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Canada and Seapower

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MOST of the earth's surface lies unknown, beneath the eternal tides of the stolid, heaving sea. Out of a total of 196 million square miles—141 million are a trackless waste under the shadowing depth of turbulent salt waters.

Canada is not a seafaring nation, but few other 14 million people in the world are so dependent on sea-borne trade. The terminals of our main highways and railroad tracks are marked by the angular silhouettes of merchant ships.

Most industrialized countries, when considering the disposal of exportable surpluses, regard the problem as secondary to the vitality of the domestic market. In Canada's case, the prosperity of mines, forests and factories is inseparably interwoven with foreign commerce.

In the past, all our major export products—fish, fur, lumber, wheat, newsprint, gold, and base metals,—were developed in response to external pressures. Our econ-

omic history is characterized by a basic pattern of specialization to meet the demands of foreign markets. Canada's economic development has always hinged on ever-improving ocean transportation, which brought overseas markets closer, and made available the necessary tools for our insatiable expansion.

And sea-borne trade is still one of the most dynamic factors in our level of economic activity and employment. Exports are essential to our prosperity—and chain-like we must import in order to export—and export to pay for our imports.

The blunt truth is that North America is no longer a self-sufficient continent. It has, in terms of economics, become a huge island, still immensely rich, but with limited national wealth based, for the first time, on a concept of exhaustible natural resources. The ever-increasing demands of industry, our expanding population, the exploitation of our precious native

resources, and the need, created by technological progress, for new materials, has left our economic life hanging in the balance on the ability to trade overseas.

The Paley Commission (Report by the President's Materials Policy Commission, June 1952) completely rejected the concept of American self-sufficiency as amounting to "nothing more than a self-imposed blockade".

Illustrating the growing dependence on sources beyond our frontiers in the raw materials field, the Commission pointed out that of some 74 materials now being stockpiled by the U. S. Munitions Board, 40 items were completely imported, while part of the supply of most of the others also had to be obtained abroad. It found that of the 100 main minerals used by industry, only one third are obtainable entirely from domestic sources. One third are partly supplied at home, the remainder must all be imported.

"In the past decade the United States has changed from a net exporter to a net importer of raw materials", the Commission concluded.

The United States depends on exports to absorb less than 7% of its gross national product, while Canada's dependence on exports in the poorest of the last 15 years was 20%, and has in some years reached as high as 35%. Last year ships brought us goods worth over two billion dollars.

Canada, on the basis of individual effort, led the world in foreign trade in 1951 with a trade figure of \$536 per capita. Belgium was second, and the United States far behind with \$173. With only 0.6% of the world's population we now rank fourth as an exporter and importer on the basis of total dollar value. We were third until France took over the spot last year. The United States may be the most important country in world trade, but international trade is not as vital to its economy as it is to ours. Over 77 million tons of ocean shipping entered or cleared from Canadian ports last year, carrying 39 million tons of cargo. Some 63% of our export trade and 41% of our import trade moves by water.

The exploitation of our geography and our climate is partly responsible for making us one of the leading international trading powers in the world. But we also share a handicap with other countries in the north temperate and subarctic zones. We cannot grow tropical foodstuffs, cotton, fibres, and other products associated with warmer climates. Our dependence on overseas trade, however, is most evident along essential material lines.

Here are a few sobering facts about some of our most important nautical imports. No satisfactory substitutes for these materials are available; none of them can be supplied by land routes. Our bauxite, basic in the manufacture of aluminum, comes 95% by sea; manganese ore, essential for the processing of steel 99%; tin 73%; sugar 84%; wool 80%; and chrome ore 98%. This statistical picture is in terms of peacetime business. In times of war, our ability to get these commodities is no longer a matter of choice between a balanced, prosperous economy and poverty; they become absolutely indispensable to our survival as a nation.

II

THROUGHOUT history, the developments of communication have continually been expanding the scope of trade. And with world trade came also the world war concept for the control of that trade. The oceans became a battleground and sea power emerged as a decisive factor in warfare.

The interchange of products calls for shipping power, which in turn demands the protection of naval power. Sea power is a dynamic combination of the two. According to Alfred Thayer Mahan, the great apostle of sea power, any nation that can control the seas can dominate the world. A quick glance at history seems to substantiate his claim.

The boast of the Carthaginians—the ancient nation that was elevated to her power by successful nautical commerce—was that no Roman could wash his hands in the Mediterranean without their leave. Not until Rome became a sea power, with

a fleet originally modelled on a Carthaginian vessel washed up on the Italian shore, was Carthage finally conquered.

Spain swept the seas with her ships and ruled Europe until the privateers and buccaneers of England broke the Spaniards' sea power. Holland was commercially the first power in Europe when Van Tromp, with a broom bound to his mast, swept the shores of England, looking for some English fleet which would stand and fight against the Dutch. And it was through sea power that the British Empire grew from its small beginnings to a size when the King of England ruled every third person on the earth. Mahan pointed out that this was made possible by the fact that the Royal Navy had a secure base which did not need continuous heavy outlays for the defense of land frontiers. This advantage was the greater, because no other European power shared it. (In the last two world wars England lay like a breakwater against Germany's ports. To-day, because of the further shrinkage of time and space due to new, almost fantastic weapons, England is virtually part of the continent. Her defense can no longer be based on sea power alone.)

Sea power has defensive and offensive uses,—sometimes indistinguishable, they are always mutually supporting. In general, sea power takes effect through the control of sea routes. Specifically, sea power has the following functions in war-time:

To protect and transfer, to areas where they may be used effectively against the enemy, land and air forces and the raw materials of war, which, considering the complex nature of modern warfare include most basic resources of food, fuels and industrial output measured in millions of tons. At the same time to ensure the supplying of domestic factories with critical raw materials. Sea power applies pressures to the enemy to stop him from importing commodities which are scarce or lacking in the regions under his control, and prevents him from using the seas to transport his own armies to areas where their presence constitutes a threat. To this end, sea power attempts to add strain to the enemy's system of internal trans-

portation by interfering with coastal shipping which normally relieves the burden of inland transport. Finally, sea power may act as a mobile heavy artillery in the direct assault against the enemy's territory. (The British 1941-42 offensive in Libya illustrates this type of strategy.)

As the chief concern of sea power is safety of seaborne transportation, the vehicles of such transportation must be considered not as incidental to sea power, but as an essential part of it.

Sea power in terms of naval craft alone is power without functional meaning—the ugly tramp steamer occupies an unglorified but vital position in its modern concept. The warship has meaning mostly as it affects the movement of cargo carriers, lack of such carriers makes the sea as much a barrier as does a superior fleet—more so, because the consequences of a shortage of shipping cannot be evaded. (Not counting tankers and chartered vessels, Canada's deep-sea merchant fleet today totals 65 ships aggregating a little more than 500,000 tons. Another 95 ships are owned in Canada but registered in the United Kingdom. They are subject to recall in the event of hostilities. A design for a new-type cargo vessel with an eye to specific Canadian requirements for use in case of war is now being evolved. Most of our ocean traffic at the moment is carried in the holds of U.K., Dutch, German and Scandinavian ships.)

It is suggested, from time to time, that sea power will soon be obsolete—that it is destined to be replaced by the use of large transport planes. No such solution is in sight. The sea lanes have no serious rival for carrying the bulk of the millions of tons of the world's imports and exports.

A study carried out in the United States showed conclusively that air transport cannot be used for the moving of the troops and supplies necessary to support a distant front of any effective size.

To find the practicability of using the airways, the problem of moving 100,000 long tons of supplies per month (over 127,000 long tons of manganese ore alone are shipped into the United States every month) under war conditions between San Francisco and Australia—a distance of

6,500 miles, was calculated. It was found that for transport by sea 44 average size ships, manned by crews totalling 3,200 men and requiring 165,000 barrels of fuel oil were needed. For transport by air, 10,000 four engine cargo planes, manned by 120,000 men were required. Almost nine million barrels of gasoline had to be brought overseas to keep the planes flying—a task calling for the operation of 85 large tankers, which alone almost doubles the requirement for ships, crews, and fuel oil which could handle the job without the planes.

While the aircraft is gaining increasing scope in world transportation, the ship remains unchallenged as the primary inter-contingent cargo carrier.

III

CANADA, with a 40,200-mile-long sea coast bordering on three great oceans, and an economy dependent on trade life-lines flung out over every sea, is a maritime nation, whether she wants to be or not. Yet, because most Canadians live out of the sight and the sound of the sea, we have, as a nation, never been very "sea power conscious".

Today the seas, which have always served us as protective moats, in the past, have lost that power. They are no longer a safe frontier and, if undefended, could become highways for our enemies. Canada is now vulnerable to direct assault from the sea, the sky, and conceivably by land (through Alaska). The speed and range of the modern plane, missile and submarine have conquered the ramparts of distance. Canada has become, in a strategic, as well as raw material sense, an exposed island.

Our defense planners are faced with a formidable task. Their assignment is to defend half a continent, fronted upon two oceans and accessible from a third, with a broad sea-way running deep into its vitals. They must try to build an impenetrable fence, 16,820 miles long, eight to ten miles high, around five million square miles of country. Meanwhile making sure that our industrial veins are adequately fed by ocean freighters, moving vital and vul-

nerable, everywhere on the indivisible sea.

Russian strategy in any future conflict will include full-scale submarine warfare. While the Kremlin has succeeded in building up a vast system of land communication, the West will have to rely largely on sea transport. And that's why Russia's submarine fleet represents such a paramount threat. It is already the most powerful the world has ever seen, and it is still growing.

The submarine is the only warship which can operate independently for extended periods in seas dominated by a hostile force. Though not strong in its own defense, it can secure quick concealment almost anywhere by simply submerging. Its strategy is to cut or divert the stream of trade and carry out partial blockades by closing the entry to ports essential to a nation's trade. Think what would happen to Canada if Halifax, Saint John, Vancouver, and the entrance to the St. Lawrence were blocked by Russian submarines!

Even if the submarine is defeated in this primary purpose, its destruction of shipping, and the efforts required to overcome it are of such magnitude as to make the opponent disperse his forces, cause a serious strain on his naval resources, and endanger his whole strategic position. The Germans came close to winning both world wars with their U-boats. In World War I, they sank 4,837 ships. During World War II, over 14½ million tons of shipping was sent to the bottom by Nazi subs.

Top underwater speed of the Nazi submarine was only about 10 knots; the modern type vessel can attain twice that speed. A World War II submarine had to surface at least five hours out of every 24 to recharge batteries, providing our radar with a perfect target—today's ship can stay underwater for over two months, while the use of snorkel drastically reduces the effectiveness of radar. A convoy could be attacked by a 1945 U-boat within 376 sq. miles of itself; the danger area of the modern sub is over 1,300 sq. miles. Today's submarine also carries more and deadlier torpedoes. Equipped with "homing" devices, the modern torpedo can find its pre-determined target while travelling at 40 knots, when fired from a distance of

five miles. Submarines can now lay mines which are impossible to sweep with any device in use today. They can land sabotage and espionage parties and fire guided missiles at ranges of more than 80 miles.

The Russian underwater fleet is presently estimated by the authoritative *Jane's Fighting Ships* at 370 submarines afloat and 120 in various stages of construction, many of these are of the most modern snorkel type. (The Germans started World War II with 53 operational subs; Britain now has 50; the U.S. 200.)

While the big brother navies of the United States and the United Kingdom are concentrating on other branches of sea warfare, Canada has taken on the job of creating a top-notch fleet of fast, specialized submarine killers.

IV

THE strength of any navy is governed by the extent, distribution, and importance of what it is required to defend, and by the power and nature of hostile forces.

By both these standards, the Royal Canadian Navy should be a far greater and more powerful fleet than even its most ambitious planners are striving to make it. But Navies are expensive and unproductive. Fighting ships do not earn their way, but do eat up taxes. The architects of our naval policy have had to govern themselves by economic considerations. We simply can't afford naval defense to take care of every potential danger.

Our fleet in being today reveals the outline of the bigger and better R.C.N. planned for tomorrow. We now have 26 warships in service, with another 40 undergoing conversion. Under the present expansion program involving 20 shipyards, the Navy has in various stages of construction or on order books, 14 destroyer escorts, 14 coastal minesweepers, five gate vessels, and many smaller craft. About 6.4 cents of every tax dollar now goes to pay for the accelerated growth of the R.C.N.

To maximize the effectiveness of our available fleet, naval planning has been

directed specifically to combating the submarine, the weapon by which we are most likely to be attacked, and to planning transportation in terms of convoys, to reduce the number of points requiring simultaneous defense.

Convoys—the herding together of transports in groups for the economizing of escort vessels—had been the accepted practice until the end of the Napoleonic wars, but later fell into disfavour with naval strategists. A British Royal Commission, in 1879, pronounced the convoy impracticable. From the outset of World War I it was used only for troop transports. But in July 1917, the submarine threat got so desperate that it was adopted once more, and its success broke the threat to Allied supply when Britain was within six weeks of the end of her food stocks.

In World War II, because of the much increased threat from the air, it was thought that convoying, which was then vital as an anti-submarine measure due to the desperate shortage of escort vessels, would increase the vulnerability of shipping to air attack. But the concentration of anti-aircraft fire by armed merchantmen and escorts, combined with balloon barrages, proved unexpectedly effective in preventing the planes from low-level bombing attacks,—making the job of the anti-aircraft gunners much easier. Some World War II merchant ships carried fighter planes which could be catapulted into the air at the approach of enemy bombers. Important convoys after 1943 were escorted by aircraft carriers. Nearly 40% of all German submarines sunk between 1939 and 1945 were destroyed from the air.

Unfortunately, the convoy system is also subject to certain inherent deficiencies. Convoying reduces the effectiveness of available shipping by at least 25% as vessels are delayed in their departures and the entire group is held down to the speed of the slowest ship. (Probably the safest ocean transit is on a fast vessel travelling alone using unfrequented sea routes. But most of the few fast merchant-ships afloat today are not large cargo carriers.)

The experience of two world wars has shown that the convoy system, no matter

how efficient, cannot by itself control the submarine menace. Such control requires offensive action which actually reduces the number of enemy submarines, or which makes the life of the sub's crew a nightmare from the moment their vessel leaves its base, if not sooner.

In any future war, convoys will not only have to be equipped to cope with revolutionary capabilities of the modern submarine, but also with the very impressive threat of the long-range jet fighter-bomber. This new danger can only be met by constant aircraft carrier escort.

The carrier is a warship which strikes its blows not through guns or torpedo tubes, but through aircraft. Like the submarine, it carries naval operations into the third dimension, where the space of the battlefield is so immense that absolute command is impossible.

The plane, functioning as an instrument of sea power, attacks merchant shipping and harbour installations, warships and naval bases. It is an indispensable adjunct to the convoy, scouting for it,

spotting the fire of its escorts, defending it against enemy air attacks, shrouding it with smoke screens, and furnishing added fire power with guns and torpedoes. In favourable weather a single carrier can keep a very large portion of the sea under constant surveillance.

The R.C.N.'s only carrier is now *H.M. C.S. Magnificent*, on loan from the U.K. It has a regular complement of 25 aircraft and 1,000 officers and men. A new carrier has been purchased from Harland & Wolf, Belfast. The twenty-million-dollar ship, still to be named, will carry the latest devices for handling jet aircraft. Delivery of the 18,000-ton, 700-ft. flat-top is expected in about 3½ years.

The mounting threats to Canada's vital, watery trade lifelines explain why expansion of the Royal Canadian Navy gets high priority in our defense planning—and always will, until merchant ships are no longer required to ply the oceans, and Canada loses its dependence and obligation to sea power.

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