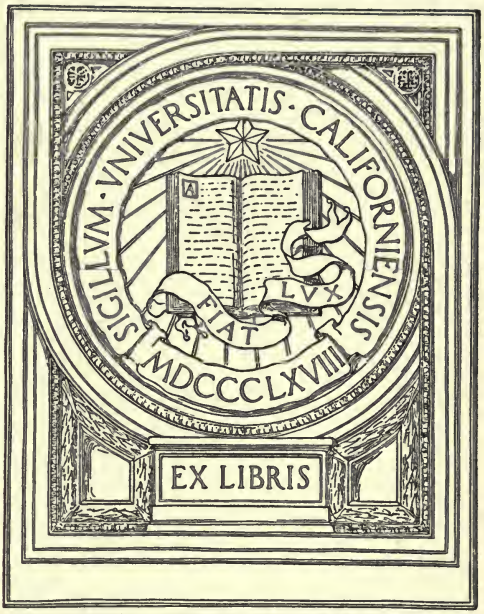

FORM

OF

EXERCISE AND MANŒUVRE

FOR THE

BOAT-HOWITZERS OF THE U. S. NAVY.

BY

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NOMENCLATURE.

THE CASCABEL is the part of the gun in the rear of the base ring; it is composed of:—

(*a*). The breech plate.
(*b*). The knob.
(*c*). The neck.

(*d*). Base ring.
(*e*). Cylinder.
(*f*). Chase.
(*g*). Loop, with hole for bolt.
(*h*). Lock lugs.
(*i*). Lip for elevator.
(*j*). Muzzle-sight.
(*k*). Mass for breech-sight.

The BORE includes all the part bored out, viz.:—

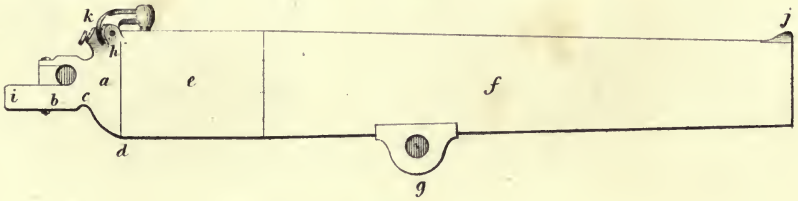
Cylinder of bore.
Chamber.

These guns should not be rubbed bright, which might render it difficult to point them with a bright sun.

Plate 1.

Boat Howitzer.

U.S.Navy.



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BOAT-CARRIAGE.

—— Bed.
—— Slide.
—— Compressor plate.
—— " bolts.
—— " handles.
—— Lugs for loop.

FIELD-CARRIAGE.

—— Axle.
—— Trail.
—— Braces.
—— Lugs for loop.
—— Trail wheel or runner.
—— Bolt for do.
—— Socket for handspike.
—— Elevator.
—— Disc of elevator.
—— Box for elevator.

EXERCISE OF THE BOAT-HOWITZER.

WHILE preparations are in progress for clearing out the boats, the officer of the boat will see that the howitzer, and its various equipments, are also got in readiness. The junior officer or officers of the piece will attend to the gun itself and its carriages.

The quarter-gunner will have the ammunition got up from below; also the lock, sights, sponges, spare fuzes, ammunition-pouches, primers, &c. (Breeching, if deemed necessary.)

This will be the proper occasion for charging the shrapnell and shells with powder, which should receive the particular attention of the officer who is to command the boat.

The captain of the gun will look after the traverses, tracks, pivot-plates, &c.

The coxswain will have ready the thwarts, oars, masts, sails, &c.

When the boat has been cleared for hoisting out, lay the thwarts and traverses, bolt the pivot-plates on the bows and quarters; if the stem and stern pivot-plates interfere with the purchases, they can be secured after the boat is in the water. If the field-carriage is to accompany the gun, lay the wheel and trail tracks.

In a sea-way, it may be better also to place the howitzer in the launch, laying it athwart-ships, and bolting the two ends of the slide into the bow pivot-plates, which will hold it perfectly firm.

As a general rule, the howitzer is not to be handled separately from one of its carriages. It may be hoisted into the launch on either field or boat-carriage, as circumstances may dictate.

When the boat-carriage is preferred, sling it with a stout strap passed through the loop-lugs and brought up round the gun, into which hook the purchase; previously shove the bed a little towards the rear end of the slide, so as to have the carriage hang square, and set the compressors tight.

When the boat has been hoisted out, the howitzer, its ammunition and equipments, will be stowed in it conformably to the requirements of the occasion.

Supposing the arrangements to be of a general character, and to be adapted, subsequently, to the service as circumstances may require.

The howitzer may be in the bow on its boat-carriage, bolted to the stem-pivot.

The field-carriage aft, the wheels resting on the floor of the stern sheets and bearing against the after-thwart; the trail laid over the quarter rail, so as not to interfere with the steering.

The ammunition can be stowed in the stern sheets, or elsewhere, as may be most convenient for trim of launch, or for its own preservation.

The captain of the howitzer slings his haversack, and deposits in it a supply of primers, a vent bit, and vent cloth, which are handed to him by the quarter-gunner.

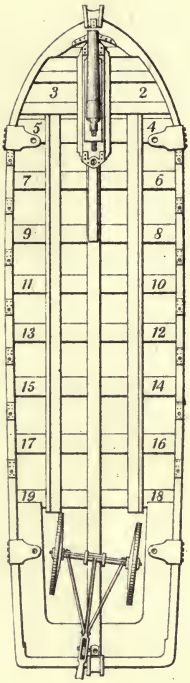
The stations in the boat and at the howitzer will be as follows, for 20 men; if fewer are employed, the higher numbers are to be omitted:—

Boat. *Stations.*			Howitzer. *Duty.*
Quarter-gunner,		Ammunition.	Ammunition.
Coxswain,		Helm.	
No. 1.		Bow.	*Captain* of *howitzer;* points and fires the gun, superintends orders, and gives orders in absence of an officer.
	Port.	*Starboard.*	
2.	———	Bow oar.	*Sponger;* sponges and rams home charge.
3.	Bow oar.	———	*Loader;* receives and enters ammunition.
4.	———	2d oar.	Tends forward compressor.
5.	2d oar.	———	Tends after compressor.
6.	———	3d oar.	Train rope.
7.	3d oar.	———	Tends vent and puts in primer.
8.	———	4th oar.	
9.	4th oar.	———	
10.	———	5th oar.	
11.	5th oar.	———	
12.	———	6th oar.	
13.	6th oar.	———	
14.	———	7th oar.	
15.	7th oar.	———	
16.	———	8th oar.	
17.	8th oar.	———	
18.	———	9th oar.	
19.	9th oar.	———	

Officer of the launch directs the whole operations, or may take especial charge of the howitzer.

Officer of the gun is in command of the piece, unless otherwise ordered by the officer of the boat.

Stations in Boat.



A.J. Cluss, del.

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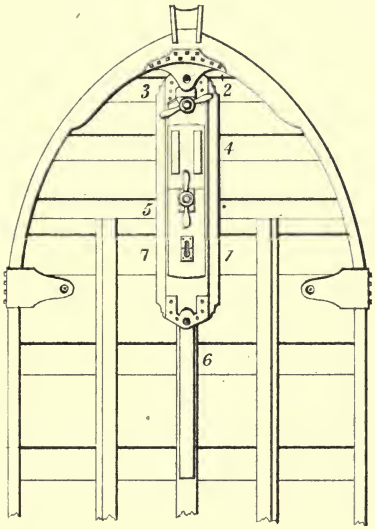
Plate 3.

Stations at Howitzer in Boat.



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(Preliminary Order)—MAN THE HOWITZER.

The captain of the gun is to see that the elevator, sight, and lock are in order for firing.

Nos. 2, 3, 4, 5, 6, 7. Trail oars.

No. 2 goes to starboard side of muzzle, having the sponge and rammer ready.

No. 3 goes to port side of muzzle, takes out tompion.

No. 4 to starboard side, near forward compressor.

No. 5 port side near after compressor.

No. 6 after end of slide, and hooks training-rope.

No. 7 tends the vent and puts in primer.

If the gun is unloaded, it must be run in.

1. SPONGE.

No. 7 closes vent (*a*).

No. 2 enters the sponge, and, pressing it firmly to the bottom, turns it round and withdraws it (*b*).

Quarter-gunner takes a round from the ammunition-box, and, if shell or shrapnell be used, holds it for the officer in command of gun to adjust the fuze.

2. LOAD.

Quarter-gunner passes forward with the fixed charge, protecting it under his jacket (*c*).

No. 3 receives from quarter-gunner and enters charge.

No. 2 rams home to the mark on rammer-handle (*d*).

No. 7 puts in primer, and covers it with his hand until Nos. 1 and 2 are clear of the gun (*e*).

3. Point.

Nos. 4 and 5 ease compressors (*f*).

All six men and captain of gun run out the howitzer (*g*).

Nos. 4 and 5 then tighten compressors.

Officer of gun puts up the sight as directed by officer of launch (*h*).

Captain of gun brings the elevation within the limits of the boat's motion.

And causes No. 6, with the assistance of some others, to train nearly to object, if the boat is under way.

4. Fire.

If the boat have motion, or is under way, a discretionary execution of this order is necessarily implied.

The assumed elevation having been given by the elevator, a slight motion of the helm is made to sweep the piece laterally, so as to cross the object.

The captain of the gun closely watches this movement, with his eye down on the sights, and, holding the lock laniard firmly, draws as soon as the sights coincide with the object.

Immediately after firing, he coils up the laniard, and pulls from the vent any pieces of the quill that may remain, also enters the bit to clear it entirely through (*i*).

NOTES TO THE FORM OF BOAT EXERCISE.

(*a*). The necessity of closing the vent is now a mooted question; as the operation itself is a slight one, having no appreciable effect in complicating or delaying the manœuvre of the gun, it is not deemed advisable to lay it aside in this "Form." The practice here shows that the most ready, and equally sure method, is merely to lay a piece of untwilled woollen cloth over the vent, and press it down with the hand, or else turn the lock on it, and hold that down.

(*b*). Too much care cannot be used in sponging; as a premature explosion endangers life and limb: a moist sponge is to be preferred, for contact with it must surely extinguish every trace of fire in the bore.

It may be considered a safeguard against accident, if the absence of a single instance of the kind, in several years' practice, can be admitted as evidence; during this time, the habit has been, in proving pieces, and exercising the men to fire rapidly; ordinarily, seven or eight times in a minute.

(*c*). The head of the fuze composition must be guarded against moisture from the fingers, rain, or spray of the sea; otherwise, there will be a failure to ignite.

(*d*). The ammunition is never to be struck with the rammer-head, but pushed home, and with very moderate force; particularly omitting a very common practice of forcing the charge after it reaches the bottom of the bore. In ramming home the charge, No. 2 should always keep his body at the side of the chase, not before the muzzle.

(*e*). It is not necessary to pierce the cylinder of the charge when percussion-primers are used; their power being always sufficient to pass through it.

(*f*). It is only necessary to give the compressors a turn, or a part of a turn; this will relieve the compression completely, and time is saved subsequently in compressing.

(*g*). Some will take hold of the standard of the carriage-bed that receives the loop of the piece, others of the breech or bed, as may be convenient to run out the gun.

(*h*). In tightening the thumb-screw that retains the breech-sight in position, do not turn it too hard; the thread may be stripped by continuing to do so. The sight may descend by the shock of the discharge, but this is of no moment.

In point-blank firing, the breech-sight is not required; the eye must then range along the cylinder and muzzle-sight.

(*i*). The charge may refuse fire; if this arises from not properly drawing the lock, it will be evident at sight, as the wafer of the primer will not flash, in which case No. 7 will throw back the lock.

If the primer explodes without acting on the charge, care must be taken not to approach the piece too soon, as it may only hang fire, and the recoil will injure any one in the way of it. After a seasonable pause, the captain of the howitzer will remove the residue of the primer, pass the bit down the vent, and reinsert another primer.

PIVOTING THE HOWITZER.

The sweep allowed by the stem-pivot is about one point and a half starboard or port; if this is not sufficient to train the piece on the object, without diverging inconveniently from the course or position of the boat, then the bow pivots may be used.

The officer of the launch gives the order:—

Pivot on the Port (or Starboard) Bow.

No. 6, with the assistance of the others, trains the rear end of the slide into the bow-pivot which is *not* to be used. No. 7 bolts it in. No. 2 draws bolt out of stem-pivot and, with assistance, draws round the forward end of the slide into the pivot *to be used;* drops in the bolt. No. 6 withdraws the bolt from rear end of slide.

The sweep on the bow-pivots includes an arc of about 120 degrees.

It is not advisable to train the howitzer more than a point abaft the beam if forward, or more than a point forward the beam if aft; as the accidental explosion of a shell near the muzzle, and even of a shrapnell, might be dangerous to those in the boat.

On the bow-pivot, the piece may be pointed nearly from the direction of the keel to a little abaft the beam.

SHIFTING THE HOWITZER.

If this does not bear on the object with such assistance as is admissible from the helm, then the officer of the launch may direct the howitzer to be shifted to the other end of the boat.

The light 12 pounders, with their boat-carriages, average 660 lbs. each; and can be transported by hand from one end of the boat to another.

With their boat-carriages the 12 pounders of 750 average 1200 lbs. each; the 24 pounders about 2000 lbs., and will probably be more conveniently managed, especially if the boat have motion, by placing rollers ($2\frac{1}{2}$ to $2\frac{3}{4}$ inches in diameter) on the tracks laid for the field-carriage. On these the boat-carriage can be shifted from one end to the other, using light falls at each end to keep it under command.

DISEMBARKATION OF THE HOWITZER.

1. Prepare to Land.

The quarter-gunner fills the pouches or passing-boxes with one round each, and passes them to the men, each of whom, except No. 2, slings a pouch over the right shoulder, and buckles the strap as short as possible, so as to keep the ammunition clear of the water when leaving the boat.

The captain of the gun also shortens the strap of his haversack.

Trail Bow and Stroke Oars.

Nos. 2 and 3 will adjust the bed of the boat-carriage to its proper place on the slide for shifting; place the muzzle-block, and make the muzzle bear on it by means of the elevator; pass the strap around the neck of the cascable, and put the shifting-spar through the strap; the quarter-gunner, assisted by the men from the after oars, raises the field-carriage up on the tracks.

2. Trail.

The boat being beached in season, the men trail their oars and jump to their stations.

Nos. 4 and 5 over the bow to adjust the skids, which are launched by Nos. 6 and 7.

No. 2 attends the elevator.

No. 3 attends the muzzle.

Nos. 8, 10, 11, and 13 the shifting-spar, assisted by as many of the crew as can take hold.

No. 9 draws the loop-bolt.

The stroke oarsmen run the field-carriage forward, the quarter-gunner guiding it on the track by the trail.

3. Shift the Howitzer.

Now clear the elevator; heave up the breech of the gun by the spar; Nos. 6 and 7 back the bed on the slide; run the field-carriage a little forward, so that its lugs come under the loop of the howitzer; lower the piece; put in the loop-bolt and elevator; hook on the drag-rope, and ship the trail-handspike in its socket.

4. Land.

Nos. 2, 3, 6, and 7 now jump out of the boat, and, with Nos. 4 and 5, divide to each skid; not standing between them, but keeping outside of them. The stroke oarsmen wheel the piece up to the gunwale by the spokes, the quarter-gunner guiding the trail by the trail-handspike; the remainder of the boat's crew take hold of the drag-rope, so as to ease the howitzer down from the bow, the quarter-gunner guiding it on the skids with care, so that the wheels may not run off sideways.

When down off the skids and on the bottom, the drag-rope may be hooked around the axle, and the howitzer run up on the beach.

The captain of the howitzer superintends and assists whenever it may be necessary.

The sponges and rammers are now to be attached in their places on the trail.

If required, one or two boxes or double boxes may be lashed under the axles.

The boxes contain 9 rounds each, the double boxes 18 rounds each.

EMBARKATION OF THE HOWITZER.

When the howitzer is to be embarked, the ammunition-boxes, if slung to the axle, should be cast off from it, and put in the boat separately.

The men unsling the ammunition-pouches or passing-boxes, and pass them into the boat, which is to be brought to a convenient distance from the beach, the skids laid and secured.

The field-carriage is pointed with the trail towards the boat, and drawn down to the skids, with a wheel resting on each.

Nos. 2, 3, 4, 5, 6, and 7 divide at the wheels, and take hold of the spokes, so as to assist the carriage up. No. 14 ships the trail-handspike, and tends it with No. 15. The rest of the men get into the boat and take hold of the drag-rope. At the word Heave! the men at the wheels bear the carriage up on the skids, those in the boat haul on the drag-rope, and the two at the trail bear it up so that the quarter-gunner, who stands at the bow, can get hold of the trail-handspike and guide the carriage fairly.

When the howitzer is in the boat, the skids are unhooked and put in the boat by Nos. 4, 5, 6, and 7.

The howitzer may now be shifted to the boat-carriage, by reversing the process already described in orders Nos. 1, 2, and 3, for the shifting to the field-carriage.

EXERCISE WITH HOWITZER ON FIELD-CARRIAGE.

GUN'S CREW.

Stations.	*Duty.*
Quarter-gunner.	Charge of ammunition and spare equipment.
No. 1. Rear of breech, to the right.	*Captain* of *piece;* points and fires the howitzer, superintends orders, and gives orders in absence of an officer.
2. Starboard side of muzzle.	Sponges and rams home.
3. Port side of muzzle.	Receives and enters ammunition.
4. Rear and outside of starboard wheel.	Assists at starboard wheel.
5. Rear and outside of port wheel.	Passes ammunition, assists at port wheel.
6. Five yards rear of starboard wheel.	Assists at starboard wheel, attends bolt of trail wheel, and trail handspike.
7. Five yards rear of port wheel.	Passes ammunition, assists at port wheel.
8. With No. 6.	Assists at starboard wheel.
9. With No. 7.	Assists at port wheel.
10. Rear of breech, to the left.	Closes the vent, puts in primer.

(Preparatory Order)—MAN THE HOWITZER.

The men go to their stations as above designated.

If the piece has been just landed, the *captain of the howitzer* will have been provided with his haversack, previously supplied.

All the men, except No. 2, with one round in a pouch.

No. 2 takes the sponge and rammer.

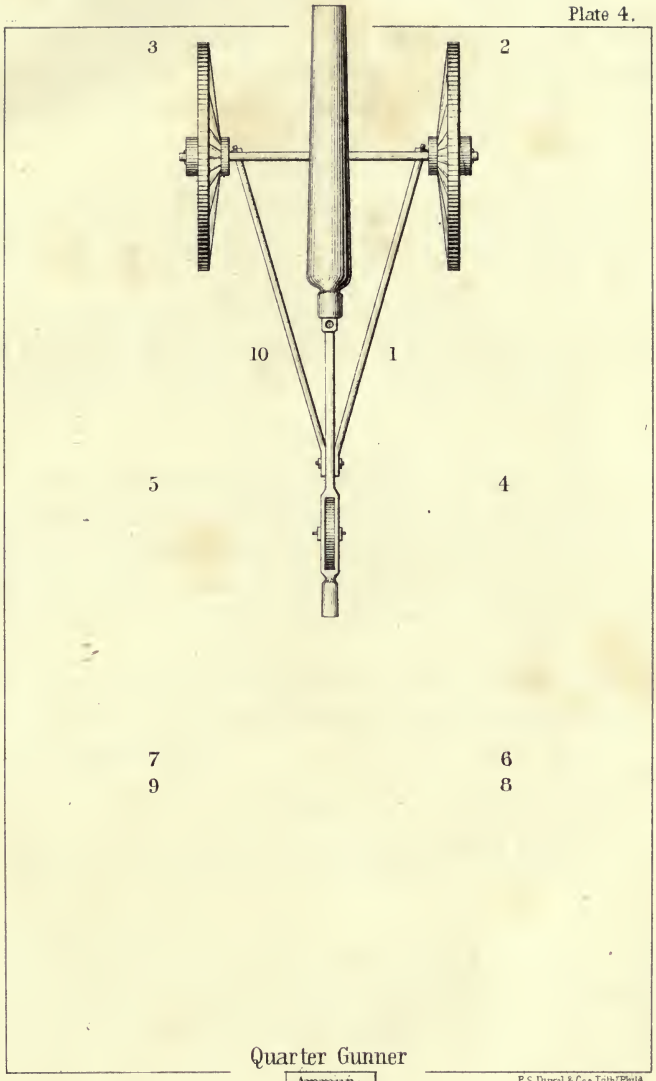
No. 6 unbolts trail wheel, and ships handspike in its socket of trail.

The ammunition-box, if there be any with the howitzer, is to be deposited about twenty-five yards in the rear of howitzer, in charge of quarter-gunner.

The drag-rope is deposited with the ammunition-box.

Stations at the Field Carriage.

Plate 4.



P.S. Duval & Co's Lith. Phil.

1. Sponge.

No. 2 enters the sponge, and, pressing it firmly to the bottom, turns it round and withdraws it.

Quarter-gunner takes a round from the ammunition-box, or from the pouch or passing box of one of the men; and, if shell or shrapnell be used, holds it for the officer in command to adjust the fuze.

2. Load.

The charge is to be passed along by the quarter-gunner to No. 7, and by No. 7 to No. 5, and by No. 5 to No. 3, who enters it into the muzzle.

No. 2 rams home to the mark on rammer-handle.

No. 10 puts in primer, and covers it with his hand until Nos. 2 and 3 have withdrawn to their stations outside the wheels.

3. Point.

Officer of gun puts up the sight, as directed by officer in command.

The captain of the gun gives the piece the proper elevation with the screw, and causes No. 6 to train the gun with the trail-handspike to the desired direction. He then withdraws as far as the lock laniard permits, standing on the right quarter of the breech, and outside of the wheel.

No. 10 stands outside of the port wheel. Nos. 2 and 3 fall back upon Nos. 1 and 10, and the remainder of the gun's crew take the stations first assigned them.

4. Fire.

The captain of the howitzer instantly draws the laniard at the word.

No. 10 closes the vent.

Nos. 5, 7, and 9 go to the port wheel; 4, 6, and 8 to the starboard wheel, taking hold of the spokes, ready to wheel the carriage forward, as may be directed by the officer in command.

(Concluding Order)—SECURE THE HOWITZER.

The quarter-gunner secures the ammunition-box, and gets ready the beckets or lashing.

The captain of the howitzer coils the laniard around the lock.

No. 6 bolts the trail wheel.

No. 2 may carry the sponge in his hand if the fire is merely suspended.

No. 6 may also carry the trail-handspike.

Nos. 7 and 8 hook on the drag-rope, and lead its parts fair for taking hold.

Wheel the piece over the ammunition-box, and lash or becket it to the axle.

The piece is now ready for any change of position.

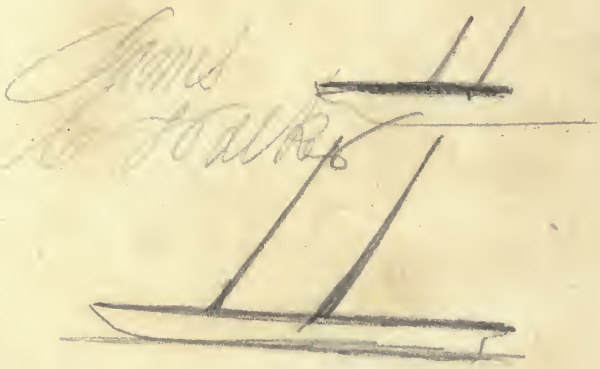
Jesse Taylor

Jesse Taylor

Robt G Robb
Jos. N. Barney
John Downey
Alex. de Bow
H. Lyne
J. L. Taylor

Jesse Taylor

Jesse



Alex. de Bow

Jesse Taylor

Ruth. Jones

Mr Maxwell
Called to see
Mr Dunnington