

## **Building a Bigger Stick: The Construction of Tribal Class Destroyers in Canada, 1940-1948**

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"The building of Destroyers is a major advance in Canadian shipbuilding and it is essential for success that the business be properly organized right at the beginning as otherwise the programme will become hopelessly bogged down as construction proceeds."

H. H. German, Naval Architect, January 1941.<sup>1</sup>

"I want those for my navy."

Admiral P.W. Nelles, Chief of the Canadian Naval Staff,  
after seeing a photograph of the first Tribal, 1938.<sup>2</sup>

Prior to the Second World War, the Royal Canadian Navy (RCN) was in almost every respect a reflection of the Royal Navy (RN). The RCN, only twenty-nine years-old in 1939, had little tradition of its own save for its limited and largely coastal experience in the First World War.<sup>3</sup> Throughout the Second War the RCN still depended on its British parent for experience, equipment, training and strategic direction. It was natural that, when Canada looked to construct naval vessels in its own yards, it turned automatically to British designs. This worked well initially, when Canada seized upon the unsophisticated corvette as the ideal type to build in its inexperienced and relatively poorly-equipped yards. In 1939 the Canadian steel shipbuilding industry, which had never really been significant, was in deep depression. From 1931 to the end of 1937 only four vessels over 1000 tons were built. At the outbreak of hostilities in September 1939, only one vessel of any size, an icebreaker, was under construction in Canadian yards." The corvette was designed for coastal duty and excellent for this and other roles, such as auxiliaries to larger vessels. It could also be used for ocean escort if other vessels were not available. In addition, some of the vessels were slated to be exchanged later with Britain for larger destroyers. Unfortunately, this barter scheme later fell through. The tiny ships proved to be a godsend both to the RCN, which employed them extensively in escort work when other vessels were not forthcoming, and to the Canadian shipbuilding industry, which used the corvettes as vital learning tools for later building programmes. Yet while the Naval Staff certainly wanted corvettes, what it looked to for its future were larger vessels.<sup>5</sup>

It should not seem surprising, then, that the Canadian Naval Staff, under the determined Admiral P.W. Nelles, Chief of the Naval Staff (CNS) since 1934, was concerned that in the postwar period the RCN would again be reduced to a third-rate service with outdated and inadequate ships. This had been the case for most of the inter-war period, with the exception of the acquisition of five British Crescent-class destroyers, and the force was nearly abandoned for financial reasons in the early 1930s.<sup>6</sup> Unlike the Army, it had little proud tradition to look back on, due to its lack of experience in World War I; and unlike the newly created Air Force it did not have the romantic appeal which could be sold to the Canadian public. For their parts, Nelles and the Naval Staff would take the corvettes but wanted larger vessels, particularly destroyers, both to replace the Crescents down the line and because the service's brush with extinction in the 1930s "undoubtedly fired the RCN's resolve to build a permanent and sizable service during the course of the Second World War." To this end, in early 1940 the Navy convinced the Canadian government to order two Tribal-class destroyers (later two more) from the Admiralty, originally to be "paid" for with a number of Canadian-built corvettes. The Tribals were clearly the "Cadillacs" of contemporary destroyer design. Possessing eight 4.7-inch guns in twin mountings, four twenty-one-inch torpedo tubes, several other auxiliary weapons, a top speed of 36.5 knots, and a displacement of around 1900 tons, and perhaps most important one of the finest hull designs of the time, these ships were among the most powerful destroyers afloat and really closer to "pocket cruisers."<sup>8</sup> Such vessels would of course give the RCN considerable striking power and "prestige" and most important would necessitate sizable shore establishments and crews, thus ensuring the service's future prominence. In short, they would be too valuable and involve too much investment in time and money to be scrapped easily.

With the fall of France, however, the RCN's plans seemed in jeopardy. British yards, already taxed to capacity, could take no more orders and Nelles' plan for two Tribals every two years, as outlined early in the war, was in danger of being put on hold. It was at this time that the idea of building Tribals in Canada began to be seriously considered, although suggestions and inquiries to this effect had been made months earlier.<sup>9</sup> Obviously, such a plan appealed to the Naval Staff, as the development of a domestic building capacity would add to the Navy's legitimacy and postwar position. It would also fit nicely with the newly-formed Department of Munitions and Supply's shipbuilding programme and C.D. Howe's desire to use the war as an opportunity to increase Canada's industrial capacity since, according to a contemporary study, Canada was "one of the least self-sufficient countries in the world."<sup>10</sup> The problem was that to build destroyers, which were infinitely more complicated than the corvettes and minesweepers under construction in Canadian yards, a great deal of technical and manpower assistance would be needed from Britain. This became the first snag in the programme.

The difficulty of building complex ships such as Tribals were well known, at least to some. Surveys done earlier by the naval architectural firm Lambert, German and Milne, without question the best in the country at the time, illustrated Canada's grave weakness

in actual shipbuilding capacity as well as its promising potential." The most severe handicaps were a lack of skilled technicians, draughtsmen and labourers, general inexperience, and a virtual absence of the infrastructure needed for the building and outfitting of any type of larger vessel.<sup>12</sup>

Before even infrastructure construction could begin, plans, technical support and skilled personnel had to be obtained from experienced British firms, which were already overburdened. After several requests failed, Mackenzie King cabled Prime Minister Churchill, suggesting Canadian production of destroyers and even cruisers and asking for the necessary personnel and assistance. Churchill replied that, while the programme sounded worthwhile, not only would the British be unable to supply the necessary personnel for such an endeavour, but the programme would require much "special apparatus" and equipment which was in short supply in the UK. He suggested that Canada produce American designs and draw on the United States' greater resources.<sup>13</sup>

Such a radical change from British to American systems was out of the question for the CNS, because of the RCN's already "British" origin, not to mention possible technical difficulties of adapting to an American ship. Nevertheless, after Churchill's suggestion, the Naval Staff sent off a delegation of officers and technical personnel to examine American destroyer designs and construction practices. The group's report concluded that the Tribal was superior to the US design in its extensive use of high-tensile steel and "comparative simplicity," but pointed out the advantage of ease of supply of materials and expert personnel from the U.S. "For this reason alone," the report declared, "it is considered that it would be advisable to select the American type of ship."<sup>14</sup> This fact aside, there was concern because the best American design of the time, the latter-named Fletcher class, was still in development, and the Canadians were the first non-Americans given access to the plans and prototypes. Because of the difficulties associated with any unproven design, some members of the investigating committee, most notably naval architect H. H. German, advised against it. German judged that it would in fact be easier to overcome the supply problems associated with the Tribals.<sup>15</sup> The final assessment by Capt. A. D. M. Curry, the Engineer-in-Chief (E-in-C) at Naval Service Headquarters (NSHQ), was non-committal, but did note the difficulty of producing high-tensile steel in Canada for British designs and the availability of the necessary expertise and materials from the US.<sup>16</sup> In fact Curry and Capt. G. L. Stephens, who on 5 February 1941 succeeded him as E-in-C, were against any early attempt to build destroyers in Canada because of the complexity of the vessels. Canadian shipyards and associated industries simply needed more experience. Again, the CNS was unconvinced and "unhesitatingly" stood by the earlier decision to build Tribals; he of course had the support of German's expert opinion. By the end of February 1941, the Tribals were designated as the destroyers to be built in Canada, two at first, with a second pair decided upon on 27 February 1942.<sup>17</sup> In fact, judging from the comments and discussions of the previous two years, this decision had never really been in question.

The next question was where the ships would be built. In contrast to the corvette and Bangor minesweeper programmes, there was no call for tenders, as it was decided by

NSHQ in consultation with Munitions and Supply to select a builder for the ships and their engines. This was also in keeping with German's recommendation that "one yard, or one organization be selected and allowed to build without competition from other firms, but of course with the proper degree of governmental control of construction costs, as is the British practice."<sup>18</sup> German's reference to "British practice" suggests that he did not realize that war production in Canada in the Second World War was much more *laissez-faire* than in Britain, where war industries were more tightly controlled. The rationale for his recommendation, although not explicit, was probably concern that cost, rather than the capability of the yard, would determine the choice. Unfortunately, politics, not justifiable technical concerns, would decide the issue.

Originally, Canadian Vickers was a front runner.<sup>19</sup> This was not surprising as Vickers was without question the best-equipped yard in Canada at the time, with five covered building berths (the only ones so protected from the weather in the country); a modern floating drydock; connections to Montreal's excellent rail communications; and a relatively good supply of skilled labour. In addition, it was the only shipyard which also had the facilities to build turbines, engines and boilers of all types on site. Moreover, British Vickers, the parent company, was one of the original firms involved in the development and production of the Tribals.<sup>20</sup> The yard had been sold to Canadian interests in 1926, but still retained its British-built equipment and, most important, many of its British-trained personnel.<sup>21</sup>

Nevertheless, Canadian Vickers was passed over in favour of Halifax Shipyards, which was awarded the contract unofficially in February and officially, once all the preliminaries were out of the way, in June 1941. No reasons were recorded for this decision. Certainly the conditions and facilities at Halifax were not the main consideration. The yard, like others in the Maritimes, suffered from a chronic scarcity of skilled labour: the region had never really made the transition from wooden to steel-hulled building in the late nineteenth and early twentieth centuries. Incorporated in 1918 as a subsidiary of the Dominion Steel and Coal Company (DOSCO), due to the possibility of wartime business, Halifax Shipyards had little subsequent building experience, no strictly naval building background, and scraped by in the 1920s and 1930s with repair work. The primary yard and its Dartmouth branch were almost exclusively repair yards, and only one very small vessel had been built there since 1930.<sup>22</sup> Even after receiving the Tribal contract, repair continued to be the primary activity because of Halifax's strategic position as a primary convoy assembly port and Allied naval base. By early 1941, the yard was swamped with repair work because of the large number of ships damaged by increasing U-boat activity and particularly by the harsh North Atlantic winter. In July 1942, repairs begun to be carried out twenty-four hours per day, seven days a week. By the end of the war over 7000 merchant and naval ships suffering from damage and breakdowns had passed through the yard.<sup>23</sup> The yard was so insignificant in terms of shipbuilding that in a study of the potential of "shipbuilding plants" in Canada in September 1941 by Lambert, German and Milne it was not even mentioned.<sup>24</sup> Officials were well aware of the situation at Halifax. In his "General Views on Building Destroyers in Canada" in February 1941,

Curry warned that "unless other repair facilities are made available at Halifax, it will not in my opinion be a sound policy to give the Shipyards any important new construction work as they have not got the plant or labour supply available to carry on with ship repair and important new construction."<sup>25</sup>

Soon *after* the contract was awarded to Halifax, the Navy's superintendent of shipbuilding added his reservations:

Mssrs. Halifax Shipyards Limited already bear a grave and heavy responsibility in connection with vital repair work...their availability for, and progress with, this repair work should not be upset by other commitments...In other words, the construction of the destroyers must necessarily, and rightly, take second place *which will result in the construction period being lengthened by an amount not readily forecast and subject to continual fluctuation with the ebb and flow of repair work* [my emphasis].<sup>26</sup>

Clearly the Naval Staff knew that if the vessels were built at Halifax their construction would be sporadic and drawn out, and it must be concluded that their purpose was not for immediate wartime need, as the officers often implied to other government agencies and the War Cabinet, but primarily to form the core of the postwar RCN.

What other reasons, aside from its strategic location and ice-free port, did the RCN have for choosing Halifax as the building site? There are several possible answers. Ken Mackenzie's assertion that the programme was advanced in Halifax to provide stand-by employment when repair work slackened seems a sound rationale.<sup>27</sup> Halifax, unlike yards in central Canada, could operate year-round, as it was not affected by the winter freeze-up of the St. Lawrence. Thus, it was busy in the winter, as were other Maritime yards, with repair work, but slack in the summer when ships were diverted to the better-equipped St. Lawrence yards. It is also possible that the decision was made so quickly that few had any opportunity to question it. As a contemporary observed, "In some cases, plants were actually constructed and production undertaken before the contracts had been signed."<sup>28</sup> This was certainly the case here, almost six months passing between the choosing of Halifax as the contractor and the actual signing of the contract, during which time plans were set into motion for the ships' construction. It seems the choice of Halifax took on momentum early and could not easily be reversed.

Politics undoubtedly played an important, even decisive role. Angus L. Macdonald had been premier of Nova Scotia until his call to Ottawa to serve as Naval Minister in 1940 and had always been a staunch advocate of his native province's interests. He was under heavy political pressure from his provincial associates, particularly the new premier — long-time colleague A. S. Macmillan — to push wartime projects in this direction. As events progressed, Macdonald became the chief advocate of the programme in Cabinet. The choice of Nova Scotia was also aided by the fact that shipyards in central Canada were given the lion's share of ship construction in the first building programme, and yards

on the west coast had also done quite well.<sup>29</sup> Nova Scotia was, with the possible exception of Prince Edward Island, the only traditional shipbuilding province that had not yet been awarded a major naval building contract. Even "lowly" New Brunswick had received a contract for the construction of three corvettes at Saint John in the first building programme, although Nova Scotians could not know that these were to be the last steel-hulled warships built there during the War.<sup>30</sup> As the final insult, Nova Scotia was even passed over as the location for the Canadian Naval College, which had recently begun construction at Esquimalt. The political factor then was no doubt the most important reason for Halifax receiving the Tribal contracts, a fact the Naval Minister alluded to on more than one occasion. In addition, it is clear that he was very responsive to his home province's efforts to developing shipbuilding plants, as evidenced by his very active role in establishing a merchant shipbuilding yard at Pictou, even though his department was technically not involved in the merchant shipbuilding programme.<sup>31</sup>

The final rationale for the selection of Halifax as the site for Canada's first foray into the construction of fleet-class ships was no doubt the Naval Staff's desire to develop such capacity at its principal port of operations. Although this was never explicitly stated, well-developed base facilities at Halifax were necessarily the foundation of hopes for a substantial postwar fleet. The Naval Staff had been struggling since 1910 to upgrade the facilities, as the port had never been more than a small outstation for the British, with their main western hemisphere base at Bermuda.<sup>32</sup> In addition, with a large contingent of the RCN already in Halifax, close supervision of the project was possible, away perhaps from the interfering hands of other government departments involved in wartime production, particularly Munitions and Supply. It is clear that the RCN was particularly protective of its newfound independence and wanted to ensure its position when the fighting stopped.

Whatever the rationale for the selection of Halifax as the main contractor, what is clear is that there were delays and from the very beginning. The main reason, at the outset at least, was the continued scepticism of the British and their inability or unwillingness to supply the necessary trained personnel, and even the required vessel plans. This was not because of any ulterior motives, as some members of the Nova Scotia legislature later claimed.<sup>33</sup> Many of the plans and working drawings were received, after repeated requests, beginning in October 1940, but a complete set had still not arrived by early 1941 and certain detailed blueprints, such as those of the capstan, windless gear and other auxiliary equipment, were still unavailable in June 1942.<sup>34</sup> The reason for this was the difference in Canadian and British building practices due largely to the former's inexperience. British firms, with a large number of craftsmen and traditional procedures, tended to be rather like old cottage industries and worked with minimal prints and drawings. These yards would not need, for example, specifications for a fire-control system for a destroyer, as they had built them before and thus had the previous plans, changes and, most important, experience to go on. By contrast Canadian (and American) practice was to use thousands of detailed prints because of a lesser number of highly skilled tradesmen. In addition, many of the British standard items were not available in

North America or had different specifications. The result was that the British had to find or even specifically draft plans for the Canadian yards, a long process considering the number of drawings involved.<sup>35</sup> This difficulty was later solved to a certain degree by the establishment of a central drawing office, with the help of German and Milne, in mid-1942.<sup>36</sup> It is unclear to what extent the lack of drawings delayed the Tribal programme, but all hull drawings at least were received by 1941.

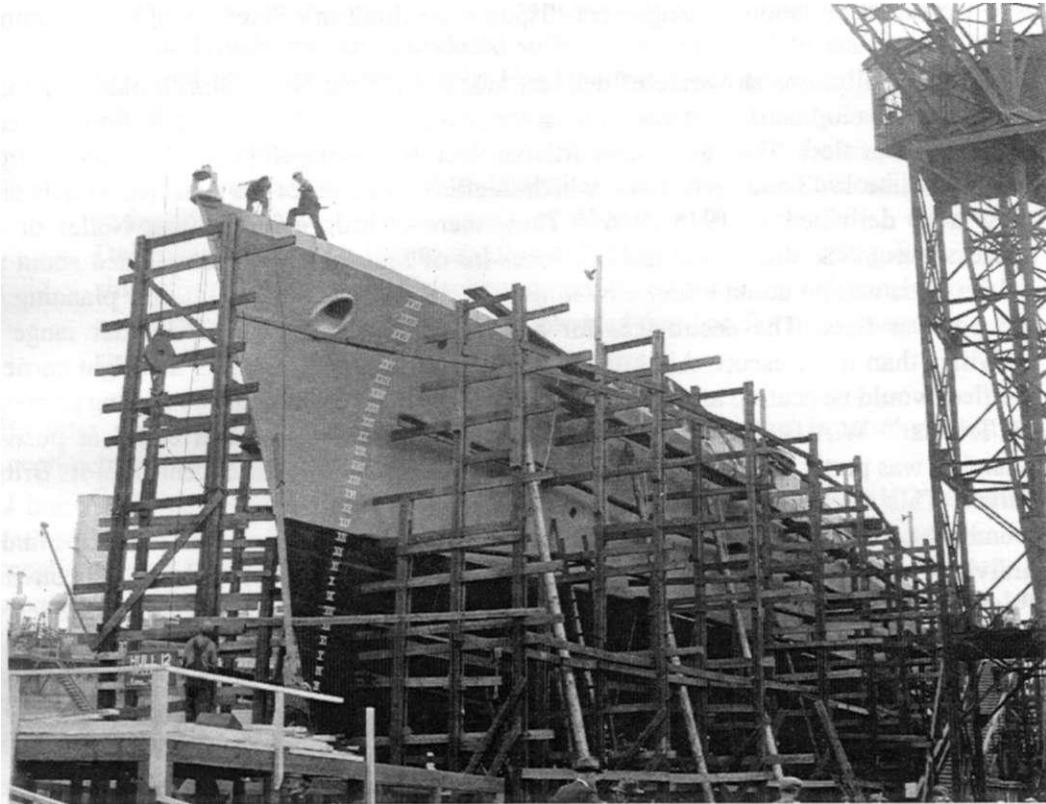
A much more severe problem, and *the* principal reason for delays in Tribal and other naval construction, was the severe shortage of skilled labour and engineering personnel. Repeated attempts to secure the necessary individuals from British firms, including many personal appeals by Ralston and Macdonald, failed. A typical response, from Yarrow and Company in Glasgow, a firm which had never even built Tribals, noted that while some technical assistance was possible, "under present circumstances this technical assistance could not, unfortunately, include the dispatch of skilled men."<sup>37</sup> Halifax Shipyards began to make appeals to Munitions and Supply, noting that minimum requirements were twenty-three technical and trained workmen to begin construction. D. B. Carswell, Controller of Naval Shipbuilding, replied that under present circumstances this request would be "extremely difficult" to fulfil.<sup>38</sup> Given these difficulties Halifax Shipyards, on its own initiative, hired an experienced hull designer, E.S. Sharpe, from Vickers-Barrow in the UK. It had been agreed upon early that Vickers would collaborate with Halifax and provide as much help as it could spare. This contractor-to-contractor method of building was designed to be more practical than navy-to-navy and seemed to make sense, particularly given the way Canadian war production functioned. Sharpe proceeded to Halifax in September 1941 on a three-year contract. It was individuals like Sharpe which the Tribal programme desperately needed. An experienced technician, Sharpe had been a hull designer with Vickers since 1909 and was intimately involved in Tribal development and construction in the 1930s. Happy as Halifax Shipyards was to have him, they still needed hull draughtsmen, platers, loftsmen, and other personnel virtually impossible to find in Canada, and particularly in the Maritimes. Experienced naval shipyard managers which, with the possible exception of Vickers, did not exist in Canada were also needed, but such valuable individuals would never have been released by the Admiralty. Macdonald continued to lobby in Britain, but to no avail.<sup>39</sup>

By August 1941, many were beginning to wonder why the Tribals had not yet begun construction. Concern was greatest at Munitions and Supply, where Carswell pointed out that Howe was "anxiously awaiting word from me that some substantial progress has been made in getting destroyers built."<sup>40</sup> The problem, aside from the skilled labour shortage, was a lack of the high-tensile "D" quality steel needed for Tribal construction, a steel not yet produced domestically. The mild steel used in the first building programme of corvettes and Bangors was of a relatively simple type, easily produced in Canadian mills. High performance vessels like the Tribals required a very specific type of high-grade steel because the long, narrow hulls were subject to enormous and complex stresses. "D" quality steel was strong enough to resist such pressure, yet also light enough to allow for no sacrifice in speed, a factor of vital importance to destroyer

construction. Again, Britain was unable to help. The Canadian steel industry was in the process of developing such capacity, but did not yet possess the necessary plant.<sup>41</sup> Early in the war there had been an opportunity to develop it by refurbishing DOSCO's plate mill at Sydney, NS, but whether for financial reasons, as Howe claimed, or a "regional bias," as E.R. Forbes later argued, the opportunity was lost.<sup>42</sup> A detailed study by Munitions and Supply in October 1940 noted the potential of the Sydney plate mill which, although it had not been in operation since 1919, had an impressive capacity of 50,000 tons per year on a single shift. The proposal to refurbish the plant was rejected by Howe because of the great cost, the already considerable investment in the "big 3" Ontario steel mills (Algoma, Dofasco and Stelco) and the lack of domestic demand.<sup>43</sup> The inaction was doubly unfortunate, due to the obvious advantages that would have accrued both in ease of transportation and the fact that Halifax Shipyards was a wholly-owned subsidiary of DOSCO. Later, by 1942, DOSCO's plate mill was refurbished and did produce the necessary plate for the Tribals, but this was done too late for the first two vessels; Nova Scotia steel was used only on the second pair of destroyers.<sup>44</sup>

With no domestic source of supply, and with British supply problematic, the obvious place to look was to the United States. The US seemed a natural source of supply, as in the prewar period one-third of steel used in Canada originated there.<sup>45</sup> The problem was that the Admiralty "D" quality steel needed for the Tribals had very specific properties and chemical composition. American steel plants were, of course, producing high-tensile steel for their own naval building programme, but its composition differed slightly from Admiralty specifications and they were unwilling, not surprisingly, to alter production for the relatively small amount of metal required for two or even four destroyers, as their own programme dealt in exponentially larger numbers. These problems were overcome eventually, and US-grade steel was adapted for the Tribals by minor design changes and extra stiffening and used on the first pair of vessels. This need for re-design resulted in yet further delays. As a result, the keels for the first two Tribals were not laid until 20 May 1942, almost one year after the contract had been awarded, and nearly a year and a half since the project had informally begun.<sup>46</sup>

By the time the third keel was laid on 18 September 1943, domestic plate manufacturing had caught up to ship production after a considerable lag in 1941-1942. At this time ship construction and repair activity had risen to what would prove to be wartime peaks. The corvette and minesweeper programmes, the new frigate programme, and the acceleration of the merchant shipbuilding programme increased competition for already scarce materials and skilled labour. The shortages had always been greatest in the Maritimes. These difficulties on the east coast were multiplied by soaring demand for repair services as a result of damage inflicted on naval vessels and merchant shipping by the particularly vicious Atlantic winter of 1942-1943 and the all-out German U-boat offensive against the mid-ocean convoys that began in the fall of 1942 and continued until the following spring. At Halifax Shipyards skilled personnel often had to be taken off the Tribals to meet repair emergencies.<sup>47</sup>



*Figure 1: Shipyard, Halifax, Nova Scotia, September 1943, taken by Gilbert A. Milne.*

*Source: National Archives of Canada, PA-138188.*

The Shipyard's success in launching the first ship on 18 September 1943 and laying down the third keel the same day proved short-term. By the end of 1943 the second vessel, which was originally scheduled to be launched with or soon after the first, was still several months behind schedule. The laying down of the fourth and final Tribal was delayed until the launch of the second, as only two building berths were available." The difficulty continued to be a lack of skilled labour. A report on the project in March 1944 noted that "shortage of labour is still being experienced, but if an adequate supply of labour, due to changing labour conditions, can now be established, it is anticipated that two ships will be completed in 1945 (possibly three) and the fourth in 1946.<sup>49</sup> In the end, only one destroyer was delivered in 1945, followed by one each year for the next three years, the fourth being delivered on 20 January 1948.<sup>50</sup> In late 1944, Halifax Shipyards noted that it would like to put another 1000 workers on Tribal construction. So severe were the delays that even the press began to wonder, noting that "The standard wisecrack ...is that the Tribals will probably be ready for the next war."<sup>51</sup> The labour shortage was

also worsened by labour-management disputes, resulting in a brief strike in the summer of 1944.<sup>52</sup>

Actually, this slow rate of delivery was not off the Naval Staff's plans for long-term fleet development, as it was aiming for two ships every two years to form the core of the postwar fleet. They got two additional fleet destroyers, *Algonquin* and *Sioux*, from the RN in late 1943 and early 1944, which in effect filled in for the first two Tribals until they were delivered in 1945-1946.<sup>53</sup> Thus, there is little evidence that Nelles or his successor as CNS, Vice-Admiral G.C. Jones (as of January 1944), complained about the delays. This was no doubt because by mid-1943 the RCN had begun actively planning for the postwar fleet. The desire was for a balanced fleet, capable of a wider range of activities than mere escort. Although it was hoped to include cruisers and light carriers, the fleet would be centred around three destroyer flotillas, presumably consisting primarily of Tribals.<sup>54</sup> W.A.B. Douglas has demonstrated that this conscious effort at postwar planning was partly routed in a desire to make the RCN more independent from its British parent. This direction became even more marked by early 1944 when Nelles and key members of the navy's planning staff were sent overseas, leaving less imperial-minded individuals to direct the service's future. In addition, there was the need to convince Prime Minister King that the RCN would not be merely an adjunct to His Majesty's fleet.<sup>55</sup> This is an excellent point, but clearly planning for the postwar Canadian navy had begun, at least with Nelles and some of his staff, as early as 1939-1940.

Not everyone was as "understanding" of delays as the Naval Staff. Angus L. Macdonald realized that the ultimate purpose of the destroyers was, at least in part, to form the core of the postwar fleet, as he had often defended the programme's importance, "more especially from the long range viewpoint."<sup>56</sup> But even he wanted them delivered as soon as possible. Speedy construction would reflect positively on Nova Scotia's industry, especially if the warships were ready in time to see combat. In January 1944 he met with R.J.R. Nelson, General Manager of Halifax Shipyards, and Sharpe to discuss the delay. They pointed to a lack of skilled labour as the main culprit. That argument heightened Macdonald's anger at reports that the yard had not always kept a regular "gang" on destroyer work but had often moved workers to ship repair. According to the Minister's information, in January 1943 the yard had 700 of a total workforce of 2500 engaged on the first pair of destroyers, but that commitment had subsequently decreased to only 500, despite the laying down of the third and fourth vessels. Nelson and Sharpe replied that reports of diversion of labour from the destroyers were exaggerated and was done only in "very extreme cases." They again noted that they required more labour and were scouring the country and working with Munitions and Supply to rectify the matter.<sup>57</sup>

Many at Munitions and Supply, particularly Carswell, the ever-efficient Scottish-born and trained engineer, were also unimpressed with the slow rate of construction. In November 1943, Carswell passed on criticism from Halifax Shipyards to the effect that the Tribals were obviously not a priority to the Naval Staff because of the service's unhelpful responses to the company's requests for help, to which Rear-Admiral G.L. Stephens, Chief of Naval Engineering and Construction, angrily rejoined:

I strongly resent the implication in Mr. Carswell's letter that the contracts for the Tribals are not considered sufficiently important to warrant the preferred attention of the staff at Headquarters. I see no reason why the Tribal class Destroyers should be given any preferential treatment to any other new construction and it is obvious that the whole of the shipbuilding programme has to be taken as a whole and progressed accordingly. It is ridiculous to earmark items of equipment for the Tribal class Destroyers and have it laying about in the shipyard or deteriorating in the ship when Corvettes and Frigates urgently need the same equipment to get them to sea. Furthermore it is not intended that...preferential treatment should be given to the Tribal class Destroyers.<sup>58</sup>

He later noted that he had found that, "Halifax Shipyards are becoming singularly incompetent in competing with the slightest difficulties."<sup>59</sup>

Stephens' attitude reflected the doubts that the technical staff at NSHQ had always expressed about the practicality of building advanced destroyers in Canada. That scepticism had no doubt been sharpened by delays in the construction of frigates, the advanced anti-submarine and convoy escort-type that was urgently needed by mid-1942 to augment the over-stretched corvettes. The requirement for the frigates had only been dimly perceived at NSHQ when the decision was made to build the Tribals in early 1941. The growing need for frigates in 1942-1943 pushed the need for the Tribals back even further, as escorts were needed as soon as possible.

Halifax Shipyards was not alone in its delay-causing difficulties. John Inglis Co. of Toronto, contractors for the boilers and engines, also had problems in producing equipment that was more complex than anything previously attempted in Canada. When first approached to build the engines Inglis expressed "no particular concern over the technical challenges involved in building the main propulsion machinery."<sup>60</sup> This misplaced confidence aside, the construction of such machinery required that personnel be trained in new techniques, particularly for the complicated turbines. The supply of steel castings for the turbines also proved problematic, again because of the lack of any domestic capability. Further, the supply of boiler tubes fell behind from the start because of extensive demand for tubes for other ships under construction, which again suggests that the Tribals received low priority.<sup>61</sup> Finally, Inglis pleaded that its facilities were swamped by contracts for freighter and frigate engines, radio equipment, pulp and paper machinery, and Bren guns, to name a few. One report by NSHQ confirmed that, "There is no question that Messrs. Inglis have undertaken and had thrust upon them much more than they are capable of handling efficiently."<sup>62</sup> The report went on to note organizational, administrative and other difficulties, concluding that the machinery for the first Tribal would not be ready prior to September 1943. As it turned out, this estimate was optimistic by several months; the engines for the first Tribal, which were supposed to be installed shortly after launching, did not arrive until a full year after the vessel was in the water.<sup>63</sup> It is not surprising that Stephens commented, "This is a bad state of affairs."<sup>64</sup>

In addition, there was the problem of distance between Inglis in Toronto and Halifax Shipyards. The two firms were separated by some 1170 miles - thirty-six hours by rail — and shipments faced long and unpredictable delays because of the heavily overburdened single-track rail link to Halifax. Added to this was the absurdity that much of the material for the components arrived by sea, often via Halifax, was shipped by rail to Toronto, processed, and then shipped back to Halifax.<sup>65</sup> These difficulties and the added logistical headache of moving Inglis personnel and their families to Halifax and housing them in that extremely over-crowded city, resulted in the installation of the main propulsion machinery being subcontracted to Halifax. This caused yet further delay.

There were hundreds of other more minor problems in the construction programme. Although it is possible to dismiss many due to sheer inexperience with the construction of such complex ships, shortages and supply problems caused by the war and an endemic shortage of skilled labour, it is hard to believe that many could not have been solved, or at least eased, by better direction and control of the programme. As noted, two agencies, Munitions and Supply and the Navy, were involved in all details and stages of the project. This could have — and indeed where other vessels were concerned often did — work well. The problem with the Tribals was that these two departments had different conceptions on when, how and for what purpose the vessels were being built. In the case of the corvettes, minesweepers and frigates the answers to these questions were easy — as soon as possible, with top priority, and for the war effort at sea. Such a clear conceptual framework was lacking with the Tribal programme. Munitions and Supply simply treated it as any other wartime project and aimed to complete the ships as quickly and as efficiently as possible, in the very business-like fashion that characterized Howe's department. The Naval Staff, however, appeared to have longer-tenu plans: it was in their best interests to draw the construction out, as the government of the day would be unlikely to cancel the programme after such a large investment of time and particularly of finances. In short, each department either did not know what the other wanted, or refused to alter its methods to accommodate the other. Both continued to have different ideas about the speed and purpose of the project right up to the war's end.

One result of this and other problems was that costs spiralled out of control. The original estimate was approximately \$6,000,000 per ship. The British built their Tribals for an average of around \$3,000,000 per ship. The final tally for the first two Canadian-built Tribals, including sales tax and armament, was in the neighbourhood of \$8,500,000 each. The most important reason for the difference, aside from the delays, was labour rates about double those in Britain.<sup>66</sup> The old adage that time is money holds true, particularly when it comes to labour costs, and if the ships could have been completed sooner, costs would have been greatly reduced.

Many of these difficulties seem, at first glance, largely academic. Did it really matter that the Tribals did not see service in the war? Would they really have made much of a difference? The answer is, aside from aiding fleet operations in British home waters, not much. They were not designed or suited to act as escorts (the RCN's primary wartime role), as this was really a waste of their power and they were too large and ungainly.

Tribals, although fine destroyers, were ill-suited for anti-submarine duty, having been designed primarily for surface warfare.<sup>67</sup>

The real issue concerning the Tribal programme is whether it tied up valuable manpower and resources urgently needed for the construction, maintenance and repair of other vessels? The leading authorities agree that it did. Marc Milner has pointed out that despite the fact that the Tribals were secondary to ship repairs in terms of priority, they did drain manpower, "quite the opposite of the original intention, and precisely the fear expressed by the navy's senior engineer."<sup>68</sup> Michael Hennessy also noted that the ships "severely taxed Canada's engineering and industrial establishment."<sup>69</sup> These criticisms are particularly important in light of the RCN's severe deficiencies in refit facilities in 1942-1943 that contributed to the poor performance of the convoy escort fleet. Halifax would have served as the ideal location for such facilities, given proper planning and development. Still, at least Halifax was not a major shipbuilding yard, and thus the services of an experienced yard were not preoccupied. It is here that the decision to choose Halifax over Canadian Vickers made some sense, as at least the country's best-equipped yard was not tied up with the problems inherent in developing a domestic destroyer. On the other hand, Montréal also had a much larger labour pool than Halifax; thus, the drain of 700 or even 500 skilled workers from the Halifax area was exponentially greater than it would have been in central Canada, with its greater population and skill base. Perhaps had the programme not begun until 1944 — or after other vessels, particularly the vital frigates whose production was slowed in 1942 at the very time the RCN needed such ships most, were completed — better results would have been obtained, although such an observation has the benefit of hindsight.

Nelles' insistence on the Tribals, despite the rather unfortunate results, is understandable. To the end, Nelles believed that the Tribals were the best option for the RCN, particularly in asserting its independence from the RN in the postwar period. Nelles saw early on that he had to prevent the RCN from becoming a small ship navy that could be easily scrapped at war's end.<sup>70</sup> The problem was that he under-estimated and never fully understood the technical problems of building Tribals in Canadian yards. His continued persistence in ignoring advice from very able members of his staff, particularly Curry and Stephens, who would have preferred more frigates, was in the final analysis his greatest error. The Tribals could have been halted and replaced with frigates, as Stephens suggested in the summer of 1941, because the primary threat in the North Atlantic had already decisively changed from surface ships to submarines. By the time the frigate programme really got going in early 1942, however, it was too late to halt the Tribals.<sup>71</sup> Ironically, Nelles got to command his Tribals, albeit those built in British yards, when he was made Canadian Flag Officer Overseas on 15 January 1944.<sup>72</sup>

What is clear is that the Tribal programme demonstrated all the weaknesses of Canada's otherwise relatively effective wartime shipbuilding programme. The shortage of skilled labour, the lack of co-operation between the Navy and Munitions and Supply, the dependence upon the UK for technical aid and equipment, and the problem of supply were present in the other building programmes as well, but never to the extent that they

were with the Tribals. In the end, the programme turned out to be a double-edged sword for the RCN. Although the problems evidenced in their construction undoubtedly provided valuable experience for the RCN's building programmes of the 1950s, by the time the last Tribal was completed in 1948 the RCN considered them obsolete, but had not cancelled them earlier because of the fear of heavy cancellation charges and the possible prejudicing of future naval construction in Canada.<sup>73</sup> In fact, the RCN held onto its Tribals longer than any other navy, through extensive refits in the early 1960s, which attests to their once prominent position as the future hope for the backbone of the postwar fleet.<sup>74</sup>

## NOTES

\* Dean Chappelle is a doctoral candidate at Carleton University, writing a dissertation on Canadian naval shipbuilding during the Second World War. He is greatly indebted to Ken Mackenzie, Michael Hennessy, and Michael Whitby for indirectly providing valuable documentation. Norman Hillmer was also extremely helpful. He is especially grateful to Roger Sarty for documents, comments and guidance. An earlier version of this paper was presented to the meeting of the Canadian Historical Association in Calgary in June 1994.

1. Marine Museum of the Great Lakes (MMGL), German and Milne Papers, file 989.044.005.004, H.H. German, "Report of Visit to US Navy Yards at Boston and Bath Iron Works, Bath, January 21 - 22, 1941," 28 January 1941.

2. Quoted in Michael Whitby, "Instruments of Security: The Royal Canadian Navy's Procurement of the Tribal Class Destroyers, 1938-43," *The Northern Mariner/Le Marin du nord*, II, No. 3 (July 1992), 1.

3. His only in-depth account of the RCN's experience in the First World War is found in Roger Sarty and Michael Hadley, *Tin Pots and Pirate Ships: Canadian Naval Forces and German Sea Raiders, 1880-1918* (Montréal, 1990).

4. National Archives of Canada (NAC), W.H. Milne Papers, Manuscript Group (MG) 30, B 121, vol. 2, file 2-3, "Shipbuilding in Canada," 31 May 1939; and "Report on Canadian Shipbuilding Possibilities," 22 November 1939.

5. For an account of the Corvette building programme, see G.N. Tucker, *The Naval Service of Canada* (2 vols., Ottawa, 1952), II, 21-85. By far the best account of the RCN's operations and problems with corvettes in the 1939-1943 period is Marc Milner, *North Atlantic Run: The Royal Canadian Navy and the Battle for the Convoys* (Toronto, 1985).

6. For an account of this, see Marc Milner, "Canadian Naval Force Requirements in the Second World War," Operational Research and Analysis Establishment, *Extra-Mural Paper No. 20* (Ottawa, 1981).

7. *Ibid.*, 3.

8. Tucker, *Naval Service*, II, 503 and 516; and Whitby, "Instruments," 2. Size, armament and other characteristics varied, depending on the builder and date of construction, as the design was constantly changing in minor ways.

9. In the proposed building programme outlined on 9 August 1939, the Naval Staff wanted two Tribals laid down, either in Canada or Britain (or some combination), followed by two every two years for a total of twelve. See Department of National Defence (DND), Director-General History, (DGHist), Construction-Ships-General 8200, vol. 1, "Proposed Building Program for RCN."

10. Canada, Royal Commission on Dominion-Provincial Relations, *Report of the Royal Commission on Dominion-Provincial Relations. Book One: Canada, 1867-1939* (Ottawa, 1940), 179, as quoted in Robert Bothwell, "Who's Paying for

Anything These Days? — War Production in Canada, 1939-45," in Ronald G. Haycock and Barry D. Hunt (eds.), *Canada's Defence: Perspectives on Policy in the Twentieth Century* (Toronto, 1993), 119.

11. German and Milne was consulted extensively by the RCN and Munitions and Supply for technical advice throughout the War.

12. NAC, Milne Papers, vol. 2, "Shipbuilding in Canada;" "Report on Canadian Shipbuilding Possibilities;" and "Building Heavy Marine Machinery in Canada," 30 November 1939.

13. DGHist, Destroyers-Tribal Class, 8000, "Building of Destroyers in Canada," telegram from King to Churchill, 19 November 1940; and Churchill to King, 18 December 1940.

14. DGHist, Destroyers-Tribal Class, 8000, "Report on Visit to U.S. Re: Destroyer Construction," Director of Shipbuilding (DSB) to Engineer-in-Chief (E-in-C), 1 February 1941.

15. DGHist, Destroyers-Tribal Class, 8000, "Report on Visits to Yards at Boston and Bath," 28 January 1941.

16. DGHist, Destroyers-Tribal Class, 8000, "General Views on Building Destroyers in Canada," E-in-C to Chief of the Naval Staff (CNS), 5 February 1941.

17. E-in-C to CNS, 5 February 1941, as quoted in Tucker, *Naval Service*, II, 58; and NAC, Record Group (RG) 24, acc. 83-84/167, vol. 3795, file 8200-355, vol. 2, Memorandum to Deputy Minister, Navy (DM, N), Naval Service, (NS) 1017-10-29 (E-in-C), 7 March 1944.

18. "Report on Visits to Yards at Boston and Bath."

19. DGHist, Construction-Ships-General, 8200, vol. 1, "Minutes of Meeting re: Predictions of Canadian Naval Requirements," 5 July 1940.

20. DGHist, Construction-Ships-General, 8200, vol. 1, "Brief Summary of Shipbuilding Facilities in Canada", 25 November 1940; NAC, Milne Papers, vol. 2, "Report by William Ferguson to D.A. Clarke, Director General of Shipbuilding," 24 February 1942.

21. For an excellent summary of the early years of Canadian Vickers, see Graham Taylor, "A Merchant of Death in the Peaceable Kingdom: Canadian Vickers, 1911-27," *Canadian Papers in Business History*, I (1989), 213-244. For a brief summary of Vickers' wartime building record, see Dean Chappelle, "Canadian Business in Great Waters: The Role of Three Shipyards in the Building of Steel-Hulled Vessels in Canada, 1939-45" (Paper presented to the Fourth Canadian Business History Conference, Peterborough, 15 October 1994), 7-13.

22. Public Archives of Nova Scotia (PANS), MG 3, Halifax-Dartmouth Industries Papers (HDIL), vol. 74, "Statistics, 1927-68." In a list of amounts billed for construction, there are no entries from 1931 to 1938 and only one entry of \$39,000 for 1939, obviously for a very small vessel.

23. PANS, HDIL Papers, vol. 69, "History of DOSCO," April 1951; NAC, MG 27, III, B 20, C.D. Howe papers, April 1941, vol. 42, file 5-9-25, Memo from Robertson, External Affairs, to Howe; *Canadian Shipping and Marine Engineering News*, XIV (July 1942).

24. MMGL, German and Milne Papers, file 989.044.005.004, Lambert, German and Milne, "Memorandum of Estimated Production of Naval Ships in Conjunction with the Naval and Merchant Ship Programme in Canadian Shipyards," 15 September 1941.

25. DGHist, Destroyers-Tribal Class, 8000, "General Views on Building Destroyers in Canada," 5 February 1941.

26. DGHist, Destroyers-Tribal-Class, 8000, "General Considerations Regarding the Building of First Two Destroyers in Canada," Superintendent of Shipbuilding (SSB) to E-in-C, 26 June 1941.

27. I would like to thank Ken Mackenzie for this insightful observation.
28. A. F. W. Plumptre, "Organizing the Canadian Economy for War," in J. F. Parkinson (ed.), *Canadian War Economics* (Toronto, 1941), 9, as quoted in Bothwell, "Who's Paying," 121.
29. For an account and summary of the first building programme, see Tucker, *Naval Service*, II, chapter 2.
30. Saint John Shipbuilding, "Repair and Construction Lists," 1939-1945. I am indebted to Ms. Irene Shell for providing me with these records.
31. See the minister's speech to the House of Commons on 12 May 1942, in which he discussed the Tribal programme and implied that Halifax was selected at least partly in compensation for the Naval College going to Esquimalt, which had been a blow to Nova Scotia's traditional role as a key supplier of naval personnel; PANS, Macdonald Papers, volume 1495, folder 221, article from the *Ottawa Journal* summarizing his speech, 12 May 1942. For an account of Macdonald's role in the establishment of the Pictou Foundry's shipyard, see Chappelle, "Canadian Business," 30-31. The political rationale for the Tribals being built at Halifax was also noted by Mackenzie.
32. I thank Roger Sarty for these insights.
33. Some members of the Nova Scotia legislature claimed in 1943 that Tribal production had been delayed by British builders, who deliberately withheld plans for fear of Canadian competition. See *Canadian Shipping and Marine Engineering News*, XVI (November 1944).
34. NAC, J.L. Ralston Papers, MG 27, III, B1 1, vol. 54, "Abstract of File-Naval Plans, Chronology."
35. I thank Roger Sarty and Michael Hennessy for this key insight.
36. German and Milne began to address this problem as early as November 1941; see MMGL, German and Milne Papers, file 989.044.005.004, Milne to Clarke (Director General of Shipbuilding, M&S), 13 November 1941.
37. NAC, J.L. Ralston Papers, MG 27, III, B 11, vol. 43, "Destroyer Building," Yarrow and Company Ltd. to Mr. McLeod, Secretary of the Office of the High Commissioner for Canada in London, 4 December 1940.
38. PANS, HDIL Papers, vol. 15, Carswell to Scott and Moffat, 16 August 1941.
39. *Ibid.*; and PANS, HDIL Papers, vol. 15, G.M. Halifax Shipyards to H.J. Kelly, V.P. DOSCO, 16 April 1941.
40. PANS, HDIL Papers, vol. 15, Carswell to R.J.R. Nelson, Halifax Shipyards, 8 June 1941.
41. PANS, HDIL Papers, vol. 15, Carswell to Nelson, 20 February 1941.
42. E.R. Forbes, "Consolidating Disparity: The Maritimes and the Industrialization of Canada during the Second World War," *Acadiensis*, XV (Spring 1987).
43. PANS, Angus L. Macdonald Papers, vol. 1523, folder 155, "Steel Capacity at Sydney," October 1940.
44. *Canadian Shipping and Marine Engineering News*, XVI (November 1944).
45. NAC, Department of Munitions and Supply, RG 28, vol. 26, file 196-14-13, "History of Steel Control Board."
46. Memo to DM (N), NS 1017-10-29 (E-in-C), 7 March 1944.
47. DGHist, Destroyers-Tribal Class, 8000, Memo from Director of Naval Construction (DNC) to Chief of Naval Engineering and Construction (CNEC), 9 November 1943.
48. *Ibid.*

49. *Ibid.*, 2.
50. Tucker, *Naval Service*, II, 503.
51. *Canadian Shipping and Marine Engineering News*, XVI (May 1945) and (November 1944).
52. See Jay White, "Pulling Teeth: Striking for the Check-Off in the Halifax Shipyards, 1944," *Acadiensis*, XIX, No. 1 (Fall 1989).
53. Both Whitby and Tucker allude to this.
54. B. Cuthberson, *Canadian Military Independence in the Age of the Superpowers* (Toronto, 1977), 123-124.
55. W.A.B. Douglas, "Conflict and Innovation in the Royal Canadian Navy, 1939-45," in G. Jordan (ed.), *Naval Warfare in The Twentieth Century-Essays in Honour of Arthur Marder* (London, 1977), 210-232. Douglas notes that there was some effort at postwar planning in the early years of the war, but does not mention how the domestic Tribal building programme fit in; this is not surprising since his focus is the procurement of larger vessels from the British in 1943-1944.
56. Tucker, *Naval Service*, II, 59. This quote is from initial discussions in early 1941.
57. DGHist, Macdonald Papers (excerpts), folder 10, "Diary," 24 January 1944.
58. DNC to CNEC, 9 November 1943. The position of E-in-C became "Chief of Naval Engineering and Construction" on 1 January 1943. Accordingly Stephens was promoted and made a member of the Naval Board. See DGHist, Naval Historian's files, file 81/520/1000/36, vol. 1, "Senior RCN Engineer Officers, 1910-58."
59. *Ibid.*
60. J.H.W. Knox, "An Engineer's Outline of RCN History: Part I," in J. Boutilier (ed.), *The RCN in Retrospect, 1910-68* (Vancouver, 1982), 108-109.
61. *Ibid.*
62. DGHist, Destroyers-Tribal Class, 8000, "Reasons for Delays at Inglis-Tribal Machinery," 18 January 1943.
63. *Canadian Shipping and Marine Engineering News*, XVI (November 1944).
64. *Ibid.*
65. DGHist, Destroyers-Tribal Class, 8000, "Division of Responsibility between Inglis and Halifax Shipyards," D.B. Carswell to Arnold, Legal Branch, Munitions and Supply, 20 April 1942; and *ibid.*, "Meeting at Inglis Re: Progress on Tribal Machinery," 25 June 1943.
66. NAC, RG24, acc. 83-84/167, vol. 3795, file 8200-355, vol. 3, Memo to DM(N) from Commodore J.G. Knowlton, 28 March 1946. His approximate cost according to this source was \$8,450,520.
67. Milner, *North Atlantic Run*, 166.
68. *Ibid.*, 20.
69. Michael Hennessy, "The State as Innovator: Controlling the Command Technology for Warship Construction in Canada, 1949-65," *Canadian Papers in Business History*, 11 (1993), 149.
70. Both Douglas and Milner refer to this.
71. I thank Michael Hennessy for this insight.
72. Tucker, *Naval Service*, II, 461.
73. DG Hist, "Naval Staff Minutes 328-7," 18 March 1946, as quoted in Hennessy, "The State as Innovator," 150.
74. See Martin Brice, *The Tribals: Biography of a Destroyer Class* (London, 1971).