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HMCS Restigouche pauses at gun wharf in her home port, Halifax. Rounded edges of deck shed atomic fallout

Canada's Fabulous Submarine Killer... **HMCS *Restigouche***

By Wayne Whittaker

WHEN YOU STEP ABOARD Her Majesty's Canadian Ship *Restigouche*—regarded by Navy men on a couple of continents as the hottest thing in antisubmarine warfare—you are immediately impressed with the ship's resemblance to her enemy. The rounded decks and sleekly contoured hull make the ship look like a cross between a high-riding submarine and a destroyer.

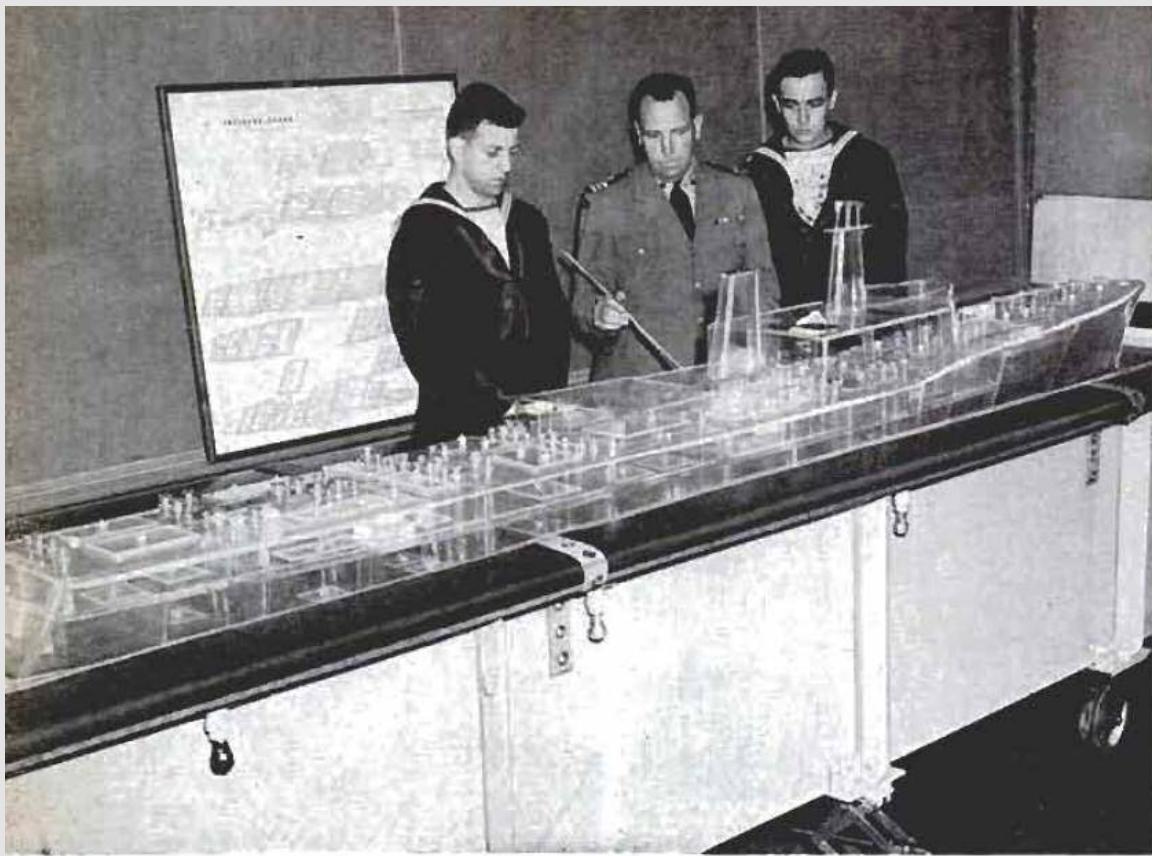
When I boarded this new destroyer escort at Halifax, Nova Scotia, she had just come in from her first trials in the North Atlantic. The captain of the ship, Comdr. John W. McDowall, and his ordnance officer, Lt. Comdr. Richard J. F. Donnithorne, pointed out that this vessel, and others of its class, would be in the first line of defense against missile-launching enemy sub-

marines—even in areas of atomic fallout.

"The *Restigouche* can proceed for days if necessary through radioactive fallout," said Comdr. McDowall as he led the way

Crew is proud of this new twin-mounted 3-inch .70-caliber antiaircraft gun; it can be fired remotely





Lt. Comdr. Ian C. Martin uses \$50,000 transparent model of Restigouche in tank to show ship's stability

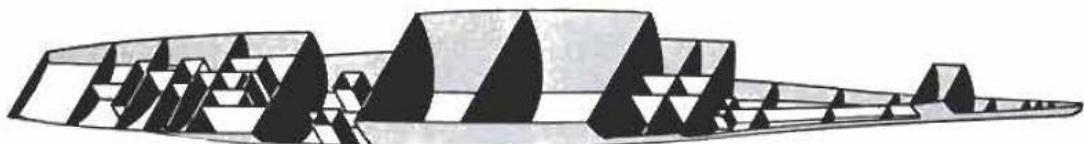
along the spotless decks of the 366-foot ship. "The ship can be sealed airtight and the air recirculated as in a submarine."

A gesture by Lt. Comdr. Donnithorne included the radar masts and aft guns. "We also have the latest equipment in sonar, as well as electronically controlled mortars and homing torpedoes," he said. "You know, it's only proper that the home port of the *Restigouche* should be Halifax." He pointed to the harbor bustling with naval craft and ocean liners. At one end of the long inlet that forms the harbor is a protected basin and at the other a widening blue expanse to the open sea. "Many of the biggest convoys of World War II were made

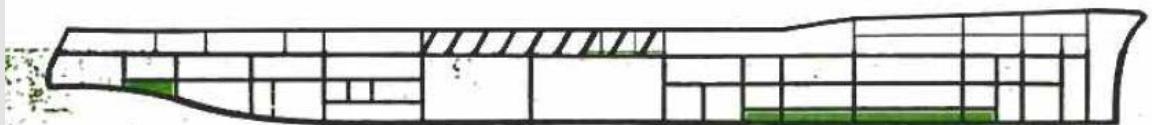
up here at Halifax. This place is antisubmarine minded."

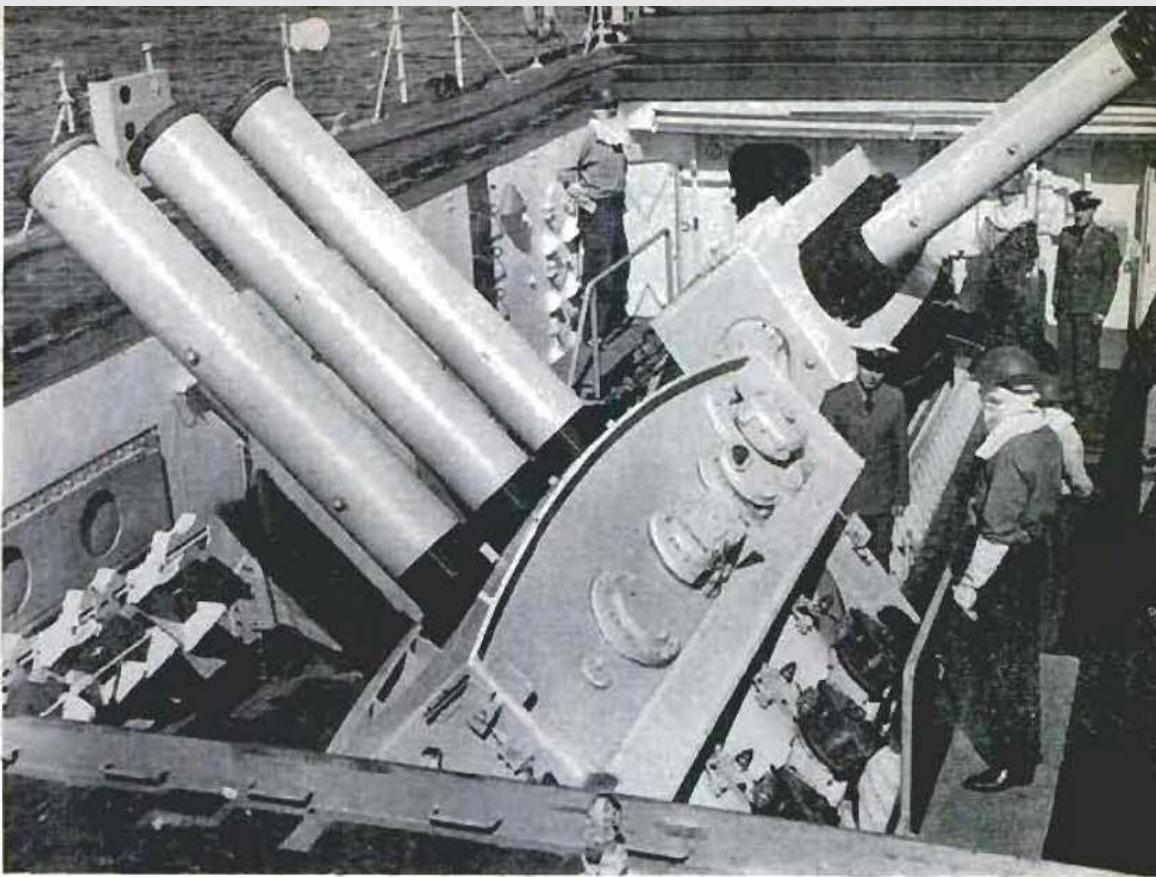
Comdr. McDowall chuckled. "I guess some people have been surprised that the Canadian Navy has developed such a lethal ship as HMCS *Restigouche*. It was a case of our sitting back in the weeds and taking the best ideas from the British and United States navies. Then, with some of our own Canadian gadgets, we put together the finest submarine killer afloat. This little ship has \$6,000,000 worth of special equipment."

As we proceeded across decks, down passageways and up ladders, we were joined by Lt. Comdr. Jacques P. Coté, the ship's executive officer, who filled us in on the



Drawing shows crosswise bulkheads that add greatly to ship's stability if struck by torpedo. The *Restigouche* will not list more than 18 degrees either way. Below, colored area can be flooded before sinking plus section just aft of diagonal lines in center; when critical center section is flooded the ship rolls over and sinks





Two triple-mounted 12-inch mortars that replace "ashcans" of World War II are housed in the aft hatch

history of HMCS Restigouche and her place in the St. Laurent class of postwar destroyer escorts. Built by Canadian Vickers Limited in Montreal, there were to be 14 ships in the class which took its name from the first ship, HMCS St. Laurent. The Restigouche (named for a river in the maritime province of New Brunswick) is No. 8, but so many improvements have been incorporated in her design and armament that the other six ships now nearing completion will be known as members of a special Restigouche class. All 14 destroyer escorts have a displacement of 2900 tons and the same geared steam turbines and twin propellers which provide a speed of "over 25 knots." How much faster than that

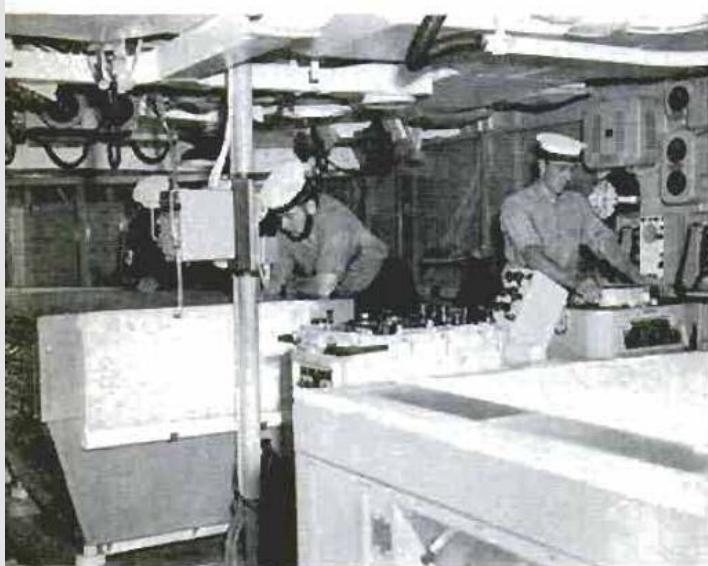


Right, crew handles a deadly homing torpedo. Below, ship gives itself shower to wash off atomic fallout

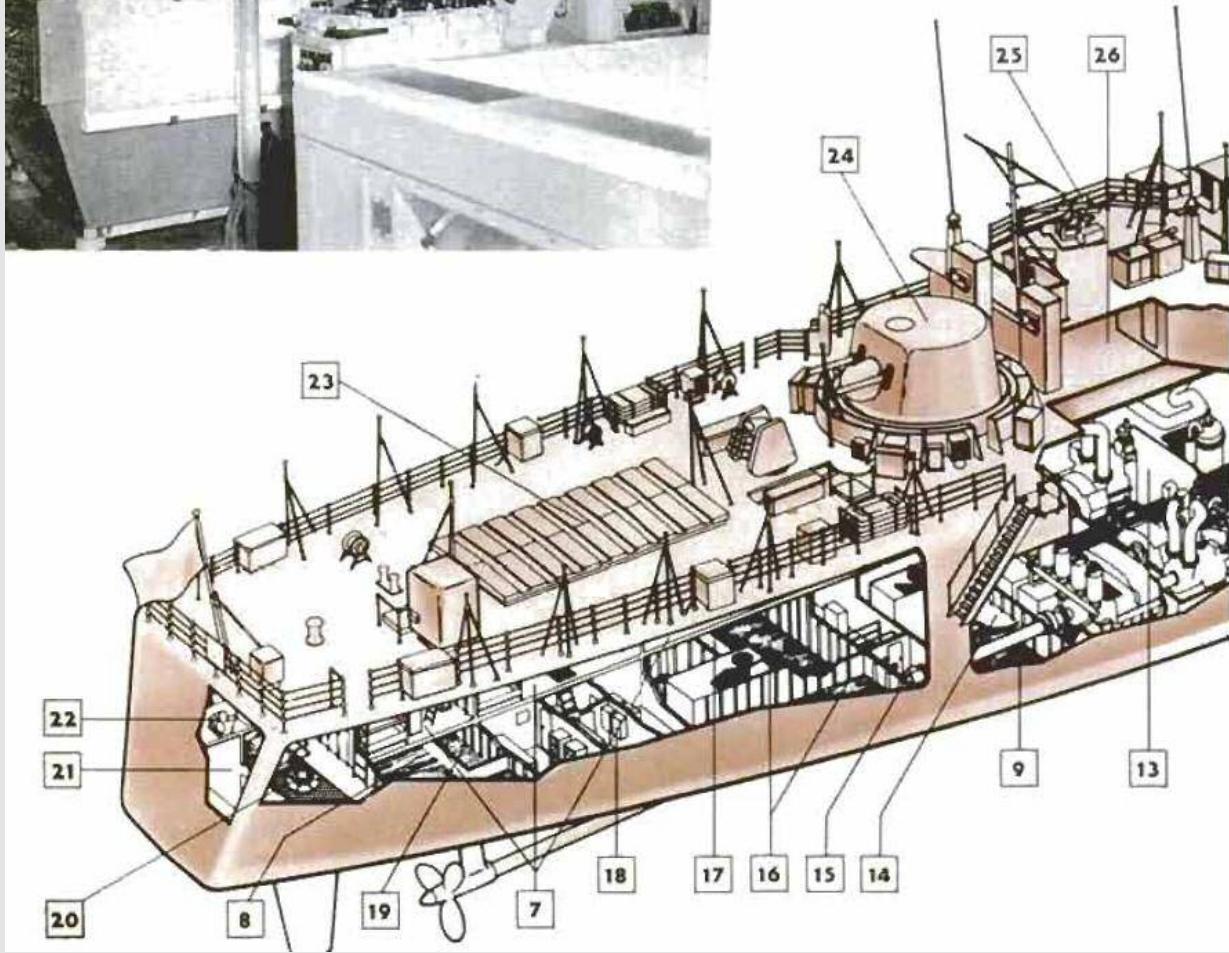




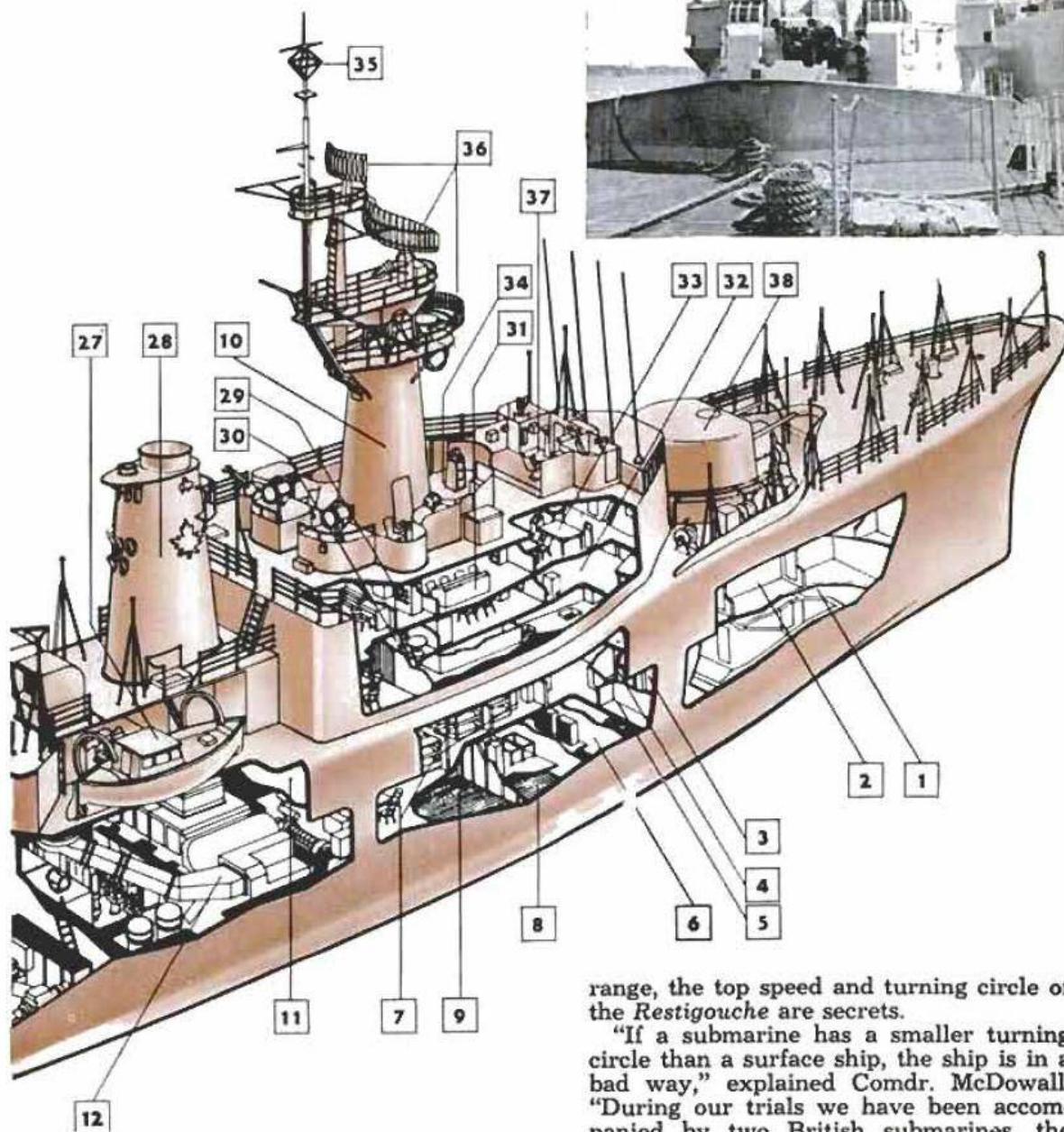
Left to right, Lt. Comdr. Coté, member of crew and Comdr. McDowall on the bridge



Cutaway shows: 1. Food storage and refrigeration; 2. Gunner's store; 3. Diving-gear store; 4. Naval store; 5. Water ballast tank; 6. Fresh-water tank; 7. Mess; 8. Water-ballast tank; 9. Fuel tank; 10. Foremast; 11. Electrical workshop; 12. Boiler room; 13. Engine room; 14. 3"/50 magazine; 15. Pump; 16. Fuel tanks; 17. Cofferdam; 18. Small-arms magazine; 19. Fog-oil tank; 20. Steering-gear compartment; 21. Provision room; 22. Refrigeration units; 23. Mortar hatch; 24. 3"/50 twin gun; 25. Single Bofors; 26. Torpedo house; 27. 27-foot motor boat; 28. Funnel; 29. Radar room; 30. Ward room; 31. Sonar room; 32. Radio rooms; 33. Operations room (C.I.C.); 34. Gunnery remote control; 35 HF/DF loop; 36. Radar; 37. Bridge; 38. 3"/70 twin gun



Right, view from forward deck shows .70-caliber guns and officer leaning from remote visual-control post



the ships will travel is anybody's guess, but when an earlier ship of the St. Laurent class worked out with the speedy United States atomic submarine *Nautilus* she was reported to have done "very well." Along with other such items as radar and sonar

range, the top speed and turning circle of the *Restigouche* are secrets.

"If a submarine has a smaller turning circle than a surface ship, the ship is in a bad way," explained Comdr. McDowall. "During our trials we have been accompanied by two British submarines, the *Alcide* and the *Ambush*. These subs are manned partially by Canadians."

"Our playmate subs have plenty of respect for the *Restigouche*," said Lt. Comdr. Donnithorne. "We can hunt down a submarine whether it's submerged, on the

(Continued to page 230)



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(Continued from page 117)

surface or resting on the bottom in shallow water. Then we can blast it with our torpedoes, mortars or the antiaircraft guns if necessary."

After a tour of the *Restigouche* and an inspection of its searching, tracking and killing devices — most of them electronically guided and remotely controlled — it seems the only place a submarine would be safe from this ship would be under the Arctic ice. The *Restigouche* has three different types of radar and five types of hull-fitted sonar underwater-detection gear, the latter designed to overcome limitations of unfavorable water temperatures, salinity and other conditions.

Under a hatch on the after deck is an innovation in antisubmarine warfare — six deadly 12-inch mortars in two triple mountings. These take the place of the old "ash can" depth charges and can be fired in any direction and with variable range. Lt. Allan F. Morris, torpedo antisubmarine officer, explained that the mortars can be fired individually or all together. When the ship is tracking a submarine with her sonars the information as to speed and depth is fed into a computer that automatically relays the information into the firing station and into the fuses of the mortar bombs. As the submarine goes into evasive action the computer supplies a constant up-to-the-second reading as to its position. When the shooting is over, the hatch above the mortars is closed and serves as landing space for a helicopter.

In the torpedo room, also under remote sonar guidance, homing torpedoes are aimed in the vicinity of a submarine where the "bloodhound" apparatus takes over and relentlessly tracks down the enemy. Lt. Morris explained that there is no danger of a homing torpedo turning back on the

(Continued to page 232)



Insignia of the Restigouche bears a fish spear indicative of underwater hunting—fish or submarines

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A twin 3-inch .50-caliber antiaircraft gun is mounted aft and a new twin 3-inch .70-caliber gun is mounted forward. The latter has a faster rate of fire than the .50-caliber gun and is said to be one of the most effective weapons ever mounted on a vessel of this size. Earlier destroyer escorts of the St. Laurent class carried only the .50-caliber guns. Both guns can be aimed and fired remotely from below decks, remotely from a visual-control station, or locally.

The Combat Information Center (C.I.C.) of the *Restigouche* is located convenient to the bridge and is the nerve center of the ship. Here are two big plotting tables, an array of radarscopes, a big aircraft plotting board, and an adjoining sonar room fitted with a battery of gear and computers. One of the plotting tables is used to plot the small-scale over-all scene of action and the other the large-scale immediate vicinity of the ship. All radar and sonar information is fed automatically into each table. In addition to the scopes activated by the ship's three radars are two screens that can pick up pictures from airplane radars.

The *Restigouche* can fight blind without a single man on deck. In C.I.C., lighted only by the eerie reflections from screens and plotting tables, the combat officers know the position of friend or foe in the air or on the sea—with special attention to the enemy below. With the miracle of electronics at their finger tips, mortars can be fired and torpedoes launched. A hit is recorded by the simple disappearance of a hitherto bothersome blip or streak on a radarscope. If he chose, the captain could shout: "Sub electronically sighted! Mortars electronically aimed and remotely fired! Hit electronically recorded!"

Just in case the insulated and air-conditioned *Restigouche* should be traveling sealed through an area of radioactive fallout during this action, the captain could turn to his intercom and order that all decks and superstructure be washed down. This, too, is done remotely with a spray installation that gives the ship a giant shower bath. They call this operation "pre-wetting." The rounded edges of the deck permit the fallout to be washed into the sea. There are no scuttles or vents opening onto the decks and every protrusion that might catch fallout has been eliminated. Lt. Comdr. G. H. Somers, engineer officer, pointed out that even the boiler room, not being pressurized, can be sealed off from contamination. The anchors are housed in recesses and the capstan and cable chain, usually located on the fo'c'sle, are below

(Continued to page 234)

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decks. In case any members of the crew are exposed to radioactivity, there are two decontamination rooms on the ship.

In time of combat or peaceful cruising, the *Restigouche* can always keep in touch with its fighting "team" of ships and planes or the outside world. She has three radio rooms for transmitting and receiving on low, medium, high, very high and ultra-high frequencies. It's possible to broadcast or receive from 28 places on the ship. There's a message center with teletypewriter, and a cryptographic room with the latest equipment in coding and decoding devices. For internal communication, the *Restigouche* has 12 separate telephone systems including lines for fueling at sea, docking the ship, radar maintenance, and a dozen loudspeaker systems.

If the ship is crippled in action, the supply officer and engineers have a storeroom filled with 12,000 repair parts and a small but well-equipped workshop. Another storage item of interest to the crew is frozen provisions for 90 days. Back in World War II, destroyer escorts carried only enough fresh food for two weeks.

If the worst comes—an enemy torpedo ripping through the hull of the ship—the *Restigouche* is designed to give its crew a fighting chance for survival. This ship is designed to stay afloat and erect when 70 percent of it is flooded. Formerly, when the engine and boiler room of a destroyer-type ship was flooded, the vessel would capsized almost at once.

The stability of the *Restigouche* is dramatically demonstrated with a \$50,000 transparent model of the ship in the Canadian Navy's ABCD (Atomic, Biological, Chemical Warfare and Damage Control) School at Halifax. The model faithfully duplicates the volume of each compartment in the ship and the weight distribution. It is set in a large tank of water and is flooded by an intricate arrangement of valves.

"The ship has a low center of gravity," explained Lt. Comdr. Ian C. Martin of ABCD, as he proceeded to sink the model. "Even when flooding it will not list more than 18 degrees either way. As the ship fills with water it rights itself and her decks are almost horizontal to the sea until the last. There are many reasons for this ship's amazing stability and buoyancy. The designers used a lot of aluminum in its construction, particularly in the upper parts. Also, the shape of the hull is very important as is the fact that there are no longitudinal bulkheads. All bulkheads are crosswise of the ship. We all think Commodore Rowland Baker did a fine job on the design."

Although Comdr. McDowell insisted that

(Continued to page 236)

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I view the sinking of the model in order to appreciate the stability of the *Restigouche*, he begged off attending Lt. Comdr. Martin's demonstration.

"I don't care to see even a model of the *Restigouche* go down," he said.

The commander's feeling for the ship is reflected by all 15 of his officers and the 210 men of the crew. They like the life on board, the good bunks, the same good food served to both officers and crew, and the reasonably late movies in the big dining hall in the evenings. The men even are tolerant of Lt. Comdr. Somers' avocado pear tree that grows in a wooden tub in the officers' ward room.

They are proud of the little as well as the big things on the ship, like the windshield wipers on the electrically heated windows of the bridge, the scores of luminous disks on gun protrusions and ladders that save cracked heads and shins in time of blackout. They like the idea of the intercom and lighting systems that have battery-operated auxiliaries in case the big generators are knocked out.

HMCS *Restigouche* is a combat ship of which any great navy could be proud. Men of the Royal Canadian Navy are especially proud when they recall that the entire fighting strength of the RCN at the beginning of World War II was just 13 ships—six destroyers, five minesweepers and two training vessels.

This Month's "Great Pioneer in Science"

(Page 16)



Charles Goodyear (1800-1860)