

August 2020

Volume 42 Issue 8



The Binnacle

Victoria Model Shipbuilding Society
Victoria, B.C.



Ken Lockley on Fort Rodd, Yucata Spirit,
Shop Tips, and Glendevon.



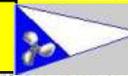
Edward White on Boxing



A Suggestion from John Callin
The Comox Black Duck



<http://www.vmss.ca>



**From
The Bridge**

Another month without a meeting, perhaps we can get together in September. At least the parking problems at Harrison Pond seem to be less severe, and spots become available for those who wait. People are arriving at different times which helps avoid a rush. We are getting good turnouts Sunday mornings. It is heartening to see both members and others are using it at other times throughout the week.

I am also happy to see new people entering the hobby. There are also some really fantastic boats on the water. If you are not one of the regulars, drop down and say hello and get your boat fix.

See you there, Ron

2020 Executive Committee

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<i>All above area code (250)</i>	



ON THE RADAR

Upcoming Events

Sigh!



Meetings: Second Thursday 7:30-9:30
St. Peter's Anglican Church, Lakehill
3939 St. Peter's Road
Upcoming meeting: TBA



Sundays 9-11
Harrison Model Yacht Pond (HMYP)
Dallas Road at Government Street



LANGFORD LAKE
Wednesdays 9:30
Langford Lake, Leigh Rd. at Trillium

NEXT BUILD #35

by Ken Lockley

August 2020

In the May issue we showed a picture of the war time anti submarine netting across the entrance to Esquimalt Harbour, HMCS dockyard. As this taking my interest, Lois and I decided to give Fort Rodd Hill a visit. It's actually forty years since our last visit and many changes have been done since that time. The following pictures and text is what has come out of our June visit. We were impressed with these improvements.

**HERITAGE VALUE**

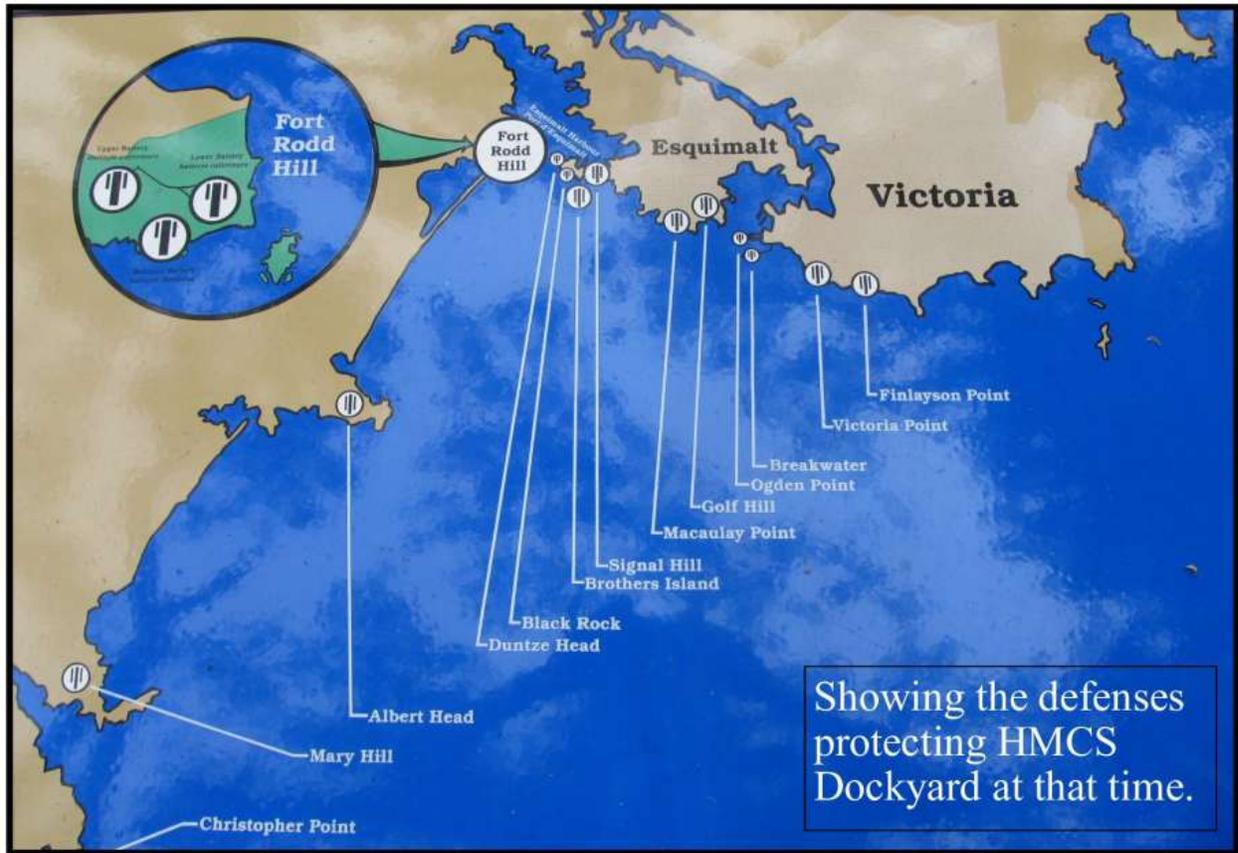
Fort Rodd Hill was designated a National Historic Site of Canada in 1958 to:

- commemorate the role of the Victoria-Esquimalt fortifications (1878-1956) in the defence of Victoria and the naval base at Esquimalt, and by extension the defence of Canada and the British Empire.

The heritage value of Fort Rodd Hill lies in the integrity and legibility of its cultural landscape. Its strategic location and setting as well as the layout, orientation, nature and composition of the many defence structures it contains witness almost a century of change in military design and requirements.

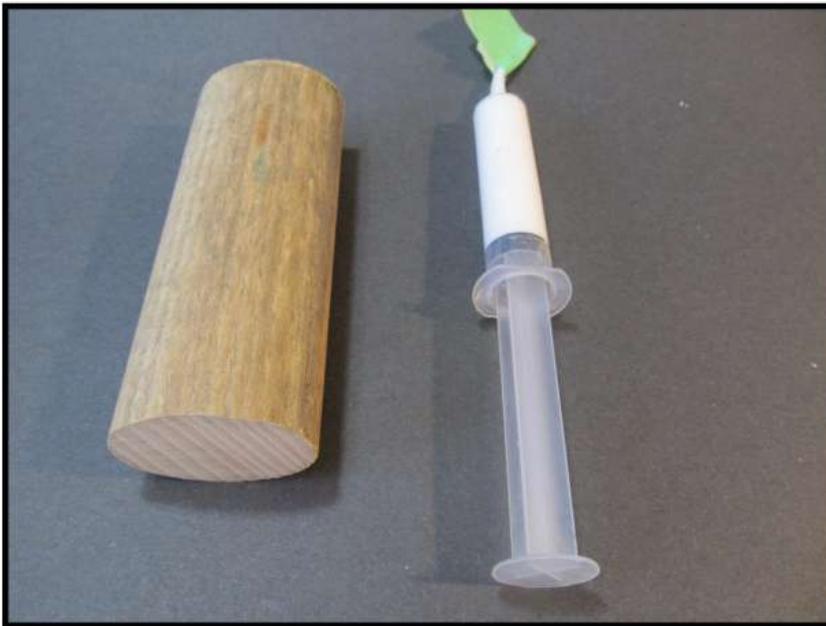
In 1878, Canada first built temporary batteries at Macaulay Point using surplus British naval ordnance. This battery was meant to protect the port of Victoria and the Esquimalt naval harbour during the Anglo-Russian crisis of that year. In the 1890s, Canada negotiated with Great Britain for the construction of a series of permanent defences for the Victoria-Esquimalt area, to be manned by British troops in defence of the Empire. Construction began on Fort Rodd Hill in 1895 and Canada assumed control of these fortifications in 1906, extensively enlarging and rebuilding them by the end of the Second World War. They were declared obsolete in 1956. The site was subsequently acquired by Parks Canada.

Sources: Historic Sites and Monuments Board of Canada, Minutes, 1958, 1992; Commemorative Integrity Statement, November 1996.

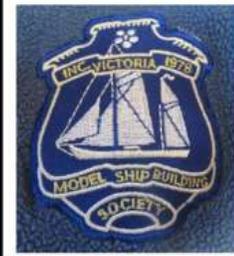


Here's another Inspirational Picture: "Yucata Spirit, "built in the mid 1960 in North Eastern UK. First worked for Weldwood Canada on our coast. Sold to Marpole Towing and eventually end up with Pacific Cashalon INC. based in Campbell River. She's been a great log tower but currently up for sale. She's 55 years plus and reaching the twilight years for a working tug. This would make a great club house for the VMSS !!!!!!!!!!!

This month in the workshop



Hi Builders. If you have good ideas you would like to share, Edward will be happy anytime to receive them and place them in the Binnacle. "Binnacle"



Here's a couple of ideas from Jim Cox. Down at Harrison one evening, Jim passed these two ideas over to me. The first is a piece of axe handle made from hickory, cut about 5 inches in length and to be used as a sanding form. I put it on my bench and have been using it frequently.

The second idea is a syringe loaded with Welbond glue. This is a great way to get a thin bead of glue where careful application is necessary. The applicator syringe was purchased in a medical supply store and can be rinsed out. Thanks Jim



These two pictures show my windows and doors, made from thin plywood and small strip wood. Stained with a light oak colour and clear lacquer finish. Black paper glued behind the windows for glass and installed. The tug has 12 windows and 7 doors, this took a little time, but that is what it's all about.



Picture on the left shows my funnel with a band of aluminum wrapped around held in position with the screw eyes. Support wires will eventually be attached .

Picture on the right shows my brass railings that will be painted black and attached to the cabin structure. They show below the windows.



This morning, Aug.2/2020, "Glendevon" in the water, showing doors, windows and handrails. Next month I hope to show second deck railings along with navigation antennas etc.

Operational wise the tug is performing to my satisfaction. It's not too heavy for transport, currently 11 pounds. The rest of the bits and pieces might add a pound. I should be able to wrap this project up in the September Binnacle.

It's been fun to share the build during the Covid-19 situation and I hope we'll see more new boats at Harrison in the coming months.

The Box

The biggest thing to happen to water transport in the last 75 years?

It's a steel box.



To be precise, it's an ISO Intermodal container that can be used by and transferred between, road, rail, and shipping without unloading and reloading its content. The standards for these boxes is built around their outside measurements being 8 feet wide, 8 feet 6 inches or 9 feet 6 inches high, and 20 or 40 feet long. The measurement of their capacity is in "Twenty Foot Equivalent Units" or "TEU's" So a twenty foot long container is 1 TEU, a forty foot long container is 2 TEU's.



The Emma Maersk (2006) could carry 14,900 TEU's if their average loading was low enough, but the Maersk shipping company quotes her capacity at 11,000 TEU's at an average weight of 14 tons per container.

The latest ships being built, for the HMM company of South Korea, are rated at 23,964 TEU's for a gross tonnage of 228,283.

It's a big business.

There are probably around 43 million of these containers in existence around the world. (Nobody really knows!). The forty foot containers are by far the most common. Internally, they measure 39 feet 6 inches long, 7 feet 8 inches wide, and 7 feet 10 inches high. (the doors, however, are only 7 feet 6 inches high. They are made up of a steel frame with corner castings and a welded infill of walls and roof of corrugated steel. The floor is normally channel section beams covered in plywood. They weigh 8,333 lbs, 4.1 tons, and can be loaded to a maximum of 58,863 lbs, 29.5 tons. At that, they are strong enough to be stacked 9 high, but with the much lower weights that actually fill them, and stacking the lightest on top, the big ships will stack them up to 21 high. They have a typical service life of ten to twelve years in shipping, followed by eight or more years in other uses. The cost of building them is mostly that of the steel itself, and they are easily scrapped and re-cycled.

How did these come to be?

I guess the first intermodal container was the barrel. These could be rolled on the ground and up slopes with one manpower, pulled on a cart at 7 per horsepower on a brewer's dray, and loaded by the hundred into sailing ships. (Think India Pale Ale!) They carried gunpowder, salt meat, wine, beer, water, candles, nails, anything.



But when steam power became available, larger containers could be handled, and so by the 1830's the Liverpool and Manchester Railway was hauling wooden boxes filled with coal to Liverpool, four to a rail truck, and loading them onto horse carts by steam crane.

By 1932, the gas powered truck was in common use and the Pennsylvania Railroad opened the first container terminal in Enola, PA. Containerization was seen as a way to re-vitalize the railroads after the 1929 Wall Street Crash, and the first attempts to produce international standards were in the 1930's.

The US forces experience of fighting overseas in the Second World War led them to develop in 1948 the "Transporter", a rigid, corrugated steel container 8 feet 6 inches long, 6 feet three inches wide and six feet ten inches high, on skids and with lifting rings on the four upper corners. It could carry 9,000 lbs.

It was a big success in the Korean war, and was developed into the CONEX (Container

Express) system, which could stack the boxes three high and had a second size box at half the capacity. The US military stuck with the Conex system, owning a total of 200,000 by 1967. They were not only useful in the transport role, but for storage in theatre. More than 75% of Conex boxes were shipped only once, providing the facilities for military camps when they arrived, and not being worth the cost of re-patriating them.

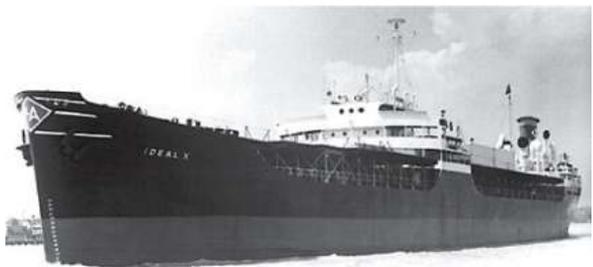


But going back again to 1949, the story has an individual hero. Keith Tantlinger was a 30 year old mechanical engineer who had spent the war at Douglas Aircraft, working on tooling for the B17 bomber. In 1949 he was working at Brown Trailers in Spokane, where he modified their design of stressed skin aluminium trailers to make them stackable two high by the addition of steel castings at the corners. This was for an order of 200 trailers for the Alaskan company Ocean Van Lines.



In 1955 Malcolm McLean had bought Pan-Atlantic Steamship Company to form a container shipping enterprise, later to become Sea-Land. The first containers were supplied by Brown Trailers and McLean met Tantlinger and hired him as vice-president of engineering and research. Tantlinger designed a new container for McLean that was 35 feet long 8ft 6in high, and 8ft wide, the length the maximum that could be carried on Pennsylvania highways. Each container had a frame with eight corner castings that could withstand stacking loads.

McLean had modified a WW2 oil tanker to take these containers, and in April 1956, she made her first run as the Ideal X with 58 containers from Port Newark, New Jersey, to Houston.

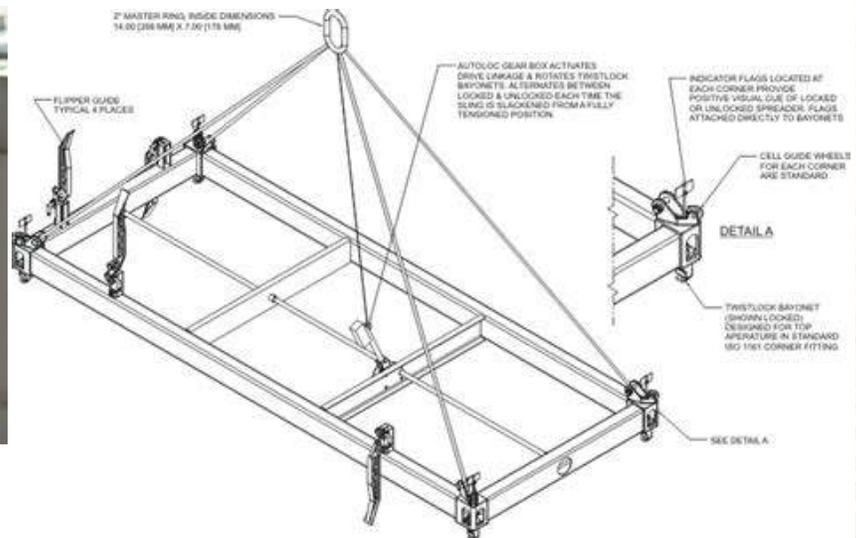


But in a claim for the first container ship, she had actually been eclipsed by a Canadian venture. The Clifford



J Rogers had been built in Vancouver and launched in May 1955 for British Yukon Ocean Services. She was designed to carry 168 "Caissons", eight feet by eight feet by seven feet. She was destined for Scagway, there to load the "Caissons" onto the White Pass Railway, to serve Dawson, Cassiar, Mayo, and Whitehorse. She made the first of these runs on 26th Nov. 1955.

Container shipping was on the way! Matson Navigation in 1957 started a container service between California and Hawaii, with 24 foot containers to comply with California's traffic code. Europe had produced a standard for rail containers after WW2, but these had integral rollers which made the transition to and from rail and road easy, but were less suitable for shipping.



Tantlinger was still innovating. Two major inventions of his were the Twistlock system for connecting containers at the corner castings, and the automatic crane spreaders that are used to handle the containers. These were crucial to the clean transfer of containers into stacks and for the integrity of stacks aboard ship. In 1958 he left Sea-Land to become Chief Engineer at Fruehauf, where he continued to work on containers, and extensively with the American Standards Association and later with the ISO.

Tantlinger died in 2011 in Escondido, California, aged 92. You can find his patent, US3085707A, in Google Patents. Really well worth a good look at for the simplicity and ruggedness of the twistlock system he devised. Almost everything you buy got to you in his design!



The International Maritime Organization first published the ISO, (International Standards Organization), standards between 1968 and 1970, and this was followed by their Container Safety Convention standard plate, which defines a standard label plate that gives each container a unique registration number along with information on age, dimensions, strength, and stacking capability.

The ISO standard now allows for some other container sizes, notably the "high cube" variation at 9ft 6in high, which in 2014 became the majority of boxes in service.



With the standards established, the growth in container traffic has been spectacular. In 1980 ship traffic in containers was about 102 million metric tonnes, by 2019 it was 2.1 Billion metric tonnes,

or 860 million TEU's. That's 206 times, or an average growth of just over 20% per year.

I haven't found an easy source for world wide road and rail container traffic, but since all containers have to get somewhere other than the port, they are all going somewhere, and the growth rate must be the same. I can tell you that the railways from China to Europe, ("The New Silk Road"), carried 52,000 TEU's in the month of June this year, and that was double the traffic from June 2019. It's not just ships.



What it all means is that today I got a quote for shipping a 40 foot container from Shanghai port to Portland, Oregon port that was from \$3500 to \$4500 US. It'll be about the same to Vancouver.

A brand new container in Shanghai will set you back about the same \$4500. So when it gets here, its a secure warehouse! And it'll still be worth \$2,000 and up when you're done.

Lets work over those figures. The interior of a 40 foot "high cube" container is 2,694 cubic feet. The maximum weight of its load is 63,000 lbs, or 28.6 metric tonnes. Let's ship some beer to China. That'll be weight limited rather than bulk limited to about 7,480 imperial gallons or 59840 pints. I buy a pint can of Naughty Hildegarde (the world's best beer bar none!) from Driftwood brewery on the bottom of Hillside for about \$4 retail. Shipping from Vancouver to Shanghai is going to be 15 cents a can! Total cost of transport from Driftwood Brewery, Victoria to a series of upscale bars in Shanghai is going to be maybe 60 cents a can!

The big picture is that the cost of shipping across the world on almost any kind of an imperishable product is negligible. For the shipping cost to make a difference of 25%, the ultimate retail price of a box one cubic foot in size and less than 23 lbs in weight is going to be less than \$16.

Let's talk about the ships. Because they are truly different. They are open! That's right, no decks! The last guys to trade across the sea this way were the Vikings! Take a look at YouTube on "loading container ships".



Within the hull below the level that would otherwise be the deck are a series of cross walls. These cross walls carry vertical rails exactly 8 feet apart horizontally. And the walls are either 20 or 40 feet apart along the ship's centreline. The corners of a container engage with these rails and the containers slide down between them to form stacks twelve to 14 high. (Some of the newest ships continue these cross walls above "Deck" level.) Beyond that height the stacks have to be secured

with lashings (generally steel turnbuckles), attached to the corner castings and then finally, in the top couple of layers where the stresses are less, by the twistlocks that fit into the corner castings and lock them vertically.

Just below the "Deck" level, inside the side plates, a rectangular hollow steel tube (the "belt"), runs right around the ship. The cross walls are welded to this so that the walls and belt provide the main structural stiffness of the hull. The inside of the belt serves as a corridor that gives access to the staircases and cross corridors in the cross walls. These in turn provide holes that access the container ends for inspection and emergency access to the containers.

But I'll say it again, no main deck. So all the rain and the spray that gets above the hull sides goes straight down inside the hull. Within a 35 kilometre radius of a tropical cyclone centre, rainfall can be as much as 34 inches a day, (land based data). That's maybe as much as 2 inches an hour. Emma Maersk has a surface area of about 200,000 square feet, which would mean it gathers rainwater at 33,333 cubic feet an hour, or 208,000 gallons an hour. Her draught is 52 feet, so the pumps have deal with at least a 60 foot head. Containers aren't water-tight, so cargo damage will start at a 4 inch depth of water in the hold. Her bilge pumps must be something of a feature! The Vikings, of course, just had frightened men and buckets! Of course, things do go wrong. And a big container ship can be big trouble. Here's one that lost it off the New Zealand coast.



Modelling these behemoths is going to be a major challenge. Going true scale with the 7,000 containers that make up a load for the Emma Maersk is not a really appealing idea to me. But the earliest ships, the Ideal X or the Clifford J Rogers, would be a great historical model. But even the big ones can be done, there are a number of models of Emma Maersk around to prove it. Here's one in "O" gauge.



A semi-scale model of one of the big ships would make a great toy for the club's tugmasters.

Volunteer?

The Black Duck.

John Callin gave me a heads-up recently about this website:-
<https://sites.rootsweb.com/~andersonfamily/RCAFMarine.htm>.

It's a history of the RCAF Marine Section, who were to service floatplanes and provide sea and lake rescue to the RCAF. And it's really good, great old photos and lots of stories of interest.

But in particular, John pointed me at a 40 foot rescue boat named Black Duck, and at her entry in Nauticapedia
([https://www.nauticapedia.ca/dbase/Query/Shiplist4.php?&name=Black%20Duck%20\(R.C.A.F.\)&id=28199&Page=1&input=Black%20Duck](https://www.nauticapedia.ca/dbase/Query/Shiplist4.php?&name=Black%20Duck%20(R.C.A.F.)&id=28199&Page=1&input=Black%20Duck)
RCAF_M.87_Black_Duck.jpg).



She was built in 1954 and served at Comox until 1998, being owned by both the RCAF and the RCN, but doing the same job. She finally died in 2005, sinking at her berth at the Vancouver Maritime Museum.

The basic design was that of the US Coastguard 40 foot Utility Boat. A steel hull and two 165 horsepower diesels gave her about 20 knots with shallow draft and great manoeuvrability. And very, very pretty!



I agree with John that this is a subject worthy of any Canadian modeller, and you could be that person! Lots of fun on the pond.



That's all Folks!

The Victoria Model Shipbuilding Society is a non-profit club, open to all, established in 1978 under the Societies Act of B.C.