

Class of 65 Newsletter

Bulletin d'Information—Classe de 65

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November/novembre 2019

Disclaimer: This Newsletter is produced for members of the RMC Class of 1965 and is based primarily on inputs from members of the Class of 65. It is not an official publication of the Royal Military College nor does it purport to represent the views or opinions of all members of the Class. Unfortunately, the Editorial staff lacks the linguistic skills to produce a bilingual version. Items are published in the official language in which they are received.

Editor's Corner/Coin du rédacteur

Woke up this morning to almost a foot of snow and cancellation of my volunteer activities for the day, so it seemed like a good time to start putting together a very full November issue of the Class Newsletter. The first order of business is to report the sad loss of two more classmates. This will be followed by a couple of updates on the 2020 Reunion Weekend. There is a report on the presentation of the 2019 Teaching Excellence Award; a thought-provoking article by **Jim Carruthers** on naval training (or lack thereof) at RMC; and a couple of other interesting inputs by **Harold Merklinger** and **Gord (Navy) Forbes**. Finally, a reprint of an article from e-Veritas on a project undertaken by **Jim Palmer**.

6543 Ron Jackson (3 Mar 43—6 Oct 19)



Much treasured son of the late Ronald and Helen (Cooper) Jackson, and brother of the late Karen Johnson, passed away after a short illness, resulting from a fall at home. Survived by his loving wife and best friend, Carmen Hall of Gananoque, their son Alex and his wife, Chanda and their daughter Vienna of Toronto, as well as his sister Susan Roess (Manfred) of Calgary. Ron grew up in a military family and as legend has it, lived in 19 places in 21 years. He graduated from RMC in 1965. After a career in the Air Force and in the private sector, he joined the federal public service. He enjoyed and cherished his long career in Transport Canada, the Privy Council of Canada, and finally as a principal at the management consulting firm Sussex Circle. The highlight of his Government career was as the Assistant Deputy Minister first of Aviation, during the privatization of the Canadian Air Navigation System, then as the ADM responsible for bringing together all Transportation Regulation: Air, Marine, Road, Rail, Dangerous Goods, and Security. While passionate about his work, his first priority was his family and he prized their shared downtime. He was good at it all: skiing, sailing, hiking, hockey, swimming, he excelled at anything that was both physical and out-doors. Loved sailing on Lake Ontario and in the Thousand Islands, but also sailed in Greece, Polynesia, Mexico, Virgin Islands, the Grenadines and the Seychelles. Ron was thoughtful, smart, fun and a colourful raconteur. A lovely man, he will be forever missed by his family and many friends. Donations in Ron's memory can be made to the MS Society of Canada, or the Leukemia and Lymphoma Society of Canada. (*Ottawa Citizen*, 8 October 2019)



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6367 Peter Thackray (10 Oct 42-31 Jul 19)



It is with broken hearts that we announce that surrounded by his loving family, PETER EDWARD THACKRAY in his 77th year has passed away after a short but valiant fight with cancer at Victoria Hospital in London, Ontario on Wednesday, July 31, 2019.

Peter was the loving husband and best friend of Judy (Colter) Thackray through almost 51 years of marriage. He was dearly loved by his daughter Robin Thackray Ashton (Brent) of Woodbury, Minnesota and his son Matthew (Matt) Thackray (Erin) of Bloomfield Hills, Michigan. Peter was the very proud Papa to Bennett, Blake and Max Ashton of Woodbury, Minnesota and Ari and Lennon Thackray of Bloomfield Hills, Michigan. Peter was loved by his sister in law Pat Colter and many nieces, nephews and other extended family members in Dartmouth, Nova Scotia. Peter is predeceased by his parents Edward and Amy Thackray (Montreal, Quebec) and his parents-in-law Maurice and Connie Colter (Dartmouth, Nova Scotia). Peter is also predeceased by his brother in law Jimmy

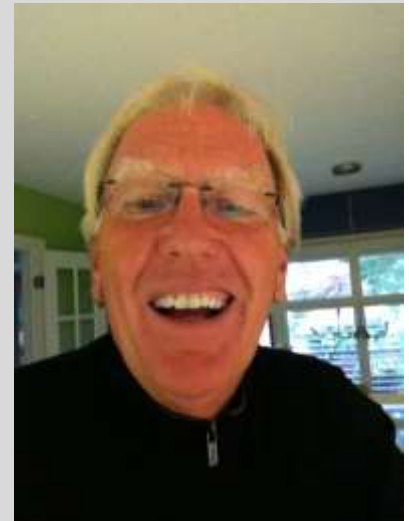
Colter from Dartmouth, Nova Scotia.

Peter's first career was as a pilot with the Canadian Navy (based in Shearwater, Nova Scotia). This was followed by a long career with Bell Canada in Toronto, Hamilton, Kitchener, Ottawa and London, Ontario. After retiring from Bell Canada, Peter worked for Alcatel-Lucent Canada in Georgetown, Ontario

Peter lived his life for loving family and many good friends.

His funeral will be held at St. James Westminster Church, 115 Askin Street, London, Ontario on Tuesday, August 6, 2019 at 11:00am with visitation one hour before and a reception to follow at the church. We would like to extend our sincere thanks to the 7C Oncology Team at Victoria Hospital - LHSC for their compassionate care of Peter. Donations to Peter's favorite cause would be appreciated: The Leukemia & Lymphoma Society (in honor of his grandson Max's successful completion of treatment for childhood leukemia) .

(London Free Press, 3 Aug 19)





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Reunion Weekend 2020 Accommodations

A block of rooms have been set aside for the Class of 65 at the Residence Inn Water's Edge in Kingston for those that are interested. Details are as follows:

The reservation link is [Book your group rate for RMC '65 Reunion](#) . If anyone would prefer to phone in their reservation, they are welcome to call the hotel directly at 613.544.4888 and they just need to let the Front Desk Agent aware that they are booking with the RMC '65 Reunion group block.

Reunion Weekend 2020: Proposed Changes

An article in e-Veritas 35/2019 proposed a number of changes to the format of the Reunion Weekend next year that included shortening the event by a day and moving the Parade to the Arch from Sunday to Saturday. These changes provoked a sharp response from several of our classmates that are best summarised by a message sent to the Club Executive Director by **6541 Fraser Holman**, the gist of which is as follows:

"E-Veritas of last week announced exciting news for the coming Reunion Weekend, our 55th anniversary of grad. Well I was excited alright, but in a negative way. I have a hard time envisioning doing justice to the traditional service at the Arch, by jamming it into the 0800-1000 block ahead of the main Badging parade. The Saturday events would then stretch from 0800 until end of the Old Brigade dinner at 2200ish, a prospect daunting to my retired rhythm of life. Worse in my mind was that we would rush through a memorial time dedicated to paying our respects to those who have sacrificed their lives to service of our nation. I don't see it as a offering a respectful focus on our forebears.

So I wrote to the Executive Director, Bill Griffis, and got rather defensive notions of including First Years who apparently are excused duty on Sunday, and reference to time pressure recommendations of the Special Staff Assistance Visit report of 2017. Neither excuse seemed compelling to me.

Jim Carruthers and Mike Houghton have written to the Commandant in support of my objections, and the Commandant has responded positively, but the issue is not yet settled. Apparently more recent ex-cadet classes, including that of the Commandant, do not stick around for Sunday at all. In any event he has asked the Club to give him a specific recommendation on holding the Arch parade on the Sunday. Presumably this will force the Club executive to sample opinion a bit more widely than they have to date. So stand by."

Clearly, there is more to follow on this issue. I will try to update via the newsletter, although e-veritas will probably get the word out more quickly.



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2019 Teaching Excellence Award

The presentation of this year's Class of 65 Teaching Excellence Award was held on Monday, 28 October in Currie Hall to this year's winner, Dr. Jing Gai of the Mathematics and Computer Science Department. Her presentation tried to convince her audience that math could be fun—a thesis that fell on deaf ears among several of the members of the Class of 65 in attendance including yours truly



As usual, there was a good turn-out from the Class with attendance from the Toronto area, **Ambachtsheer**, Collingwood, **Hilliard**, Kitchener, **Mueller**, Ottawa, **Adams**, **Astley**, **Braham**, **Carruthers**, and **Emond**; from Kingston, **Gynn**, and **Houghton**; and, from Halifax, **LT Taylor**.

Following the presentation there was a lively question and answer period followed by a short reception before everyone hit the road for home.

Making Waves: Putting Some Navy Back Into the Royal Military College by 6604 Jim Carruthers

This is an exciting time for the 23 naval cadets who have just graduated from the Royal Military College of Canada (RMC) and have been commissioned as officers in the Royal Canadian Navy (RCN). Yes, I said 23 – that includes all classifications, Logistics (LOG), Naval Technical Officers (NTO) and Naval Warfare Officers (NWO). Yet it is possible that some of these young men and women will never have seen an ocean or spent any time in one of Her Majesty's Canadian Ships in their already more than four years of service.

Without a doubt these young officers will not have taken any naval-oriented academic subjects. RMC dropped its last naval-oriented course a number of years ago. Historically Canada educated its naval officers through naval institutions but those days are gone. While naval colleges in different forms ran sporadically for the RCN's first 40 years, the tri-service Canadian Service College (CSC) successor has endured for over 70 years. Through those 70-plus years CSC has lost naval attributes it once might have had and is now for all intents and purposes a college with an army history and a very small naval component. The non-naval character is not just a case of numbers but permeates the ethos of the institution and processes from basic training through to graduation.

The naval influence and characteristics did not just abruptly disappear but rather, atrophied over decades. The CSCs over the decades have changed shape, morphing from three colleges, each staffed by a single service, and therefore having navy, army or air force characteristics, to a single college of the army persuasion, and now back to two campuses with language or perhaps civil culture being the differentiator. The erosion of naval culture can be connected to three inflection points – the demise of the Royal Naval College of Canada (RNCC) in the 1920s, the change to make CSCs degree-granting institutions, and integration of the Canadian Armed Forces.

From establishment of the CSCs until the early 1960s the approach of the RCN differed from the other two services. Whereas army and air force cadets entered the CSCs with the objective of graduating after four years – and in many cases went to a civilian university to obtain a degree – RCN cadets often left after two



Making Waves (Continued)

after two academic years to continue naval-specific training at Royal Navy (RN) establishments.

In addition, the approach at each of the colleges was different. In the case of Royal Roads, the service college with a focus on the navy, the college had many 'naval college-like characteristics, including:

- Cadets were recruited by service specific standards and were navy from the first day.
- Royal Roads was staffed by the RCN. The character of the college was navy.
- The terminology was navy, the focus was oceanic, a naval ethos permeated the establishment.
- Time on ships during the academic year, weekend sailing in the sail training ship HMCS *Oriole* and taking auxiliary craft along the coast allowed cadets to develop naval skills and experience real responsibility.

Perhaps the next inflection point took place when RMC was given the ability in the late 1950s to begin granting degrees. Naval cadets no longer had the option to go to the RN to complete their training, and everyone spent the final two years at the army school – RMC. They may have had some naval exposure if they attended Royal Roads, but they graduated from a general military college. Royal Roads provided a naval environment for the first two years with all the attributes enumerated in the section above. On completion of the academic year, naval cadets remained at Royal Roads, joined by their colleagues from RMC and CMR St. Jean, with the curriculum changing to shore-based training in navigation and naval subjects before moving to ships for a few weeks of pilotage training in the Gulf Islands, then down the coast to California and over to Hawaii. 'Roads types' were in many ways immersed in a naval culture for the entire first two years. Those from the other two colleges were still recruited by the RCN and spent the summers on ships but they spent their college years immersed in a mainly army environment.

With integration and unification of the Canadian Forces in the late 1960s, the decline of things naval accelerated. It did not happen all at once or in a single location. Royal Roads stopped being a military college in the 1990s, and change spread throughout the system from the time naval cadets were recruited – not by the navy but the Canadian Forces – until they graduated with minimal naval influence.

Although things have changed a bit as second year cadets get a long weekend trip to Halifax, the environment is non-navy and perhaps even anti-navy. As mentioned, some naval cadets had never seen the ocean, never mind a ship during their entire time at RMC!

The Future

The tri-service basis of Canada's current defence academies is a strong positive step and of great benefit particularly to those officers who go on to senior positions and work in a multi-service environment. However, it seems clear that it has resulted in a diminishment of naval culture and ethos critical to an effective navy. The CSCs are failing to provide naval officers in the numbers needed and the cultural leanings desired.

While some postulate a separate naval college as a solution, that is unrealistic. Canada will not see distinct service academies in the future. While we will never turn the CAF/CSC ship around, perhaps we can nudge this vessel so that there is a course alteration that would benefit naval needs. I believe there are actions that can be taken during basic training, while the naval cadets are at RMC/CMR and over the summers.



Making Waves (Continued)

With naval cadets being immersed 24/7 in a military environment, every opportunity must be taken to provide some naval context. Naval staff at RMC must work harder than their other service contemporaries to provide whenever possible an ongoing persistent naval connection.

In an attempt to make some difference while the naval cadets are at RMC, in 2011 I established, through an RMC Foundation endowment, a series of naval-oriented undertakings. They include: presentation of naval swords to the top NTO and NWO naval cadets of the graduating class; presentation of the 10 volumes of *Salty Dips*² – the RCN's 'unofficial history' – to each graduate; support of 40-50 naval cadets at the Naval Association of Canada (NAC) Battle of Atlantic Gala Dinners in Ottawa; support of 40 or so naval cadets at NAC conferences held in Ottawa and two or three naval cadets if the conference involves air travel elsewhere; and attendance at the Halifax Battle of the Atlantic Dinner for second year cadets during their ship visit. The 'tag line' I use to describe this use of my endowment is an attempt to 'Put Some Navy in Naval Cadets.'

Some other changes that should be considered include attention to: initial naval recruiting; naval cadets 'bleeding away' during basic training and their time at RMC; each naval cadet receiving a personal message from the Commander of the Navy welcoming them to the RCN; naval cadets attending naval social and professional events within driving distance of RMC for the entire group and smaller numbers for events requiring air travel; expanding the annual naval mess dinner as much as space permits instead of limiting it to the graduating class; ensuring key, inspirational senior officers attend the RMC naval mess dinner; some sort of naval 'symposium' at RMC with exciting speakers; and a frigate visit to Kingston during the academic year with day sail opportunities.

It seems that summer – which formerly was the time when naval cadets at CSC could begin to be inculcated with naval knowledge – has in part been given over to RMC and the army. It appears that a good number of naval cadets spend their summers at RMC or go to St. Jean rather than undergoing naval training. Even if the naval cadet is working on language training, summers need to be spent on the coast and preferably on a ship. Summers, which are formative with these young people, must be used to begin to put some navy in naval cadets.

It may seem unwise to propose adding courses when RMC is in the process of examining how it can reduce the cost per cadet possibly by eliminating courses, but that is what we need to do. What courses would add professional value and make naval cadets feel they are future naval officers? Some changes to re-establishing a naval academic presence at RMC could include credit courses such as:

- Naval history and naval strategy. Every naval cadet should leave RMC with a basic understanding of these subjects, and officer cadets in other classifications could also benefit.
- Oceanography to provide a basic understanding of the oceans upon and under which the navy operates.
- Ship acquisition, i.e., the process of requirements definition, sketch design, trade off s, roles of other departments, shipyard processes, etc. Every naval cadet would benefit from some grounding in how Canada builds a navy, especially in light of the National Shipbuilding Strategy.
- Overview of naval architecture and marine systems that every naval officer would find valuable in understanding RCN ships.
- Overview tying together electrical, mechanical and computer system disciplines taught at RMC into a systems look at a ship.



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Making Waves (Concluded)

Conclusion

Canada is a three-ocean country. The world's states continue to devote a large portion of their defence budgets to navies. Trade overwhelmingly moves by sea, and the largest source of protein for the world's increasing population is the ocean. Since establishing a navy as a young Dominion, Canada has recognized the wisdom of educating aspiring naval officers in naval strategy and affairs. Yet, as the importance of maritime affairs has grown, naval content in Canada's service academy programs has atrophied. There is little naval content in the current CSC/RMC program. While it is impossible to imagine the creation of a separate naval college in Canada or even major changes to the present military college program, there are small non-disruptive changes that can be made to the education of naval cadets that would fill some of the gaps. These should include:

- During the academic year putting more navy in naval cadets.
- Summer training, whatever the content, conducted on a coast in a naval environment.
- Course offerings to include, at a minimum, naval content such as naval history and naval strategy.

None of these need be a disruption to the present program; any or all of them would be of immense value to ensuring better graduating officer corps for the Royal Canadian Navy.

Notes

1. For an account of this, see for example, G.N. Tucker, *The Naval Service of Canada: Its Official History, Vol II: Activities On Shore During the Second World War* (Ottawa: King's Printer, 1952), pp. 247-251; and Vice-Admiral (Ret'd) Nigel D. Brodeur, "The Importance of Naval Education for Flag Officer Development," *Canadian Naval Review*, Vol. 14, No. 1 (2018).

There Are a Lot by 6533 Gord Forbes

On a recent train trip between Ottawa and Halifax it dawned on me as I watched the countryside go by. There are a lot of trees in this country. My train trip covered probably less a third of the way across the country. So, you can imagine how many there are in total. Our biggest forest is the northern boreal forest that stretches across Quebec, Ontario and the northern prairie provinces and into the arctic. This forest also stretches across northern Russia so the tree count for this forest must be in the billions.

In addition, there are trees in almost every country in the world. Despite clear cutting, the Amazon jungle is still of formidable size. There are still significant forests in Europe, Asia and Africa.

But is it enough?

Scientists tell us that trees are one of the most important resources for ameliorating climate change. A tree's ability to take in carbon dioxide and release oxygen is truly one of the most amazing things about nature. But we are still seeing climate change get worse despite all of the trees we have. Why?



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There are a Lot (Concluded)

The obvious answer is that we are putting more carbon dioxide into the atmosphere than the trees can handle. That being the case, we have two choices. We can plant billions of more trees, or we can significantly decrease the amount of carbon dioxide we put out. Better still, we can do both and find the balance that will stem or even decrease the change of climate. But we must act now so that the twin actions will have a chance to take effect.

The current arguments against the fact that climate change is being caused by human activity are, in my research and opinion, false. Despite the argument that the climate has changed in the past, those changes took place over millennia, not within the lifetime of a single person. The Canadian argument that we don't need to do anything because we only contribute about 2 percent of the global total ignores the fact that on a per capita basis, we are one of the largest contributors in the world. And some government decisions have just made things worse, such as Premier Doug Ford's decision to cancel a provincial tree planting program that would have planted fifty million trees. That fifty million would help, but a goal of fifty billion may be closer to what's needed. In the prairie provinces, their desire to drown the world in their oil could be seen as a crime against humanity.

But the real answer is to seriously curb our use of carbon products. We will never eliminate the need completely, but its limited use must be carefully and very efficiently done. If we continue as we are, no matter how many trees we plant and grow, the carbon dioxide will still overwhelm that attempt.

We should all be concerned about climate change. And trees, those wonderful, beautiful gifts of nature, can only do so much. Plant and protect trees and cut down our use of fossil fuels so that maybe we can actually reach or exceed the climate goals that have been established. Maybe then the trees and us can all survive.

Class of 65 Books and Authors

I have read a number of books authored by members of the Class of 65 and wonder if there are any more. Those I am aware of are:

Mike Braham

My Father – The Forgotten Air Ace, Create Space Independent Publishing Platform, 2016 ISBN 978 1537525595
Men of Valour: Canada's VC Winners, Create Space Independent Publishing Platform, 2016 ISBN 978 1540459480

Gord (Navy) Forbes

We Are As One, Baico Publishing, 2010, ISBN 978 1926596945

Doug Cope

The Roadants of Canadian Services College Royal Roads, Baico Publishing, 2012. ISBN 978 1927481318

Roger Chiasson

Cape Bretoner at Large: From New Waterford to Tokyo and Beyond, Friesenpress, 2018, ISBN 978 1525512223



The Origins of Active Sonar

By 6554 Harold Merklinger

About five years ago I learned something I should have known essentially all my working life. It relates directly to my work and yet I didn't learn about it until more than a decade after I retired. I am referring to the story of Newfoundlander and Canadian, Robert William Boyle generally known to the world as "R. W. Boyle" or to his close friends as "Billy".

Boyle is almost unknown in the history of Canadian science, but he deserves to be one of its stars: he is one of a few people who can legitimately claim to be the inventor of anti-submarine sonar and medical ultrasonics. He led the team that, during World War I developed the very first anti-submarine active sonar, the Royal Navy's "ASDIC" Type 112.

Immediately following the sinking of the *Titanic* in 1912 there was a burst of activity intended to prevent future iceberg strikes. British mathematician and pacifist Lewis Fry Richardson obtained two patents for what we would today call active sonar. One patent covered acoustic echo-location in air while the other covered acoustic echo-location in water. So far as I can determine he never reduced his patents to practice. Meanwhile Québec-born inventor Reginald Fessenden, better known as the inventor of radio as we know it, at the time working for the company we know today as Raytheon, demonstrated actual underwater acoustic detection of an iceberg at a distance of about two miles. So far as I can determine, there is no indication Fessenden knew of Richardson's patents.

R. W. Boyle was born in Carbonear, Newfoundland where his father, originally from P.E.I., was a General Practitioner. R. W. followed his father's footsteps in that he went to McGill University in Montreal for his higher education. Rather than taking up Medicine, however, R. W. studied Electrical Engineering and Physics. At the time, Ernest Rutherford was a visiting professor and the two began a professional relationship that lasted until Rutherford's death in 1937. Early during World War I, the British Government set up an organization called the Board of Inventions and Research, or BIR, to bring new ideas to the war effort. Rutherford was on the Board. Boyle (by then at the University of Alberta) wrote to Rutherford offering his services and his offer was accepted. Boyle was assigned to work on the problem of detecting and tracking U-Boats using acoustic methods. A British acoustician, Albert Beaumont Wood (another former student of Rutherford's) was assigned to investigate passive (listening) methods while Boyle was given the job of investigating the echo-location methods suggested by Richardson. In Switzerland, ex-patriot Russian, Constantine Chilowski offered similar suggestions to the French Government, which then sought the advice of well-known physicist Paul Langevin. At the outbreak of WW I, Reginald Fessenden offered his service and patents to the Royal Navy.

During the War, Boyle and Langevin collaborated and exchanged ideas. Both men independently obtained high frequency echoes from submarines in March of 1917. Langevin's physics specialty was piezo-electricity and both men ultimately chose piezoelectric quartz as their active material for ultrasonic transducers (transmitter/receivers). Langevin had earlier obtained some success using a "singing" condenser, while Boyle and company initially followed up Fessenden's use of a "Fessenden Oscillator" (a high power underwater loudspeaker.) Obtaining an echo using a Fessenden Oscillator operating at 540 Hz proved relatively easy, but determining the direction from which the echo came was essentially impossible at the time. As both Richardson and Chilowski had observed, it would be necessary to utilize higher frequencies (shorter wavelengths) to reveal the actual location of the target.



The Origins of Active Sonar

I have not been successful in discovering the extent to which the French exploited the active sonar concept during WW I, beyond the production of an echo sounder (fathometer) for water depth determination. R. W. Boyle and his team, on the other hand, set about to design and build a dedicated anti-submarine sonar system: the Type 112 ASDIC. This sonar was just being fitted to UK warships as the war ended.



Langevin published his findings openly. Boyle and co-workers were sworn to secrecy until about 1940. As a result of these differing policies, Langevin is often cited as the "inventor of active sonar" while Boyle has remained surprisingly unknown. In his 1928 paper entitled "Ultrasonics", Boyle agrees that Langevin should get the greater part of the credit for the development of ultrasonics. The British regarded ASDIC as so secret that one could not openly use the word "quartz" in association with anti-submarine warfare. Instead, one must refer to this active material as "asdevite".

As recorded in the Proceedings of the Royal Society of Canada, rumors of Boyle's accomplishments managed to filter through to the scientific community in Canada. Canadian Physicists were looking forward to hearing directly of Boyle's exploits on his return to Canada. Instead, his return brought only silence from Boyle: he was bound by secrecy. Boyle resumed his position at the University of Alberta, but continued his acoustical interests by researching sound properties in liquids and solids as well as investigating sound visualization techniques. In 1928, he summarized his work in the paper entitled "Ultrasonics" cited above. This paper includes a single paragraph commenting on the work in England during the War, although not mentioning the application of that work. To my knowledge, this is the only account the WW I work that Boyle ever offered. For the remainder of his life, his subordinates and co-workers appear to have known nothing of his WW I accomplishments. In fact, one of them is quoted in NRC's History of the NRC Physics Division as saying "I can not think of any direct, indirect or administrative contribution to science made by Boyle." A few years ago, a former head of the NRC Acoustics Laboratory told me that the only knowledge he had of Boyle or his accomplishments is what is contained in the 1948 notice of Boyle's retirement. That notice says simply that, during WW I, Boyle headed the team that developed the anti-submarine system known as ASDIC.

An unfortunate sequence of events helped to seal R. W. Boyle's anonymity. In January 1920, the Admiralty proposed that Boyle should be honoured with a Commander of the Order of the British Empire (C.B.E.) title. This was communicated to Boyle and he duly filled out the required forms and returned them to the Order. He was informed the honour would be announced in the next issue of "the Gazette". But no such announcement was ever to be made. Instead, Boyle received a telegram from the Order saying he should disregard



The Origins of Active Sonar (continued)

their previous communications. Then, in December 1920, the Department of External Affairs (of Canada) informed Boyle that, as a resident of Canada, he could not accept the award! This is, of course, a consequence of "The Canadian Titles Debate" and the "Nickle Resolution" which prevented Canadian residents from receiving foreign honours and awards. It was not law, but merely policy of the reigning Canadian Government. Nevertheless, this policy effectively squashed a great opportunity for Boyle's work to be officially recognized.

I looked into the Titles Debate including reading relevant portions of Hansard. My interpretation is that while the letter to Boyle was not completely accurate, the award stood no chance of being permitted. The view of Parliament at the time was that, while such awards were not banned completely, they were to be restricted to forces personnel who had come under enemy fire. I believe this influenced the number of Canadian military recipients of the British Empire awards as well as eliminating all potential Canadian civilian recipients. (As Canadian Governments have changed, so too, has this policy.)

Boyle might have delayed his return to Canada or else returned to Newfoundland instead of Alberta! Then he could have received the award without issue.

In 1940 Boyle was awarded the Flavelle Medal by the Royal Society of Canada for his development of active sonar, although that award is curious. The Flavel Medal is supposed to be for contributions over the previous ten years in the field of biological science. Yes, medical ultrasound is an application of active sonar foreseen by both Boyle and Langevin, but that connection is not made in the award citation for Boyle! And, Boyle's sonar work had been completed 20 years earlier. There is a small irony here: Flavelle was the last Canadian to receive a royal title before the Nickle Resolution became Government Policy. Boyle was one of the first to have his award disallowed.

The story does not end here. In 1929, Boyle was hired by the newly expanded National Research Council of Canada to be its Director of the Physics Division. In the following year, he established an acoustics laboratory in Ottawa where he and colleagues continued ultrasonic studies. Work on the development of RADAR was started in Boyle's Division, but was soon organized as a separate Division. Boyle apparently had no desire to continue participating in that work. My speculation is that Boyle figured it would become another one of those super-secret efforts that no one would be allowed to talk about.

In 1940, Boyle established an Optics Laboratory at NRC. The main purpose of this facility appears to have been to aid in the selection, cutting and testing of quartz for use in sonar transducers.

A.E.H. Pew, O.B.E., was a member of Boyle's team in the U.K. during WW I. In July 1940, Pew arrived in Canada with 8 tons of luggage to begin the manufacture of UK-design sonar sets (ASDICs, if you prefer) in Canada. By December 1943 some 2,600 sets of 21 different types had been manufactured and distributed to the US, UK and allied navies. I have yet to find an official reference to the location of the manufacturing facility (called "Admiralty Stores"). Casa Loma in Toronto, however, claims on their web site that the secret location was their "stables"! (see: <http://kingofcasaloma.com/casaloma/asdic.html>) NRC was responsible for testing and delivering the quartz. The official source of the raw quartz was Brazil, but I recall my father telling me when I was about age 10 that the quartz was mined locally in Ontario. (Both statements could be true. The official record does state that the supply from Brazil was inadequate.)



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The Origins of Active Sonar (concluded)

Early in WW II, the Canadian Navy requested scientific assistance in dealing with the German magnetically-triggered marine mine. The Navy approached both Dalhousie University and NRC for scientific support. It was R. W. Boyle who negotiated the arrangement between NRC, the Navy and Dalhousie University to initiate the activity that in 1943 became known as the Naval Research Establishment - the Laboratory that hired me in 1965!

Whether as one of the founders of the Lab that employed me for 36 years or as the inventor of ASW active sonar (the subject of much of my own research work) I really should have learned of R. W. Boyle before I retired! And all Canadians should understand his place in both the history of naval science and medical ultrasonics. I am certain it would have changed my appreciation of Canada's strengths in these subject areas.

A final curious fact about Boyle: At the beginning of both World Wars. Boyle was in Germany when war was declared and, as stated in official NRC history, "had to escape". On his return to Canada at the start of WW II, he stopped in the UK and conferred with colleagues and former co-workers from the WW I work. There is reason to believe his discussions influenced planning for the Tizard Mission to North America. This is the effort that brought US and Canadian scientific and industrial capabilities to the war effort even before the US officially joined the conflict. And it officially brought details of the British development of RADAR to North America.

R.W. Boyle retired from NRC in Ottawa in 1948, died in London, England in 1955, but is buried in Everett (Boston) Massachusetts.

Closing Notes

Thanks to all our contributors this month—some interesting stuff. I hope some of you will provide feedback to the Making Waves article—both from a naval perspective and those of the other persuasions. Stay posted for more information on next year's reunion weekend. Got to go now and get out the snowshoes for a trek around the golf course.