the reader across the oceans of the world to visit the fiords of Norway, Scotland, Ireland, Iceland, Newfoundland, south to the Caribbean, round Cape Horn, New Zealand, Tasmania, through the South Pacific and British Columbia. What an incredible journey, and Leonard’s detailed and well-written prose of the lands and peoples visited captivates the reader and will keep you turning the pages. Beth Leonard attains her stated goal of: “Pulling your dreams over the horizon to you, one sail change, one correction at a time.” Read, enjoy, and dream!

Quammen, David. 2006. The Reluctant Mr. Darwin: An Intimate Portrait of Charles Darwin and the Making of His Theory of Evolution. W.W. Norton, New York, NY. 304 pp. Hardcover, \$28.50 (ISBN 0393095812). – Here is another summary book of those recently published in celebration of Darwin’s bicentenary (e.g., see Browne 2006, OA Newsletter 33:4). But acclaimed sci-

ence journalist Quammen’s review stands out from most others in the manner taken to resolve the question of why Darwin waited so long (21 years) to present his discovery of natural selection. Quammen’s careful synthesis shows that Darwin was ‘reluctant’ to announce his findings for many reasons. Knowing that Victorian society still held to the belief of ‘special creation’, Darwin recognized the need for substantial evidence in support of his “one long argument” and the view that all life was based on natural, not divine, laws. Quammen recounts the 21-year period of uncertainty and the astonishing studies Darwin undertook during that time, particularly on barnacles and pigeons, to provide the scientific foundation for his theory of evolution by natural selection. This book, though small in size, is one of the finest synopses of “The Origin” available. It clearly identifies the factors responsible for the delay in publication of the great book that changed science and mankind forever.

Wilson, E.O. 2006. The Creation: An Appeal to Save Life on Earth. W.W. Norton, New York, NY. 160 pp. Hardcover, \$27.50 (ISBN 0393062171). – This new book by renowned biologist Edward O. Wilson is a plea for cooperation between secular humanists and religious literalists on an issue that affects all humanity: conservation of biodiversity and life. Wilson, our modern-day Thoreau, calls for unity between religion and science in order to save the world’s living nature – the “creation” – which is in deep trouble. His thoughts are presented in the form of letters to a Southern Baptist pastor, arguing that if religion and science – the two most powerful forces in the world today – could be united on the common ground of biological conservation, the loss of biodiversity through human activity would soon be solved. Wilson underlines the magnitude of the problem using the most recent science findings that indicate if habitat alteration and other destructive human activities continue at their present rates, half the plant and animal species on earth could be either extinct or endangered by the end of this century. After this call for attention, a tour of the embattled natural world is made that covers a wide range of topics. The ‘tour’ shows the intricate and fragile web of life, and how human activities are driving myriad species into extinction, and by doing so, jeopardizing the systems essential for human life. This defense of nature by Wilson is eloquent and convincing, as is his call for deeper knowledge of the biology and importance of biodiversity by humanists and religious believers alike.

Wright, Larry and Patricia. 2006. Great Lakes Lighthouse Encyclopedia. Boston Mills Press (Firefly Books), Erin, ON. 448 pp. Hardcover, \$45.00 (ISBN 1550463993). – For more than 200 years, lighthouses have provided ‘aids to navigation’ for mariners on the Great Lakes. This incredibly well-researched and comprehensive full-colour encyclopedia, compiled by the Wrights over a 15-year period, provides detailed infor-

mation on the more than 650 Canadian and American lighthouses located round the five Great Lakes. Details for each lighthouse include a description of its history, design and construction material, names and timing of the keepers, highlights of events – tragedies and triumphs – that have occurred, and present condition and status. The photos of the lighthouses are striking, vividly showing the great diversity of building forms and styles



MURRAY SCOTNEY: RECIPIENT OF THE 2007 BELUGA AWARD

The 2007 BIO Oceans Association Beluga Award is presented to Mr. Murray Scotney in recognition of his contributions to the BIO community over his 38-year career. Murray is currently the head of the field support group in the Ocean Sciences Division of DFO. He is a native Nova Scotian, born in Berwick, and currently living in Falmouth (close to his beloved ski hill in Martock).

Murray began his career at BIO as an Electronic Technologist in July 1969 with the Atlantic Oceanographic Laboratory, Applied Oceanography Section. Murray was the first Electronics Technologist hired to maintain and deploy the growing inventory of electro-mechanical physical oceanographic instruments that were becoming available. At the time he was hired, water bottle casts with reversing thermometers were the standard way to obtain temperature-salinity profiles. However, the deep-sea group in Ocean Circula-

tion had just begun using the vacuum tube based Bathysonde CTD system.

Acoustic releases with squib-fired release mechanisms were used for deep-sea moorings, but inshore moorings were still ground-line based with hi-flyer markers. More often than not, the hi-flyer would be missing when it came time for recovery and the moorings would have to be dragged up using the Decca or new, but unreliable, Loran navigation systems for positioning. Time series current measurements were done with Savonius rotor or propeller type sensors with data storage on photographic film.

Technology has changed significantly over the last four decades and Murray has kept abreast of the changing requirements of scientific programs and the availability of instrumentation to fulfill those needs. For example, current meters have evolved from mechanical instruments with rotors or propellers through electro-magnetic sensors to acoustic single-point and profiling instruments. Over the years,

deployment times have increased from durations of a few weeks to two years due to the improved reliability of data-recording instruments, acoustic releases, and mooring components. Murray has been a senior member of a team involved in the design, evaluation, purchase, operation, maintenance, and adaptation of these new instruments into the physical oceanographic program.

Murray approaches his job with a level of professionalism to which we should all aspire. Anyone who has ever worked with Murray would certainly concur with this assessment and, no doubt, has developed a great deal of respect for his work skills and personality. Peter Vass, the 2002 Beluga Award recipient, refers to Murray as one of the “pillars” of BIO because his participation in a field program almost assures its success. Murray has always played a vital role in our organization. Moreover, during the last decade of significant downsizing, Murray assumed many additional technical, personnel, and managerial responsibilities both at BIO and in the field. His work ethic and leadership have enabled us to continue to support field programs which are essential to carrying out our science projects and monitoring responsibilities. During this time period, Murray’s conscientiousness has ensured that we were successful in achieving our goals. As an example, during the last field season, Murray has personally supported field programs in the Sable Gully, Scotian Shelf, Hibernia, Lunenburg Bay, Labrador Sea,

Makkovik Bank, Barrow Strait in the Arctic Archipelago, Davis Strait, Bay of Fundy, Gulf of St. Lawrence, and Northumberland Strait, as well as several nearshore programs. As our field support has undergone renewal in the past two years, Murray has served as a mentor and teacher for our new technical support staff. Murray's patience and substantial experience have been crucial in bringing these new technicians up-to-speed to ensure that we will continue to have excellent field programs.

Murray is an invaluable member of our team whose interest in the success of science programs is clearly evident. He not only understands the technical requirements of these programs, but also takes interest in understanding the science as well. He listens intently to the needs of research scientists and is able to provide advice on how to apply these requirements in the field. Murray's opinion is widely respected by field-going staff in the

Ocean Sciences Division. He is not only very adept at conversing with scientific staff but is also very capable of discussing program requirements with the officers and crew of our research vessels.

An important aspect of sea-going research is the understanding that even though everything worked on the bench in the lab prior to sailing, chances are something will go wrong at sea when you are hundreds of miles from shore. Murray's humour and wit enable us to get through these trying times with a smile on our faces. Inevitably, Murray either fixes the problem or develops a solution which maximizes our return of data from the cruise. His patience at sea is unparalleled. We often encounter situations in which we are trying to recover lost equipment. This requires skill and tactics which can take upwards of 12 hours dragging the seafloor in hopes of recovering a broken mooring. Long after everyone else's patience has worn

thin and hope has faded, Murray perseveres and more often than not ends up recovering the lost instrument. Dr. Ross Hendry recalled one example of this which took place on *Hudson* Cruise 98023; over many hours, Murray guided a dragging operation for Mooring M1246 on the Labrador Slope which, because of its success, helped preserve a decade-long time series in the Labrador Sea.

The Beluga is a small whale with a great heart. It plies its way through the deeps with grace and a sprightliness that belies its strength and endurance. A look in its eye tells one of great intelligence and an active curiosity. It survives and flourishes in the harshest of environments, and still finds the time to play. These same characteristics are part of Murray's great success and this makes it abundantly clear that he is a very deserving 2007 Beluga Award recipient.

**A FEW TECHNICAL TERMS
DEFINED**

★ *Reversing thermometer:* Unlike most conventional mercury thermometers, a reversing thermometer is able to record a given temperature to be viewed at a later time. If the thermometer is flipped upside down, the current temperature will be shown until it is turned upright again. This was the primary device used by oceanographers to determine water temperatures below the surface of the ocean from around 1900 to 1970.

★ *CTD:* An instrument used to measure conductivity, temperature, and depth of the water column.

★ *Acoustic Release:* An instrument used in the recovery of valuable underwater equipment. The release will hold onto the anchor of a buoyant instrument until it is commanded to release it. An acoustic release has the ability to both receive and transmit signals to a surface instrument. It uses battery power and is typically designed to last for 1-2 years. Acoustic releases can be used in shallow water or deep water, and for large, heavy loads, or smaller instruments. The releases are especially useful in deep areas where the instrument could not be recovered by diving.

★ *Squib:* A small explosive device which has a wide range of uses, such as generating mechanical forces as well as in pyrotechnic use.

★ *Hi-flyer Markers:* Small surface buoys used to mark the location of underwater instrumentation or the ends of fish nets.

★ *Decca Navigator System:* A low frequency radio navigation system that was first deployed during World War II when the Allied forces needed a system which could be used to achieve accurate landings. Its primary use was for ship navigation in

★ coastal waters.

★ *LORAN (LONG RANGE Navigation):* A terrestrial navigation system using low frequency radio transmitters that use the time interval between radio signals received from three or more stations to determine the position of a ship or aircraft. LORAN use is in steep decline, with the satellite-based Global Positioning System (GPS) being the primary replacement.

★ *Current Meter:* An instrument used to measure speed and direction of ocean currents.

THE MARINE ECOLOGY LABORATORY REMEMBERED

From its creation in 1965 as a branch of the old Fisheries Research Board of Canada to its dissolution in 1987, the Marine Ecology Laboratory (MEL) was the focus of ecological research at the Bedford Institute of Oceanography. A well-attended reunion for staff and friends of MEL was held on 17 November 2006. The reunion featured a series of morning and afternoon presentations in BIO's main auditorium on the history, staff, programs, and legacy of MEL followed by a buffet dinner that evening at the Westin Hotel in Halifax.

In an effort to help record a key part of BIO's history, our newsletter will publish a few of the papers presented at the MEL reunion. In addition, our web site will carry an extensive chronology of MEL prepared by Dr. Don Gordon that summarizes key events and the names and roles played by staff who worked at MEL over its 22-year history as well as the articles we publish in the paper version of the newsletter.

We are pleased to present in this issue some remarks of Dr. Lloyd Dickie, the first Director of MEL (1965-1974), at the reunion.

In the July newsletter issue, Dr. Ken Mann's paper on "The impact of past MEL research on the conduct and understanding of ecological science today" will appear as well as photos from the reunion.

THE HISTORY AND PHILOSOPHY BEHIND THE FORMATION OF MEL

Lloyd Dickie

The Marine Ecology Laboratory (MEL) was founded in what seems an almost uniquely interesting time. I ask you to recall that 1965, the year we were given our new mandate, was a particular time of social experiment. Everyone seemed to be searching for their own realization of a new sense of freedom and expansion! If it isn't new, we'll make it so! And the "Beatles" were there to help us!

But this special time of creativity was also accompanied by reactions! We have to remember that Science had created the ATOM BOMB, and had not had an antidote for its potentially devastating effects. So at the same time as there was this great urge to expand and create, there was an underlying sense of fear that called for an increase in "control". Science could make people afraid, so while we can do it, the programs cannot be left to the scientists alone to decide. And what most people thought of as the Opposite of Science — i.e., Religion — was exposing us to fundamentalist fervor! And are we to trust Politics????!!

This situation reminded me of a joke that was popular in Europe about the mid-1960s. When you were waiting for a fisheries meeting to start, someone was bound to ask you: "Do you know the difference between Science, Religion and Politics?" The answer? Well science is like trying to catch a black cat in a totally darkened room. Religion is like trying to catch a non-existent cat in a dark room. Politics is like trying to catch a black cat in a dark

room and claiming: "I've caught it!"

MEL was actually the brainchild of Dr. F. Ronald Hayes. In 1964, Hayes, a former professor of biology, gave up his job as Vice-President of Dalhousie University (Halifax, NS) to take the job of Chairman of the Fisheries Research Board of Canada (FRB) in Ottawa, Ontario. Besides having a remarkable sense of humour, he had a sense of perspective on Science and an understanding of people that made him an ideal choice for the task. There is no one else I have ever known who could meet such contradictory situations head on and come out with everyone smiling. In a relatively short period of time he had undertaken a major shift in three of the main Laboratories of FRB. At Nanaimo, British Columbia, he gave the recently appointed director, Peter Larkin, a remarkable boost of staff and support to allow him to undertake a new program. He appointed new directors at the new Laboratory in Winnipeg, Manitoba, and at St. Andrew's, New Brunswick. He also had persuaded the FRB committee that it must have a new 'Major Laboratory' in association with the newly established Bedford Institute of Oceanography in Dartmouth, Nova Scotia.

What Hayes created was a new, well-supported, and virtually autonomous Laboratory, where the rules were made to expedite new hiring of staff. At the same time, however, Hayes was smart enough to accompany this administrative freedom with a clear scientific mandate. This new BIO Laboratory was

founded with a single purpose: “to trace and evaluate the pathways of energy flow from sunlight to fish on the East Coast of the Canadian mainland, and to assess how best these pathways could be maintained for commercial use by mankind”.

It was a situation of unfettered freedom to undertake a clearly defined scientific task. What more could we ask than this mixture of visionary stimulus along with a clear sense of responsibility to pursue it? It was an unbeatable resolution of opposites that gave both government and laymen a chance to understand what this new laboratory was about, and us a chance to develop in it our own personal senses of responsibility. In our first few years, we prospered in both public actions and in our own personal senses of well-being.

There was no question of the successes of those first five years, 1965 to 1970. “The Board” even permitted me, as MEL’s first director, to hire an economist, something unheard of in a biological laboratory. The successful candidate, Keith Brewer, told me before accepting the position, that he could only stay a couple of years, because although the project I proposed really interested him, it could not do his long-term prospects as an economist much good. Unfortunately, a second candidate, whom I had hoped might follow in Brewer’s footsteps, was a paraplegic. And a few weeks after he took over from Keith, his empty wheel-chair was found at the end of the ship dock. It took some time for a body to be found. A most sad ending.

Meanwhile, the regular study program was showing unexpectedly clear results. Much of this was due to putting into effect the idea of building the study of various inshore inlets as analogue models of larger

coastal systems. We began using St. Margaret’s Bay that way, and eventually added Bedford Basin and Petpeswick Inlet. Parameters developed and measured by studying and contrasting these smaller systems assisted in the approach to larger systems like The Gulf of St. Lawrence. At the same time there began the initial excursions in computer models of such systems. These studies were also accompanied by a development of new instruments that allowed biological researchers the possibility of viewing long oceanographic tracks and measuring biological variables across continental shelves or large embayments like the Gulf of St. Lawrence. Formerly, biological studies had been restricted by the complex, difficult, and time-consuming sampling of the widespread and variable biological universe by the few dispersed vertical samples that it was possible to take. So, “Progress” seemed to be everywhere, and participation in these ventures into a new oceanography were stimulating and exciting to the entire MEL staff. Every one could sense the development of this whole new conceptual system of time relations.

Inevitably, of course, the very success accorded to others the idea that MEL would be a good place to carry out additional kinds of studies, such as new and important activities related to environmental quality changes. We welcomed the addition of excellent teams of chemists, and biologists to work in these fields. Ironically, the new researchers were soon embroiled in the results of the 1970 tanker *Arrow* oil spill in Chedabucto Bay, a severe test of the practicality and worth of the new group as a whole. At the same time, partly as a result of their interests, we began to be able to pay closer attention to both small-scale surface and bot-

tom phenomena.

As MEL grew larger, the inevitable administrative restrictions began to appear, and we were examined time and again by teams of ‘experts’ sent from Ottawa. The intent appeared to be on establishing some kind of control of programs, for reasons that the experts did not seem to understand — certainly those who were prepared to balance results of control against measures of productivity were rare. Eventually, however, the very structure of the federal government was affected: the Fisheries Research Board of Canada disappeared, then the Department of Fisheries was merged with a new Department of Environment, and more re-organization occurred, most damaging MEL operations directly or indirectly. Changes in mandates were equaled in their confusing effects by misunderstandings of both the administrators and the administered. Inevitably, there was a complete loss of understanding of the original purposes for which MEL had been founded, and the original specific science goal was replaced by broad mandates dictated to governments by their new Policy makers. What began as a scientific laboratory began at times to seem to be a simple cog in a large government machine, whose personnel were “available” to be deployed where and when “needed”. MEL was dismantled in 1987.

Before ending, I should like to make one last small point about the rhythmic time behaviour of systems. As I turned my attention to a study of changes in Government Policy, in an effort to comprehend better what has been going on during the 15 years since my retirement (1991), I chanced to come upon a report prepared by the branch of government that is responsible for such policy, entitled “Science and Technology:

The New Federal Policy”. It was written by Daniel Brossard, and placed in the Parliamentary Library in 1996 - only 11 years ago. There is a stirring introduction that calls for Canada to become a “learning society” in the new Information Age. There are then outlines of how the various government departments will begin to work together with one another, and how this is being spread by various means to Universities and Industries. There are the frequently called for improvements in cooperation within and between all these various components and levels of the systems.

What caught my interest in Brossard’s report, however, was a brief note about how very much more important it is now than ever before to have a strong ‘Science and Technology’ component in all this development. In one place, it even suggested that Science and Technology Organizations, to be able to grow properly to requisite strength, might have to be protected from direct intervention, perhaps by being set up “at arm’s length” from government! Needless to say, my memory leaped back to the days of FRB, Defense Research Board and National Research Council, all of

whom were founded as they were for exactly that reason. All of them lost their “arms length” status in the throes of introducing unionization to the federal civil service. The statement almost seemed to me to be a brief glimpse of what Nietzsche called “the eternal recurrence”, our own example of the endless patterns that must inevitably appear in time. I personally can only hope that someone will, someday, realize how productive and vibrant with discovery such old organizations actually were.

CANADIAN MARINE SCIENTIST RANSOM MYERS DIES

Renowned marine scientist Ransom Myers passed away on 27 March 2007 in Halifax of complications from brain cancer at the age of 54. His death was widely reported in media across North America and much of the world.

Myers was a professor of ocean studies at Dalhousie University and a past Department of Fisheries and Oceans research scientist. He was widely known for

ground-breaking research and for his outspokenness on the overexploitation and extinction of fish species

Perhaps best known for a 2003 analysis of catch records showing that populations of big fish like sharks, marlin, and swordfish had dropped by 90 per cent in the last half-century, Dr. Myers wrote and published right up until his death, with his last paper appearing in Science on 30 March 2007.

For more information, consult the links to some of the media reports that summarize his life at the following in memoriam Dalhousie University web site: <http://as01.ucis.dal.ca/ramweb/>.

FROM THE ARCHIVES 36 YEARS AGO — 1971

Compiled by Bosko Loncarevic

[These Highlights are excerpted from BI World Newsletter, published at the Institute between 1967 and 1973. Complete versions are posted on our web site.]

{**January 1971**, Vol. 5, No. 1} - Dr. Mann’s seminar on “Physical Oceanography on the HUDSON 70 Voyage” – “A demonstration of the mutual respect and admiration between fisheries scientists in Britain and in Canada is the best way to summarize the visit of the Lowestoft Research Vessel CIROLANA to the Bedford Institute.” – CSS DAWSON In West Indies on a metrology cruise – Meeting at BIO of the “East Coast Working Group” (a regional daughter group of the Canadian Committee on Oceanography) – Long report on Gordon Research Conference 9 chemistry)

by A. Walton - Dr. Roger Pocklington joined Chemical Oceanography on January 18. – C.D. Maunsell provided a mathematical solution to “How long is the banana?” (posed in Dec. 1970 issue) - More on “Principles of existence in the Civil Service” (e.g. Demonstrate clearly your incompetence to do work of your subordinates) – A 44 ft wave snapped two of the four anchor cables on the Stable Platform.

{**February 1971**, Vol. 5, No. 2} – Seminar by Dr. Henry Charnock, Director, NIO-UK. – ICNAF Report – Dartmouth Free Press Reports on RAD Building – B. Lumsden proposed a new layout for typewriter keyboards – Mike Bewers reported on Royal Society Symposium on “Mercury in Man’s Environment” – Another mathematical puzzle – Another poem about “Red Tape” – All seven ships were at BIO or in refit.

{**March, 1971**, Vol. 5, No. 3} – Report on Tenth Annual Hydrographic Conference - All seven ships were at BIO or in refit – More tips on travel around the Province – Long Report by Peter Beamish on “A Cruise on an Antarctic whaler” – Accidents can be prevented – Another poem in response to previous month – Solution to Math Puzzle by C.D. Maunsell – David Heffler joined Marine Geophysics.

{**April 1971**, Vol. 5, No. 4} – Dalhousie University Computer Centre announced that they will be installing a Control Data 6400 Computer during June (with remote access from BIO) – All ships out at sea. Weekly reports from Hudson, Baffin, and Dawson – Report by L.M. Dickie on MEL’s “Fish-counting cruise” – Air-Sea interaction measurements in the Arctic – Steve Grant joined the Navigation Group – “Notes on a Family Vacation in Lisbon” by Mrs. John Brooke –

Norman Sabowitz joined the Library – Don Peer’s description of boating in the Bahamas – Work assignments for 29 Summer Students.

{**May 1971**, Vol. 5, No. 5} – Weekly messages from Hudson, Baffin, Dawson, and Kapuskasing – Baby girls borne to the Parsons, Lawrences, Lockes, and Dessureaults; baby boy to Bingham – “Ten days in London on a tight budget” by Mrs. John Brooke - Captain D. W. Butler, Master, CSS HUDSON, received an Honorary Doctor of Laws degree from Brock University – “Nature of Fire” (Notes by the safety Committee) – More tips on Travel around the Province.

{**June-July 1971**, Vol. 5, No. 6 & 7} – Tenders for a 420-foot exten-

sion to the Resource Management Conservation Branch, Core Building, have closed and a contract has been awarded to the low bidder, Boyd & Garland, at \$99,300. - Summer tours of the Institute started in July and a total of 761 tourists visited during the first month – Dr David Garner left for New Zealand; Ross Richards left for Ottawa – Joining the Institute were Jim Cuthbert, Mrs. M. Trapnell, Mrs. Cheryl Yates, Mrs. Paulette Kampermann, and C.R. Butler – Report on Annual meeting of the Canadian Public relations Society by C.E. Murray – Weekly messages from Hudson, Baffin, Dawson, Kapuskasing, and Maxwell – Batfish Test on CNAV BLUETHROAT – ICNAF Report – CDC 6400 computer installed at Dalhousie U.

And that was that at the end of July 1971.

ABOUT THE ASSOCIATION

The Bedford Institute of Oceanography Oceans Association 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 sup-

port 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 \$5.00 per year, \$25.00 per half decade, or \$100.00 for a lifetime membership.

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