



MANUAL

OF THE

VICTORIAN

NAVAL FORCES.

1890.

with changes  
to circa 1895

The following pages comprise the changes made to the *1890 Manual for Victorian Naval Forces*. The resulting edition most likely reflects the manual as it was in 1895.

The changed pages are from a copy held by *the Melbourne University Library*. The original pages are from a copy held by the *Museum of HMAS Cerberus*.

On most pages the changes are shown on the right hand side. Although page 37 does not seem correct it is nevertheless included.

This edition of the *Manual for Victorian Naval Forces* was produced by the *Friends of the Cerberus* ([cerberus.com.au](http://cerberus.com.au)).



2008

2 books same N<sup>o</sup> 24

145

202

*Responsibility of Nos. 1.*—Nos. 1 of all guns are responsible, under the officer of the quarters, for all precautions being taken to ensure the safety of the guns and their crews, and generally for everything connected with the working of the guns. The officer of the quarters is similarly responsible to the commanding officer.

*Accuracy of Laying the Guns.*—It should be impressed upon the men that laying the gun cannot be too carefully performed, and that it requires extreme care and attention on the part of No. 1, as well as the intelligent co-operation of the gun's crew in carrying out his orders.

*Rapidity of Loading.*—Loading, on the contrary, cannot be executed with too much rapidity, provided neither the safety of the crew nor gun be compromised.

*Exercise by Signals.*—After the gun's crew have been well trained in using words of command, they should be carefully instructed in working the guns without them, and the employment of signals should be the usual practice.

*Diminished Crews.*—They should also be instructed in working the guns with diminished crews.

*Adjustment of Compressor.*—On the guns being run out for the first time, or on any change of circumstances that may render it necessary, 1 directs the proper adjustment of the compressor, so that the recoil will bring the gun into the loading position. The amount of compression required will depend on the charge, motion of the ship, and degree of roll on firing. It is important to remember that when the compressor bars and plates are wet the recoil will be increased, owing to the diminution of friction.

*Lie Down.*—At any time should a collision be imminent, or as a protection from raking fire, the order "Lie down" may be given, or the bugle sound one G, when the men will at once lie down as in "Director firing." When the order is given, or the bugle sound "Carry on," they will go on with the firing or otherwise, as ordered.

*Time Fuzes.*—When using time-fuzes they should be adjusted at the last instant. The projectile should not be rammed home until the order "Commence" is given.

*"Prepare for" a Firing.*—When the order for any firing is preceded by the words "Prepare for," the guns are to be laid but not brought to the "Ready," the order "Ready" being given in this case by the officer of the quarters for the first round.

*Responsibility of Nos. 1.*—Nos. 1 of all guns are responsible, under the officer of the quarters, for all precautions being taken to ensure the safety of the guns and their crews, and generally for everything connected with the working of the guns. The officer of the quarters is similarly responsible to the commanding officer.

*Accuracy of Laying the Guns.*—It should be impressed upon the men that laying the gun cannot be too carefully performed, and that it requires extreme care and attention on the part of No. 1, as well as the intelligent co-operation of the gun's crew in carrying out his orders.

*Rapidity of Loading.*—Loading, on the contrary, cannot be executed with too much rapidity, provided neither the safety of the crew nor gun be compromised.

*Exercise by Signals.*—After the gun's crew have been well trained in using words of command, they should be carefully instructed in working the guns without them, and the employment of signals should be the usual practice.

*Diminished Crews.*—They should also be instructed in working the guns with diminished crews.

*Adjustment of Compressor.*—On the guns being run out for the first time, or on any change of circumstances that may render it necessary, 1 directs the proper adjustment of the compressor, so that the recoil will bring the gun into the loading position. The amount of compression required will depend on the charge, motion of the ship, and degree of roll on firing. It is important to remember that when the compressor bars and plates are wet the recoil will be increased, owing to the diminution of friction.

*Lie Down.*—At any time should a collision be imminent, or as a protection from raking fire, the order "Lie down" may be given, or the bugle sound one G, when the men will at once lie down as in "Director firing." When the order is given, or the bugle sound "Carry on," they will go on with the firing or otherwise, as ordered.

*Time Fuzes.*—When using time-fuzes they should be adjusted at the last instant. The projectile should not be rammed home until the order "Commence" is given.

*"Prepare for" a Firing.*—When the order for any firing is preceded by the words "Prepare for," the guns are to be laid but not brought to the "Ready," the order "Ready" being given in this case by the officer of the quarters for the first round.

**Precautions when Firing.**—The carriage and slide should be marked to indicate the position of the gun when out. After firing, when the gun is out, No. 4 will hold up his hand as a signal to No. 1. No. 1 will not permit the gun to be loaded until he is satisfied that the gun is out in the firing position.

The officer of the quarters must always see that the safety arrangement is in good working order, and that the locking lever and needle-holder are in their proper position before firing.

### CLEARING FOR ACTION.

**ACTION.** { The guns are cast loose, and everything on deck removed clear of the fire; the bugle will then sound the "Advance"; the guns will be loaded with full charge and Palliser shot, and run out. Nos. close up, and wait further orders. Should it be desired to load with any other projectile but that above-named, the "Still" must be sounded, and orders given.

**EXERCISE ACTION.** { As above, without powder being provided, the gun being always loaded with dummy charge and projectile.

**NOTES.**—Electric firing gear is invariably to be used unless otherwise ordered. The mechanical gear and tube lanyards are to be considered as auxiliary, and only to be used (except for purposes of drill) at the discretion of the officer of the turret when the electric gear is disabled. All orders are delivered through the speaking tube from the conning tower, and repeated by the officer of the turret.

A directing dial showing the description of firing and the distance of the object is placed so as to be always seen by the captain of the turret.

### SIMULTANEOUS FIRING.

In this firing, the guns in each turret are fired simultaneously, the turrets working independently.

**SIMULTANEOUS FIRING.** { A caution.

(Broadside)  
(Turret Salvo)

*Precautions when Firing.*—The carriage and slide should be marked to indicate the position of the gun when out. After firing, when the gun is out, No. 4 will hold up his hand as a signal to No. 1. No. 1 will not permit the gun to be loaded until he is satisfied that the gun is out in the firing position.

Page 14. General Notes for B.L. Guns.—Insert additional Note, as follows:—

*Note.*—At B.L. Guns, the tube is to be inserted when the "Object" or "Bearing" is named.

**ACTION.** { The guns are cast loose, and everything on deck removed clear of the fire; the bugle will then sound the "Advance"; the guns will be loaded with full charge and Palliser shot, and run out. Nos. close up, and wait further orders. Should it be desired to load with any other projectile but that above-named, the "Still" must be sounded, and orders given.

**EXERCISE ACTION.** { As above, without powder being provided, the gun being always loaded with dummy charge and projectile.

**NOTES.**—Electric firing gear is invariably to be used unless otherwise ordered. The mechanical gear and tube lanyards are to be considered as auxiliary, and only to be used (except for purposes of drill) at the discretion of the officer of the turret when the electric gear is disabled. All orders are delivered through the speaking tube from the conning tower, and repeated by the officer of the turret.

A directing dial showing the description of firing and the distance of the object is placed so as to be always seen by the captain of the turret.

### SIMULTANEOUS FIRING.

In this firing, the guns in each turret are fired simultaneously, the turrets working independently.

**SIMULTANEOUS FIRING.** { A caution.

—DEFLECTION,  
OR  
—KNOTS SPEED.  
—YARDS.  
—BEARING.  
—OBJECT.

{ The captain of the turret adjusts his sight and trains, the gun is laid for the object and brought to the "Ready," as in Preliminary Drill, No. 1 giving the necessary orders.

COMMENCE. { The captain of the turret fires at his own discretion, and trains for loading; No. 1, if necessary, orders "Run in"; when the gun is in it is laid for loading, sponged, and loaded without orders; 1 then orders "Run out," and proceeds with the firing.

CEASE FIRING. { As detailed in Preliminary Drill. If the gun is in, it is to be loaded and run out.

If desired, the guns of a turret may be fired independently. In this case the cartridge of the gun that is being loaded is not to be exposed while the other gun is at the "Ready." No. 1 may fire from the side platform if ordered.

### DIRECTOR FIRING.

In this firing the turret guns are fired either both turrets together or one at a time from the conning tower by means of electricity, having been previously laid by the director.

The guns are invariably laid for 800 yards distance, and concentrated on three fixed points on each broadside (bow, beam, or quarter); the corresponding marks are placed on the turret, in the turret-room, abreast of the turret-pointer.

DIRECTOR FIRING. { The captain of the turret adjusts the sight for 800 yards.

STARBOARD, OR PORT BOW, BEAM, OR QUARTER. { The turret is trained under the direction of the 2nd captain of turret.

HORIZONTAL, OR (—) DEGREES ELEVATION, OR DEPRESSION.) { On receiving the elevation from the director, the gun is laid and brought to the "Ready," as in Preliminary Drill.

{ When the guns are fired, the captain of the turret trains for loading, 1 disconnects the slot and bolt; the gun is run in, loaded and run out, as in Simultaneous Firing, and is then laid as before.

—DEFLECTION,  
OR  
—KNOTS SPEED.  
—YARDS.  
—BEARING.  
—OBJECT.

{ The captain of the turret adjusts his sight and trains, the gun is laid for the object and brought to the "Ready," as in Preliminary Drill, No. 1 giving the necessary orders.

COMMENCE. { The captain of the turret fires at his own discretion, and trains for loading; No. 1, if necessary, orders "Run in"; when the gun is in it is laid for loading, sponged, and loaded without orders; 1 then orders "Run out," and proceeds with the firing.

CEASE FIRING. { As detailed in Preliminary Drill. If the gun is in, it is to be loaded and run out.

If desired, the guns of a turret may be fired independently. In this case the cartridge of the gun that is being loaded is not to be exposed while the other gun is at the "Ready." No. 1 may fire from the side platform if ordered.

### DIRECTOR FIRING

Page 15.—Cancel "Director Firing" and substitute—

*Note.*—If considered desirable at any time, turret or barbette guns can be fired by "Director" from the conning tower on any fixed bearing. When this is resorted to, the order will be given, "Simultaneous (or Independent) Firing by Director"; — yards (naming the distance); the bearing and elevation will be passed from the conning tower, the officer of the turret or barbette reporting "Ready" when the named gun or guns have been brought to the "Ready."

In turret or barbette ships, where the new Director circuit, without contact rings, is fitted, it must be remembered that when this firing is being carried out the guns can be fired on any bearing, with either firing key. Close attention to this point, therefore, must be paid by the officer at the Director to prevent any possibility of the guns being fired prematurely.

The orders for elevating are "Raise" (or "Lower"); when 1 orders "Well."

1 is responsible that both sights are adjusted according to charge and projectile the gun is loaded with. Should the distance be given in yards, 1 refers to the range table for elevation due the distance if necessary, and passes it to 2 and 3.

If no distance should be named, 1 estimates the distance of the object, 2 and 3 adjust the sights accordingly.

READY. { 2 connects firing gear, 1 full cocks pistol  
                  { slacks the tube lanyard.

HALF COCK. { 2 disconnects firing gear; 1 half-cocks the  
                  { pistol or tautens the tube lanyard.

READY. As before detailed.

FIRE. { 1 fires by pressing the trigger or pulling the  
                  { lanyard smartly with a jerk, and orders "Run  
                  { out;" 2 disconnects firing gear, and attends by  
                  { pass valve; when the gun is out, 5 lays it for  
                  { loading, and the crew close up.

MISS-FIRE. { *If using Electric Gear.*—1 re-cocks the firing  
                  { key, and the primer is tried a second time; if after  
                  { a second attempt, after a pause, 1 orders "Shift  
                  { primer," 2 disconnects the "slot and bolt," and  
                  { replaces the primer, 1 then orders "Ready."

*If using Tube Lanyard.*—1 waits a pause of at least 30 seconds, then orders "Re-cock," the primer is tried a second time; if after a second attempt, 2 replaces the primer, 1 orders "Ready."

SPONGE. { 1 and 2 open the breech; 3 places loading  
                  { tray; 6 wipes the cup; 4 provides sponge, and  
                  { assisted by 3, sponges the gun.

NOTES.—Guns are always to be sponged, whether firing blank or projectile. Two sponges are supplied, the "bore sponge" and the "chamber sponge." The bore sponge is to be thrust completely through the bore before loading for the first time, and after each round fired with a blank charge. The chamber sponge is, before loading for the first time, and after each subsequent round, to be forced to the end of the chamber, and a complete turn given before withdrawing it. Both sponges are to be saturated during the firing, and after it the chamber sponge is to be rinsed with fresh water and thoroughly dried, to preserve it.

The orders for elevating are

Page 24.—Cancel paragraphs "Ready," "Half-cock," "Ready," "Fire," "Miss-fire," and substitute—

READY. { 1 slacks the tube lanyard, and brings his left  
                  { hand over the right; 2 connects the firing  
                  { gear, and replaces the needle-holder if neces-  
                  { sary.

FIRE. { 1 fires by pulling the tube lanyard smartly  
                  { with a jerk, bringing his left hand down on  
                  { the right. After the gun is fired, 1 drops the  
                  { tube lanyard; 2 unhooks it, and, if necessary,  
                  { runs the gun out; 3 lays the gun for loading.

SPONGE AND  
LOAD. { As before detailed.

READY. As before detailed.

HALF-COCK. { 1 drops his left hand; 2 unhooks the tube  
                  { lanyard.

READY. As before detailed.

OUT TUBE. { 1 drops his left hand; 2 unhooks the tube  
                  { lanyard, and withdraws the needle-holder.

READY. As before detailed.

MISS-FIRE. { 1 waits a pause of at least 30 seconds, then  
                  { orders "Ready"; 2 makes ready, and the  
                  { tube is tried a second time. Should the tube  
                  { fail after a second attempt, 1 waits a pause of  
                  { at least 30 seconds, then orders "Out Tube";  
                  { 2 withdraws the needle-holder, and places a  
                  { fresh tube; 1 then orders "Ready"; 2 re-  
                  { places the needle-holder, and makes ready.

NOTES.—Guns are always to be sponged, whether firing blank or projectile. Two sponges are supplied, the "bore sponge" and the "chamber sponge." The bore sponge is to be thrust completely through the bore before loading for the first time, and after each round fired with a blank charge. The chamber sponge is, before loading for the first time, and after each subsequent round, to be forced to the end of the chamber, and a complete turn given before withdrawing it. Both sponges are to be saturated during the firing, and after it the chamber sponge is to be rinsed with fresh water and thoroughly dried, to preserve it.

~~LOAD.~~~~As before detailed.~~~~CEASE FIRING~~~~1 orders "Half-cock"; 2 disconnects firing gear; 2 and 3 put down sights; gun's crew close up.~~

NOTES.—If, while loading, or after the gun is fired, the order "Cease firing" is given, the loading will be completed, and the gun's crew close up. Should it be necessary for the gun's crew to leave their gun, for "boarders," to man a pump, &c., the gun will be left in the "Cease firing" position.

If the gun requires to be run in, 2 attends by-pass valve; 3 closes screw flap; 5 ships winch-handle; 4, 5, and 6 run in, and when the gun is in, 1 orders "Well"; 2 closes by-pass valve, and holds up his hand to 3, who disconnects screw-flap and returns it; 5 returns winch-handle; gun's crew close up.

~~UNLOAD.~~~~2 removes needle-holder, and takes out primer; 1 and 2 open the breech; 3 places loading-tray, and draws out cartridge; powderman returns it; 4 receives ejector from 6, and forces back the projectile; 3 receives it; 5 returns it; 3 returns loading-tray; 4 returns ejector; 1 and 2 close the breech; 2 replaces needle-holder; gun's crew close up.~~

NOTES.—If the gun is loaded with filled shell and fuzed, it should be fired if the range is clear.

The order "Unload" may be given, to alter the charges and projectile, or for securing.

~~SECURE.~~~~1 sees the gun placed in securing position; 1 and 2 return sights, firing gear, pouch, and primers; 3 puts in tompon; 4 raises friction-brake lever, returns sponge and rammer; 5 and 6 return winch-handles; 5 returns projectiles; all Nos. replace gear, and when finished, 1 orders "Fall out."~~

Page 25.—Cancel paragraphs "Load," "Cease Firing," and substitute—

CEASE FIRING. { 1 orders "Out Tube"; 2 unhooks the tube lanyard, and withdraws the needle-holder; and the gun's crew close up.

Page 25.—Cancel paragraph "Unload," and substitute—

UNLOAD. { 2 and 3 open the breech; 3 places loading-tray, and takes out cartridge; Powderman returns it; 4 receives ejector from 6, and, assisted by 5, forces back the projectile; 3 receives and returns it; 6 returns the ejector; 3 returns the loading-tray; 2 and 3 close the breech; 2 replaces the needle-holder; and the gun's crew close up.

After notes on "Unload," insert new Note thus—

Note.—When it is necessary to change the nature of the projectile, and time does not permit of unloading, the order "Discharge the Guns" may be given, a caution as to what to re-load with being given beforehand.

NOTES.—If the gun is loaded with filled shell and fuzed, it

Page 25.—Cancel paragraph "Secure," and substitute—

~~SECURE.~~

{ 1 sees the gun placed in the securing position; 1 and 2 return sights and firing gear; 2 returns pouch and tubes; 3 puts in tompon; 4 and 5 put on securing chains, return winch-handles and training stanchions; 6 returns sponge and rammer; 3 returns projectiles; and, when everything is finished, 1 orders "Fall Out."

## PROJECTILES AND CHARGES.

Guns.	Weight.	Length.	Nature of Powder.	Charges.		Shell.						Shot.		
				Full.	Reduced.	Common		Shrapnel.		Segment.		Pal- liser.	Case.	
						Weight.	Burst.	Weight.	Burst.	Weight.	Burst.			
														lb.
10-inch M.L.R.	18 15 0	15 0	{ Pebble R.L.G.	70	44	377 12	20 4	404 9	1 9	177 0	3 0	400 0	143 0	193
				60	40									
8-inch B.L.	12 19 3	19 3	{ Prismatic Pebble	100	65	168 0	12 0	180 0	0 10	177 0	3 0	180 0	180 0	432
				..	..									
6-inch B.L.	4 14 7	14 7	{ Prismatic Pebble	42	30	75 0	5 0	80 0	0 5	77 0	3 0	80 0	70 0	320
				..	..									
12-pr. B.L.	8	7 7	R.L.G.	..	3 12	12 8	0 7	12 8	0 1	12 8	0 4	..	12 8	150
9-pr. B.L.	5	7 0	R. L.G...	..	2 8	8 11	0 43	9 0	0 1	8 15	0 1	..	9 0	103

The full and reduced charges for the 8-inch B.L. Guns are in two half-charges.

PR

## PROJECTILES AND CHARGES.

Guns.	Weight.	Length.	Nature of Powder.	Shot.		Case.		Balls.	
				Burst.	Weight.	Pal- liser.	Weight.	Weight.	No.
10-inch M.L.R.	18 15 0		{ Pebble R.L.G.	..	..	..	400 0	143 0	193
8-inch B.L.	12 19 3		{ Prismatic Pebble	..	..	..	180 0	180 0	432
6-inch B.L.	4 14 7		{ Prismatic Pebble	..	..	..	80 0	70 0	320
12-pr. B.L.	8	7 7	R.L.G.	8 0 4	..	..	..	12 8	150
9-pr. B.L.	5	7 0	R.L.G...	0 1	..	..	..	9 0	103

The full and reduced

to half-charges.

Page 32.—In Table of Projectiles and Charges—

Erase 100 lbs. and insert 90 lbs. (Full charge 8-inch B.L.)

Erase 42 lbs. and insert 34 lbs. (Full charge 6-inch B.L.)

And also erase 30 lbs. and insert 25 lbs. (Reduced charge 6-inch B.L.)

READY. { 1 slacks the tube lanyard, and brings the left hand over the right; 2 places the tube in the vent; the numbers let go the side-tackle falls.

OUT TUBE. 1 drops his left hand, 2 takes out the tube.

READY. As before detailed.

NOTES.—When necessary to train the gun at the "Ready," the handspikes only are used, the opposite one being used for checking the training.

At the order "Ready" or "Out Tube," 8 withdraws his right foot and handspike, to allow 2 to step up clear of the recoil.

If the ship is rolling, the side-tackle falls are kept in hand until the moment of firing, 1 raising his left hand as a signal for them to be let go.

FIRE. { 1 pulls the tube lanyard downwards with a jerk bringing the left hand smartly on the right; after the gun is fired, 1 makes up the tube lanyard, 7 and 8 ground the handspikes.

MISS-FIRE. { 2 examines the vent, and hooks a fresh tube to the lanyard; 1 then orders "Ready."

RUN IN. { All the numbers man the preventor tackle, except 1, and 3 and 4 who overhaul the side tackles. When the gun is in, 1 orders "Well;" the right rearman chokes the luff of the preventor tackle, and attends it.

SPONGE. { 1 serves the vent; 6 serves the sponge to 4 who, assisted by 3, forces it hard home to the bottom of the bore, keeping it pressed home while a round turn is given; 4 then withdraws it; 6 takes the rammer, and the powderman closes up; 5 drops back to the projectile.

NOTES.—The vent-server is always to be used, and No. 1 is to put his thumb on top of it, keeping his hand clear, so that he may see if there is any escape of air. When withdrawing the sponge care should be taken to keep the staff in the upper part of the bore. When firing, the sponge should be sprinkled with (not dipped in) water, as a saturated sponge causes an increase of the remains of the cartridge bag after firing.

## CORRECTIONS IN MANUAL (VICTORIAN).

## FIELD EXERCISE.

Page 37.—Erase paragraph "Markers giving Points," &c., and substitute the following:—

## MARKERS GIVING POINTS.

The Markers are called out by Bugle call, viz., one "G" for Left Markers, two "G's" for Right Markers, and are fallen in in single rank, facing the same way as the Battalion would if in line.

"Markers" — "Attention" — "Shoulder Arms."

GIVE POINTS IN { The Marker of No. 1 turns right, and  
LINE, COLUMN, OR { Recovers arms; the remainder turn outwards  
QUARTER { and step off at the Quick, halting, turning  
COLUMN. { about, and Recovering arms as they gain their  
QUICK, MARCH. { proper interval.

The Markers are now covered by the Officer Instructor or C.P.O., who will give the order—

"STEADY." { The Markers shoulder arms, and, if giving  
{ points in line, turn to the front.

Note.—Markers giving points do not "Order Arms" when they halt.

ON THE RIGHT — { The named Marker turns to the front and  
LEFT, OR ANY { orders arms, the remainder turn towards him  
No. — CLOSE — { and step off, trailing their arms, halting, and  
QUICK OR { turning to their front as they arrive in their  
DOUBLE MARCH. { places.

# DRILL FOR 4.7 INCH, 36-PR. OR 45-PR. QUICK FIRING GUN.

The drill laid down for Q.F. guns is similar to that for machine guns. Each pair of guns requires a crew of 6 men and 2 powdermen.

When one side only is manned the highest numbers provide projectiles and ammunition, and keep up the supply.

The gun's crew fall in in single rank in rear of the starboard guns.

P.M. P.M. 5. 3. 1. 2. 4. 6.

The gun's crew place themselves as follows:—

CLOSE UP. { 1 in rear of the gun; 2 on the right in line with the sight; 3 on the left in line with the sight; 4, 5, and 6 in rear.

NUMBER. The gun's crew call their numbers in succession.

CHANGE ROUNDS. { At the order "Change rounds," 3 becomes 4, and the remainder move round one place to the left.

BOTH SIDES.	{	Starboard Guns.	Port Guns.
		1 remains 1	2 becomes 1
		3 becomes 2	4 " 2
		5 " 3	6 " 3

NUMBER. { The gun's crew call their numbers in succession.

FALL OUT. { The gun's crew fall out in single rank in rear of their guns.

STARBOARD (OR PORT) GUNS. { The gun's crew close up at the named gun.

The following drill is for both sides manned:—On the bugle call "Action," the gun's crew repair to their stations "Both Sides," clear away their guns, and open the ammunition; so that, if necessary, all the guns can be worked at once.

# DRILL FOR 4.7 QUICK-FIRING GUNS.

The following drill is for 4.7 Q.-F. Guns, fired by means of electric or percussion gear, and mounted on upper deck, or between-deck mountings:—

The gun's crew fall in, in single rank, in rear of Starboard guns.

P.M., P.M., 5, 3, 1, 2, 4, 6.

CLOSE UP. { The gun's crew place themselves as follows:—  
1 on the left, at the shoulder piece.  
2 on the right, in line with the breech.  
3 in rear of 1.  
P.M., 4, 5, and 6 in rear.

NUMBER. The gun's crew call their Nos. in succession.

The gun's crew take their places as follows:—  
Odd numbers at the Starboard guns, even numbers at the Port guns.

BOTH SIDES.	{	Starboard Guns.	Port Guns.
		1 remains 1	2 becomes 1
		3 becomes 2	4 " 2
		5 " 3	6 " 3
		P.M.	P.M.

NUMBER. The gun's crew call their Nos. in succession.

FALL OUT. { The gun's crew fall in, in single rank, in rear of their guns.

ACTION.

berthing; 1 ships the sights, sees battery terminals screwed up, and makes the earth connexion in the spare battery; 2 and 3 clear away securing chains (if fitted); 2 sees the striker set for electric firing, and opens the breech; 3 takes out tompon, and enters a projectile; 2 closes the breech; and the gun's crew close up.

Note.—(1.) This is termed the "Cease Firing" position.

(2.) On all occasions before firing, the electric circuit is to be tested at the order "Action" by firing a primer in the short cartridge case supplied for that purpose.

(3.) No. 1 is to take every opportunity of satisfying himself that the terminals are properly screwed up, as they are liable to become loose when firing.

ACTION. { 1 ships sights, sees the elevating gear, firing pin, and main-spring in order; 2 sees the training gear clear and wheel connected, sets the index to fire by trigger, and opens the breech-block; 3 provides cartridge and enters it; 2 then closes the breech-block, Nos. close up.

NOTES.—Should the gun be fitted to secure inboard, 1 and 2 first open the port and train the muzzle outboard, then close the port. The cartridge is not to be entered until the ~~gun is trained~~ *object is named*.

When only one side is engaged, Nos. 4, 5, and 6 keep up the supply of ammunition.

-DEFLECTION,  
OR  
-KNOTS SPEED.  
-YARDS. } 1 adjusts the sight.

-OBJECT  
-COMMENCE. { 1 lays the gun, and fires at his own discretion keeping the gun bearing on the object; 2 opens the breech by a quick motion of the lever; 3 places a fresh cartridge in the gun; 2 then closes the breech, and the firing is continued.

NOTES.—If necessary to use the training gear, 2 attends it, 1 giving the necessary orders.

Care must be taken in loading that the point of the projectile does not strike the entrance to the chamber.

MISS-FIRE. { 1 orders "Re-cock," 2 re-cocks without moving the extractor or jarring the cartridge, and the cartridge is tried a second time; if after a second attempt, after a pause, 2 opens the breech, 3 carefully removes the cartridge, which is to be thrown overboard if the cap has been struck, or a new striker inserted if it has not.

CEASE FIRING. { 1 discontinues the fire; 2 opens the breech; 3 returns the cartridge, if uninjured, to the ammunition-box.

NOTE.—If the gun's crew are required to leave their guns, the breech-block is to be closed.

Page 51—"Action."—Erase "3 provides cartridge and enters it; 2 then closes the breech-block;" and insert "3 provides and opens a box of ammunition on the left of the gun."

first open the port and ~~train the muzzle outboard~~ *object is named* port. The cartridge is not to be entered until the ~~gun is trained~~ *object is named*.

When only one side is engaged, Nos. 4, 5, and 6 keep up the

Page 51.—Cancel paragraph "Object," "Commence," and substitute—

OBJECT. { 1 lays the gun; 3, on the left, places a cartridge in the gun; 2 closes the breech.

COMMENCE. { 1 fires at his own discretion, and keeps the gun bearing on the object; 2 opens the breech by a quick motion of the handle; 3 places a fresh cartridge in the gun; 2 then closes the breech, and the firing is continued.

In paragraph "Miss-fire," after the word "Pause" insert "1 orders 'Shift cartridge.'"

Page 51.—After "Cease Firing," erase Note, and substitute—

If the guns' crews are required to leave their guns, or when changing from "Both Sides" to "Starboard" or "Port" guns; or *vice versa*, the guns are to be left in the "Cease Firing" position, i.e., with the breech open and cartridge out.

**ACTION.** { 1 sees elevating and training gear clear, then raises the cover and feels each extractor and firing-pin to see they are uninjured; 2 sees drill-stop off, releases the hand lever, and tries the mechanism; 3 provides, fills hoppers and places one.

**NOTE.**—*To fill a Hopper.*—Place it base upwards between the knees, with the highest side to the left. Draw the slide so that cartridges can be entered, and then fill each compartment with 10, holding each cartridge with the right hand at the bullet end and guiding the rim into the slot with the left. When the compartments are full, push in the slide.

The drill-stop is only to be used for drill, and is intended to save the wear of the firing-pins and mechanism. When it is in use, neither dummy nor live cartridges can be worked through the gun.

When only one side is engaged, Nos. 4, 5, and 6 keep up the supply of ammunition.

—DEFLECTION,  
OR  
—KNOTS SPEED.  
—YARDS. } 2 and 3 adjust and attend the sights.

—OBJECT. { 1, using the left sight, lays the gun, working the training wheel with his right hand and elevating wheel with his left; 2 draws back hand lever, forces it forward half way, and fires by order of 1 by forcing it right forward, then, instantly drawing it back to its full extent, repeats the operation. When the hopper is empty, 3 replaces it with a full one.

**COMMENCE.** { 2 works the mechanism continuously after 1 has given the first order "Fire." Should it be necessary to cease firing for a short time to allow smoke to clear away, or to allow 1 to re-lay his gun, 1 will order "Rest," and rapid firing will be continued at his order "Carry on."

**NOTE.**—If when the motion of the gun platform is very quick the elevating gear is not required, 1 can fire the gun himself, looking along the right sight and working the training wheel with his left hand.

**ACTION.** { 1 sees elevating and training gear clear, then raises the cover and feels each extractor and firing-pin to see they are uninjured; 2 sees drill-stop off, releases the hand lever, and tries the mechanism; 3 provides, fills hoppers and places one.

**NOTE.**—*To fill a Hopper.*—Place it base upwards between the knees, with the highest side to the left. Draw the slide so that cartridges can be entered, and then fill each compartment with 10, holding each cartridge with the right hand at the bullet end and guiding the rim into the slot with the left. When the compartments are full, push in the slide.

The drill-stop is only to be used for drill, and is intended to save the wear of the firing-pins and mechanism. When it is in use, neither dummy nor live cartridges can be worked through the gun.

When only one side is engaged, Nos. 4, 5, and 6 keep up the supply of ammunition.

Page 55.—Erase paragraph "Object," "Commence," and substitute—

**OBJECT.** { 1, using the left sight, lays the gun, working the training wheel with his right hand, and the elevating wheel with his left.

**COMMENCE.** { 2 draws back hand-lever, forces it forward half-way, and fires, by order of 1, by forcing it right forward, and after waiting a pause of two seconds drawing it back to its full extent, waits a pause again and repeats the operation. When the hopper is empty, 3 replaces it with a full one.

Page 55.—Erase paragraph "Rapid Firing."

CEASE FIRING. { 2 discontinues the fire, and puts the drill stop on; 3 removes the hopper, pushing in the slide as he does so; 1 then opens the cover and removes any cartridges that may be in the gun, leaving the cover open; 3 returns the cartridges and fills the empty hoppers.

SECURE. { 1 closes the cover; the sights and deflection scales are set to zero; 2 fixes the hand lever by its catch; 1 trains the gun to the securing position, and when everything is finished orders "Fall out."

#### DIMINISHED CREW.

WITH 2 MEN.—1 places and removes the hoppers.

NOTES.—It is to be distinctly understood that with the hoppers filled one man can work the gun. After every practice the guns are to be closely inspected, in order to ascertain that they are empty. Loose cartridges should be returned to Nordenfelt Magazine in a Nordenfelt ammunition-box.

CEASE FIRING. { 2 discontinues the fire, and puts the drill stop on; 3 removes the hopper, pushing in the slide as he does so; 1 then opens the cover and removes any cartridges that may be in the gun,

Page 56.—After "Cease Firing," add—

Note.—If required to commence firing again, No. 1 puts down the cover when the object is named.

#### DIMINISHED CREW.

WITH 2 MEN.—1 places and removes the hoppers.

NOTES.—It is to be distinctly understood that with the hoppers filled one man can work the gun. After every practice the guns are to be closely inspected, in order to ascertain that they are empty. Loose cartridges should be returned to Nordenfelt Magazine in a Nordenfelt ammunition-box.

ACTION. { 1 ships sights, sees the elevating gear, firing pin, and main-spring in order; 2 sees the training gear clear and wheel connected, sets the index to fire by trigger, and opens the breech-block; 3 provides cartridge and enters it; 2 then closes the breech-block, Nos. close up.

NOTES.—Should the gun be fitted to secure inboard, 1 and 2 first open the port and train the muzzle outboard, then close the port. The cartridge is not to be entered until the gun is trained.

~~When only one side is engaged, Nos. 4, 5, and 6 keep up the supply of ammunition.~~

-DEFLECTION,  
OR  
-KNOTS SPEED.  
-YARDS. } 1 adjusts the sight.

-OBJECT  
-COMMENCE. { 1 lays the gun, and fires at his own discretion keeping the gun bearing on the object; 2 opens the breech by a quick motion of the lever; 3 places a fresh cartridge in the gun; 2 then closes the breech, and the firing is continued.

NOTES.—If necessary to use the training gear, 2 attends it, 1 giving the necessary orders.

Care must be taken in loading that the point of the projectile does not strike the entrance to the chamber.

MISS-FIRE. { 1 orders "Re-cock," 2 re-cocks without moving the extractor or jarring the cartridge, and the cartridge is tried a second time; if after a second attempt, after a pause, 2 opens the breech, 3 carefully removes the cartridge, which is to be thrown overboard if the cap has been struck, or a new striker inserted if it has not.

CEASE FIRING. { 1 discontinues the fire; 2 opens the breech; 3 returns the cartridge, if uninjured, to the ammunition-box.

NOTE.—If the gun's crew are required to leave their guns, the breech-block is to be closed.

Page 51—"Action."—Erase "3 provides cartridge and enters it; 2 then closes the breech-block;" and insert "3 provides and opens a box of ammunition on the left of the gun."

first open the port and train the muzzle outboard, then close the port. The cartridge is not to be entered until the gun is trained.

When only one side is engaged, Nos. 4, 5, and 6 keep up the

Page 51.—Cancel paragraph "Object," "Commence," and substitute—

OBJECT. { 1 lays the gun; 3, on the left, places a cartridge in the gun; 2 closes the breech.

COMMENCE. { 1 fires at his own discretion, and keeps the gun bearing on the object; 2 opens the breech by a quick motion of the handle; 3 places a fresh cartridge in the gun; 2 then closes the breech, and the firing is continued.

In paragraph "Miss-fire," after the word "Pause" insert "1 orders 'Shift cartridge.'"

Page 51.—After "Cease Firing," erase Note, and substitute—

If the guns' crews are required to leave their guns, or when changing from "Both Sides" to "Starboard" or "Port" guns; or vice versa, the guns are to be left in the "Cease Firing" position, i.e., with the breech open and cartridge out.

## USE OF DEFLECTION SCALE.

When the ship is moving, the deflection scale must be used. Allow 5' deflection for each knot of speed. An allowance for wind across the range, or for the speed of the enemy, may also be made on the deflection scale.

The following rules for applying deflection are to be observed:—

*For the Speed of Ship.*—Move the scale aft if on hind sight; forward if on trunnion sight.

*For the Speed of the Enemy.*—Move the scale the same way the enemy is moving.

If two ships are going in the *same* direction, the difference of their speeds must be used, and, if in *opposite* directions, the sum of their speeds.

*For Wind.*—Move the scale to windward.

When using guns with deflection leaf on the trunnion sights, 2 and 3 adjust and attend both hind and trunnion sights. The adjustment of the trunnion sight is not to be altered until a new speed is named.

## USE OF DEFLECTION ~~SCALE~~.

When the ship is moving, the deflection ~~scale~~ must be used. Allow 5' deflection for each knot of speed. An allowance for wind across the range, or for the speed of the enemy, may also be made on the deflection ~~scale~~. *Scale*

The following rules for applying deflection are to be observed:—

*For the Speed of Ship.*—Move the ~~scale~~ *scale* aft if on hind sight; forward if on trunnion sight.

*For the Speed of the Enemy.*—Move the ~~scale~~ *Scale* the same way the enemy is moving.

If two ships are going in the *same* direction, the difference of their speeds must be used, and, if in *opposite* directions, the sum of their speeds.

*For Wind.*—Move the ~~scale~~ *Scale* to windward.

When using guns with deflection leaf on the trunnion sights, 2 and 3 adjust and attend both hind and trunnion sights. The adjustment of the trunnion sight is not to be altered until a new speed is named.

† between pages 62 and 63—

## VELOCITIES AND PENETRATION.

Gun and Weight.	Charge.	Projectile.	Length of Gun.	Extreme Range.	Muzzle Velocity.	Velocity at 1,000 Yards.	System of Obturation.	Penetration at the muzzle of unbacked Wrought Iron.
10-inch M.L.R., 18 tons	70 lbs. P. 44 " P.	lbs. 400	ft. in. 15 0	yards. 8,000	F. S. 1,379	F. S. 1,244	M. L. ..	13.2"
64-pr. M.L.R., 58 cwt.	6 lbs. R.L.G. 6½ lbs. P.	64	9 3	5,000	1,123	969	M. L.	
8-inch B.L.,* 12½ tons	90 lbs. P. blk. 65 " "	180	18 6	12,000	2,027	1,792	Elswick cup & needle-holder	16"
6-inch B.L., 4½ tons	34 lbs. P. 25 lbs. P.	80	13 10	10,000	1,880	1,584	De Bange pad & needle-holder	11" (about); 8.7" at 1,000 yards
4.7 Q.F.,† 2 tons 2 cwt.	12 lbs. S. Pebble	45	16 2	10,000	1,786	1,440	Cartridge case & breech-screw	7"
14-Pr. Q.F., 18 cwt.	6½ lbs. .45 Hex. Indented	14	11 6	8,000	2,100	1,619	Cartridge case & breech-block	7"
6-Pr. Q.F., 6 cwt.	11b. 15oz. .45 Hex. Ind.	6	8 0	5,000	1,818	1,319	Cartridge case & breech-block	2" of steel
1-inch Norden- felt,‡ 180 lbs.	1½ oz. M.G.I.	oz. 7½	..	2,000	1,450	791	Cartridge case & plunger	Perforate Tor- pedo boats to 1,500 yds.

\* Gun is of steel and chase-hooped to the muzzle. † Can be fired accurately 15 rounds in 3 min. ‡ Can fire 100 rounds per min.

*Flooding.*—The shell-room is flooded from the sea-cock as the fore magazine, and is worked from the upper deck.

*Stowage.*—100 projectiles for 8-inch gun, viz.:—Palliser, 45; common, 30; shrapnel, 10; segment, 10; case shot, 5.

### AFTER SHELL-ROOM.

*Shell-room.*—The shell are supplied to the upper deck by means of an iron davit and tackle.

*Lighting.*—As in the fore shell-room.

*Flooding.*—The shell-room being in the same compartment as the after-magazine, is not fitted with separate flooding arrangement.

*Stowage.*—100 projectiles for 6-inch gun, viz.:—Palliser, 40; common, 40; shrapnel, 10; segment, 5; case shot, 5.

### SMALL-ARM MAGAZINES.

#### “CERBERUS.”

*Magazine.*—The machine-gun and small-arm magazine is the starboard side of fore-steerage.

*Lighting.*—The light-box is placed in light-room passage.

*Flooding.*—It is flooded from the upper deck.

*Stowage.*—It contains all ammunition for 6-pr. Nordenfelt Quick-firing guns, 1-inch Nordenfelts, M.-H. rifles and pistols.

#### “VICTORIA AND ALBERT.”

*Small-arm Magazine.*—Is practically part of the fore shell-room.

*Flooding.*—It is flooded from the fore shell-room.

*Stowage.*—It contains all ammunition for 1-inch Nordenfelt guns, M.-H. rifles and pistols. There is also a fuze locker containing fuzes and fireworks.

*Flooding.*—The shell-room is flooded from the sea-cock as the fore magazine, and is worked from the upper deck.

*Stowage.*—100 projectiles for 8-inch gun, viz.:—Palliser, 45; common, 30; shrapnel, 10; segment, 10; case shot, 5.

### AFTER SHELL-ROOM.

*Shell-room.*—The shell are supplied to the upper deck by means of an iron davit and tackle.

*Lighting.*—As in the fore shell-room.

*Flooding.*—The shell-room being in the same compartment as the after-magazine, is not fitted with separate flooding arrangement.

*Stowage.*—100 projectiles for 6-inch gun, viz.:—Palliser, 40; common, 40; shrapnel, 10; segment, 5; case shot, 5.

### SMALL-ARM MAGAZINES.

#### “CERBERUS.”

*Magazine.*—The machine-gun and small-arm magazine is the starboard side of fore-steerage.

*Lighting.*—The light-box is placed in light-room passage.

*Flooding.*—It is flooded from the upper deck.

*Stowage.*—It contains all ammunition for 6-pr. Nordenfelt Quick-firing guns, 1-inch Nordenfelts, M.-H. rifles and pistols.

#### “VICTORIA AND ALBERT.”

*Small-arm Magazine.*—Is practically part of the fore shell-room.

Page 149.—New paragraph: Quick-Firing Gun Magazine—The Q.-F. Magazine on board the *Cerberus* is on the starboard-side of the half-deck forward, a little before and between the shell room and ship's side. It is fitted with flooding arrangements similar to those in the other magazines. It contains the ammunition for the 6-pr. Q.-F. guns, and is also used for the stowage of the ammunition for the 14-pr. Q.-F. guns on the *Nelson*.

felt  
ker

# FUZE TABLE.

Fuze.	Nature of Shell and Gun.	How used.
15 sec. Wood Time without detonator.	Common and Shrapnel for 10-inch M.L. guns.	With Common Shell when distance is known against unarmoured ships, earthworks, buildings, &c.
15 sec. Wood Time, with detonator.	Common for 64-pr. M.L. gun. Common and Shrapnel for 10-inch M.L. guns.	With Shrapnel Shell, against boats and men exposed. As 15 sec. without detonator.
Large.	Common, Shrapnel, and Segment Shells for 6-inch and all B.L. guns above.	As 15 sec. without detonator. Segment Shell being used for the same purpose as Shrapnel.
Medium.	Common, Shrapnel, and Segment Shells for 6-inch and all above at medium ranges.	As Metal Time Large.
Small.	Common, Shrapnel, and Segment Shells for all B.L. guns below 6-inch.	As Metal Time Large.

FUZES.

171

FUZES.

171

Pages 171-172—Fuse Table.—Cancel, and insert as under—

Time & Percussion.	Sensitive.	Wood Time.	Fuze.	Nature of Shell and Gun.	How used.
Middle Time and Percussion	Sensitive Middle Time	15 sec. Wood Time (without detonator)		Shrapnel shell for all M.L. guns	Against boats and men exposed.
Short Time and Percussion	"			All B.L. common and shrapnel 4-inch to 16.25-inch	With common unarmoured ships. With shrapnel against men and boats.
				Common and shrapnel B.L. 4-inch to 16.25-inch	As Sensitive Middle Time.
				Common and shrapnel 12½ and 9-pr. B.L.	As Middle Time and percussion.

stance is  
d ships,

st boats

or. Seg-  
the same

Fuze.

15 sec. W  
Time with  
detonator.

15 sec. W  
Time, with  
detonator.

Large.

Medium.

Small.

Wood Time.

Metal Time.

Metal Percussion.	<p>Petman's General Service Marks I., II.</p> <p>R. L. Mark II.</p> <p>Small Percussion Marks I., II.</p> <p>Direct Action Marks II., III.</p> <p>Naval Concussion Large.</p> <p>Naval Concussion Small.</p> <p>Bolt Percussion.</p>	<p>Common Shell 10-inch M.L. gun.</p> <p>Common, Shrapnel, and Segment Shells for 6-inch B.L. gun, and all below.</p> <p>Common, Shrapnel, and Segment Shell for 4-inch B.L., and all below.</p> <p>Common Shell, 10-inch M.L. gun.</p> <p>Common Shell for 6-inch B.L. guns, and all above.</p> <p>Common Shell for all B.L. guns below 6-inch.</p> <p>Common, Shrapnel, and Segment Shells for all B.L. guns.</p>	<p>Against Earthworks or unarmoured Ships; this fuze is obsolete and is superseded by the Direct Action.</p> <p>For Common Shell against unarmoured Ships and Earthworks; for Segment or Shrapnel against men exposed.</p> <p>As for R. L. Mark II. Intended to supersede it.</p> <p>Against Earthworks or unarmoured Ships, &amp;c., this fuze is intended to supersede Petman's General Service Fuze.</p> <p>Against unarmoured Ships, Earthworks, &amp;c.</p> <p>As for Naval Concussion Large.</p> <p>Common against Earthworks, and unarmoured Ships. Shrapnel and Segment against men exposed.</p>
		<p>For 6-Pr. Nordentfelt Q.F. gun pointed Steel Shell and Common Shell.</p>	<p>These fuzes are supplied in the shell. The steel, on all occasions on which the pointed Steel Shell is required. The gun-metal one is used in Common Shell, but these two fuzes are interchangeable.</p>

NOTES.—\* These Combination Fuzes are intended to take the place of the Metal Time.  
+ This is intended to replace the Medium Combination, and fuzes will probably be eventually issued to replace the large and small combination.

† This fuze is not at present supplied to Victorian Navy, but will probably be in use shortly.

	Fuse.	Nature of Shell and Gun.	How used.
Direct Action.	Direct Action, Mark II. and III.	Common and shrapnel 64-pr. and above, M.L.	With common shell against unarmoured ships, earthworks, &c.
	Direct Action, Mark II. and III.	Common and shrapnel B.L. 4-inch to 16.25-inch	With shrapnel against men and boats.
Base Fuses.	R.L. Percussion, Mark II. and III.	Common shell for 64-pr. M.L. and 12½ and 9-pr. B.L.	As with direct action.
	Base Percussion, Nordenfellt	6 and 3-pr. Q.F., and 14-pr. Q.F.	Against torpedo boats, &c.
	Base Percussion, 4.7, Q.F.	4.7 Q.F. ... ..	Against unarmoured ships, &c.

~~Petman's General Vice Ma II. R. L. Ma~~

Small F sion Ma. II.

Direct f Marks II

Naval Conc sion Large Naval Conc sion Small Bolt Perc sion.

Base Percu Steel an Metal.

Notes. — \* Ther + This is intent to replace the la. + This fuze is 1.

wire fixed across the hole. The guard and pellet are both of gun-metal. The copper cover, in form of a tube, fits over the pellet, the upper edge being bent inwards so as to rest on the top of it; the lower edge being cut into wings and bent outwards so as to support the guard. The pellet has a copper cap in the top, the detonating composition being covered with a .005 in. brass disc, and a powder pellet in the lower part, with a fire-hole connecting them. The bottom of the body is closed by the bottom plug, which screws in, and is filled with pressed gunpowder. The safety-pin passes through the head and split-pin, and prevents the latter bearing on the shearing wire.

The fuze is screwed into the shell, and the safety-pin withdrawn at the moment of loading.

On discharge, the split-pin shears the shearing wire and drops through the bolt into a pocket; the bolt then slides back by centrifugal force.

The guard straightens the wings of the copper cover, and sets down over the pellet, which is then free to move forward against the needle on impact or graze.

#### BASE PERCUSSION STEEL AND GUN-METAL FOR 6-PR. NORDEN-FELT Q.F. GUN.

This fuze is very simple in construction. Its parts are—body, pellet, split-ring, and bottom plug. There are two holes in the body for screwing it into the shell. It is threaded half way; the remainder is plain. A lead washer under the head prevents the entrance of the gas from the charge into the shell. The pellet is solid, having a recess in the end for the detonating composition, which is covered by a brass disc. The exterior of the pellet is turned down to form a shoulder for the split-ring to rest on, which prevents the pellet from going forward until the shock of discharge, when it slips over it and puts the fuze in action. The bottom plug is fitted with a steel needle, and has two holes through it, filled with pressed powder, covered with a paper disc.

*Action.*—On the shock of discharge, the split-ring is driven over the pellet, and both remain back; on impact, the pellet and ring fly forward on the needle-point and fire the fuze and the burster.

There are two patterns of these fuzes, steel and gun-metal; the latter is used with common shell. The principle is the same, but the body is of gun-metal, and the diameter reduced to suit the thicker walls of the cast-iron shell. These fuzes are, however, interchangeable.

There is a Mark II. fuze in which the needle is fluted, and the holes in the plug are conical; the ring or guard is rounded at the edges and slightly smaller to prevent the pellet from jamming; but this is not so far supplied (July, '90) to the Victorian Naval Forces.

### FITTING AND FIXING FUZES.

#### WOOD TIME FUZES (WITHOUT DETONATORS).

Wood time fuzes are prepared for any desired range by boring into the required side-hole for the length of fuze-composition. A hook-borer or gimlet-borer is used, and when using it place the fuze in the hook, in the proper position for boring the required hole, enter the bit into the side-hole and screw up until the bit has entered as far as the borer will allow, taking care not to press upon the fuze so as to prevent its bedding in the hook.

Unscrew, and, when the bit is clear, remove the fuze from the hook; the fuze is then screwed into the shell by hand, or a smart blow is given.

Care should be taken when withdrawing the bit to prevent the escape of powder from the channels.

Wood time fuzes may be bored into at any hole irrespective of the projectile in which they are used.

Wood time fuzes are fixed in the fuze-hole by screwing the fuze round by hand until it is held firmly in the fuze-hole, or by a smart blow with a piece of wood, taking care not to split the fuze. The fuze must not be uncapped until the shell is in the muzzle of the gun. These fuzes are "uncapped" by taking hold of the copper band and unwinding it smartly, so as to leave the priming fully exposed.

#### WOOD TIME FUZES (WITH DETONATORS).

These fuzes are screwed into the fuze-hole by hand, and on no account are they to be struck against anything. The safety-pin is not to be removed until the moment of loading.

#### METAL TIME FUZES.

These fuzes may be prepared for the desired range after they have been screwed into the shell.

Loosen the nut with the key, so as to free the collar; then move it round until the arrow ↑ points to the required length of fuze; then screw up the nut, steadying the collar at the same time; then tighten the nut with the key.

There is a Mark II. fuze in which the needle is fluted, and the holes in the plug are conical; the ring or guard is rounded at the edges and slightly smaller to prevent the pellet from jamming; but this is not so far supplied (July, '90) to the Victorian Naval Forces.

### FITTING AND FIXING FUZES.

#### WOOD TIME FUZES (WITHOUT DETONATORS).

Wood time fuzes are prepared for any desired range by boring into the required side-hole for the length of fuze-composition. A hook-borer or gimlet-borer is used, and when using it place the fuze in the hook, in the proper position for boring the required hole, enter the bit into the side-hole and screw up until the bit has entered as far as the borer will allow, taking care not to press upon the fuze so as to prevent its bedding in the hook.

Unscrew, and, when the bit is clear, remove the fuze from the hook; the fuze is then screwed into the shell by hand, or a smart blow is given.

Care should be taken when withdrawing the bit to prevent the escape of powder from the channels.

Wood time fuzes may be bored into at any hole irrespective of the projectile in which they are used.

Wood time fuzes are fixed in the fuze-hole by screwing the fuze round by hand until it is held firmly in the fuze-hole, or by a smart blow with a piece of wood, taking care not to split the fuze. The fuze must not be uncapped until the shell is in the muzzle of the gun.

These fuzes are "uncapped" by taking hold of the copper band and unwinding it smartly, so as to leave the priming fully exposed.

Page 189—Fitting and Fixing Fuses.—Cancel paragraph Wood Time Fuses (with detonators)."

Pages 189 and 190.—Cancel "Metal Time Fuses," &c., and Metal Combination Fuse."

## QUICK-FIRING GUN AMMUNITION.

## 4.7-INCH QUICK-FIRING GUN.

The cartridge-case is made of brass, and is drawn from the solid metal to shape. It is screwed at the base for the reception of the primer, and its mouth is closed with a combined lubricator and lid ~~soldered on~~.

Charge	...	...	...	...	12 lb. S.P.
Projectile	...	...	...	...	45 lb.
Bursting charge, armour-piercing shell,	1 lb. 13 oz. P. & 9 oz. F.G.				
Do. do., practice shell	...	...	...	1 lb. 1 oz. L.G.	
Muzzle velocity	...	...	...	...	1,786 f.s.
Total energy	...	...	...	...	995-foot tons.
Penetration at muzzle	...	...	...	...	8.2 inches.

*Instructions for filling Shell.*—Remove the plug from the fuze-hole, and after seeing that the fuze-hole is clear from dirt, grit, &c., insert the funnel, and pour in the bursting charge. The shell should be first filled with pebble, and the interstices then filled with F.G. powder, well shaken down. Take care that none of the powder is left on the threads of the fuze-hole, then screw in the fuze or plug as required.

The primers (electric) used are termed "double contact primers," having a double bridge, two projections on the outside, and one in the centre. The striker presses against the primer, and is used for electrical or mechanical firing. The primer itself makes earth (E) with the gun. For mechanical firing, an adapter is used, which will take the service primer.

The ammunition is prepared for firing by the primers or adapters being firmly screwed into the cylinders with the spanner supplied for the purpose. A pair of large tongs is used to hold the cylinder whilst screwing in the primer or adapter.

Page 198, line 6.—Erase the words "soldered on" and add—"A millboard disc being put on top of the powder before putting on the lid, the cap or lid is held down by three tongues cut in the rim of the case and turned in over the edge of the lid."

The projectiles supplied are—

- Forged steel armour-piercing shell.
- Cast iron common shell.
- Shrapnel shell (steel).

The shrapnel shell is of the ordinary form, with bursting charge in the base; and carries the middle time sensitive fuse.

## 6-PR. NORDENFELT QUICK-FIRING GUN.

AMMUNITION PROPOSED BY THE NORDENFELT GUN COMPANY.

## POWDER AND CARTRIDGE.

The powder for these guns is the Nordenfelt hexagon. It is a small pellet-powder of six sides, with indented ends, and of considerable density, viz., 1.82. The service charge, with all descriptions of projectiles, is 1 lb. 15 oz.

The cartridge-case is of brass, solid drawn, the base and body being of one piece. In shape it is slightly conical, to ensure easy extraction. A small brass tube fits into a hole in the centre of the base, and projects into the body of the case about three inches; this tube is primed, and the cap is pressed firmly into its head.

The powder is shaken down into the cartridge-case so as always to occupy the same space; this ensures great uniformity in velocity.

## PROJECTILES.

There are two descriptions of projectiles supplied with these guns, viz. :—

Steel shell.

Common shell.

The steel and common shells, weighing 6 lbs., are coated with thin copper, deposited by the electro-chemical process. At a certain distance from the base the deposited copper is much thicker than on the other parts, so as to allow the rotating rings being turned from it. Both descriptions of shell are fitted to receive the base percussion fuze.

## SALUTING AMMUNITION.

The saluting ammunition is composed of a cartridge-case, shalloon cartridge, and felt, and paper wads. It is supplied not made up. The case is solid drawn and has a central tube.

When required, the charge is placed in the cartridge-case, the wads placed over it, and secured with shellac. Its weight is 15 oz.

## 6-PR. NORDENFELT QUICK-FIRING GUN.

AMMUNITION PROPOSED BY THE NORDENFELT GUN COMPANY.

## POWDER AND CARTRIDGE.

The powder for these guns is the Nordenfelt hexagon. It is a small pellet-powder of six sides, with indented ends, and of considerable density, viz., 1.82. The service charge, with all descriptions of projectiles, is 1 lb. 15 oz.

The cartridge-case is of brass, solid drawn, the base and body being of one piece. In shape it is slightly conical, to ensure easy extraction. A small brass tube fits into a hole in the centre of the base, and projects into the body of the case about three inches; this tube is primed, and the cap is pressed firmly into its head.

The powder is shaken down into the cartridge-case so as always to occupy the same space; this ensures great uniformity in velocity.

## PROJECTILES.

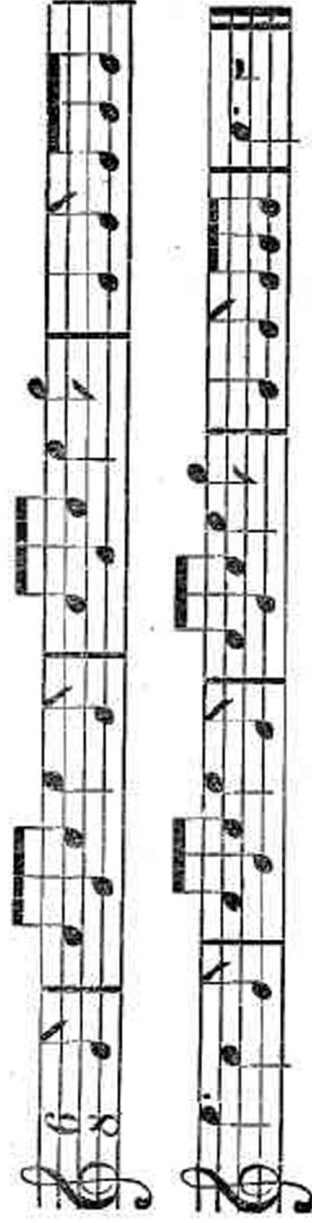
There are two descriptions of projectiles supplied with these guns, viz. :—

Page 199.—Under heading "Projectiles," after "Common Shell," add "for practice only," and cancel paragraph "The steel and common shell, &c.," to the word "it," leaving in "Both descriptions of shell are fitted to receive the base percussion fuse."

The saluting ammunition is composed of a cartridge-case, shalloon cartridge, and felt, and paper wads. It is supplied not made up. The case is solid drawn and has a central tube.

When required, the charge is placed in the cartridge-case, the wads placed over it, and secured with shellac. Its weight is 15 oz.

### III. Boarders.



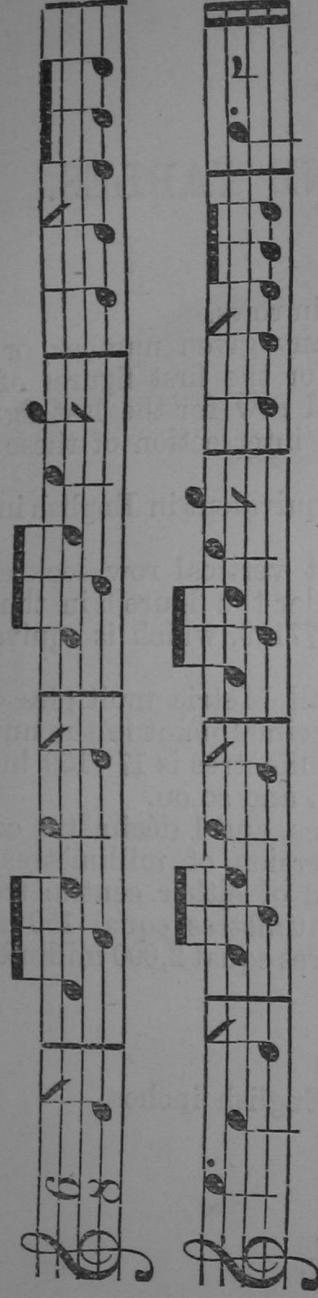
### IV. Boarders return to their Quarters.



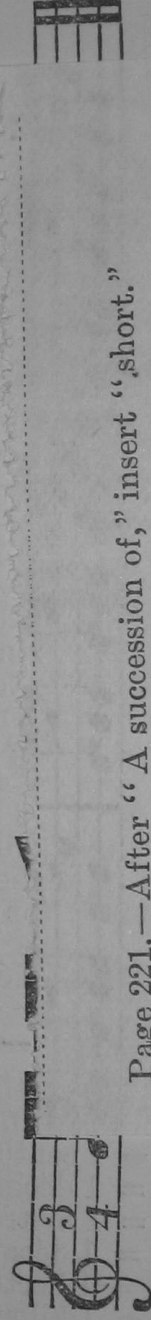
### CLOSE WATERTIGHT DOORS.

A succession of "G's" on the Bugle, or short notes on the Foghorn, to be sounded along the decks.

### III. Boarders.



### IV. Boarders return to their Quarters.



A succession of "G's" on the Bugle, or short notes on the Foghorn, to be sounded along the decks.

*Lie Down.*

One long "G" —

*Starboard Guns.*

Three long "G's" —

*Port Guns.*

Two long "G's" —

*Both Sides.*

One long two short, and a long "G" —

Page 221.—After "A succession of," insert "short."

Additional calls to be inserted, at bottom of page 221:—

be