



The Binnacle

November 2024

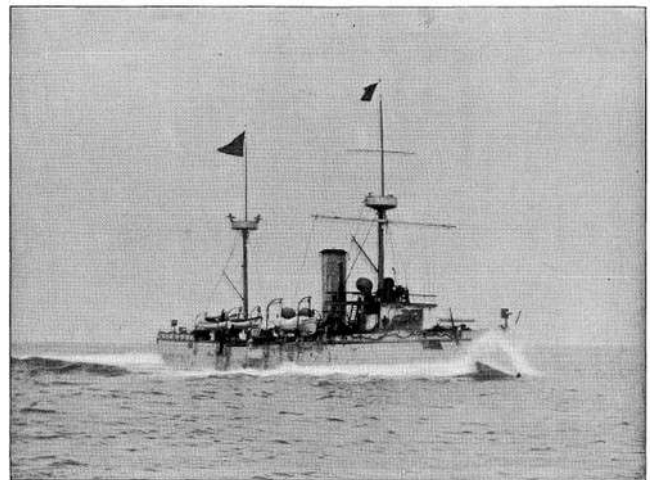
Volume 46 Issue 11



**Ken Lockley
Building Swell**



**Edward White
Imperial Chinese Cruiser
Zhiyuan**



FROM A PHOTOGRAPH.
THE CHINESE SHIP "CHI YUEN," SUNK IN THE BATTLE.
The ship is here shown at full speed. The bow torpedo-tube parts the spray as seen at water-line, but offers only slight resistance.

**Annual General Meeting
New Venue, New Date.
See Below Page 3**



2024 Executive Committee

President: Mike Claxton work 479-2258
 cell 380-8770.

Vice-Pres: Vacant
 Secretary: Vacant
 Treasurer: Mike Creasy 888-4860
 Director @ Large: Calvin VanElsakker 477-5830
 Binnacle Editor: Edward White 385-6168
 Quartermaster: Vacant
 Membership: Bev Andrews 479-2761
 All above area code (250)

This month we are meeting in person for our Annual General Meeting and Election of Officers at a different venue and on a different Night.

The meeting will be at the Horseshoe Club of Victoria at 7:30 pm. The address is 620 Kenneth Street, Saanich, BC V8Z 2B9. There's screenshots from Google maps on page 3 below.

The major business is the election of the Executive Committee for 2025. We hope to run a swap and shop after the business is complete.

Please, please come and join us if at all possible.

Edward.

P.S. President's message will follow soon.



On the Radar!

**Annual General Meeting.
 Tuesday 19th November 7:30 pm.
 Horseshoe Club of Victoria.**



Regular General Meetings
 To be announced at Annual General Meeting.



Every Sunday Morning, 9am-ish to 11:30-ish at Harrison Model Yacht Pond, Dallas road.



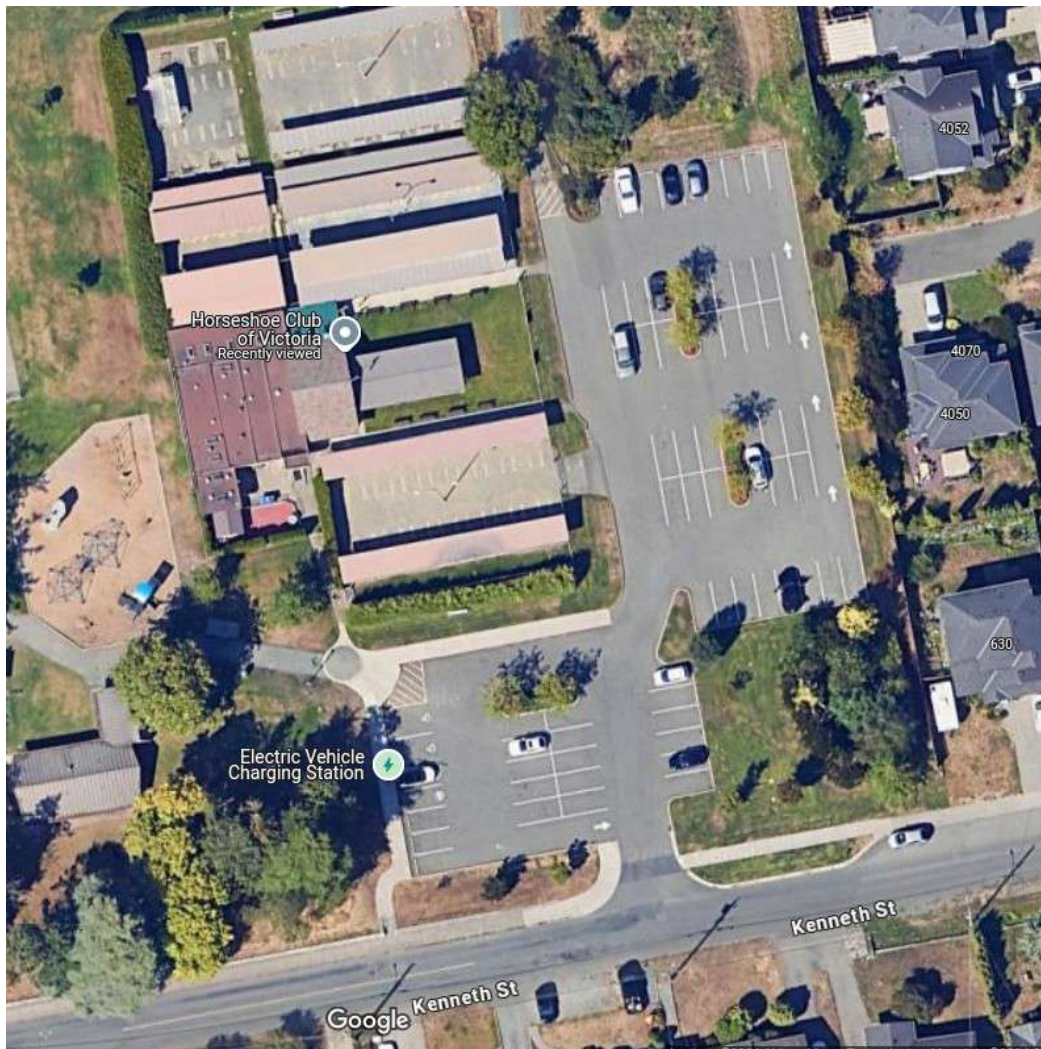
The Langford Lake Navy.
 Wednesday Mornings 9 :30 ish, Lake Point Park
 Westhill Drive.

Our New Meeting Venue Tuesday 19th November 7:30 pm.

We will meet at Victoria Horseshoe Club, which is at the top of this screenshot about 1/3 of the way from the left edge.

At the bottom is McKenzie Avenue just west of the Patricia Bay Highway.

Going west on McKenzie, turn right onto Glanford at the bottom left of the screenshot. Then turn right again onto Kenneth St. Go East on Kenneth half a block, turn left into the car park and abandon your car there.



This screenshot shows the car park at the Horseshoe Club in more detail. The Club is at the target circle labelled Horseshoe Club of Victoria. Go there and look for other members of VMSS.

Talk to them!

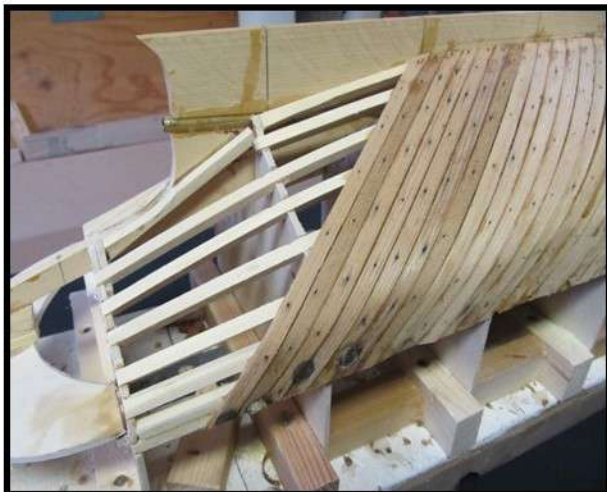
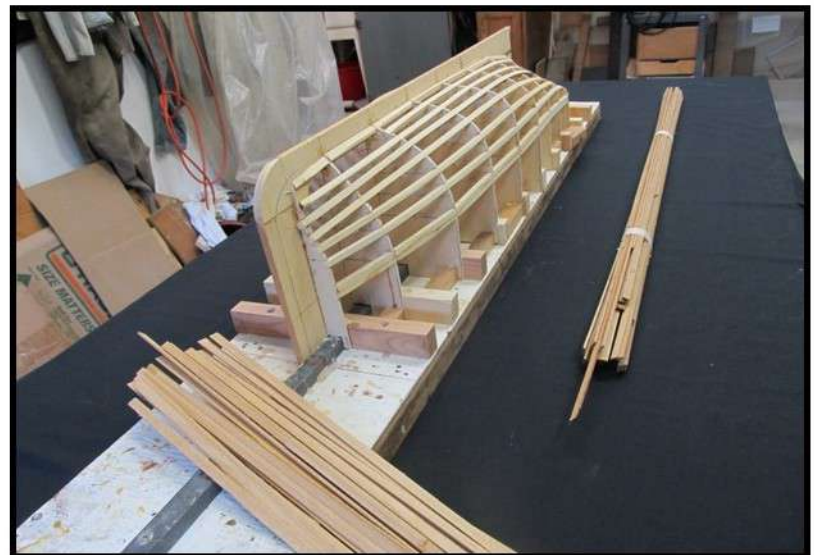
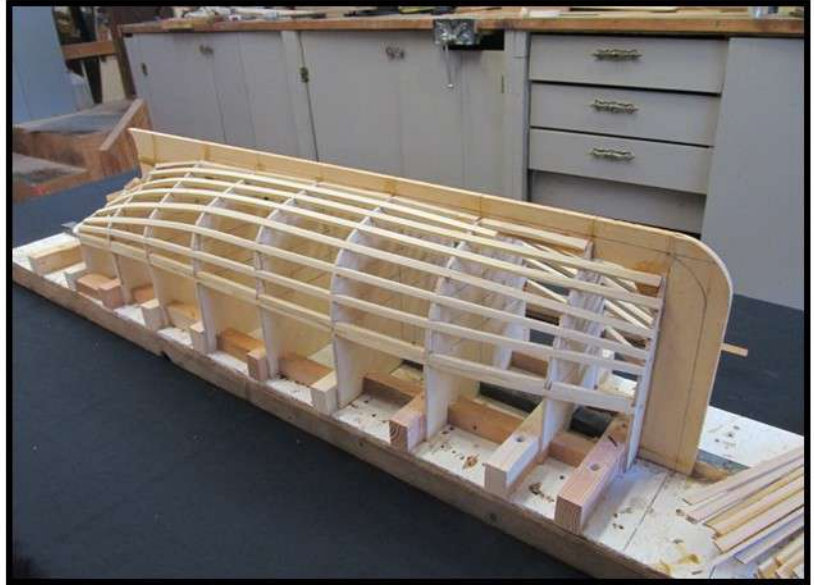
IN THE WORKSHOP:

Ken Lockley

Nov. 2024

These pictures, going clockwise show the progress once the frames are on the building board. First the length wise stringers are in place. I have used yellow cedar 1/4" x 1/4" notched into the frames and glued into position as you see them.

The first layer of red cedar planking is applied at a 45 degree angle to the building board. You will notice the bow and stern look empty and that's because I will use a filler block shaped to the desired bow and stern section as per plan. Portions of this first layer of planking is water soaked over night to make the bending easier.



These two pictures show the progress as of October 15/24. The hull is ready for rub strips, decking and bulwarks. The sub decking is 1.5 mil plywood and the finish decking will be dark mahogany with natural oil finish.

The hull as you see here has had two coats of a cold care epoxy liberally applied. I have installed lots of backing under the for mounting fixtures, such as bollards, having sufficient strength for holding screws etc.

Lead ballast is also coming soon and my estimate is 6-7 pounds will be required. I would like the vessel to finish up in the 12-13 pound range.

I have found this a idea weight to deal with. This length, 32 inches and 12 pounds works well for Harrison Yacht Pond. The picture to the right shows yellow cedar and red cedar combined in the hull construction.



Laminating stern rub rail

The picture on the right takes some studying.

I have made a plywood jig to bend three strips of wood laminated with "Tight Bond" glue. This curved structure is the rub rail around the stern of the vessel. I have found this is by far the best approach to get a very good fitting wrap around rub rail. Lots of clamps in use.



Here is where we are in the construction as of Nov. 4/24. MV Swell is a great build for me as I well remember seeing the vessel in my early days, pulling barges of sawdust out of Victoria's inner harbour area. I have had all the R/C equipment in the hull and functioning and ready for a later installation. Once the port side bulwarks are installed I will start the hull painting and final deck trim. When viewing the pictures, start to the right clockwise and that's the order of construction. The clear wood deck is Mahogany giving that old aged look.



Edward White,

Our Binnacle Editor is retiring after completing his 84 issues. As a member of the club and a steady contributor to the newsletter I would like to Thank Edward for a outstanding job in the production of all the issues and many historical articles he has written.

December 2024's "Binnacle" will be his last and I understand a new editor is in the wings .

DENTON CUP RESULTS :

We completed 2024 series of the Denton Cup on October 6/24. In both the Summer Heat and the October Heat we had good turn outs and lots action on the pond.

Each time we have any type of special event at the pond I think how lucky we were that Mayor Claude Harrison in 1954 felt the city needed a yacht pond. Also with city budgets getting tighter the city has managed to keep the pond operational all this years , 75 years.

This years winner Frank Lohner. Picture by Ron Hillsden



Zhiyuan, Naval Gunnery, and Modelling at 1:1

One of the most interesting parts of naval history to me is the transition from the sailing battleship of the Napoleonic war period to the dreadnought of the first world war. Especially of gunnery.

I am going to tell part of this story around that of a single ship, the Chinese cruiser Zhiyuan, (Chi Yuen).



The history of the ship itself is fairly short and quickly told. She was ordered as one of a pair in October 1885 from the Armstrong Whitworth yard in Elswick, Newcastle-on-Tyne, England. She was completed in July 1887.

Her specs from Wikipedia are:-

Name	Zhiyuan
Ordered	October 1885
Builder	Armstrong Whitworth, Elswick, England
Laid down	20 October 1885
Launched	29 September 1886
Completed	23 July 1887
Fate	Sunk in combat, 17 September 1894

General characteristics

Type	Zhiyuan-class protected cruiser
Displacement	2,300 long tons (2,300 t)
Length	268 ft (82 m)
Beam	38 ft (12 m)
Draft	15 ft (4.6 m)
Propulsion	Compound-expansion steam engine, two screws 4 x boilers

Speed	18 kn (33 km/h; 21 mph)
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Capacity 510 tons of coal
Complement 204–260 officers and men

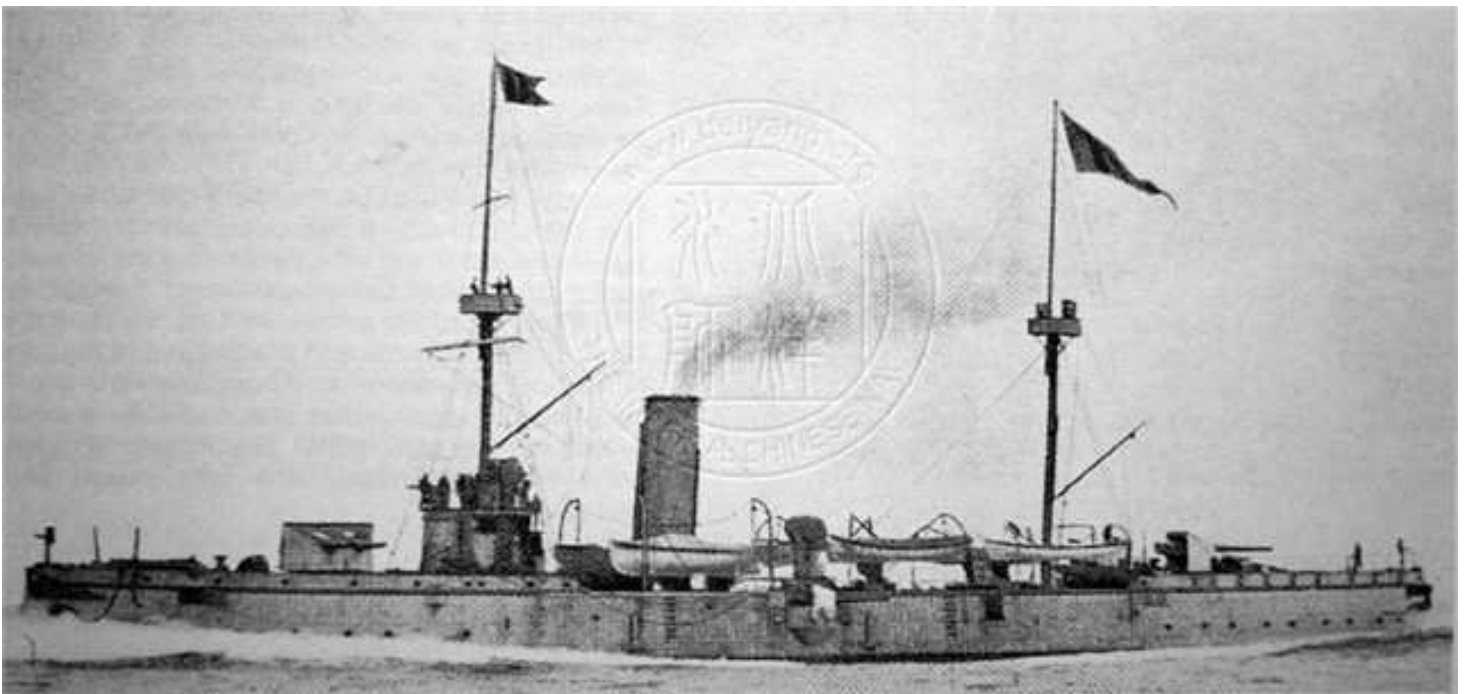
Armament

- 3 × 8 in (20 cm) Krupp guns
- 2 × 6-inch (15 cm) Armstrong guns
- 8 × QF 6-pounder Hotchkiss guns
- 2 × QF 3-pounder Hotchkiss guns
- 8 × 1-pounder guns
- 6 × gatling guns
- 4 × above water torpedo tubes

Armor

- Deck armour: 4 in (10 cm) (flat), 3 in (7.6 cm) (slope)
- Gun shields: 2 in (5.1 cm)

Both ships were assigned to the Beiyang Fleet, and she was captained by Deng Shichang throughout her life.



She was part of a flotilla which toured ports during the summer of 1889.

Zhiyuan's sole action was at the Battle of the Yalu River on 17 September 1894 during the First Sino-Japanese War. During the battle, she came under heavy fire from the Japanese forces. Having been holed, Deng ordered for the ship to ram an opposing vessel. She was destroyed by a major explosion as she closed, either by a hit on one of her torpedo tubes, or from a Japanese torpedo.

This heroic attack, has become embedded in popular culture in the People's Republic of China. A replica of the Zhiyuan was constructed in 2014 at the Port of Dandong, and is now a floating museum there. (That's the 1:1 scale modelling referred to in the title.)

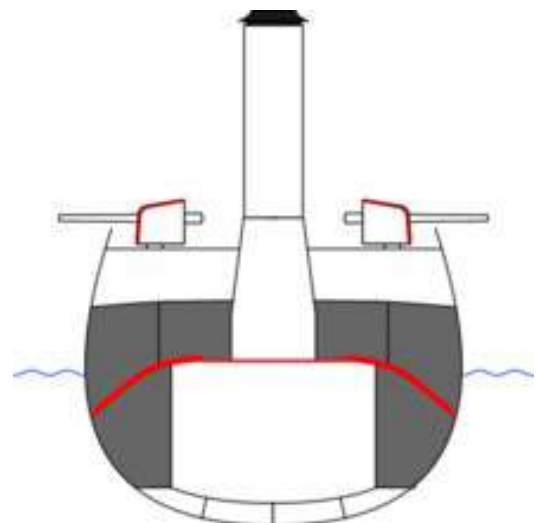


The actual wreck of the Zhiyuan was discovered in 2013 after a 16-year search. Artifacts from the wreck continue to be retrieved as the surrounding seabed is searched.

In the specifications above, you may have missed the words "protected cruiser" in the Type description. This is, in fact, a very specific description of a ship type which had no external armour, but a lighter armoured deck internally, protecting the machinery spaces and, presumably, magazines from shrapnel from shells exploding above this internal deck. Here's a schematic and explanation from Wikipedia :-

"A schematic section of a protected cruiser illustrating the protection scheme. Red lines delineate the armoured deck and gun-shields, and grey areas represent the protective coal-bunkers.

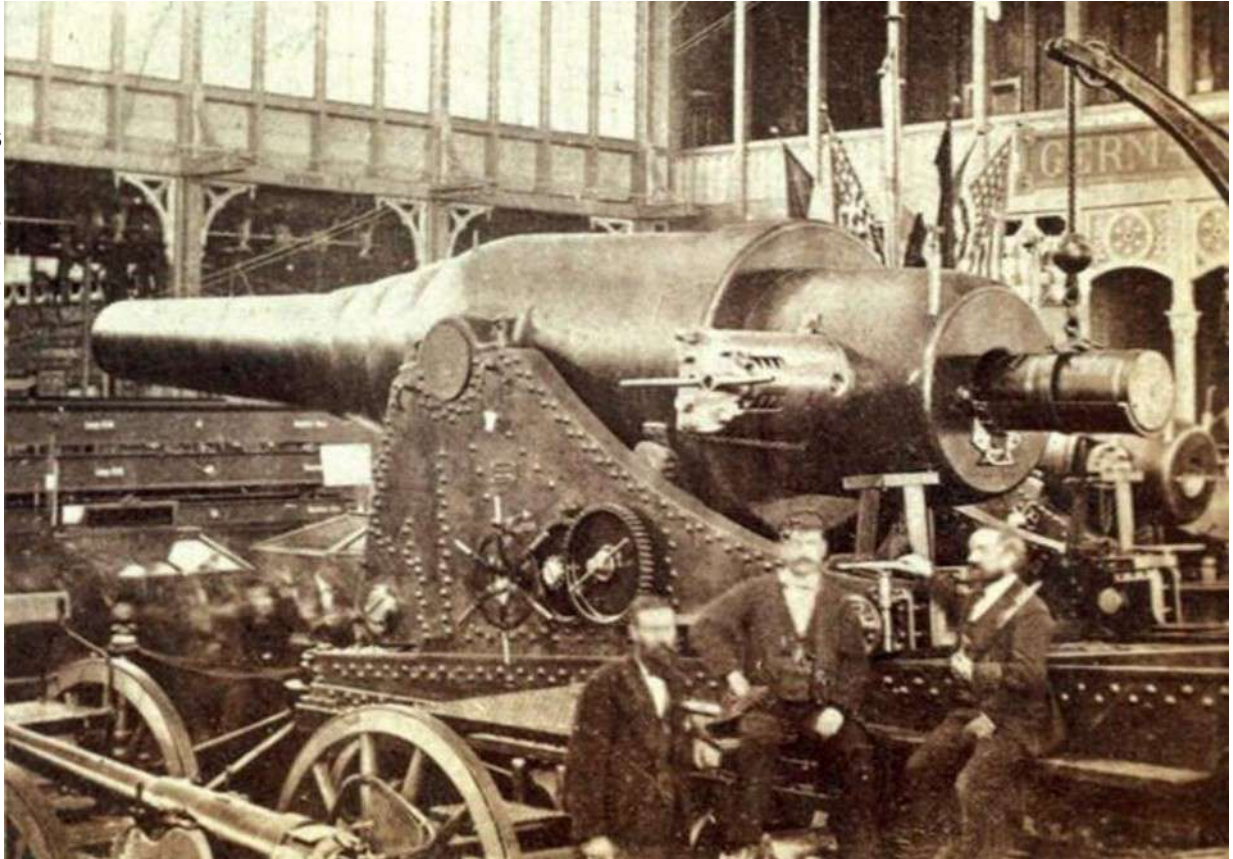
Note that the deck is thickest on the slopes, that the upper coal bunker is divided longitudinally to allow the outer layer of coal to be maintained while the inner bunker is emptied, and the watertight double-bottom."



In Zhiyuan the central, flat portion of this armoured deck was 4 inch steel and the sloping portions 3 inch.

The reason for this design was the development of armour-piercing shells to the point where external armour capable of resisting them was so heavy as to reduce the speed capability and mobility of the cruiser type to uselessness. This was a period before the development of large calibre quick-firing guns, so the speed of a cruiser was its main protection.

Now we get to the main point of this article, the offensive armament of Zhiyuan. The main guns were three 8 inch Krupp breech loaders, two on a hydraulically powered rotating platform on the foredeck, and one on a manually powered platform aft. These would probably need at least 45 seconds to reload. Krupp's barrel construction was based on his development of the Bessemer furnace to produce cast steel of high quality. Krupp was able to produce built-up gun barrels of thinner inner sleeves re-inforced with annular rings.



The cast iron smooth bore cannon had reached its limit. The quest for longer range and accuracy at that longer range, together with the punch to penetrate ships' armour, meant that shells had to be:

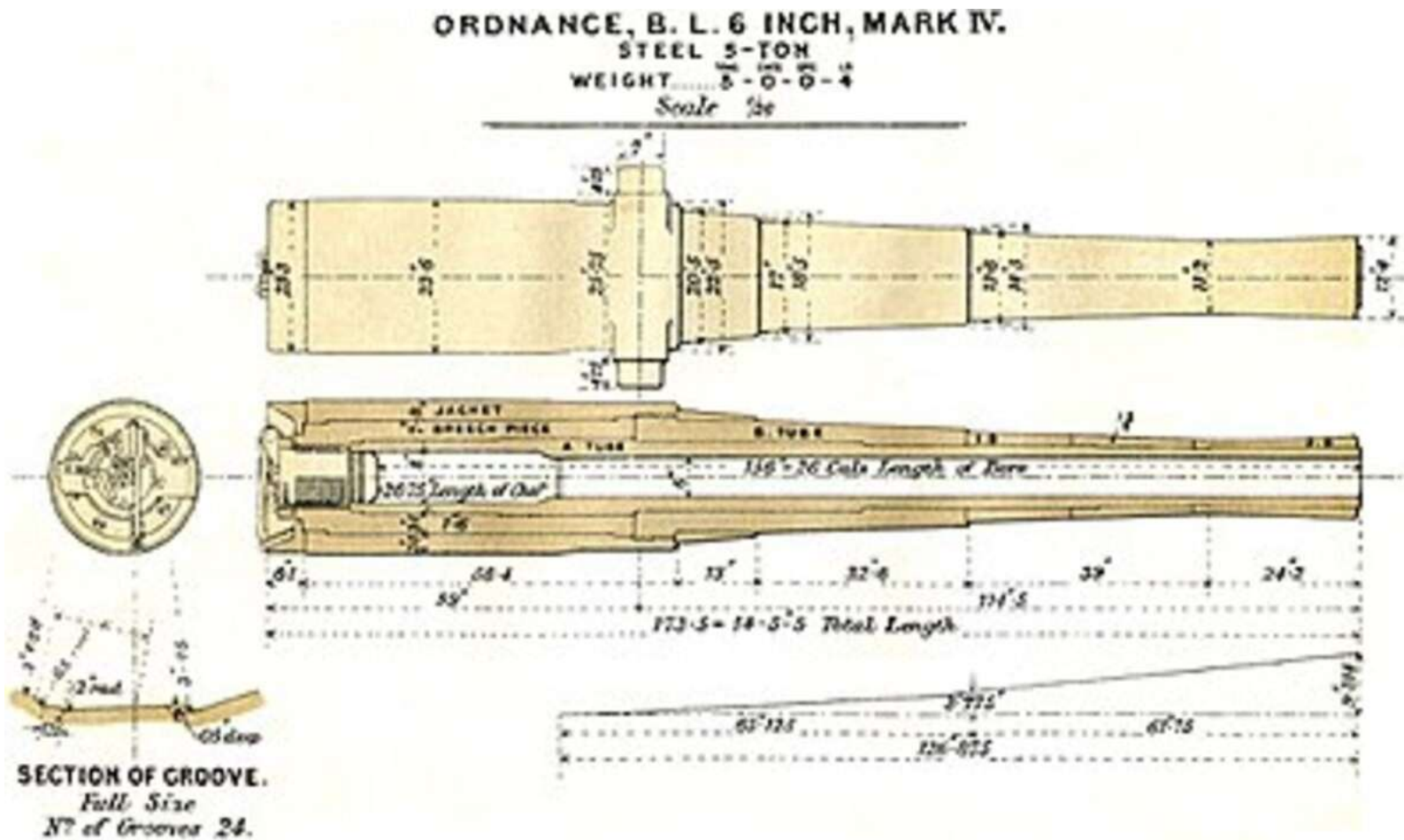
- * Cylindrical in section, to get a sectional density (weight to frontal area ratio) that could carry their punch through longer distances.
- * Have spin, to stabilize them and keep up the accuracy and reduce the air resistance. Barrels had to be rifled.
- * Have higher muzzle velocities, for flatter trajectories and long range. To get this, the pressure from the explosive behind the shell has to increase.

Cast iron has relatively little elasticity. Under tension it stretches only slightly before a brittle fracture occurs. So in a cannon, the thickness of the walls has a limit of thickness before cracks develop from the bore outward without necessarily showing on the outside. Once they start, they progress with each subsequent shot and the likely result is a catastrophic burst. So practically, the thickest that a cast iron cannon wall can usefully be is about half the calibre of the bore.

Steel has a much higher elastic range. So it can stretch under pressure and return to the original size when the pressure disappears. It behaves somewhat the same under compression.

So Krupp, with his new mastery of the Bessemer process, was able to forge long, steel tubes that could be rifled for the bore of his guns, and then later more steel tubes that could be fitted around the bore of his larger calibres to re-inforce it as it stretched under the firing pressure.

Next in bore size were two 6 inch Armstrong guns. These were mounted on sponsons at the midships beam. Armstrong had developed a barrel construction consisting of a wrought iron inner tube, onto which were heat shrunk a series of wrought iron coils to hold the inner in compression. The coils do not show in the view of the Armstrong gun below, but I assume that the outer tubes were forged from wrought iron wrapped in a spiral around a mandrel.

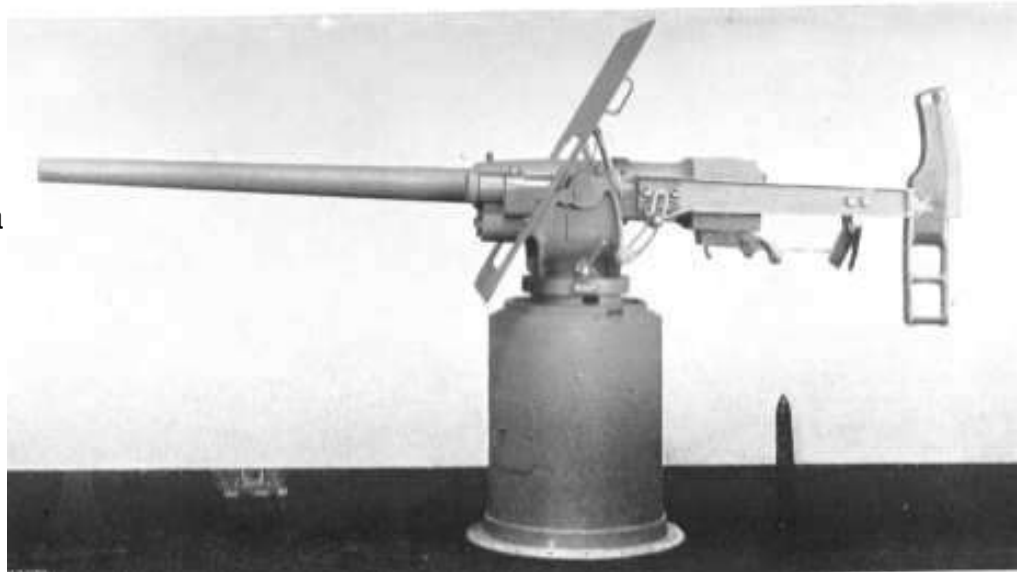


Wrought iron was iron re-heated to the point where the slag was molten while the iron was still solid. Working the iron at this temperature expels most of the carbon with the molten slag, leaving behind what is essentially mild steel with a fibrous structure around remaining silicate inclusions.

The idea behind this shrunk coil construction was that the maximum efficiency of the bore would be when the pressure of firing the gun would take the bore from its elastic compression limit up to its elastic tension limit. That would make the gun the minimum weight for the shells and powder cartridges that it used. The shells were cast iron with a thin lead coating to engage the rifling. The powder cartridges were also fitted with a lubricator disc, which followed the shell down the bore and cleaned and lubricated it ready for the next shot.

But both the Krupp and the Armstrong guns were slow to fire. Shells, cloth powder cartridges, and detonators were three separate items. They were heavy to handle, meaning the guns had to be brought back to a fixed position for re-loading and then retrained to the firing position once loaded. All of this took time.

Now at the time Zhiyuan was built, the state of the art in quick-firing guns was the 6 pounder Hotchkiss. (2.24 inch bore) This was a quick-firing gun using a brass casing to contain powder and detonator with the shell crimped lightly into the mouth of the casing. (Just the same as a modern rifle cartridge).



Hotchkiss 6 pounder on recoil mount with round in background

Using this complete cartridge, which weighed only 9.7 lbs. the crews could achieve 12 rounds a minute. It was intended to provide a defence against fast small craft, torpedo boats and the like. Zhiyuan had 8 of these together with 2 smaller 3 pounders.

(The 6 pounder Hotchkiss was to be hugely successful, close to 4000 of them being produced in the UK alone, and many, many more all around the world. The last of them in active service was in the Icelandic Coast Guard, who finally replaced them in 1990.)

Then, on Zhiyuan, there were 8 1 pounders (1.5 inch bore), and 6 Gatling guns, probably using the American 45/70 cartridge and, to top it all off, torpedo tubes front and rear just above the waterline. The specification says there were 4 torpedo tubes but the drawing shows just one at each end. Maybe it was just two torpedoes for each tube that she carried.

Anyway, she fairly bristled with weaponry all around. And at 18 knots she was fast and manouverable.

It is worth re-visiting the story of Zhiyuan's end. The Battle of Yalu River against the Japanese fleet was a major defeat for the Chinese, following another defeat on land only the day before at Pyonyang.

The most immediate cause was the loss of the flagship's signalling mast, along with the disabling of the fleet admiral Ding Ruchang and his senior officers with the first shots in the battle. This left the remaining ships of the Chinese fleet fighting as independent pairs for the rest of the action.

The Chinese authorities eventually came to blame the loss on corruption during the preceding few years, leaving the ships' crews largely untrained and with very poor, old ammunition, and not enough of it. The corruption was blamed on Li Hongzhang, the Chinese statesman, diplomat, and general who had recruited Ding Ruchang to head the fleet although his previous commands were in the army.



THE CREW OF THE "CHIH YUEN." ALL BUT SEVEN OF THE CREW WERE DROWNED ON THE SINKING OF THE SHIP.

Anyway, Captain Deng Shichang of the Zhiyuan was seen as heroic and blameless, especially because the seven survivors of the Zhiyuan told that Deng, along with his dog, chose to drown with his ship rather than be rescued.

As a modelling subject, the Zhiyuan could hardly be bettered. Her variety of armament makes the detail absolutely fascinating, and her origin in a British shipyard at the height of the industrial revolution gives a pathway into world history in all kinds of ways.

Add to that, there is actually a plastic kit in 1:350 scale available from Bronco Models to serve as a prototype.

(I'm not telling you where, because I'm thinking of ordering it for myself.)

We thank our corporate supporters



Our Website is,
vmss.ca