



# NEWS

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## Innovation – The light bulb went on!

By Cdr (Ret'd) Pat Barnhouse

The concept of diffused lighting for concealing a ship at night, especially from an attacking submarine, was proposed early in the Second World War by Professor Edmund Godfrey Burr of McGill University, Montreal. At night, it was possible for a ship to be seen through a submarine's periscope as a dark object against the lighter background of the night sky, which is rarely pitch black. The suggested approach was to illuminate the hull and superstructure of the ship using photocells to match the level of the background sky.

Original experiments began in January 1941 with the corvettes HMCS *Cobalt* and HMCS *Chambly*, and by August of that year, a prototype system with automatic control was fitted to HMCS *Kamloops*. Various trials and demonstrations were carried out, including one in the Clyde for the benefit of the British Admiralty, reportedly using HMCS *Trillium*, although I can find no corroborating record of this ship being so fitted. One result of this latter trial was that the RN proceeded to further develop and fit a system in a converted merchantman, HMS *Largs*. Results from this installation and subsequent trials were conveyed back to Canada, resulting in further redesign of the automatic controls for the system by National Research Council (NRC) and naval personnel.

Production versions of the diffused lighting apparatus were contracted for and manufactured by General Electric of Schenectady, NY, using data supplied by Canadian engineers and scientists — an interesting comment in itself on the state of industrial development in Canada at the time. Systems were fitted aboard HMC ships *Edmundston* and *Rimouski* in the latter part of 1943 for further trials. It is reported that Professor Burr went to sea in *Edmundston* for some of the trials, assisted by Electrical LCdr Reside McCullum, RCNVR (who had been involved in the redesign of the lighting control system), and Acting Electrical LCdr T.R. Durley, RCNVR. Despite being considered operational, trials of the system continued through late 1944 and early 1945 off the East Coast of Canada, near Bermuda, and in UK waters.



FCN photo

HMCS *Kamloops* with diffused lighting camouflage fittings on struts around the funnel, September 1941.

One trial report tells of an Allied submarine being unable to visually detect the illuminated HMCS *Edmundston*, even though it got to within 700 yards of the accompanying control corvette which was easily seen. When the submarine commander asked for "lights off," *Edmundston* leapt into view only 300 yards away. When the commander requested "lights on" again, the ship disappeared, and could not be detected again despite knowing exactly where to look.

An operational UK report of the HMS *Largs* trials nicely summarized the advantages and disadvantages of diffused lighting. In favour was its effectiveness at night in matching any ship paint scheme to the background, thus allowing optimization of camouflage paint schemes for reduced daytime visibility. Against its use was the growing proliferation of radar at sea, its less-than-optimal performance in certain nighttime conditions such as moon light, and the complexity and fragile nature of the outrigger lighting fixtures.

(Continues next page)

Information for this summary was found in a number of sources, some of which bedeviled me by the contradiction in dates of events. Three contemporary government reports that are considered to be the most reliable in this respect are:

- HMS *Vernon* Trial Report No. D.L. 126, Diffused Lighting Trials HMS *Largs* (undated).
- Research Laboratories of the General Electric Co. Ltd. (UK), Report No. 7924, Diffused Lighting, March 16, 1942.
- Report on Revised Control Gear for Diffused Lighting Developed by National Research Council, December 15, 1944

Further information was found in the following books:

- Eggleston, W., *Scientists at War*, Oxford University Press, Toronto (1950).
- Fetherstonhaugh, R.C., *McGill University at War*, Gazette Publishing Co. Ltd., Montreal (1947).
- Lindsey, G.R. (Ed.), *No Day Long Enough – Canadian Science in World War II*, Canadian Institute of Strategic Studies, Toronto (1998). ISBN 0-919768-65-9.
- Lynch, T.G., *Canada's Flowers – History of the Corvettes of Canada 1939-1945*, Nimbus Publishing Ltd., Halifax (1981). ISBN 0-9208552-15-7.

A more detailed Wikipedia account of this fascinating wartime technology may be found at:

[https://en.wikipedia.org/wiki/Diffused\\_lighting\\_camouflage](https://en.wikipedia.org/wiki/Diffused_lighting_camouflage)



British Admiralty photo, National Archives ADM/116/5026

Bulwark of HMS *Largs* showing four diffused-lighting camouflage fittings, two lifted inboard, two deployed, for trials in the Clyde Approaches, 1942.

**The Canadian Naval Technical History Association congratulates the *Maritime Engineering Journal* (MEJ) on the occasion of the magazine's 40<sup>th</sup> anniversary of continuous publication, and the release of MEJ 100.**

The CNTHA has enjoyed a wonderful working relationship with the *Journal*, beginning with MEJ 44 in the summer of 1998. We gratefully acknowledge the enormous benefit this has made in the pursuance of CNTHA's goal of documenting the technical history of the Royal Canadian Navy, in support of the DND Directorate of History and Heritage.

The *Journal* plays a vital role in this regard. What is in the *Journal* today becomes the history of tomorrow, and this intrepid branch technical forum has a proven record of showcasing the excellent efforts and achievements of the RCN's technical support community.

On behalf of the CNTHA, we wish the *Maritime Engineering Journal* continued success long into the future.

— **Cdr (Ret'd) Pat Barnhouse, CNTHA Chairman, and  
Cdr (Ret'd) Tony Thatcher, CNTHA Executive Director**