

## HMVS Cerberus:



## The Damaged Guns

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## Summary

Of the four 10 inch RML guns originally fitted to Cerberus, the two in the aft turret were both replaced as each was damaged.

On 26 August 1884 the right gun in the aft turret developed 4 cracks in its barrel when a common shell burst as it was leaving the muzzle.

A gun being kept in reserve for HMS Nelson (not HMVS Nelson) in Sydney was inspected and found to be a suitable replacement. This gun was most likely originally fitted to HMS Hercules. The gun was about to be delivered to Melbourne by Commodore Erskine in HMS Nelson when the ship's services were required to carry out the annexation of part of New Guinea.

Presumably the gun was offloaded in Sydney as it was eventually transported to Melbourne on the SS Dingadee. It was installed in Cerberus on 12 February 1885. The damaged gun was sent to Britain aboard the ship Old Kensington.

The left gun in the aft turret was damaged when its right trunnion cracked during firing practise. The damage was first noticed on 16 September 1897.

A Mark II replacement gun was obtained in Britain and shipped to Melbourne aboard the ship Australasian. It was installed in Cerberus on 30 November 1898.

The damaged gun which had been sent to Ballarat in the hope that it could be repaired was mounted on the foreshore of Lake Wendouree for display purposes. Eighty-eight years later it was gifted to the Australian Navy and is now displayed at HMAS Cerberus on the shores of Westernport Bay.

updated 25 January 2011

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### First Damaged Gun, 1884 (with four fractures)

location: right gun, Aft Turret

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*The Herald*, 28 August 1884

**PREMATURE EXPLOSION**

**ON BOARD THE**

**IRONCLAD CERBERUS**

**A TURRET GUN SERIOUSLY FRACTURED**

**A COSTLY SHOT.**

On Tuesday last it will be remembered the ironclad turret ship Cerberus, of the Victorian Navy, went down the Bay some distance with a party on board, the object of the trip being to afford the men of the Naval Reserve an opportunity for gun practise.

Some particulars of the trip were given in the morning contemporaries yesterday but strange to say all mention of the most important incident of the trip is omitted. The incident is nothing less than an accident by which the usefulness of the big turret guns has been largely injured, if the gun has not been rendered useless. The facts are that after the fifth shot the muzzle of No. 1 gun (in the after turret was being wiped out, as is usual, when the men employed in the work discovered that the steel tube had been seriously fractured. The order to cease firing was immediately given on the discovery being reported. Subsequent examination disclosed the extent of the injury. The gun is an R.M.L. 10-inch 18 ton piece of ordnance and is said to have cost £16,000. It carries what is known as a 400lb common shell and it was these projectiles which were used on Tuesday last. The damage was caused by the premature explosion of one of their shells.

From the examination it appeared that the shell burst just at the muzzle. It seems as if something went wrong with the projectile for the steel tube has a mark upon it which presents the appearance of having been chiselled out. The extra pressure thus required to expel the shell must have been serious and perhaps caused a premature explosion.

At any rate there are three fractures in the steel tube, and the supposition is that the shell commenced to burst as it was receiving its last revolution at the mouth of the gun. The first fracture is a straight crack 3 inches in length, the second is an eccentric crack 2 inches in length and an eccentric fracture extending 4½ inches, and the third a hair split at the mouth of the tube.

One statement is, that the damage was discovered immediately after it was done; and another is that two shots were fired before the fractures were seen, the powder and smoke in the tubes hiding them until they were sponged away, which is not done every shot. It is admitted that had the shell exploded in the chamber the consequences must have been very serious and would probably have involved loss of life and great injury to the turret, if not the total destruction of perhaps two guns, for it will be remembered that the Cerberus carries two of these large pieces of ordnance, trained almost parallel rolled in each of her two turrets. As it is, the utility of the injured gun is seriously impaired.

The naval authorities admit that the injury cannot be repaired, but it is intended that the gun may still be used, although it would not be safe to attempt to fire projectiles of the same weight or size at those hitherto employed.

The gun is not likely to be condemned, but it is plain that the efficiency of the Cerberus must be to a considerable extent impaired. Of course two new guns of a more modern character might be obtained for the after turret, but the cost would be considerable. No doubt further information on the subject will be elicited in Parliament.

Since the above was written, it has transpired that the fracture was more serious than we were led to believe. One is 13 inches long, another 7 inches, and the third 5½ inches, and the openings are wide enough to allow the blade of an ordinary penknife to penetrate. The largest and most serious fracture extends through the A or steel tube to the B or outer tube. Having thoroughly examined the injuries, the conclusion has been arrived at that the gun is rendered quite unsevicable, It cannot be repaired here, but will have to be sent to England, unless it be thought more advisable to obtain other guns for the turret; and it may be pointed out as an argument in favor of the latter course, that at the present moment the Admiralty is abolishing guns similar to those of the Cerberus, and replacing them with breech loaders.

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*The Argus*  
**29 August 1884**

When the guns of the Cerberus were subjected to the usual examination after the firing practice on August 26, it was found that one of the two 18-ton guns in the after turret was so much damaged as to be practically unfit for further use, the "A" tube, as it is called, which forms the interior portion of the weapon, being split in no less than four places. The tube is of Firth's steel, about 3½ inches thick, and is surrounded at the muzzle by about 2 inches of metal, so that a very great strain would be required to break it. The cracks are all near the muzzle. Three of them extend from the inner surface of the tube to the surrounding metal, and are large enough to admit the point of a knife, while the fourth is an irregular longitudinal breakage, 16in. or 18 in. in

length, commencing a few inches from the mouth, and proceeding along the mouth of the tube.

The weapon, which is known as the "right after-turret gun," was fired four times on August 26, and the charge of powder used was only 40lb. The battering charge is 70lb., and as the weapon is intended to be loaded to this extent when required, the fractures cannot be attributed to the amount of powder used. The practice was with common shells, without fuses, weighing 400lb. each, and it is to the bursting of one of these projectiles in the gun that the mishap is attributed. Some of the shells are weak, and liable under certain circumstances to explode at the time of discharge.

An exactly similar incident occurred on board the armor-plated ship *Alexandra* at the recent bombardment of Alexandria, the cause in this case also being supposed to be the explosion of a shell. The original cost of the Cerberus gun was about £1,700, and it is estimated that to refit the weapon with a new steel tube would cost about £400. The repairs would involve boring out the shattered tube, and the introduction of a new one by means of a process known as "shrinking on." It has not yet been decided, however, whether to go to expense of making the present gun effective or to purchase a new one. In the former case the gun would have to be sent home, and there would be considerable delay and expense incurred for freight, insurance and other charges. It is stated that the injured gun is not absolutely useless for war purposes, but as some risk would be run in bringing it into service, it is not to be fired again in practice while in its present condition. The injury to the gun has been officially reported by Captain Thomas to Colonel Sargood, and the matter will probably be considered at the next meeting of the council of defence.

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*The Williamstown Advertiser,*  
**30 August 1884**

**IMPORTED ARMAMENT  
£16,000 WORTH FRACTURED**

A 10 inch R.M.L. 18 ton gun on board H.M.V.S. *Cerberus* whilst engaged in firing a 400lb common shell on Tuesday was fractured in three places. £16,000 is said to be the value of this piece of ordnance.

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*The Argus,*  
**1 September 1884**

The official report furnished by Captain Thomas on the fracturing of the after-turret gun of the *Cerberus* states that there are three fractures in it, 13 inches, 7 inches and 5½ inches in length respectively. It is considered that the damage was done by the bursting of one of the large shells at the moment it was leaving the gun when fired from it at practice on Tuesday last. The gun is rendered perfectly unserviceable by the accident, and Captain Thomas suggests that an application should be made to the Admiralty for a gun of the same description. He states that similar guns are now being removed from the ships of the Royal Navy, and replaced by breechloading guns. If the request be not complied with it will be necessary to purchase a new gun, or send the old one to England to be repaired. The Minister of Defence has not yet positively decided what will be done, but it is almost certain that he will recommend that a fresh gun be procured either from the Royal Navy authorities or a manufacturer.

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*The Williamstown Advertiser,*  
**6 September 1884**

It would appear that the gun on board H.M.V.S. *Cerberus* has been rendered quite unserviceable by the recent accident, the fractures, three in number, being 5½, 7 and 13 inches respectively. The damage in the opinion of Captain Thomas has arisen from the shell bursting before leaving. It will either be necessary to send this gun to England for repair or purchase another.

*The Weekly Times*  
**13 September 1884**

The commodore of the Australian Naval Station can, it is thought, supply a gun of the Cerberus class from Sydney.

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*The Williamstown Advertiser,*  
**13 September 1884**

Gunner Tubbs of the naval forces, and the armourers' fitter proceeded to Sydney at once (says *The Argus*) to see if the 18 ton gun proposed to be purchased for the Cerberus from the Admiralty is suitable for that vessel.

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*The Argus,*  
**18 September 1884**

Gunner Tubbs, of the naval forces, was sent to Sydney a few days ago to examine an 18 ton gun which Commodore Erskine had agreed to recommend the Admiralty to sell to the Victorian Government for the Cerberus. He has reported that the gun will fit the carriage in the after turret, for which it is wanted, and the Minister of Defence will take steps to make the purchase.

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*The Argus,*  
**20 September 1884**

A telegram has been sent to *The Agent*—general by the Minister of Defence, instructing him to at once request the Admiralty to sell the Victorian Government the 18 ton gun now in Sydney, and offered for the Cerberus by Commodore Goodenough. The gun has been held in reserve for HMS Nelson, and is equally suited for the Cerberus.

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*The Australasian*  
**4 October 1884**

The Minister of Defence on Wednesday received a telegram from Commodore Erskine, who is now in Hobart, notifying that HMS Nelson will arrive in Hobson's Bay about the 17th inst. He will then hand over the 18-ton gun which the Admiralty has agreed should be sold to our government for the Cerberus.

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*The Australasian*  
**27 December 1884**

Some time ago the Admiralty consented to an 18-ton gun belonging to HMS Nelson being sold to the Victorian Government for the Cerberus, but the delivery of the weapon has been delayed, in consequence of Commodore Erskine having had to visit New Guinea. Now he is back in Port Jackson again, the Minister of Defence hopes soon to have the gun in Melbourne. He has written to the commodore requesting that the transfer be made as soon as possible.

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*The Argus*  
**10 January 1885**

Captain Thomas, commandant of the Victorian naval forces, on Saturday last left Melbourne for Sydney on business connected with the defences of the colony. He had an interview with Commodore Erskine on various confidential matters. He also inspected the spare 18-ton gun which is to replace the Cerberus piece of the same size and pattern which a little while ago had the tube fractured while shell was being fired. The gun, which is now among the Imperial military stores in Sydney, has been re-tubed, but Captain Thomas found it to be in excellent condition, and quite equal to the accounts which he had received of it. The gun will be brought over as soon as the contract for its freight is adjusted with Messers Wm. Howard Smith and Sons, who are to communicate on this subject with the Minister of Defence. The damaged gun will be sent to England to be re-tubed. It could be used in its present condition, and if it were to be soon required it would be kept in the colony, and the crack so pierced at its base that it would not extend further, but happily the gun can be readily spared.

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From the Victorian Government's *Register of Guns in Naval Charge, 1889* it appears that the gun acquired from HMS Nelson in Sydney was gun number 8. As this replacement gun had been retubed it is quite possible that it was one of the guns damaged on HMS Hercules, which was the first ship to carry Mk I 10 inch RML Guns. Hercules carried eight of these guns. See the appendix

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*The Argus*,  
**14 January 1885**

The purchase of the 18 ton gun intended to replace the damaged piece of ordnance on the Cerberus from the New South Wales Government has been concluded and Captain Thomas proceeded yesterday to make arrangements for the removal of the gun from Sydney to the Cerberus.

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*The Argus*,  
**11 February 1885**

The S.S. Dingadee, from Sydney, passed Wilson's Promontory at 20 minutes past 10 a.m. yesterday. The Dingadee has on board the turret gun which was secured at Sydney to replace the one which was split on board the Cerberus. She will tranship it to the Cerberus today.

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*The Argus*,  
**12 February 1885**

The 18 ton turret gun obtained from Sydney, to replace one which was injured on the Cerberus lately, was brought to Melbourne yesterday by the S.S. Dingadee. The steamer went alongside the railway pier, Williamstown, yesterday morning, and the gun was lifted up on the pier. Captain Thomas and his officers superintended the operations. The Cerberus will be taken alongside the pier today to have the gun placed in the turret.

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**HMVS CERBERUS LOG,  
12 February 1885**

**4.00 am** raised steam in Auxiliary boiler to work Capstan. (sic)

**5.00** turned the hands up

**5.10** Breakfast

**5.45** turned the hands up to get ready for slipping moorings.

**6.00** Steamers William & Advance came alongside. Hands from Nelson, Victoria & Albert came on board.

**6.30** slipped mooring & proceeded to Railway pier Williamstown.

**7.40** moored alongside of pier & commenced to get condemned gun out.

**12.00** finished getting gun out.

**1.00** Hands employed slinging gun.

**5.00** finished getting gun in & returned gear.

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*The Argus,*  
**13 February 1885**

The turret ship Cerberus was taken alongside the railway pier, Williamstown, yesterday, and placed under the shears. The injured gun was removed from the turret, and placed on blocks on the pier, and the 18 ton gun which was brought round from Sydney, was lowered into the turret. The work was done by men from the Cerberus and Nelson, under the direction of the officers.

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*The Williamstown Advertiser,*  
**14 February 1885**

The S.S. Dingadee brought the 18 ton turret gun obtained from Sydney, to re-place the one that some weeks ago was fractured on board the Cerberus, to Williamstown on Wednesday where it was landed Captain Thomas being present. On Thursday the huge missile was shipped on board the Cerberus.

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*The Argus,*  
**3 March 1885**

The large iron clipper ship Old Kensington was moved across from the railway pier, Port Melbourne, yesterday, to the railway pier, Williamstown. She will be placed under the shears to take in the 18 ton gun from the Cerberus. The gun is being sent to England to be re-tubed, if possible.

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*The Williamstown Advertiser,*  
**7 March 1885**



The ship Old Kensington has been deputed to be the bearer to England of the 18 ton gun injured some time back on board H.M.V.S. Cerberus. It will be refitted in London with a new tube.

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## Second Damaged Gun, 1897 (with cracked trunnion)

location: left gun, Aft Turret



**The second damaged gun ( a Mk I ) while "on holiday" in Ballarat for 89 years.**

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HMVS Cerberus Log Book  
**16 September 1897**

J. White (Armourer) discovered fracture in the right trunnion of the left gun after turret.

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The Secretary of Defence

VICTORIAN NAVAL FORCES

H.M.V.S. Nelson  
Port Melbourne, **28 October 1897**

Memo,

With reference to the re-arming of the "Cerberus", I consider that as one of the 10" guns is disabled, now would be a fitting opportunity to undertake the work. In the first place, we have 4 – 8" B.L. guns available and 800 rounds of ammunition for them. I suggest that with a reduced charge for which a range table could be easily calculated, these guns would be quite servicable and sufficiently effective for the work here, without being chasehooped, this would save at least £3,000.

The cost of mounting the new guns in the "Abyssinia" and "Magdala" was as follows

Four (4) Vavassour carriages complete in every way including spare parts	£7,400
Packing and delivery about	£600
Erection on board	<u>£1,400</u>
Total	£9,400

One of the 8" guns is chasehooped already, and I estimate that if the other three were sent home, chasehooped and re-fitted, the whole work could be done at a cost under £14,000, but, of course Sir W. Armstrong could give exact estimates. There is a lot of the fitting in the ship that could be done by the men in the service with a little extra help.

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*The Argus,*  
**19 May 1898**

"The muzzle-loading 10in. 18-ton gun which the Imperial Government has presented to the Victorian Defence department to take the place of the damaged gun of the Cerberus has not yet come to hand, but it is expected to arrive from England in a few days. The fate of the damaged gun has not so far been decided, but the Minister proposes consulting with Commander Tickell as to the best course to be adopted with regard to it. The new weapon will cost the Victorian Government about £300, the expenses in connection with the "gift" reaching that sum."

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*The Argus,*  
**29 September 1898**

**GUN FOR THE CERBERUS.**

To be shipped next month.

LONDON, Sept. 28

The 10 inch gun for the Victorian war ship Cerberus, which was selected a few weeks ago by Lieutenant Colquhoun, who is undergoing a course of instruction in England, will be shipped to Melbourne by the steamer Australasian, of the Aberdeen line, which leaves London on October 11.

[In consequence of the fracture of one of the trunnions of the turret gun of the Cerberus, the Admiralty agreed to allow the Victorian Government a new gun at one tenth its cost, bringing the price down to £150. The cost of the gun when landed in Melbourne will be about £250.]

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*The Age,*  
**29 September 1898**

**GUN FOR THE CERBERUS**

LONDON, 28th September.

The 10 inch muzzle loading gun of obsolete type, which the British Admiralty is sending to the colony of Victoria to replace a similar gun which is defective on the Victorian turret ship Cerberus, has been shipped for Melbourne in the steamer Australasian.

[This gun the Admiralty has no use for, having discarded muzzle loaders; it is of the same type as the guns of the Cerberus. The British Government lets Victoria have it at one-tenth its original value, or about £150, and the colony pays transport and cost of mounting, making in all about £250 or £300]

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*The Ballarat Courier*  
**28 November 1898**

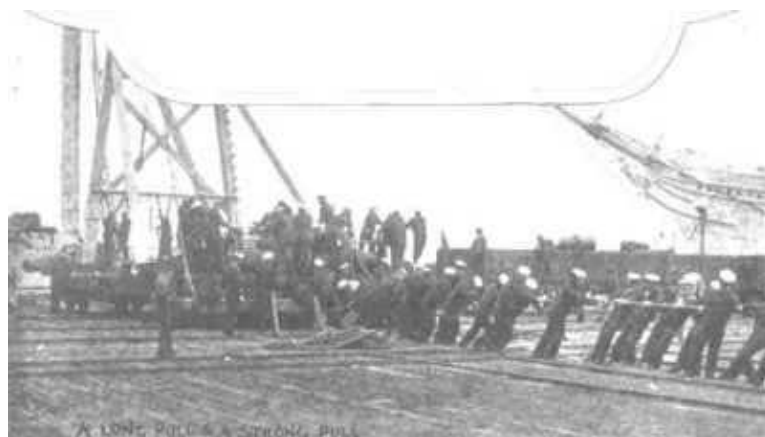
A new gun to replace the damaged weapon on board the Cerberus has arrived from England on board the steamer Australasian, and will be mounted as soon as possible.

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*The Weekly Times,*  
**10 December 1898**

### **MOUNTING A GUN ON THE CERBERUS**

The new gun which was mounted on HMS (sic) Cerberus on Wednesday, the 30th ult is a 10-inch muzzle-loading gun, weighing 18 tons. It is 15 ft in length and throws a 400 lb shell, taking a powder cartridge of 70 lbs. The new gun was one of several which the Imperial authorities in England did not require, and was sold to the Victorian Government for £150. Probably the carriage and expenses cost another £100. The gun is quite new, only three shots having been fired for testing purposes. A shell fired from the gun at a distance of 1000 yards would penetrate 11.7 inches of armour plate and at 4000 yards would penetrate 9 inches of armour plate steel. The average life of a gun of this description is 450 rounds. The gun, which was taken from the Cerberus, and which was replaced by the new gun, had only fired 207 rounds; but as one of the trunnions or arms by which the gun is suspended on the carriage was cracked, the gun was considered unsafe. How the fracture occurred is not known.



**"A long pull and a strong pull"**

The new gun was shipped out by one of the Royal Mail steamers, and was lifted onto the wharf. The Cerberus then came alongside, the turret roof was lifted, and the new gun was placed in position. The work was undertaken and supervised by the officers and armourers of the Naval Torpedo Depot. (This article was accompanied by three photos. The one showing the replacement gun being lowered into place appears at the beginning of this article.)



### **"In the Slings"**

photos courtesy of "Newspaper Collection, State Library of Victoria".

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*The Age,*  
**7 February 1899** BALLARAT, Monday

The condemned Cerberus cannon, presented by the Defence department to the citizens of Ballarat, was delivered at the Western railway today. The gun, which weighs 19 tons, is to be mounted in front of the pavilion of the botanical gardens, where there are already a number of "presentation cannons" of smaller calibre.

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*The Age,*  
**23 March 1899**

BALLARAT, Wednesday

The condemned Cerberus gun, recently presented to the citizens of Ballarat for the further "ornamentation" of the lawn at the Botanic Gardens, has entailed upon the city council an outlay of £77 12/- to place it in its present position, as follows:— Railway freight, &c., £22; cost of road carriage from the station to the Botanic Gardens, £36 cement, £4 12/- contract for mounting, £16. It is now considered that the discarded cannon in question is a somewhat expensive "ornament" for Ballarat.

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*The Sun,*  
**18 April 1987**

### **CERBERUS GUN'S TIMELY RETURN**

After nearly 100 years, an HMVS Cerberus gun has returned from its Ballarat holiday home to the Mornington Peninsula. The gun, built around the 1850's, was "on loan" to Ballarat after it was sent to the Phoenix Foundry in 1898 for what were found to be irreparable faults. It was originally an armament on the HMVS Cerberus, a vessel now resting at Black Rock. Ballarat Shire Council asked to have the gun for a monument, and there it stayed until the city returned it to the HMAS Cerberus last week. Ballarat council decided to give the gun back to help celebrate the navy's 75th anniversary last year. The official presentation will be made on March 5.



The second damaged gun, a Mark I, at HMAS Cerberus Navy Depot, Flinders.

## Known Gun Details

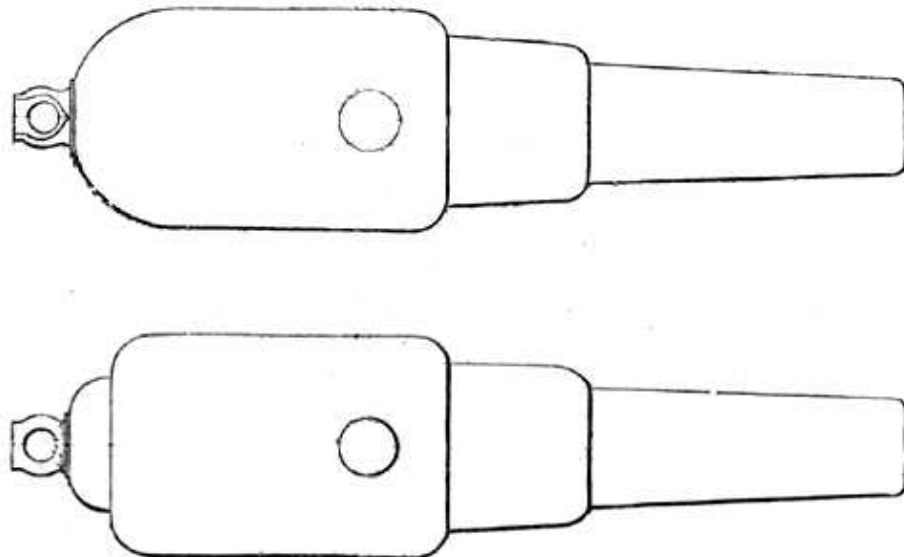
Year Mfg.	Mark	Weight ton cwt qtr lb	Number	Maker	Current location	Notes
<b>Fore Turret</b>						
1869 or 1870	I	17-18-1-0	18 or 24	Royal Gun Factory	HMVS Cerberus (left) currently on sea floor	
1869 or 1870	I	18-0-2-0	18 or 24	Royal Gun Factory	HMVS Cerberus (right) currently on sea floor	damaged during scrapping
<b>Aft Turret</b>						
?	II	17-18-2-0	?	Royal Gun Factory	HMVS Cerberus (left) currently on sea floor	installed 30/11/1898
1868	I	17-18-2-14	possibly 8	Royal Gun Factory	HMVS Cerberus (right) currently on sea floor	installed 12/02/1885
<b>Damaged Guns</b>						
1869 or 1870	I	?	possibly 25	Royal Gun Factory	returned to Britain	damaged 26/8/1884
1869	I	18-1-0-0	17	Royal Gun Factory	HMAS Cerberus Depot	damage noticed 16/9/1897

- A copy of the 1889 return of Victorian (colonial) Naval Ordnance discovered by Dr Bob Marmion in 2011 lists the four 10 inch RML guns as bearing numbers 8, 17, 18 and 24. A second entry lists the gun numbers as 24, 17, 18 plus 25 & 8 together. This could mean that gun 8 replaced 25 when it was damaged. (Gun 8 possibly being ex HMS Hercules.)
- This suggests that the guns originally fitted to Cerberus were numbered 17, 18, 24 and 25.

- The dates, manufacturer and serial numbers on the guns in Cerberus are no longer legible due to corrosion.
- The gun installed in 1885 was obtained from Sydney where it had been held in reserve for HMS Nelson. Gun number 8 may have been one of the three damaged guns from HMS Hercules which was retubed and used as a spare for the Imperial HMS Nelson.
- The gun installed in 1898 was obtained from Britain and was a Mk II gun.

Weight details from: *Victoria's Guns: A field guide.*, Major Bill Billett, Scienceworks Museum of Victoria, 1994.

Details on the Mark II Gun courtesy of Peter Webster Australian Coast Defence & Fortification Ordnance Information



Mark I (top) and Mark II guns.

## The Guns Today

### Aft Turret

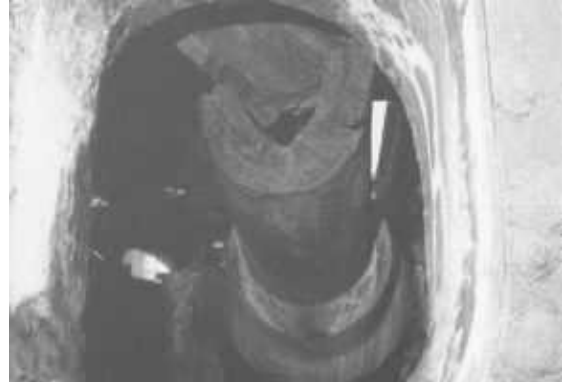


Given that the diving fraternity has been particularly vocal in the need to save Cerberus, it is fitting that the Aft turret guns are being so well safeguarded.

## Forward Turret



The left gun in the forward turret.



The right gun in the forward turret would seem to qualify for the title of "the third damaged gun". Apparently it was damaged by the use of welding equipment during attempts at scrapping the ship around 1924–6.

Photos by Glen Agnew, Parkdale Research 1989

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### THE GUNS OF THE HERCULES

*The Mechanics Magazine*, 22 June 1872

Naval artillerists are much excited by the disabling of the third 18-ton gun on board one of our finest iron-clads, the Hercules. More exact information has been received, which shows that a "common" shell, 400lbs. in weight, enclosing 26¼ lbs. bursting charge, exploded prematurely in the gun near the muzzle, splitting the interior steel tube in three places. One split is through the tube, and about 15 inches in length; and the other splits are three and five inches long respectively, but not quite through the tube; the condition of the outer coils is uncertain. The Hercules has five other 18-ton guns, which have not yet been disabled. It is alleged that the immediate cause of the premature explosion of the shell was a check in its exit by an unusual degree of wriggling in getting away from the increasing spiral. Such a check would throw the time-fuze out of the shell when the inflamed gasses would find free admission to the powder within the shell, and the explosion necessarily follow. We understand that the time-fuzes in use do not differ materially from the wooden ones generally in use for half a century, and which have not been found liable to disable mortars or such guns as the projectiles are free to escape from them without wriggling and wedging in the bore. This wriggling action is said to be greater in the case of the "common" 400-lb. shell, as it is more than three calibres in length, and is rotated on a bearing of six-tenths of an inch in each of seven grooves. But the time-fuzes were also thrown out of the Royal Sovereign's 9-inch, 250-lb. "common" shell, a month ago, at Spithead, causing the shell to break up prematurely, though happily without destroying the gun. Whether the time-fuzes can be fastened in so as to withstand the check at the muzzle remains to be seen.—"Standard."

### ANOTHER 18-TON GUN DISABLED

*The Mechanics Magazine*, 29 June 1872

Another of "the most magnificent guns in the world" has been obliged to be removed from Shoeburyness to the Royal Arsenal for repair, having had its inner steel lining split in three places by its own projectile. As usual, the splits are at the muzzle and not near the powder chamber. Though not very serious at present, the effect of repeated firing was regarded as likely to be so destructive, that though the accident occurred only on Tuesday, 18th June, the gun was dismantled on the following day, and examined by the Royal Arsenal artificers on Thursday, previous to removal. The cracks were three inches in length, one being right through the steel lining to the coils, on the "driving" side of the upper groove; and the third in a "land" through to the hole for the shot bearer pin. The premature bursting of a shell by the dislodging of the fuze composition, on the concussion of the foremost studs, on coming into bearing twelve inches from the muzzle, seems to have been the cause. The increasing spiral gives rise to this concussion, which would be less in the 18-ton gun than in some other guns, which have sharper angles of spiral, but that the 400-lb. common shell is upwards of three calibres in length; whereas the 402-lb. shell of the 25-ton gun is only two and a half calibres long, and is, therefore, less imperfectly rotated.

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