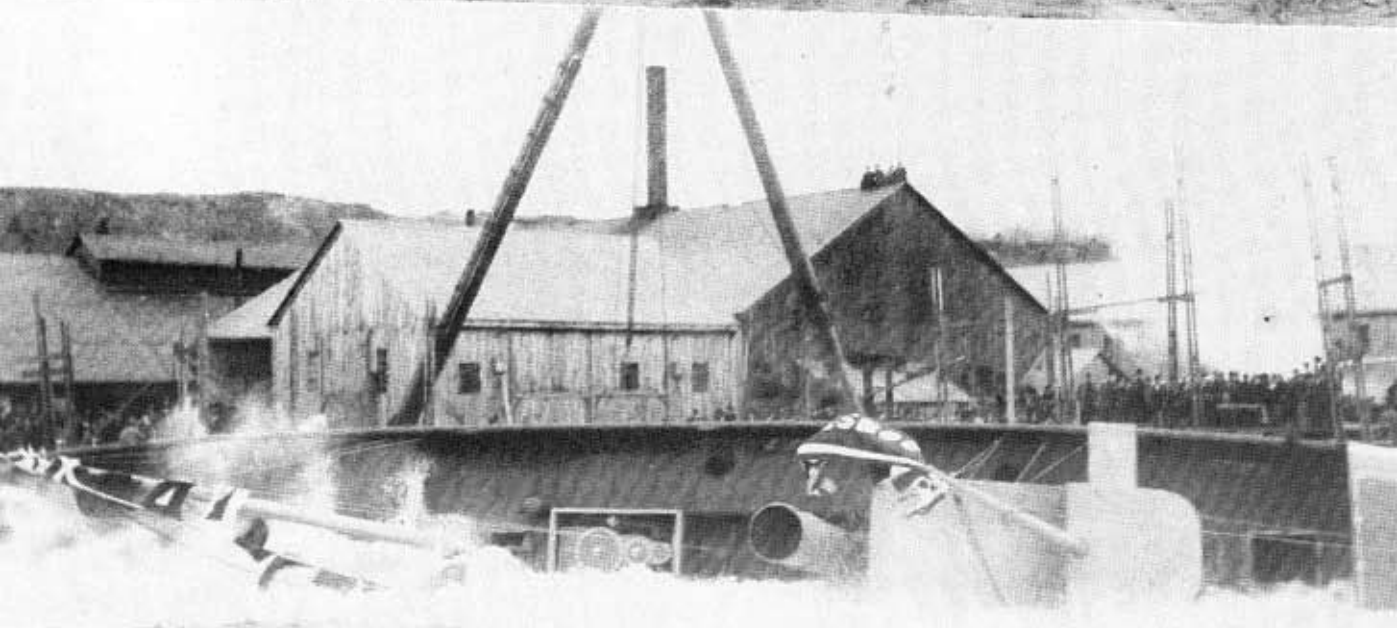
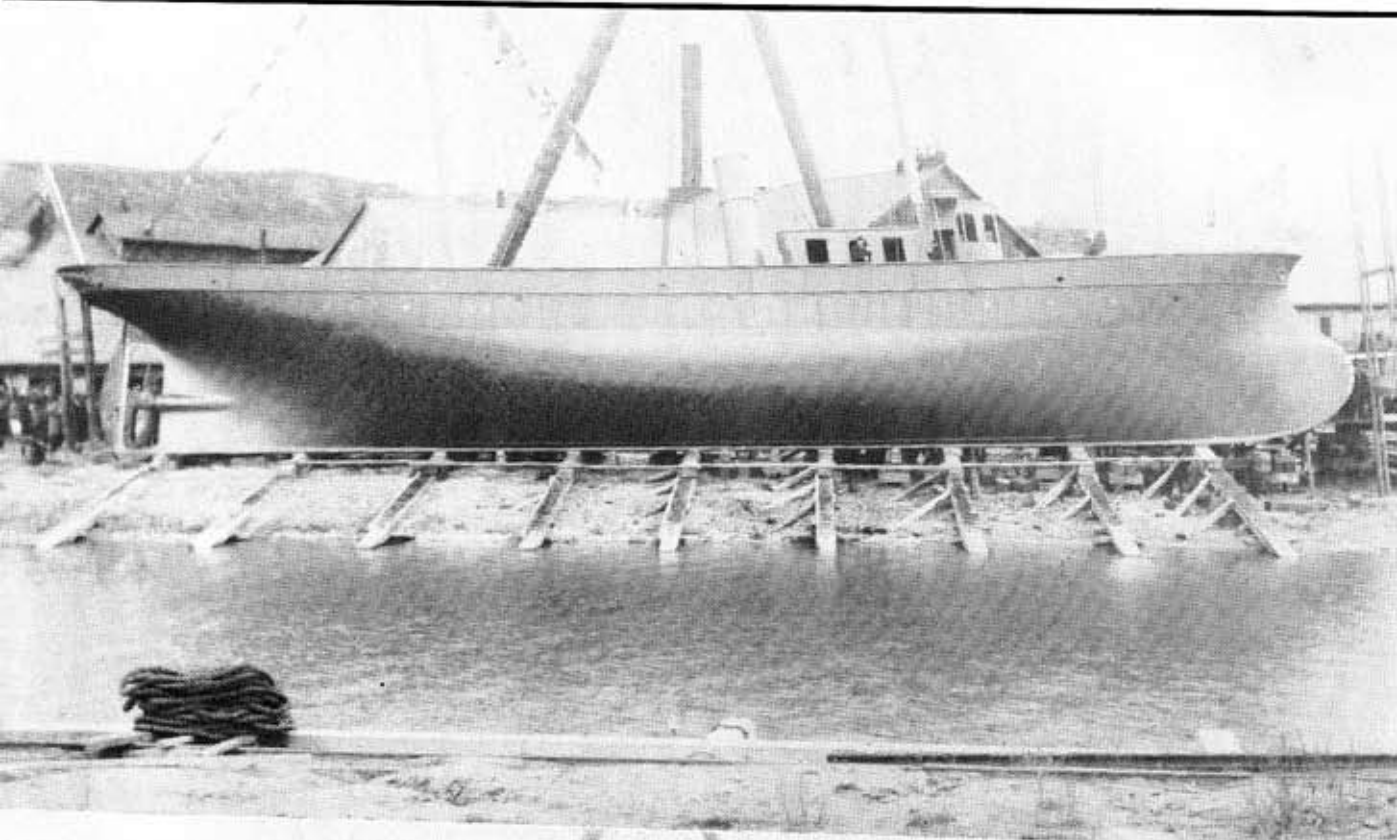

FreshWater

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EDITORIAL POLICY

The subject matter for articles and other submissions to *FreshWater* will reflect the broad interests of the Marine Museum of the Great Lakes at Kingston, an institution which seeks to preserve and interpret the marine history of the Great Lakes, including the hinterland waterways of Ontario and the historic routes to tidewater. Any aspect of this heritage - archaeological, economic, social, technological, political - is eligible for treatment. Topics external to the lakes, but which show a significant connection to the history of the *FreshWater* marine, will also be considered for publication.

The views expressed in *FreshWater* are those of the authors and do not necessarily reflect those of the Marine Museum of the Great Lakes at Kingston

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Editorial

For the past ten years *FreshWater* has specialized in bringing its readers many articles that represent new findings in the field of marine history. Authors have been generous in permitting us first publication of their original research. This issue is no exception.

Bruce Rudolph has with a passion spread over many years accumulated new information and rarely published photographs about the first venture into steel shipbuilding in Canada. We all hope *The Polson Iron Works of Owen Sound* will elicit more comment and discussion about the relationship between business enterprise and the introduction of new technologies.

Violence, Oh God, Violence is, according to Captain John Lawrence the author a somewhat muted response to an event that marked his life. The memory has stayed with him. It is only with the passing of time and retirement that he has been able to give an account of this one momentous personal event in the dark side of "labour" on the Lakes.

Finally let me thank all of our readers on behalf of the museum Board of Directors and my fellow Editors of *FreshWater* for your support during this first decade of publication.

Stay with us. There is much more to come!

Maurice D. Smith,
Co Editor.



The Polson Iron Works of Owen Sound

by Bruce Rudolph

Part I Introduction

The Polson Iron Works was established in 1883 in Toronto by William Polson, first as machinists and machine brokers and then as boat builders. As their expertise grew they expanded to build yachts, tugs and dredges. Their introduction to steel ship building occurred in Owen Sound in 1888.

Polson and the Canadian Pacific Railroad Contracts

The Canadian Pacific Railway (C.P.R.) operated three large steel steamers on the upper Great Lakes, the *Athabasca*, *Alberta* and *Algoma*. In November 1885 the steamer *Algoma* ran aground while en route to Port Arthur and became a total loss. Out of this unfortunate accident arose the opportunity for a new steamer to be built, the *Manitoba*.

The Building of the Manitoba

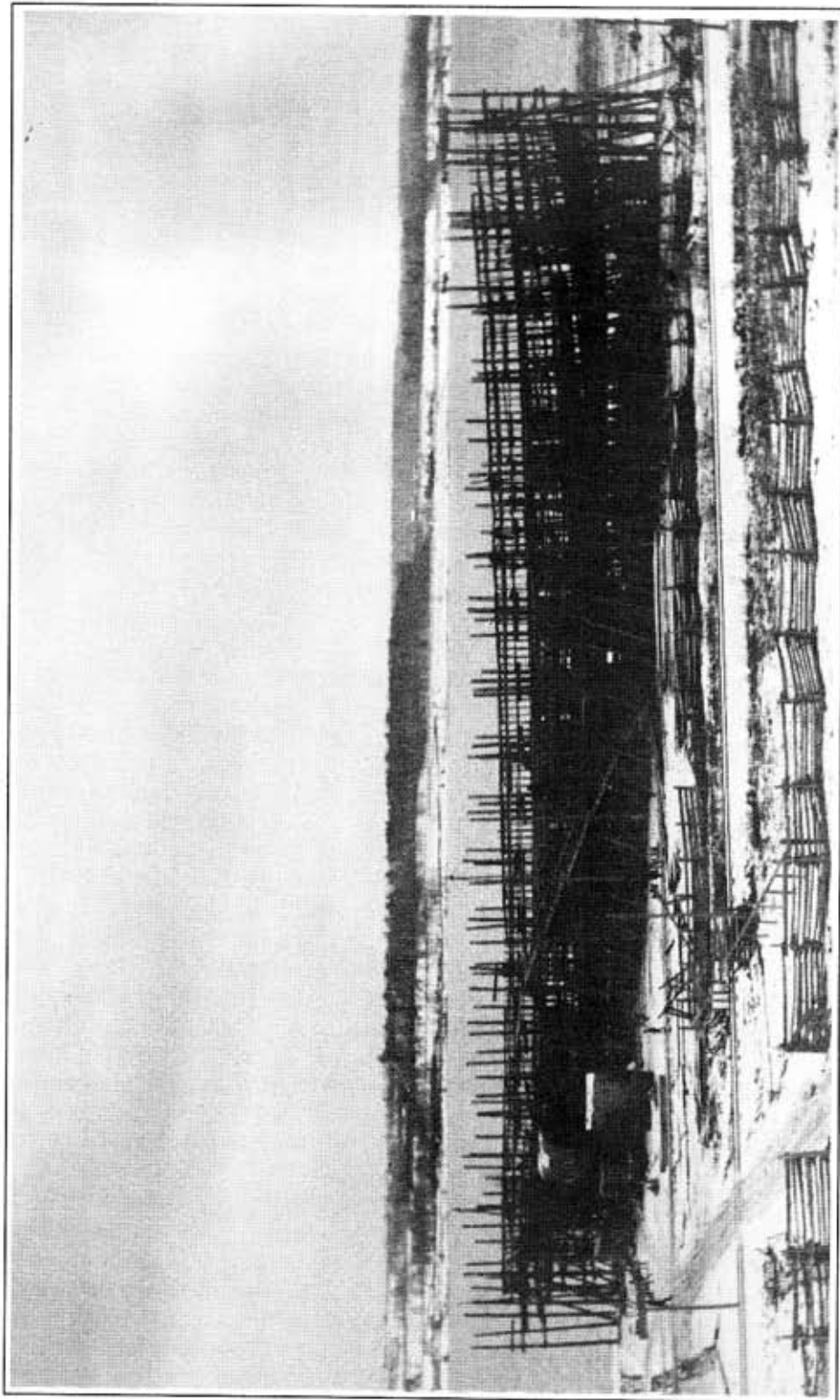
The awarding of the contract to build the first steel ship in Canada, the *Manitoba* was the sole reason that the Polsons built a new shipyard at Owen Sound. This paper looks at the reasons why the shipyard was built and what type of shipbuilding was being performed. The manner in which the C.P.R. changed the economics of transportation in Canada has been a popular subject; however little has been written on the impact that the C.P.R. had on the development of new technologies in Canada. The Polsons were at the forefront of an emerging technology in Canada.

The building of the *Manitoba* marks a significant achievement in Canadian industrial history in a number of ways. For one, the *Manitoba*

would not only be the largest steel steamer afloat on inland waters, but she would be built by the first Canadian shipyard equipped for steel shipbuilding. From an industrial archaeological point of view, the *Manitoba* was the starting point of steel shipbuilding in Canada. Although there had been some attempts at steel shipbuilding (*Cibola*) prior to the *Manitoba*, they did not compare to the Polson's financing and constructing a steel shipyard for Canada's first series of steel ships.¹

Several facts are left to speculation. For example, why did the C.P.R. decide to give the contract to a Canadian shipyard, when previously the contracts were executed in Scotland? Why did the Polsons undertake such a risky venture? They had already achieved success as a company and although they had some experience in composite vessel construction (J.J. Wright's *Electric*, 1887), they had never built a steel ship or attempted any vessel of this size before. Perhaps it was a risk that a young man might attempt (F.B. Polson the 30 year old son of William Polson was especially prominent during the Polson's involvement at Owen Sound). Whatever the speculation might be, the fact remains that the Polsons had given birth to steel shipbuilding in Canada, that almost killed Polson Iron Works.

In June 1888 the C.P.R. engaged the Polson Iron Works to build a large steel steamer for the sum of \$132,000.² The boilers and engine were supplied by the C.P.R. having been salvaged them from the wreck of the *Algoma*³. Although it is not known how many tenders were submitted to the C.P.R. for the construction of their new steamer, the *Toronto Empire*, quotes Mr. Henry Beatty (Great Lakes Traffic Manager for the C.P.R.), as saying that the C.P.R. desired to keep the work in Canada, despite that the work



The *Manitoba* in her berth at Owen Sound. Winter has set in and the framing looks complete. The date: probably November 1888. Photograph courtesy of the National Archives of Canada (NAC) PA 135423

could have been performed in Scotland at a lower cost.⁴

The Polsons now had the contract for the new steamer, but no place to build it. A well equipped shipyard on the upper Great Lakes would be required and so several towns were approached with a proposal, including Sarnia, Collingwood and Owen Sound. The latter was the best choice as the C.P.R. ran their ships from this excellent port, as well as having a direct rail link to the town⁵. Owen Sound offered the Polsons a free building site, freedom from taxation for ten years as well as the required dredging for the launching basin.⁶

The contract called for a launch date of 1 December 1888 and all of the work completed by 1 March 1889. Failure to meet these dates activated a penalty clause in the contract resulting in lost revenue. The Polsons' new venture was daring, considering that before any work on the steamer could begin they would have to build an entire shipyard from scratch including importing the steel and specialized rolling machinery and bringing experienced steel shipbuilders from Scotland.

The new C.P.R. steamer was to be called the *Manitoba*. She would be the largest inland steamer to have been built up to that time. The *Manitoba* had an overall length of 305 ft. with a 38 ft. beam. The hold depth was 14.3 ft. She had 146 frames (ribs) and seven bulkheads dividing her into eight watertight compartments and was classed as 100 A by the Lloyd's shipping registry.⁷ Some 1,100 tons of steel was used in her construction giving her a measurement of 2,616 gross tons. Her upper deck was to be 250 ft. long with 64 staterooms, all finished in antique oak. There was a promenade the entire length of the hurricane deck. Edmund Trist was the superintendent in charge of all work on the *Manitoba* while Robert Logan was the inspector for the C.P.R.⁸

With Owen Sound as the chosen site, there was no time to lose. Erection of three large buildings was the first task which began by mid-July. The first would be the machine, blacksmith and engine shop (260 by 60 ft.). The second building was the furnace shop which would house the furnaces and bending slabs (160 by 60 ft.). The third building was two stories and housed the carpentry, joiners, stores, draughting and general offices. What had been a hay field in June was being trans-

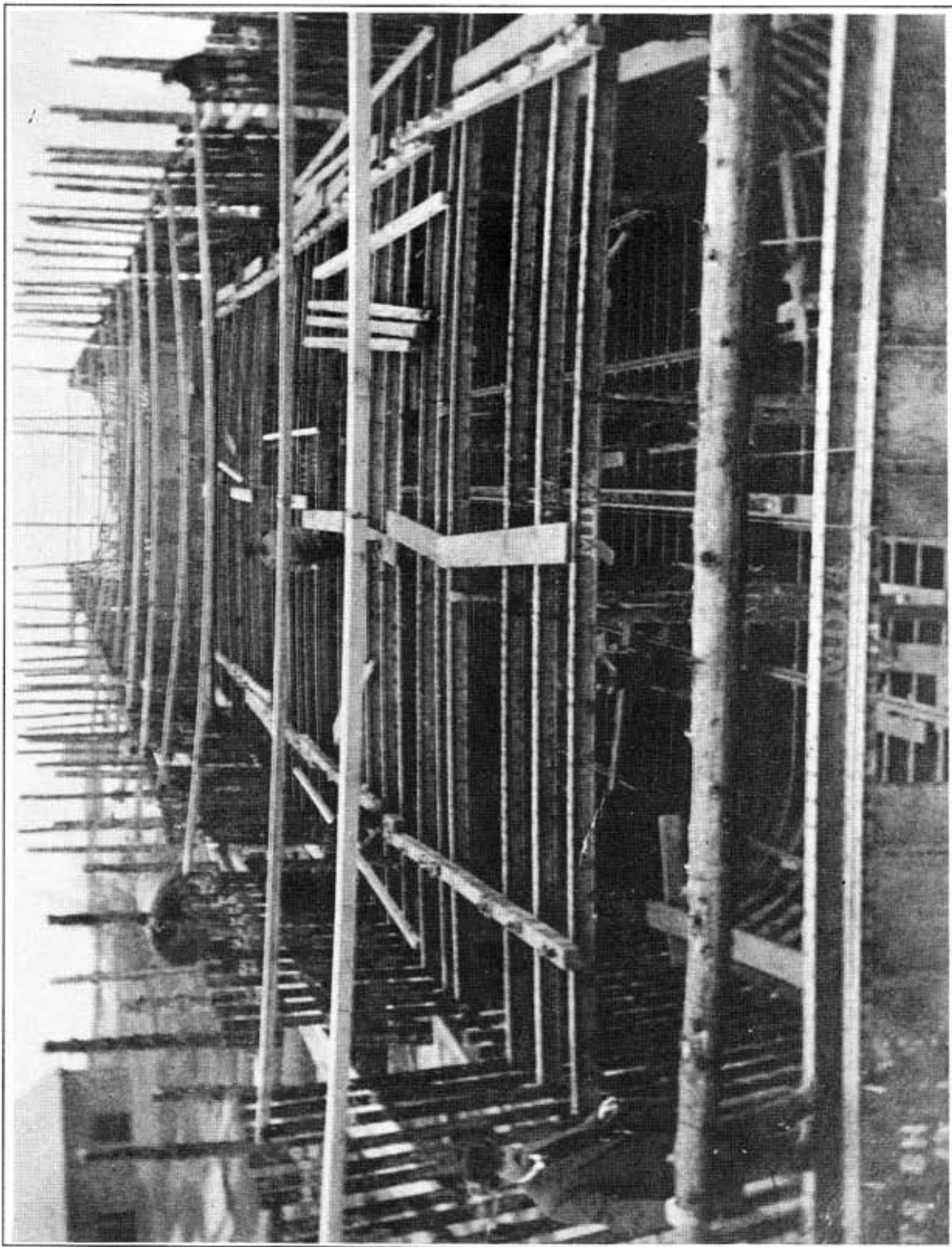
formed into "the finest shipyard on the continent", with over 300 men employed there.⁹

If time was an obstacle it was only one of many the Polsons would face. Delays in the delivery of the heavy machinery from Scotland were just the beginning of the problems. H. & J. Russel of Montreal were the agents used to import the steel from Scotland.¹⁰ It would not be until mid-August that the first steel began to arrive. The steel arrived by steamer and was unloaded at the docks in Montreal. It was then reloaded on rail cars for shipment to Owen Sound. But shipments from Scotland were slow and the steel was often delayed at the Montreal docks.¹¹

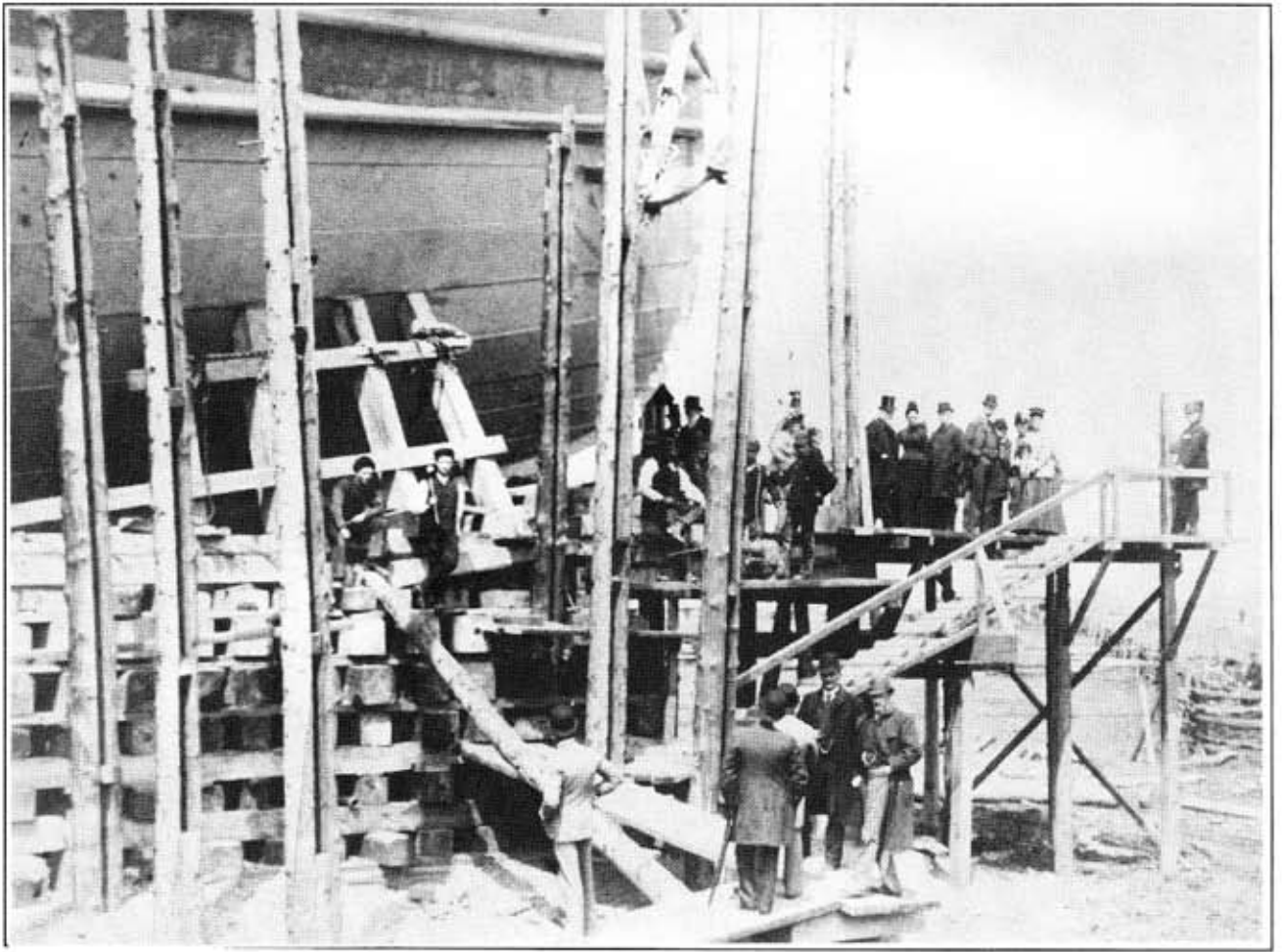
By the end of August two of the three buildings were erected and the enormous punches and shears were being installed along with a Brown automatic stationary engine to run the machinery. The huge rollers for bending the plates had not yet arrived but the furnaces were installed and working. The keel of the *Manitoba* was being laid despite the fact that most of the material had been greatly delayed.¹² A launch date of 1 December was quickly fading as the required steel was still arriving as late as mid-November. A description of the shipyard is given in the *Toronto Empire* of 22 November 1888.

The first building on entering the yard is the wood shop where all the woodwork is done, one end of it been utilized for the business office and offices for the draughtsmen, a considerable number of whom are engaged on the multiplicity of drawings necessary. Here is the model which furnishes the basis of the whole work on which every plate is distinctly laid out and lettered and numbered so that when shaped according to the model it is ready to be fitted into it's place without confusion. In addition to the model there are an immense number of plans and detail drawings of every portion of the ship. On an immense designing floor over 200 feet in length each one of these drawings of frames and beams is enlarged to full size. From there they are transferred to the floor of the furnace room and the shapes made in thin strips of iron to serve as models to which the great steel ribs are bent.

The furnaces are 50 feet in length, where the bars of steel are heated, while in front is a massive metal floor laid out in little squares of about an inch and one quarter, each alternate square being perforated so that by means of iron pins the heated bars may be bent into any required shape. In an other building



The *Manitoba* in frame at the Polson's shipyard at Owen Sound. Mr. F.B. Polson looks on.
Photograph courtesy of the NAC, PA 135429



The *Manitoba* on launch day, 9 May 1889, Owen Sound. The launching party on the platform: Miss Mamie Beatty performing the christening, Miss Grace Polson, Miss and Mrs. Jeffrey, Henry Beatty, F.B. Polson, Mr. John Jeffrey, Mr. Tait, Mr. Conway and Mr. J.W. Sutherland.

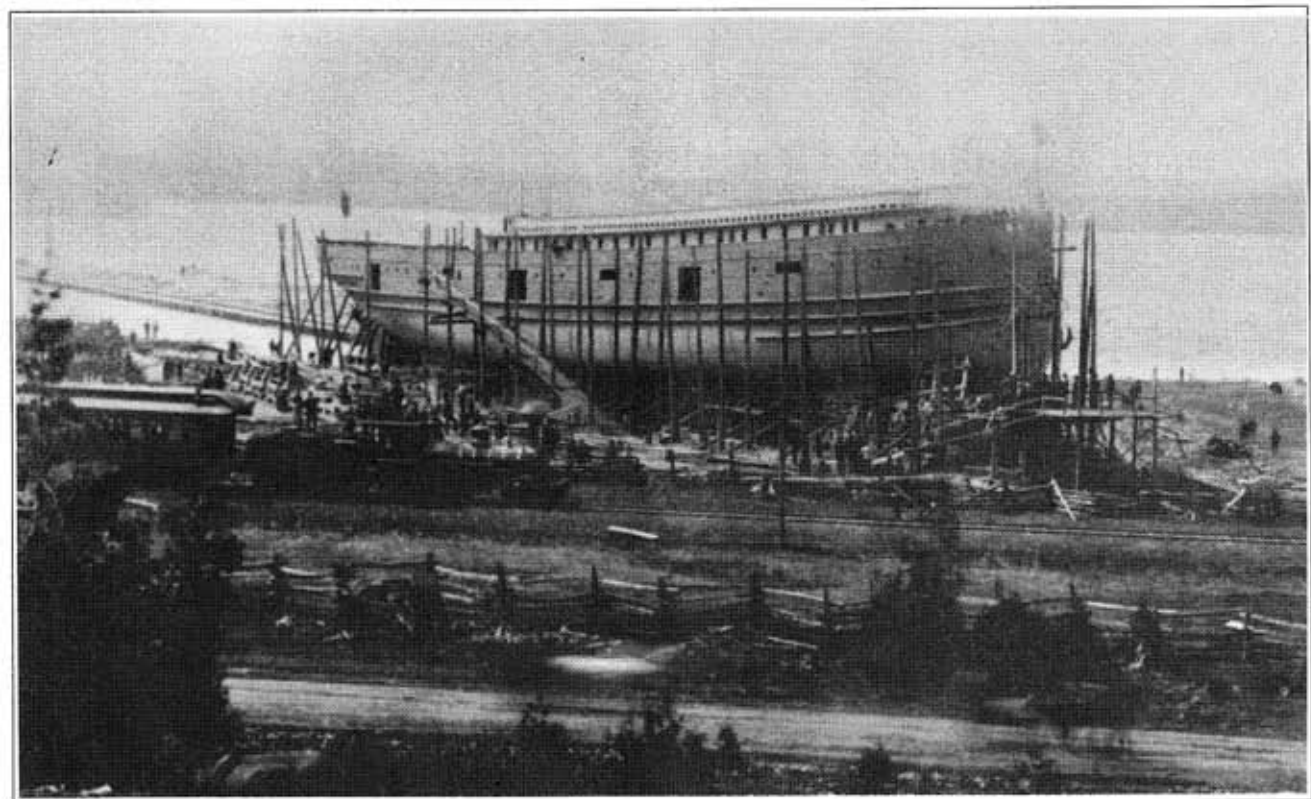
Photograph courtesy of the Ontario Archives, # 9814 S15975

are a number of forges at which blacksmiths are busily engaged in the department of the work. But the most interesting building is the machine shop, where the different processes of bending, shaping and punching the plates are carried out. The rolls for bending plates have been specially imported from Glasgow, and are said to be the finest on the continent. They weigh thirty tons and bend plates 16 feet and 6 inches in length. Besides the rolls there is an immense planer for planing the edges, and a powerful angle cutter, both made by a Canadian firm, that of John Bertram and Sons, Dundas.

Next comes a powerful beam bender, which takes a great steel bar and bends it like a piece of wire. Then there are no less than seven great machines for

shearing and punching plates, which clip off edges and punch holes in plates of steel three quarter inch thick as if they were a piece of cardboard. After the holes are punched the plates are taken to drilling machines, which countersink with bevelled drills so that the rivets are left flush with the plate. After going through these various processes the plates are ready to be placed in position on the ship, the immense skeleton of which stands in the yard with her great ribs standing up amidst a forest of scaffolding.

The town had abandoned the dredging it had promised the Polsons as the work was much more costly than they had anticipated. However, a new by-law was proposed granting the Polsons \$15,000 to purchase the Owen Sound



A moment in Canadian history, the Manitoba launch day 4 May 1889, the first steel steamship designed and built in Canada.

National Archives of Canada: PA 135428

Dry Dock and to undertake the remainder of the dredging.¹³ The by-law was easily passed as the town was enamoured with their new shipbuilding industry, although not everyone was impressed with the new "Toronto company". In a letter to the editor of the *Owen Sound Advertiser* (20 December 1888), one man calling himself "Mechanic" felt the \$15,000 bonus should not be paid to a foreign company (Polson), but to the present Dry Dock company. He went on to say that there were not six men from Owen Sound that were working at Polson's yard. The Mechanic was enraged because the Polsons had reduced the wages of the general labourer, mainly local men. The reply from the editor is revealing, telling how specialized workers had to be brought from Scotland, their passage had to be paid and that they were receiving the amazing sum of \$3.00 per day while most workers were receiving \$1.00 per day. The mild winter of 1889 aided in the progress of the *Manitoba* and by mid January all the plates were in position up to the main deck.¹⁴ The job of dredging had been taken over by the Polsons,

who had made progress thanks to the use of an "English centrifugal sand pump". The Dry Dock was now a Polson possession as of 13 February for the sum of \$16,000. By April most of the machinery had been put into position and the decks were almost completed. In early May the *Manitoba* was ready for launching. The people of the town had been speculating as to when this might be and so the town council agreed to raise a flag on the town hall to let all know that the important day had arrived. As well, the mayor declared a half-day holiday in celebration of the launch. Thousands of people attended the launch, cramming the shipyard and the limestone bluffs above. A special train arrived carrying the dignitaries. Miss Beatty (daughter of Henry Beatty) performed the chistening.¹⁵ The following is from the *Owen Sound Times*,

The immense concourse waited in breathless silence until the majestic craft touched the water and then cheer after cheer rang along the heights, the hillsides and up from the yard, while the whistles of the steamers, locomotives, foundries, factories and