

C. 63

H. M. COASTGUARD.



ISSUED BY THE
BOARD OF TRADE

DESCRIPTION OF THE
ROCKET APPARATUS
FOR
SAVING LIFE FROM SHIPWRECK



FOR OFFICIAL USE

C.G. 3.

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ROCKET APPARATUS

FOR

SAVING LIFE FROM SHIPWRECK



LONDON.

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CONTENTS.

<i>Section.</i>	<i>Page.</i>
I.—Organisation of Life-Saving Service on Coasts of United Kingdom and Northern Ireland	3
II.—The Rocket Life-Saving Apparatus Service	5
III.—Exercises with Apparatus	7
IV.—Wreck Service	7
V.—Description of Stores forming a complete Life-Saving Apparatus	10
VI.—Storage of Vehicle and Gear	35
VII.—Care of gear and stores	38
VIII.—Buildings—L.S.A. Houses and Look-out Huts	41
IX.—The Sighting of Rockets	41
X.—Restoration of the Apparently Drowned—Schäfer Method	43
<i>Appendices.</i>	
I.—List of Stores forming a complete Rocket Life Saving Apparatus, and Index to Stores described in Section V	47
II.—List of Stores kept in Cart or Wagon and where stored	49
III.—Enrolment of Volunteers—conditions of	51
IV.—Information and Instructions for the guidance of Masters and Seamen	52
V.—Signals in connection with Life-Saving Service	53
<i>Index to Stores.</i>	
(See Appendix D)	47

SECTION I.

Organisation of Life-Saving Service on the coast of Great Britain and Northern Ireland.

The Board of Trade, under the provisions of the Merchant Shipping Act, 1894, are responsible for the establishment and maintenance of Rocket and other Life-Saving Stations on the coasts of Great Britain and Northern Ireland for the purpose of affording assistance towards the preservation of life in cases of shipwreck and distress at sea.

The Rocket Life-Saving Apparatus belongs, except in two instances, to the Board of Trade, while the Lifeboats, which, with the Life-Saving Apparatus, form the principal means of life-saving on the coast, are owned and managed, with few exceptions, by the Royal National Lifeboat Institution.

In April, 1923, H.M. Coastguard was reconstituted as a Life-Saving Service under the control of the Board of Trade, and the great majority of the L.S.A. Volunteer Companies, who work the Life-Saving Apparatus, are under the immediate charge of the Coastguard. In localities, however, where there are no Coastguard Stations, or where the Life-Saving Apparatus is housed at a distance from a Coastguard Station, charge is vested in a specially selected Volunteer, styled a Volunteer-in-Charge. In all cases the Life-Saving Apparatus is under the general supervision of the Officers of H.M. Coastguard.

Details of the Coastguard Stations, Life-Saving Apparatus Stations, and Lifeboat Stations, and also information as to the wreck services at which the Volunteer Companies have participated, and the number of lives saved by means of the Apparatus, are published annually by the Board of Trade in their Report on the Life-Saving Apparatus on the coasts of Great Britain and Northern Ireland.

Watch is maintained by the Coastguard from selected positions round the coast. The degree of watch kept at the different points depends necessarily on the weather conditions prevailing from time to time, the nature of the coast and the proximity or otherwise of the traffic routes, but at all times a general supervision of the coast is kept and arrangements made for increasing the watch if the weather conditions should require it. Whenever necessary the Coastguard are assisted by part-time watchkeepers, who are drawn so far as possible from the Life-Saving Apparatus Companies. At certain places where Coastguard Stations are not established, but where watch is necessary under

certain conditions of weather, watch is kept by auxiliary watchmen working under the direction of a Watchman-in-Charge.

The Coastguard or the Watchman-in-Charge is responsible for informing the Lifeboat Authorities, and for taking such other action as may be necessary (e.g., calling out the Life-Saving Apparatus Company) if a vessel is observed or reported to be in distress.

Electrical communications form a very important part of the Life-Saving organisation as the degree of success attending any measures taken for the preservation of life from shipwreck is largely dependent on the rapidity with which information of a casualty is passed to those in a position to take the necessary action.

Every Coastguard Station, look-out hut, Volunteer-in-Charge and Watchman-in-Charge is, therefore, connected to the exchange telephone system, or, if that is not available, is provided with a private telephone line and the necessary extensions. The Lifeboat Authorities are, where necessary, provided with exchange telephones or are connected with the private telephone circuits used by the Coastguard. Special arrangements have been made for priority to be given on telephone and telegraph lines to all messages on actual life-saving services.

The Lightkeepers on Lighthouses and Lightvessels provide a valuable auxiliary to the look-out maintained by the Coastguard and they make sound or visual signals to denote to those on shore that a vessel is in distress in their vicinity. Further, they have been provided with telephone facilities wherever these are necessary for life-saving purposes. The use of telephone cables for the purpose of communicating with lightvessels is, however, gradually being superseded by wireless telephony, and, by this means, groups of lightvessels are being placed in wireless communication with centrally situated Coastguard Stations.

S.O.S. messages received at Coast Wireless Telegraph Stations from vessels which can be assisted from shore resources are at once passed to the Coastguard and transmitted to those in the best position to afford, or arrange for, assistance. In all cases where an S.O.S. message is received arrangements are made for the vessel to be informed by wireless as early as practicable of the assistance that is being given.

Special signals are used (a) to indicate to a vessel in distress that her plight has been observed and assistance summoned, (b) to indicate the best landing place and best approach to the shore, if boats should be lowered, and (c) to warn a vessel that she is standing into danger. These signals are published for the information of mariners in the Notices to Mariners issued by the Board of Trade, and will be found in Appendix V.

5
SECTION II.

The Rocket Life-Saving Apparatus Service.

The Rocket Life-Saving Apparatus is worked by Volunteer Companies formed from residents on the coast; in a few places on the North-east coast of England it is worked by Volunteer Life-Saving Brigades.

Volunteer members of L.S.A. Companies are drawn from all walks of life, but no person is enrolled as a Volunteer who is connected in any way with the Lifeboat or whose service with the L.S.A. would prejudice the manning of the Lifeboat.

The Board of Trade do not, as a general rule, accept Volunteers for enrolment who are 50 years of age or over, and, except in special circumstances, Volunteers are called upon to resign on reaching the age of 65. All Volunteers are required to sign an official form of enrolment (see Appendix III), in which are set out the conditions under which they agree to serve.

In 1911, His Majesty the King was graciously pleased to approve the institution of a medal to be awarded to enrolled members of L.S.A. Companies and Brigades, in recognition of long and faithful service under the Board of Trade. This medal is awarded only to those Volunteers who have served for at least 20 years in an L.S.A. Company or Brigade, and who have been regular and prompt in attendance at wreck services and at the exercises. It is classed as a "King's Medal" and worn on the left breast.

The particular type of Apparatus supplied to the different stations (a description of which is given in Section V) depends on the needs of the localities in which the stations are placed, but the great majority of the stations are equipped with the full hawser apparatus. The authorised strengths of the Companies for working the different types of Apparatus are as follows:—

Hawser apparatus :	Twenty-one,	including the Coastguard (if any)
Whip ..	Fifteen	" " " "
Cliff ladder ..	Nine	" " " "

The Apparatus can be worked with fewer persons than the authorised strengths of the Companies, but Assistants may be employed at an exercise where the requisite number of Coastguard and Volunteers are not available, provided that the total number employed at the exercise does not exceed,

- (i) 16 in the case of a hawser apparatus.
- (ii) 12 " " whip apparatus.
- (iii) 7 " " cliff ladder apparatus.

At a wreck service not more than 25 persons are normally employed.

For the care and maintenance of the Apparatus, Volunteers-in-Charge receive the following sums annually:—

- (i) £12 in the case of a hawser apparatus.
- (ii) 49 " " whip apparatus.
- and (iii) 43 " " cliff ladder apparatus.

Every Company is exercised once a quarter under the supervision of an Officer of the Coastguard, except where the Apparatus has been used on wreck service before the quarterly exercise has been held, when the wreck service takes the place of the exercise for the quarter. Volunteers receive 5s. and Assistants 4s. for participation in an exercise, and payment according to scale for travelling to, and returning from, an exercise. Volunteers-in-Charge receive double the allowance paid to the Volunteers.

For participation in a wreck service when life is saved by means of the Apparatus, a Volunteer receives from 5s. to 30s., and Station Officers, Coastguardsmen and Assistants from 4s. upwards, payment in both cases being according to the nature of the service. When life is not saved, payments are respectively from 2s. 6d. to 30s., and from 2s. upwards. The Station Officer, Coastguardsman or Volunteer in charge of the working of the Apparatus receives a double allowance.

In addition to the ordinary payments for wreck service, the Board awards a special "Life Prize" of £1 for each life saved by means of the Apparatus. This reward is divided only amongst the Coastguard and Volunteers present.

Volunteers and Assistants who receive injuries when at an exercise of, or on service with, the Life-Saving Apparatus, receive compensation from the Board of Trade under the provisions of the Workmen's Compensation Acts. Men employed as drivers of the horses or lorries used in hauling the L.S.A. wagon, if not members of the Company, also receive compensation for injuries in the event of their employer not being insured against this liability.

Horses and motor lorries to haul the vehicle to and from the exercise ground, are generally supplied, on agreed terms, by a neighbouring farmer, livery stable or motor contractor. Arrangements are also made for the provision of horses and/or motor lorries to haul the L.S.A. wagon at short notice to a wreck service, and reasonable remuneration is paid, but formal agreements or contracts are not entered into, as, under Section 512 of the Merchant Shipping Act, 1894, the use of any wagon, cart or horses, that may be near at hand, may be demanded in connection with a wreck service.

The Board of Trade require every certificated officer in the Mercantile Marine to understand the working of the Apparatus, and issue posters containing instructions in the use of the Apparatus to the crews of British vessels. These posters are supplied to masters to be placed in their vessels in a conspicuous position, and are also displayed in public places on the coast. (See Appendix IV.)

SECTION III.

Exercises with Life-Saving Apparatus.

The smooth working of the Apparatus, which is essential at wreck services, can only be secured by attention to detail at exercises. Whenever the Apparatus is exercised, the whole operation of setting up the whip and hawser to the exercise post or other suitable object, and hauling the breeches buoy outwards and inwards is, therefore, carried out.

L.S.A. Companies with hawser apparatus are, however, exercised occasionally in the use of the whip and breeches buoy without hawser, as it might, on occasion, prove impossible at a wreck service to use the hawser, and Companies which have cliff ladders in their equipment are instructed in their use. Proficiency in the use of the heaving cane is encouraged by the award of small money prizes at every drill for the longest and accurate throws with the cane. As Companies become proficient in working the Apparatus, opportunity is taken to instruct them in the difficulties likely to be met with on wreck service and the methods of overcoming them.

The serviceability of the gear is tested by use at the exercises and consequently special lines are not supplied for exercises only. The Rocket lines are used alternately, and the hawser is changed end for end after each exercise.

Rockets are never fired over vessels at an exercise, as accidents might result, but always over an Exercise Post. Exercise Grounds are selected as carefully as possible in order to secure a clear range for the flight of the rocket, and the necessary steps are taken to ensure the safety of the public.

The method of restoring the apparently drowned approved by the Board of Trade is the Schäfer method. Each member of a Company is trained in this method and the process is demonstrated at every exercise. (See Section X.)

The proper and expeditious stowage of the vehicle is regarded as an integral part of the exercise, and at the conclusion of an exercise all the gear is correctly re-stowed in the vehicle, even though it is necessary to remove it again subsequently for examination and overhaul.

The duties of the various members, together with notes on the working of the Apparatus, are contained in C.G. 4, "Detail of Drill and Notes on the use of the Rocket Life-Saving Apparatus."

SECTION IV.

Wreck Service.

Under Section 511 of the Merchant Shipping Act, 1894, command of all persons present at the scene of a wreck is vested in the Receiver of Wreck, but should this official not be present, it is provided that the following officers or persons in succession

(each in the absence of the other, in the order in which they are named); namely, any Chief Officer of Customs, Principal Officer of Coastguard, Officer of Inland Revenue, Sheriff, Justice of the Peace, Commissioned Officer on full pay in the Naval Service of His Majesty, or Commissioned Officer on full pay in the Military Service of His Majesty, may do anything authorised by the Act to be done by the Receiver. Under this Act the Receiver is authorised, in addition to taking command at the scene of a wreck, to—

Require such persons as he thinks necessary to assist him.
Require the master of any vessel near at hand to give such aid with his men or vessel as may be in his power.

Demand the use of wagons, carts or horses, &c.

Pass and repass over adjoining lands.

Apprehend persons obstructing, creating disorder or plundering, and use force for the suppression of same, for which latter purpose all His Majesty's subjects may be commanded to assist.

The term "Principal Officer of Coastguard" referred to above means the senior member of the Coastguard present, irrespective of his rank, and although Receivers of Wreck when present at the scene of a wreck have, by law, the powers given them by the Merchant Shipping Act, they will, as the duties to be performed will for the most part be such as to render indispensable the experience of the Coastguard, be guided by the advice of the Coastguard in giving any directions for the preservation of life or property and for preventing plunder and disorder.

On the approach of bad weather, the Coastguard or Volunteer-in-Charge of a Rocket Life-Saving Apparatus Station confirms that the Apparatus is in readiness for immediate service.

On seeing, or receiving reliable information of, a vessel in distress in a position where the services of the Company might prove of value in rescuing those on board, either by landing them with the breeches buoy or other equipment provided, or by assisting them to land should they attempt to do so in their own boats, the Coastguard or Volunteer-in-Charge at once summons the Company by the pre-arranged signal and sends for horses or a motor lorry, as the case may be. Valuable time is frequently saved, where the casualty is some considerable distance away, by the despatch, in advance, in a light motor lorry or motor car, of sufficient men and gear to effect communication with the vessel in distress, i.e. Rocket machine, rockets in carrier-boxes, rocket line, whip and breeches buoy.

When approaching the scene of the wreck, if difficulty is experienced in the last stage of the journey necessitating the gear being carried to the scene of action along narrow tracks or paths down the cliff side, the gear necessary for establishing communication (viz., Rocket Machine, Rocket, Line Box, etc.) is taken first.

Where a long distance has to be covered to reach the scene of a wreck the Officer in charge has been authorised to employ a motor lorry to transport or haul the Apparatus, and wherever motor haulage can usefully be employed, the L.S.A. wagon is fitted with a spring draw-bar. When a motor lorry is employed for transport purposes, care is taken to ensure that no essential gear is left behind in the process of transferring the Apparatus to the lorry. Where the nature of the coast may render close approach to the scene of the wreck by a motor lorry impossible, motor haulage is employed in preference to motor transport, in order that horse or mule haulage may be employed in the final stage if necessary, and arrangements are made for a messenger to be sent on in advance.

On arrival at the scene of the wreck, the Company is, of course, guided by local circumstances as to the best means of bringing the Apparatus into action with minimum delay and maximum effectiveness. Hard and fast rules as to how the difficulties that are likely to be met with can be overcome cannot be laid down, but Officers and members of a Company make themselves thoroughly acquainted, by means of close study, with the stretch of coast upon which the Apparatus with which they are connected may be called upon to operate, in order that they may be able to anticipate difficulties which may occur at any particular point on this coast.

Experience has shown, however, that in certain circumstances a particular course of action is usually desirable, and the following hints are given to Officers in charge of the working of the Apparatus:—

- (1) If the beach is flat, the working of the Apparatus will present no special difficulties, but, where necessary, increase the effective range of the gear by disconnecting the whip at the swivel and inserting a length of rocket line—the rescue being effected by means of the whip and breeches buoy.
- (2) If the vessel appears to be breaking up quickly, use the whip only, and thus avoid the delay of sending out and setting up the hawser—similarly, use the whip only if the vessel in distress is a small, lightly-built craft.
- (3) If the vessel is working badly do not set up the hawser by means of the luff, but keep it as taut as possible by members of the Company, and any others available, holding on to it.
- (4) If the Apparatus is worked from a cliff ledge or on a steep slope, and it is impossible to set up the hawser by means of the luff, keep the hawser taut by hand, and, if possible, take one or two turns round a convenient rock, but see that precautions are taken against chafing.
- (5) Avoid if possible working the Apparatus from the top of a high cliff—the lower the gear is erected, the easier the rescue.

(6) Before deciding to work the Apparatus from the foot of a cliff, consider carefully the state of the tide, the size of the beach and its accessibility.

It cannot be emphasized too strongly that the smooth working of the Apparatus under difficult conditions depends very largely on the knowledge of detail possessed by the members of the Company of their own particular duties coupled with their implicit obedience to, and intelligent co-operation with, the Officer in charge. This is essential if the Apparatus is to be worked efficiently at night on a difficult part of the coast in adverse weather conditions, such as a gale of wind, accompanied by heavy rain or snow.

A shield, to be held for one year, is awarded to the L.S.A. Company which has performed the most meritorious wreck service during the preceding year.

SECTION V.

Description of Stores forming a complete Life-Saving Apparatus.

Instructions to those dealing with these stores are printed in Italics.

The stores are arranged in the order in which they are normally used, except that signalling stores have been grouped together on pages 27 to 31, and certain miscellaneous stores are dealt with on pages 31 and 32.

1. Rockets and Stores connected with the Firing of Rockets.

Rockets, Life-Saving, Boxer.—This consists of a drawn steel casing in two sections.—Each section is filled separately with slow-burning composition, by means of hydraulic machinery under a pressure of approximately nine tons to the square inch. After being filled, each section has a conical-shaped cavity bored in the composition. The sections are then joined together by means of screws. When the first section of the Rocket has expended its force the second section is ignited and an additional impulse is thus given to the projectile. The rocket is 25½ inches in length, 3 inches in diameter, and about 16 lbs. in weight. The stick is nine feet six inches in length, and is secured to the rocket by a spring catch.

The line is attached by passing it through a hole at the bottom of the stick, and a figure of eight knot made in it so as to prevent it unreeving should the line be burnt. (The numeral 8 is burnt in the rocket stick in order to show the correct place for the figure of eight knot on the rocket line.) The line is then bent to a snottier, which has an eye at one end and is pointed at the other. The pointed end of the snottier is rove through the hole in the end of the stick then through two rubber washers

and one metal washer and secured by a figure of eight knot on its end. *In the event of a snottier not being available the end of the rocket line should be rove and secured in the same manner.*

The rocket is fired by a fuze ignited by a portfire. To insure that rockets shall not be accidentally ignited the vent is secured by a metal plug screwed in. Key plates for drawing the plugs are attached to each rocket line box and also to the side of wagon or cart.

The base plug of the rocket kept in the rocket machine should be examined on the approach of bad weather and before drills to see that it works freely.

The paper on the base of the rocket should be entirely removed before the rocket is placed in the rocket machine.

Boxes, Rocket carrying.—These boxes are made to carry one rocket each, and are fitted with straps so that they may be carried to the Rocket Machine on the backs of the men. *Rockets should never be taken away from the wagon, except in these boxes, or in the Rocket Machine. A snottier with washers attached should be kept in each box ready for fitting to the rocket.*

Fuzes, Rocket.—This fuze burns ten seconds. *The paper at the end of the fuze should not be removed, as it protects the priming from damp, and is readily burnt through by the portfire.*

Box, Fuze.—This is a tin box, enclosed in a leather cover, and fitted with a shoulder strap, to contain the rocket fuzes and washers.

Portfires.—The portfire is for the purpose of firing the rocket, and is calculated to burn from four to five minutes. It is fitted with its own means of ignition. *To ignite the portfire the tape at the ignition end should be torn off. This will remove the top cap and expose the ignition blob. The striker should then be removed from the opposite end by holding the milled edge and twisting so as to break the paper cover. Then the prepared end of the striker should be drawn sharply across the exposed ignition, as if striking a match. Portfires, when being ignited, should be held pointing towards the ground.*

Box, Portfire.—This box is fitted to contain 12 portfires, and is carried in the box seat of the wagon or cart.

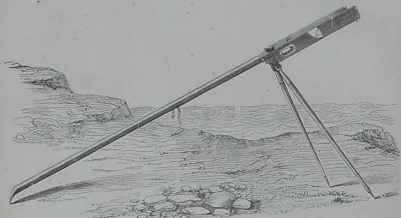
Machine, Rocket.—The machine from which the rocket is fired is a trough of sufficient length and size to hold the rocket with stick.

Openings are provided on the sides of the trough through which the lighted port fire is inserted for the purpose of igniting the fuze.

The inside of the trough of the Rocket Machine is never painted, but is kept well greased.

A rocket and stick fitted with a snottier (see page 14) with a figure of eight knot made on the thick part of the snottier, with

one metal washer near the knot, and two indiarubber washers below it, should always be kept in the Rocket Machine ready for use.



Rocket Machine.

Lines, Rocket.—These are of Linch Italian hemp, barked, 250 fathoms in length, and weigh about 55 lbs. Both ends should be marked down with twine to a point. About three fathoms of the rocket line should be wetted before securing it to the rocket stick. After firing, the burnt part of the line should be cut off, and the line re-fitted before being restored in the box. Rocket lines should always be kept on the pins ready for use.

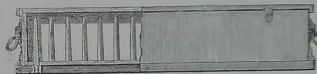
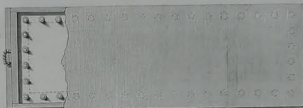
Boxes, Rocket Line.—This is a stout deal box with lid, and is used for stowing the Rocket lines.

The bottom of the box is perforated for 40 faking pins to pass through. The pins are screwed into a separate frame upon which the box rests. The weight of box, with line, is 105 lbs.

To ensure that the lines are used in rotation the different boxes are marked with white bands, three inches long and one inch wide, on one side of the cover, and also on the shell, with corresponding band on frame for pins. No. 1, one; No. 2, two; and No. 3, three.

When the pins have to be withdrawn the hooks at each end of the box should first be disengaged. The box should then be removed by placing the toe on the projecting bottom edge of the frame and lifting the box by the grumnets at each end. Care

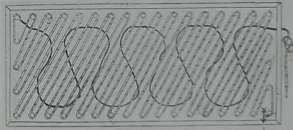
should be taken to see that no pins have been broken off and left in the line box, as this would result in the breaking or fouling of the line when the rocket was fired.



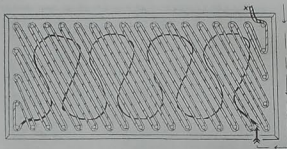
Rocket Line Box.

To stow the line.—At least six feet of the line should be taken from the inside of the box to the outside through the hole or slot and a figure of eight knot made. The line should then be snaked from one end of the box to the other and taken into a corner and faked back slackly as shown in the diagram, finishing at the opposite corner of the box....Snaking and faking should be continued alternately, care being taken that the layers of faking (which should be quite slack) cross each other, i.e., never lay the same way twice in succession.

The last two layers of faking should be laid over the pins.



Rocket Line snaked and faked in Box.
Showing 1st layer snaked and 2nd layer faked over pins.



Showing 3rd layer snaked and 4th layer faked over pins.
On completing 4th layer (at X) the 5th layer is placed in box the same way as the 1st commencing at the point X shown in the upper diagram.

Canting Legs.—This is a wooden frame placed under the rocket line box to cant the box at the necessary elevation (30 to 35 degrees) in line of fire of the rocket. *The canting legs should be placed in rear of, and close up to, the cleats of the rocket line box.*

Snotters.—These are made from new rocket line. One end is fitted with an eye splice, the other end is marked down with twine to a point. When completed the snorter is 2 feet in length. *Nine snotters in addition to the one on the machine should be kept in the wagon, three of which must be attached to the three rockets in the carrying boxes.*

New rocket line for snotters and tailing purposes should be demanded on annual requisition.

Water breaker.—This is an oval barrel of galvanised iron capable of holding about three gallons, with an opening large enough to admit a man's hand. It is provided to contain a supply of fresh water in order that the end of the rocket line may be wetted.

II. Whip and Stores used in connection with Whip.

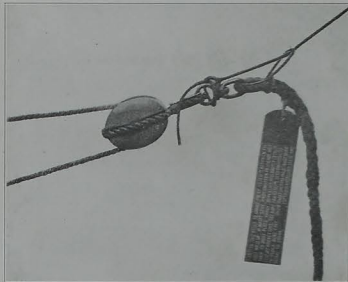
Whip.—This is an endless left handed, 1½ inch, Manila rope, rove through a single tail block. It is 250 fathoms in length, i. e., more than twice as long as the hawser. The Whip is fitted with two swivels, ordinary type, which divide it equally and enable turns and kinks to be taken out of the line without its being cut.

Box, whip.—This is a stout deal box without a lid, and with a division across the centre. By means of this box, the whip can readily be carried to any point required. Weight, with whip, &c., 140 lbs.

The Whip should be flemished down carefully left handed into the box, the swivel going in first across the bridge, and the whip must always be flemished from out inwards or it is certain to come out foul.

A space large enough for the hand to go down is left in the centre. The block is placed flat on top of the box.

Block, Tail.—A 7 inch block, through which the whip is rove, with a tail of at least two fathoms. A becket is fitted in the tail close to the swivel. A tally board is bent just in rear of the becket. To haul out the whip the shore-end of the rocket line is passed through the becket and bent on to the tail block by two half litches round the swivel. *This should always be done before the rocket is fired.*



Rocket line bent on to tail block.

Tally boards, whip.—These are about 1 foot 5½ inches long by 4 inches by ½ inch. They have printed on them, in white letters on a black ground, instructions to the following effect in the English, French, German and Norwegian languages:—

"Fasten tail block to lower mast well up. If masts gone then to best place handy. Cast off rocket line, see rope in block, runs free, show signal to shore."

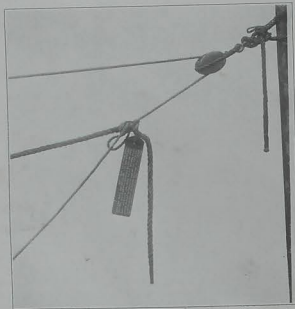
One should always be kept bent to the tail of the whip block and spare whip block close to the swivel.

iii. Hawser and Stores used in connection with Hawser.

Hawser.—This is a 3 inch Manila right-handed rope, 120 fathoms in length.

The ends of the hawser should be pointed, and a becket worked in at two fathoms from each end (with a hawser tally board close to the becket.)

When the hawser is to be hauled out it is necessary that it should be secured to the whip in such a way as would facilitate it being cast off by those on board the vessel who may have to do so under great difficulty. The whip should, therefore, be secured to it by reeving about an arm's length of the bight of the whip through the becket on the hawser towards the wreck, then making the first part of a clove hitch round the hawser on the wreck side of the becket, completing the hitch on the inside (shore side) of the becket.



Whip bent on to hawser.

Tally boards, hawser.—These are about 1 foot-5½ inches by 4½ inches by ½ inch. These boards have printed on them in white letters on a black ground, instructions to the following

effect, in the English, French, German and Norwegian languages:—

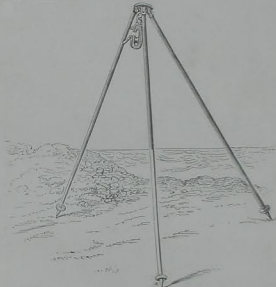
“ Make this hawser fast about 2 feet above the tail block.

Cast off whip from hawser. See all clear, and that the rope in the block runs free, and show signal to the shore.”

One should always be kept bent to each end of the hawser close to the becket.

Triangle.—This triangle is made of iron with an eye in the crown for the snatch-block. This is provided in order to keep the hawser and breeches buoy clear of breakers and rocks.

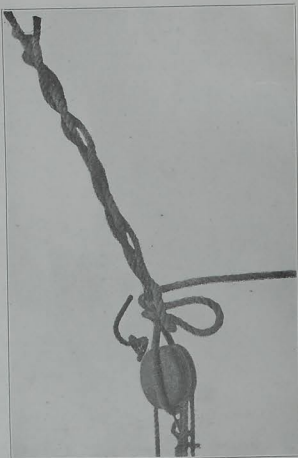
The rear leg has a Turk's head worked in the centre and is painted white from this Turk's head to the bottom.



Triangle.

Block, Snatch.—This is of galvanized iron and is fitted with a swivel hook, to be kept hooked and moused to the head of the triangle for the purpose of giving a fairlead to the hawser. The hook and clasp of block should not be painted but kept greased.

Tackle, Luff.—This consists of two eight inch double wood blocks and a fall of 25 fathoms of two inch manila rope. One of the blocks is fitted with two tails to bend on to the hawser and the other block is fitted with a hook for attaching into the ring on the anchor, or anchor bicker, or into the strop. This luff tackle is used in order that the hawser may be set up taut.



Luff tackle made fast to hawser.

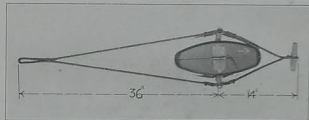
Anchor.—This is a stockless anchor with one fluke, and weighs about 3 qrs.

Anchor Backer.—This is of wood, and is 6 feet long, 11 inches broad, and 3 inches thick. A chain 6½ feet long, with a large iron ring at the end, is fixed to the centre of the backer by a stout bolt and nut. It is supplied to back up the anchor when the ground lacks good holding qualities.

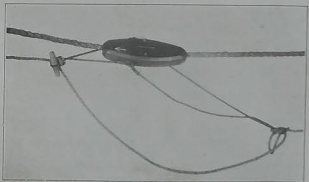
Strop.—This is to secure the hook block of the luff tackle to a post or tree or other suitable object, if available, thus obviating the necessity of using the anchor or anchor backer. It is also used on piers or in harbours where there are rings, etc., secured in the stonework. The strop can be put round or through such objects.

Hawser Cutter.—This is a linged wooden shell fitted with two knives. It is hauled along the hawser for the purpose of cutting it adrift from the wreck when the last of the crew has been landed. An arrow is burnt in the shell to indicate the direction in which the block should travel.

The hawser cutter is fitted with lanyards and toggle as shown. It should be secured to the whip by means of two half hitches on the toggle end and a sheet bend on the other end. When the cutter has been placed on the hawser and hauled cut to the wreck the hauling-out end of the whip should be let go, and the reaction of this together with a sharp jerk on the other part of the whip will cause the knives to engage for cutting.



Hawser Cutter fitted with Lanyards and Toggle.

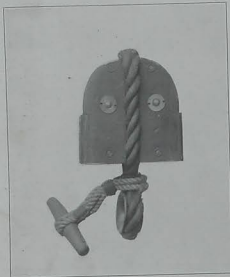


Hawser Cutter attached to Hawser and Whip.

IV.—Breeches Buoys, Lifebuoys, &c.

Block, Traveller.—This is an inverted block with two brass sheaves on patent runners through which the hawser is rove.

A thimble is seized in the stropping and fitted with a toggle, to which, without any lashing, the breeches buoy is attached by means of a grummet, and then hauled along the hawser by means of the whip running through the tail block.



Traveller Block.

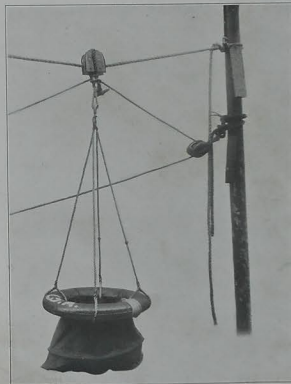
Block, Metal, Snatch for Whip.—This is a brass snatch block, six inches in length, with two brass sheaves and a steel spring. It is fitted with a grummet for securing to the sling of the breeches buoy, and is only used when the breeches buoy is employed without a hawser.

Buoy, Breeches.—This buoy is a cork lifebuoy, fitted with breeches of tanned canvas through which the persons to be rescued pass their legs. They are thus secure from the risk of falling or being washed out during transit from a wreck to the shore. The cork buoy is of sufficient buoyancy to support a man well out of the water. The buoys are fitted with two slings of 1½-inch manila rope. The longer sling is fitted with two thimbles and a grummet, and the shorter has an eye seized

in at the bight. The shorter sling is secured, when used with the hawser, by passing the eye through the lower thimble and over the grummet of the longer sling. The shorter sling has two Turk's heads worked in as a guide for bending to the metal snatch block when being used with the whip only. The four ends of the slings are spliced round the breeches buoy at equal distances apart.

At whip stations the metal snatch block is permanently attached to the short sling, and the two slings cannot be connected.

The breeches buoy, when used with the hawser, should be secured to the traveller block by means of the grummet in the thimble on the slings of the buoy. The grummet should be passed through the thimble and round the toggle on the traveller block.



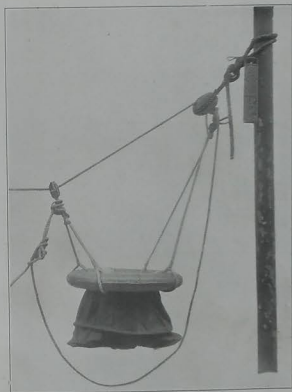
Using the Hawser and Whip with the Breeches Buoy.

Where a breeches buoy is fitted for use with the whip only, the long sling of the buoy should be secured to the lee whip on the wreck side of the buoy—the bight being passed through the Dumble and two half hitches being made. A bight of about two fathoms should then be measured off in the direction away from the wreck, and the lee whip secured to the short sling by means of two half hitches. The block should then be snatched to the weather whip.



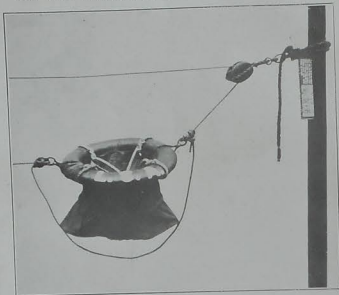
Breeches Buoy fitted with metal snatch block for whip apparatus.

Where the breeches buoy fitted for use with the hawser has to be adapted for use with the whip only, the slings should be separated. The eye of the sling marked with a Turk's head should be rove through the strop of the brass snatch block as far as the Turk's head and secured to it by means of two half hitches. The remaining sling should be secured to the lee whip on the wreck side of the buoy—the bight of the whip being passed through the Dumble and two half hitches being made. A bight of about two fathoms should then be measured off in the direction away from the wreck and the lee whip secured to the bight of the snatch block sling by means of two half hitches. The block should then be snatched to the weather whip.



Using Endless Whip with Small Snatch Block without Hawser.

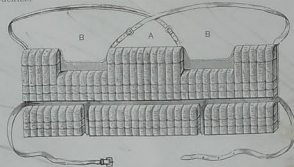
When the breeches buoy has to be used as a life buoy, the brass snatch block should not be snatched to the weather whip.



Using the Endless Whip without the Hawser and Small Snatch Block.

Line, Steadying.—This is a length of rocket line of 1 fathom spliced round the breeches buoy. When necessary to steady a person being hauled in the buoy through the water, the steadying line is secured to the lee whip on the shore side of the buoy.

Belts, Life, Cork.—These consist of two rows of cork strips stitched to tanned canvas. They are fitted with web straps and buckles.



Life Belt, with the Shoulder-straps ready for use.

To put the life-belt on.



Hold belt in front of the body, place right A over the head and slip the arms through right B.



Cross the waist straps behind the body—

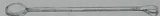


And buckle them in front.

Buoy, Life.—This is made of cork, and is of the usual pattern. A life-line fitted with running eye with turk's head may be attached.

Lines, Life.—These are of 1½ inch Manila hemp, 20 fathoms in length. One of these lines fitted with running eye with turk's head may be attached to the life buoy. The other is for use with the life belt.

Heaving Canes.—The heaving cane is 19 inches in length, loaded at one end with 1½ lbs. of lead, and has a leather loop secured to the other end. This is provided to enable a line to be thrown to a vessel which is close in shore.



Lines, Heaving.—These are of 6-thread Italian hemp, 25 fathoms in length. They are attached to the heaving-cane.

v. Stores used in connection with Cliff Ladders.

Ladders, Rope.—These are supplied in lengths of 20 fathoms. Half lengths are supplied if required. One length is supplied fitted with chains to secure to iron stakes. *The tripping line should be rolled up in it, as in frontispiece.*

Stakes, Iron.—These are of galvanised iron, 4 feet long and 1½ inches in diameter. They are supplied for driving into the ground at the head of a cliff for the purpose of securing the cliff ladders.

Hammer, Sledge.—This is about 7 lbs. in weight, and is used, for driving into the ground the iron stakes used to secure the cliff ladders.

Breast Ropes.—These are of 1½ inch Manila, 3 fathoms long, with standing eyes to go over stakes. They are supplied for the protection of those called upon to work near the edge of the cliff.

Head Guard.—This is made of cane strips and is padded. It affords protection to the man using the cliff ladder.

Line, Tripping.—This is of 1½ inch Manila, 5 fathoms longer than the total length of the ladder with which it is used. It is used for hauling up the cliff ladder on completion of the service.

Line, Life, for Ladders.—This is of 1½ inch Manila, and is 5 fathoms longer than the total length of the ladder with which it is used. This line is used by the man descending the ladder.

Belt, Life, Kapok.—One is supplied to each station equipped with cliff ladders. The pattern is similar to the cork life-belt, but it is not so liable to catch on projecting rocks when used for cliff ladder work.

Boatswain's Pipe with Chain.—One is supplied to each cliff ladder station for signalling by the man descending the cliff ladder. The pipe fits between the cane strips of the head guard.

Whistle with Chain.—One is supplied for use by the man attending the cliff ladder when answering signals.

Lanyard.—Two fathoms of 1½ inch rope is supplied with each cliff ladder for setting up the foot of the ladder to a rock or projection in the cliff when this is practicable.

vi. Signalling Stores.

Lantern, Hand, Acetylene.—This is an acetylene lamp, and is supplied for use as required.

Tripod for Illuminating Lights.—This tripod consists of three wooden legs about six feet in length, connected at the top by a piece of iron wire, having a small hook attached to it, on which the illuminating light is suspended vertically.

Lights, Illuminating, Wrecks.—These are pyrotechnic lights used for illuminating the scene of a wreck. The light is 29.6 inches in length and 2.7 inches in diameter. The time of burning is about 20 or 25 minutes.

One end of the light is fitted with a piece of wood, with a loop of iron wire attached to it in order that it may be suspended from the tripod. The other end is primed with meal powder. A mill-board disc, with a piece of cord attached to it, is placed over the priming, and the whole end covered with a cap of kilt plaster. The end of the cord attached to the mill board disc projects through the cap, and is used to tear off the cap when necessary. The light, if properly suspended, clears itself of dross when

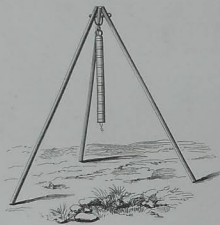
burning and is further kept clear by the case separating at each joint, as the heat of the burning composition successively melts the soldering of the bands.

These lights should be used on all occasions at wreck services when this is likely to further the work of rescue, whether rescue is being attempted by means of the rocket apparatus or by the lifeboat or both. The light should not be roughly handled or thrown about, as it is liable to be broken across at the junction of the segments.

Care should be taken in removing the cap before lighting, and the case should be grasped firmly at the capped end when the cap is torn off by means of the string loop; if there is any difficulty in removing the cap, it should be eased off round the edge by inserting the blade of a knife.

The light should be placed well to the rear and leeward of the rocket party, and on higher ground if possible.

Should these lights become damaged in the joints under the bands, they should be resoldered, when they will be again ready for use.



Illuminating Light and Tripod.

Lamp, Ecla.—This acetylene lamp consists of a stormproof hood fitted with a 100 c.p. burner and an aluminium reflector. The glass is protected by a wire screen. The hood is attached to the generator by means of a wing nut swivel which permits of the hood being locked in position at any desired angle. The generator is made of sheet steel galvanized. The weight of the lamp when charged is about 25 lbs. A charge of 3 lbs. of carbide burns about 16 hours.

These lamps are supplied to certain stations for illuminating the scene of a wreck in lieu of illuminating lights. The lamp can also be used as a headlight for the wagon when proceeding to the scene of a wreck.

Directions for working:—

Before recharging see that all carbide residue is cleaned from the retort.

Flush through with water, and make sure that the drip nozzles in the retort and the gas supply pipe are unobstructed.

To START UP.

- (1) Open burner cock.
- (2) Close drain tap and water valve.
- (3) Charge retort with carbide. (*The full charge is 3 lbs.*)
- (4) Replace retort door and screw up tightly.
- (5) Fill up water reservoir.
- (6) Open water valve.
- (7) When air is expelled from retort apply light to burner.

To SHUT OFF.

- (8) Do not turn down light.
 - (9) Close water valve.
 - (10) Open drain tap and drain off all water.
 - (11) Allow gas remaining in retort to burn out.
- If the carbide is not exhausted, the lamp can be relighted by repeating operations (1), (2), (5), (6), and (7).

Tripod for "Ecla" Lamp.—This is similar to the Illuminating Light Tripod (*see page 28*) but fitted with spikes and lanyard for steadying the lamp.

Shutter for "Ecla" Lamp.—This consists of a light metal hood which can be fitted over the front of the lamp. The hood is fitted with a signalling shutter three inches in diameter operated by a lever and spring.

Flag, Large.—This is either a red flag marked "B" or "T," size 9 feet by 6 feet, or Flag "B" (red Burgee), and is used during daylight as a signal for the L.S.A. Company to assemble.

Flags, Signal, Red.—These are 3 feet by 2 feet, fixed at the head of a staff 5 feet long.

Cover, Canvas, for Signal Flag.—These are supplied for the signal flags.

Flags, Semaphore.—

Lantern, Bullseye Flashing.—

Lantern, Signal Red.—

These are supplied for signalling purposes.

Lights, Coastguard.—These are white pyrotechnic lights containing the means of their own ignition and are fitted with a spike for sticking into the ground. They burn for 45 minutes and are used for signalling purposes as required.

Megaphone.—This is of aluminium, and is used on wreck service as required.

Maroons.—The maroon is a cylindrical light and sound signal, about $\frac{3}{4}$ inches in diameter and 5 inches in length. It is fitted with friction igniter, a quickmatch fuse about 40 inches in length and a safety fuse which burns for eight seconds. On bursting it makes a loud report and ejects white stars. It is used to summon volunteers to a wreck service, and to inform a ship in distress that her plight has been observed and that the L.S.A. Company is being assembled.

Directions for firing—

- (1) See that mortar is clear of water, stones, &c.

MARROONS. *add.*

When igniting the fuse the fuse must position ~~himself~~ slightly to the rear of the mortar and should in no circumstances pass in front of the mouth of the mortar until the maroon has first fired as intended, in the case of a mis fire, the "mis fire drill" has been completed.

C. G. Hinch 72/47.

Mortar for Maroons.

Maroons, Striker for.—This is a small wooden block coated with prepared composition for igniting the maroons.

Magazine for Maroons.—This is a metal lined case, supplied for the storage of the maroons. The case is painted red.

Maroons Mortar, Tampion for.—This is a wooden plug with head made to fit over the top of the mortar so as to keep the mortar free from wet, stones, &c.

Socket Signal.—This is a cylindrical light and sound signal fitted with a Bickford's fuse and with a detonator. The fuse is ignited by means of an ordinary fuse, and brass boxes for holding these fuses are supplied. The socket is fixed to a post which is securely driven into the ground.

Directions for Firing—

- (1) See that there is no water in the socket.
(2) Place the signal in the socket with the conical part upwards, taking care that it is pushed home to the bottom.

* These are gradually being replaced by maroons.

(3) Cut about half an inch off the fuse clean and straight across.

(4) Light the fuse with a fuse and retire to a safe distance. (An ordinary match will not ignite the fuse readily.) Fuses should be purchased locally and should be kept dry in the metal fuse box.

Care should be taken not to loosen the fuse—the signal should never be carried by means of the fuse.

Socket Signals should never be fired except from a Socket supplied for the purpose.

As these signals are fitted with a detonator, they should only be fired over deep water which is free from shipping and boats, so that, in the event of the signal not exploding on reaching its maximum height, it may fall into the sea. On no account should Socket Signals be used at discharges.

The signals should be used in order of age up to two years after the date of their manufacture provided they have been stored under good conditions (i.e., have been kept in a dry place in a Coastguard Station, L.S.A. House or Watch Hut and treated carefully), and are not damaged in any way.

If there is any doubt whatever as to the condition of any signal more than twelve months old, it should not be fired, but should be destroyed immediately by being weighted and sunk in deep water where dredging and trawling operations do not take place.

At all stations supplied with such signals one should be used at each quarterly exercise in the event of one not having been used in connection with a wreck service since the previous exercise.

In the event of a mis-fire, or where the signal fails to rise from the Socket, it should not be approached or handled for at least five minutes. Afterwards it should be destroyed by being weighted and sunk in deep water where dredging and trawling operations do not take place.

After each discharge the Cleaning Hook should be used to withdraw anything that may remain in the Socket. A requisition for a further supply must be made when the stock is reduced to two.

Socket, Bronze.—This Socket, which is used for the firing of the Socket Signal, should be fixed to the post provided.

Magazine for Socket Signals.—This is a zinc-lined air-tight case 10 $\frac{1}{2}$ inches deep for the storage of Socket Signals.

Box, Fuse.—This box is made of brass and is supplied to stations where socket signals are used.

vii. Miscellaneous Stores.

Belts, Arm.—These numbered web arm belts are supplied to enrolled Volunteers, to be worn when on duty with the Apparatus. The belts are not kept by the Volunteers but are hung on pegs in the Rocket House. The numbers are

consecutive from 1 upwards, according to the number of enrolled members, and are embroidered in blue. Volunteers-in-Charge are furnished with arm belts with crown embroidered in red but without a number.

Post, exercise.—An exercise post for drill purposes is erected and maintained at each station.

Tokens.—These are of bronze, about the size of a penny. They are issued to Assistants employed at a wreck service so that those who have been engaged by the Officer in charge of the Service may be identified when claiming payment for their services.

Bag for Tokens.—This is a canvas bag supplied to hold the tokens.

Tools.—Axe, claw hammer, screw jack, sheath knife, marlin-spike, pickaxe, screwdriver, screw wrench, shovel, spades.

Sundries.—Cans for oil, lamp feeder, lamp trimmer, a framed list of stores to be kept in the cart or wagon (C.G. Stores 12. See Appendix II),* a framed list of stores forming a complete Life Saving Apparatus (C.G. Stores 13. See Appendix II),† spun yarn, twine, palms, sail-needles.

viii. The L.S.A. Wagon.

The wagon is provided with good springs and is fitted with two pairs of shafts which can be used together or separately, and a pole so that either shaft or pole harness can be used. It has a brake which will block both rear wheels and a shoe drag and tie chain.

Washers are fitted to the axles and rings to the splinter bar and to the tail of the wagon for drag rope hooks.

The bottom and sides of the body are of lattens so as to admit air to the stores and to allow any water in the ropes and lines to drain out.

On the footboard are two boxes for tools and small stores. Iron crutches are fitted to the wagon for the rocket machine, rocket sticks, tripod, triangle and signal flags. Hooks and chains are fixed underneath the wagon for the purpose of slinging the anchor, water breaker, spades, shovel and pickaxe.

The seat in front for the driver and others is so made that it will contain six life-saving rockets, two illuminating lights, port-fire box and megaphone &c. The line and whip boxes are placed across the wagon and rest on the sides, thus forming seats. A board is placed across the fore part of the body of the wagon so that the rocket carrying boxes, life belts, life buoy &c. may be kept separate from the lawser, traveller block, breeches buoy, anchor block, &c.

Lamps (with the exception of the "Ecla" which is carried on the inner side of the foot-board and secured to the front of

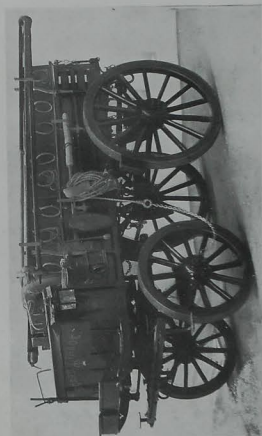
* This list should be screwed on to the tailboard of the wagon.

† This list should be kept hung up in the Rocket House.

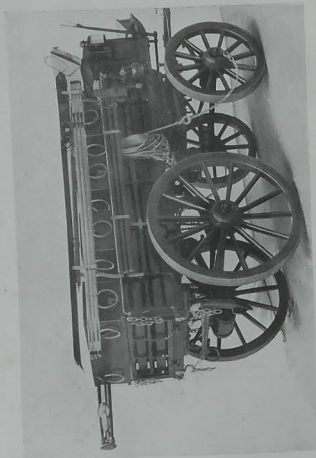
the box seat by means of a leather strap and spiral springs) are slung on the upper rail outside, and leather straps are fixed to secure them from damage by swinging.

Carts are only supplied to stations where wagons are unsuitable. In certain cases the gear is transported on specially provided hand-carts.

The wheels of the wagon or cart should be taken off once in each quarter and the axles cleaned and greased afresh. When motor towage is employed the wheels should be greased afresh after each journey. All nuts should be kept well screwed up.



Wagon stored for service, Frank View.



Wagon stowed for Service. Rear View.

Drag-Ropes.—Each rope is 28 feet in length and is fitted with 3 feet of galvanised chain with clip hooks at end, and with web shoulder bands for five men. By means of these ropes, when hooked into the drag wasters on the axles or into the rings on the splinter bar or tail, the wagon or cart can be dragged by the men when horses are not available, or where the ground is soft or uneven and the horses require to be assisted. *The drag ropes should be kept hooked on ready for use.*

Ropes, chains, or web bands are supplied separately to replace others worn out or lost.

Draw Bar.—An iron draw bar with spring, fitted with an eye through which the bolt of the fitting of the towing vehicle is secured, is supplied where motor haulage is available.

Back Band.—This is for use by the man in the shafts when horses are not used. It is made of broad web, with straps at each end, so as to admit of its being lengthened or shortened as circumstances require; one is supplied for carts and two for wagons.

Hand-bearer.—This is made of wood or canvas. It is used for the carriage of portions of the Apparatus from the wagon or cart to the place where required. It can also be employed as a stretcher to carry a disabled person.

Lamps, Side for Wagon or Cart.—A pair of carriage lamps, to burn candles, is supplied for each wagon or cart.

Lamps, Red, Rear.—One is supplied for each wagon fitted for motor towage. It is fitted in a bracket affixed to the tail board. *This lamp should always be lit when the wagon is being towed after dark, and should always be unshipped before the tail board is lowered.*

Cover, Cart, or Wagon.—This is of tanned cotton canvas and is used to cover the Apparatus and stores in the cart or wagon. It is fitted with lanyards. Tent pegs are supplied to secure it on the beach or shore when required.

SECTION VI

Stowage of Vehicle and Gear.

The Box Seat.—The box seat is divided into three compartments in which gear is stowed as follows:—

Offside.—The spare tail block is stowed at the bottom quite flat on the rear side, then the tail is coiled down neatly, the tally board standing up close to the front side. It will be found that the whole of it will go between the block and the front side with none of it above the strap of the block. Then the portfire-box is placed on the top. The two spare tally boards (one hawser, one whip) will go down in front alongside the tally board on the spare tail block. The fuze-box is placed on the top of the portfire-box.

Middle.—The megaphone, also the tokens.

Near Side.—Two illuminating lights in the lower brackets; six life-saving rockets in the other brackets. The back-bands, spare snuffers and strop are placed at the bottom. Nothing else is stowed in this compartment.

Footboard.—Wrench, screwdriver, marlinspike, nails, sheath-knife with belt, hammer (claw), axe, and spun yarn.

Inside the Vehicle.—In a wagon there is a partition across the vehicle in the rear of the box seat in the centre of which are stowed three carrying boxes upright close to the box seat; on each side is placed a life-belt and on top of each life-belt a life-line, but one life-line may be kept attached to the life-buoy. Behind the carrying boxes is placed the life-buoy; the buoy, behind the carrying boxes is placed the lanyards inside it, is stowed between the life-buoy and carrying boxes. Inside each carrying box is stowed a life-saving rocket base up with a snapper attached to it.

In a cart there is no partition, but the carrying boxes, life-belts and life-lines are stowed in the same way and must be stowed first, the hawser being flemished down against, but not under, them.

The life-buoy and the cover, with pegs, are kept on the top of the two front rocket line boxes.

In the body of the wagon or cart are stowed the hawser, luff, and breeches-buoy, and where cliff ladders are supplied, the two iron stakes and sledge hammer; in a wagon the becker must be stowed first on the left-hand side where the brackets are fixed, the chain being between the side of the vehicle and the becker.

The sledge hammer and one stake are kept inside the vehicle in becketts on the left-hand side and one stake in becketts on the right-hand side.

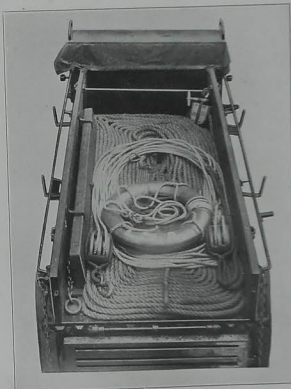
The Hawser.—The end of the hawser is placed on the left side a full arm's length from the rear end of the vehicle (a white mark is painted inside the vehicle to indicate the correct place) and flemished down. A space of about 4 inches is left in the centre and the hawser is taken to the top left-hand corner when the second layer is commenced. The same space is left, and the third layer is begun at the right-hand top corner. The traveller-block with toggle up is placed in this corner at an angle of about 45 degrees, and the flemishing is continued till the hawser is expended. The end is then brought down the centre to the rear of the vehicle close to the tail-board. The hawser must *never* be hitched over the toggle of the traveller-block.

The Luff.—The hook-block is placed on the left-hand side, close to the rear of the vehicle; all parts of the fall are then taken up the side, square across the vehicle just inside the right of the hawser, down the right-hand side, then across a short arm's length from rear of vehicle, and so on. The tail-block will come to the right-hand side of vehicle close to the tail-board with the knot in the end of the fall on top; the tails are then doubled back and placed straight out close to the side of the vehicle. Three complete coils will be made in a wagon.

The Breeches-Buoy.—This is placed just inside the luff-fall with the letters L.S.A. nearest to the tail-board. (A short length of line is kept secured to the buoy for use as a steadying line, when required.)

Line and Whip boxes.—Three line boxes and a whip box are stowed on the top of the Vehicle. In a wagon these are placed a small distance apart, to form seats for the men, the rear box being close to the tail-board; in a cart the boxes are close together.

The rocket-line box, which is to be used first, is stowed, with the cutting legs secured on top, close to the tail board. The whip-box is stowed next to it, the two other line boxes being in front.



Inside of Wagon properly stowed.

Outside the Vehicle:—

Drag ropes complete with shoulder straps, heaving canes and lines, head guard, two lanterns and hawser-cutter (where supplied).

In brackets: Rocket machine, triangle, with head to the rear, sticks for life-saving rockets, tripod for illuminating light, and signal flags on staves in a cover.

The Whip and line boxes must never be passed over the rocket machine to their positions on the vehicle, nor must any man climb into the vehicle over the rocket machines.

Underneath: Anchor (close to tail-board), water-breaker, hand-bearer, pickaxe, shovel, two spades; also in a cart, the bucket. If room cannot be made for the hand-bearer underneath a cart it should be placed on top of the boxes.

The tent pegs are secured to the lanyards of the vehicle cover, and rolled up inside, but two or three spare ones for marking the exercise ground may be stowed in the foot-board or kept in the house.

SECTION VII.

Care of Gear and Stores.

General.—All L.S.A. Gear should be kept in a serviceable condition, stowed in the correct place and ready for immediate service.

Stores should be examined after use and put in order or refitted. They should also be mustered and restowed (including all lines) at least once a quarter, exclusive of exercises.

On no account should any of the ropes or other gear be allowed to be used for other purposes than those for which they are specifically provided.

The L.S.A. house should be kept aired by the doors and windows being frequently opened; and such of the gear as would suffer injury from damp should be frequently examined, and, if necessary, dried by exposure to the sun or wind, or by means of a fire in the house. If from damp or any other cause the explosives or other stores are injured, the fact should be immediately reported.

When the doors of an L.S.A. house are left open, a Station Officer, Coastguardman, Volunteer-in-Charge, or some person connected with the Volunteer Company should always be present in charge; and when explaining the use of the Apparatus to visitors he should see that on no account is the plug removed from the rocket, or fuse inserted, or any fireworks or pyrotechnic stores ignited. All stores which may be removed for the purpose of the explanation or demonstration must at once be returned to their proper places.

* Where stretchers are supplied in lieu of a hand-bearer they should be stowed in the brackets (outside vehicle).

Measurement of Lines.—Rocket lines, hawser and whip should be carefully measured—

- (a) When new lines are received.
- (b) As soon as possible after being used at a wreck service if they should show any signs of having been cut, and
- (c) In March of each year before the annual store report is forwarded.

The Station Officer, Coastguardman or Volunteer-in-Charge should be able to identify each line with the date when received. At every station two stout pegs should be driven into the ground 10 fathoms apart and kept there as fixtures to ensure accurate measurements. The length of each rocket line when last measured, and the date of measurement, should be marked on the inside of the lid of the box in which it is kept; in the case of the hawser and whip the particulars should be noted on the inside of the tail-board of the wagon or cart. Rocket lines should never be allowed to be more than 29 fathoms short. When, therefore, a line is less than 250 fathoms in length a piece should be tailed on to it so as to make it up to the original length of 250 fathoms. Short lengths of line are issued for this purpose. All lines should be pointed.

Rocket Lines.—These should not be spliced more than once at each end. When it is necessary to re-tail a line it should, therefore, be cut beyond the previous splice. A long splice should be employed and this should be very carefully made so as to obviate the possibility of the line parting. On the completion of the splice the ends should be locked by dividing the strands with a marine-spike and passing the ends through the opening. This splice can be reduced in circumference and the strands made to lie evenly together by rolling the splice between two boards. In cutting off the ends of the strands care should be taken not to cut them too close to the rope.

Whips.—When splicing a whip into a swivel a chain splice should not be used as this would leave only two strands in the swivel to take the strain. A short splice should always be used and after tucking ~~one~~ the second strand should be pulled ~~out~~ the third strand a ~~little~~ *three times* ~~and~~ will prevent the three strands forming a ~~hook~~ *hook* ~~at~~ *at* ~~one~~ *at one* part of the rope. The ends should be locked and the splice rolled between two boards to reduce the circumference. ~~During~~ *locking* ~~it~~ *by* should be worked towards the swivels in order that they may ~~be~~ *be* removed by revolving the swivels in the required direction, ~~and~~ *and* ~~the~~ *swivels* should be kept clean and lubricated. *lockers*

Where it is necessary, owing to the ropes having been chafed at a wreck service, to cut and splice the whip or hawser, in order that it may, if required, be ready for further use, a report on Form C. Stores 10 should at once be forwarded to the Superintendent of Stores.

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Rockets.—These should be moved as infrequently as possible and handled carefully, for rough handling causes internal damage and results in erratic flight.

Rocket sticks.—To prevent warping, these should be strapped or tied together in bundles at the ends and centre, the springs should not be compressed but kept on the outside. Spare sticks not carried on the vehicle should be tied together and stowed on a flat surface.

L.S.A. Explosives should be kept as dry as possible and handled carefully. At drills the explosive stores longest in stock should be used first.

Mortars and Signal Sockets.—These should be examined frequently in order to ensure that they are kept dry and free from stones.

Rocket Machine.—The outside of the trough of the rocket machine is painted blue, the inside should be greased and the other ironwork parts kept bright. When the legs of the machine have for any reason been removed it is necessary to ensure that it has been properly assembled, and the machine should, as soon as the legs are replaced, be erected in the firing position before it is stowed on the wagon.

Hauser Cutters.—The knives should be kept clean and sharp.

Lamps, Acetylene.—As soon as possible after use the old carbide should be removed and the carbide container cleaned and dried before the lamp is recharged. The water container should be tested to see that the dripper is in order. When burners are supplied fitted with cleaning screws, these must not be used for the purpose of regulating the flame as this will cause an unequal pressure of gas and may break the glass or damage the reflector. When the lamp is alight, the screws should be opened to their fullest extent.

Lamps, Oil.—After use, the lamps should be cleaned and refilled and the wicks trimmed.

Wagons and Carts.—The brake, where fitted, should be tested to ensure that the wheels are properly gripped. The wheels should be removed and the axles cleaned and greased at least every quarter after the exercise has been held, and after each wreck service. The axles should be tested for flaws by tapping lightly with a hammer. No oil is to be rubbed on the paint of the vehicle.

Miscellaneous.—No tar or blacking should be used on any part of the Apparatus. The woodwork of the rocket machine, pick, shovel, spades and small tools should be scraped clean and varnished and the iron-work bronzed. The anchor should be painted red and the luff tackle and traveller blocks varnished.

SECTION VIII.

Buildings.

L.S.A. Houses.—These houses are either specially built or are rented. The minimum inside measurements of the houses are as follows:—

For hauser equipment, 22 ft. by 14 ft. by 9 ft.

For whip equipment, 18 ft. by 12 ft. by 9 ft.

Wherever possible space is acquired outside the house for drying the gear. Standard houses have a half loft for the stowage of spare stores and a stove or fireplace to enable the stores to be kept aired, one ton of coal being allowed annually for this purpose.

Look-out Huts.—The look-out huts provided for use by the Coastguard and Auxiliary Watchmen are of substantial structure and flat roofed. They are fitted with outside shutters in order that they may be closed up when not in use. A sliding glass panel is fitted to each hut so that the watchman may use a telescope from the inside of the hut. Heating is generally provided by means of oil stoves.

The standard huts provided are of three types:—

- (1) A small hut for use at or near Coastguard Stations.
- (2) A somewhat larger hut for use on sites at a distance from Coastguard Stations where the conditions occasionally necessitate two men remaining at the hut during the night. In this type of hut a hinged bunk is provided.
- (3) A large hut for use on sites at some considerable distance from Coastguard Stations, where it is often necessary for the Coastguardsmen to sleep in the look-out. In this type of hut the sleeping accommodation (two bunks) is partitioned off, and a cooking range and storage for utensils is provided.

SECTION IX.

The Flight of Rockets.

The Life-Saving Rocket is capable of being fired with considerable accuracy if properly used. Cases of erratic flight occasionally occur, however, owing to irregular burning of the composition causing an increase or loss of speed, but most of the important errors are due to preventable causes.

At all exercises the rocket machine should be slowly and deliberately laid, after consultation between the Officers and men of the Coastguard and the firing members of the Company. The results should be recorded and kept for reference; the deflection of the rocket and the fall of the line—the latter being actually

measured—should both be noted. If a bad shot occurs the machine should not be moved until the probable cause has been ascertained—the drill being delayed for this purpose.

The following are the principal causes of erratic flights:—

(a) *Bent or badly made machines.*

(b) *Bent sticks.*

These faults can be detected by testing with the hand to see if the rocket in the machine springs back against either side when displaced. A rocket fired from a bent machine, or with a bent stick, will be deflected towards the side of the machine on which the rocket is bearing. If it is necessary, because no other machine or stick is available, to fire a rocket under these conditions the necessary allowance should be made for deflection.

(c) *A tilted machine.*—This will cause the rocket to deflect towards the lower side. An inclination of the machine sufficient to cause deflection should, however, be visible to the trained observer; the horizon, if visible, will assist him in laying it accurately. It is sometimes easier, especially at night, to level the machine with the rocket removed, but care should be taken not to move the machine in replacing the rocket. The machine may be levelled, if necessary, by placing the lid of the line box under the lower leg.

(d) *A line box not properly placed.*—The line box should be exactly in the rear of the rocket and the line on the ground should lead straight to the centre of the box. A line passing round a stone, or plant, a few inches out of direct alignment will deflect the rocket.

The above errors affect the lateral flight of the rocket. The vertical flight is affected by the following errors, both of which would cause the rocket to fall short:—

(e) *A hump on the lip of the machine caused by rust under the band.*—This can be removed with a hammer, a spanner being held under the lip of the machine while striking.

(f) *The line box being placed above the heel of the rocket machine.*—When firing down a slope or on uneven ground, if it is not possible to select a site for placing the machine with four yards of flat ground to the rear, the line box should be placed close up to the heel of the machine. If this is not possible, then two fathoms of the line should be ranged in the line of fire between the machine and the box.

EFFECT OF WIND ON FLIGHT OF ROCKET.

The effect of wind on the rocket and line in flight can only be learnt by experience. In laying the rocket machine it should always be borne in mind that the object is to effect communication by means of the rocket line and not to hit a target with the

rocket. Sufficient deflection to windward should, therefore, be allowed, as there is a possibility of the line drifting down, whereas it cannot drift up.

The elevation given to the machine will depend on circumstances. For maximum range the legs should be nearly vertical. If the range is short and the wind not too high a low rocket will probably be successful as the effect of the wind on the line is less. With a strong wind, however, the rocket may "tip" so at least a medium elevation is recommended in high winds.

A following wind will sometimes cause a short shot. The rocket usually turns to windward towards the end of its flight, but not sufficiently to counteract the drift of the rocket and line to leeward, and the effect of this turn on the pull of the line is usually small except in a very moderate wind. The effect of secondary wind currents due to cliffs, &c., can only be roughly gauged beforehand, but a strong gust of wind acting on the rocket in the early stages of its flight, especially before it is clear of the machine, will have much greater effect than later on; it is therefore inadvisable to fire too close to a cliff edge or just under the lee of shelter of any kind. The majority of practice shots should be fired with full elevation, as this brings out errors and wind effects far better than a low elevation.

SECTION X.

Restoration of the Apparently Drowned.

(Schäfer Method.)

Send immediately for hot bottles, blankets, dry clothing, and medical assistance, but proceed to treat the Patient *instantly* on the spot.

The points to be aimed at are—first and *immediately*, the *Restoration of Breathing*; and secondly, the *Promotion of Warmth and Circulation*.

The efforts to *restore Breathing* must be commenced immediately the patient is removed from the water and persevered in energetically for five or six hours, but should a medical man pronounce life to be extinct before that time he should be informed of the instructions and that the Coastguard are quite prepared to continue for the maximum period. Efforts to promote *Warmth and Circulation* must be postponed until after the first appearance of natural breathing, unless other assistance is available (see below).

INSTRUCTION IN TREATMENT.

Do not waste time in removing or loosening clothing. This can be postponed until others arrive and are able to assist.

Immediately after removal from the water, by the patient

in a completely flat position face downwards with the arms extended. Turn the face to the side, taking care that the mouth is clear of the ground and the arm pit. Kneel or squat astride or on one side of the patient (fig. 1).

Place the hands on the small of the patient's back, one on each side, one inch above the pelvis, with the thumbs parallel and nearly touching (fig. 1).

Bend forward with the arms straight so as to allow your weight to bear on your wrists and thus make a steady, firm, downward pressure on the lower part of the patient's back (the loins and lowest ribs), as shown in fig. 2. (This part of the operation should occupy the time necessary to count—slowly—*one, two, three*.)

Immediately after making this downward pressure swing backwards so as to relax the pressure, but without lifting your hands from the patient's body (fig. 1). (This part of the operation should occupy the time necessary to count—slowly—*four, five*.) There should be no alteration in the interval between each count.

Repeat the forward and backward movements (that is, the pressure and relaxation of pressure) without any marked pause between the movements. The downward pressure forces the air out of the lungs and the relaxation of pressure causes the air to be drawn in again.

Continue the movements at the rate of about 12 to 15 per minute until natural breathing has recommenced.

When natural breathing is fairly begun, cease the movements. Watch the patient closely, and, if natural breathing ceases, repeat the movements as before.

When natural breathing has commenced, the patient should be allowed to lie in a natural position on one side, and treatment for the promotion of warmth and circulation may be continued or proceeded with, the patient being kept covered as much as possible.

The movements of artificial breathing are of the first consequence. If you are single-handed, you must attend to these alone until natural breathing is restored. If other assistance is at hand, one person should at once be sent for hot bottles and medical assistance and others should be directed to promote warmth and circulation, taking care not to interfere with the restoration of respiration.

To promote warmth and circulation the limbs should be rubbed upwards with firm grasping pressure, handkerchiefs, flannels, &c., being used energetically. In this way the blood is propelled along the veins towards the heart. After that a dry and warm covering may be placed over the patient and warm wring-out flannels, hot bottles, &c., may be applied between the thighs, to the palms of the hands, arm-pits and feet; but

the movements of artificial breathing must not be interfered with. Care must be taken that the hot bottles are covered with flannel or other material before applying them to the naked body.

After natural breathing is restored, the wet clothing may be removed and a dry covering substituted. This must be done without disturbing the patient, who should be allowed to lie quiet, encouraged to sleep, and watched for at least an hour before being removed.

TREATMENT AFTER NATURAL BREATHING HAS BEEN RESTORED.

On the restoration of life, when the power of swallowing has fully returned, small quantities of warm coffee, or tea, or milk, or broth, or other light warm nourishment, should be administered. No alcohol is to be given except on the explicit instructions of a medical man present at the time. The patient should be kept in bed, and a disposition to sleep encouraged.

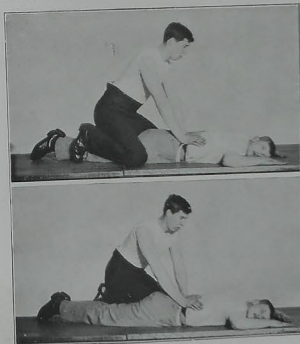


FIG. 1.

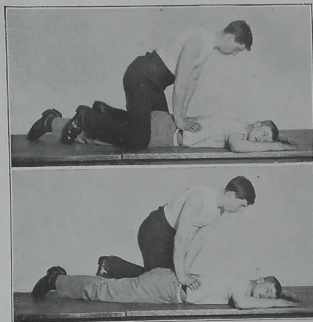


FIG. 2.

APPENDIX I.

List of Stores forming a complete Rocket Life Saving Apparatus.

Article.	Descrip- tion on page.
Anchor	1 15
Anchor Backer and Chain	1 18
Axe, Small	1 32
Back Band for Cart	1 35
" Bands for Wagon	2 35
Bag for Tokens	1 32
Belt, Arm (for Volunteers only)	1 31
Life, Cork	2 24
* Belt, Life, Kapok	1 27
* Block, Snatch	1 17
Metal for Whip	1 26
Block, Tail	2 15
Block, Traveler	1 29
* Boatwain's Pipe with Chain	1 27
Box, Portfire	1 11
" Fuse	1 11
" Fuse	1 31
Boxes, Rocket Carrying	3 11
Rocket Line	3 12
Box, Whip	1 14
* Broom	2 27
Buoys, Breeches	1 26
Life	2 35
Candles, Carriage	2 32
Cans for Oil	1 14
Cauting Legs	1 29
Cover, Canvas for Signal Flags	1 35
Cart or Wagon	1 35
Drag Ropes (complete with Shoulder Straps)	2 34
* Drawbar	1 35
Flag, Large (9 ft. x 6 ft.)	1 29
Flags, Semaphore	2 29
Signal, Red, with Staff	2 29
Frame for C.O. Stores 12	1 32
" 13	1 32
* Fuses	18 11
Fuses, Rocket	1 32
Hammer, Claw	1 27
" Sledge	1 35
Handspike	1 16
Hawser, 3 ins., right-handed, 120 fms.	1 19
Cutter	1 27
* Head Guard	2 26
Heaving Cables	1 32
Jack, Screw	4 11
Key-plates	1 32
Knife Sheath	1 28
* Ladders, Rope	1 28
Lamp, Bala (for Lights Illuminating Wreck)	1 32
Lamp Feeder	1 32
Trimmer	1 32
Lamps, Side for Cart or Wagon	2 35

* Supplied to certain stations only.

† Supplied by H.M. Office of Works.

Article.	Description No.	tion on page.
* Lamp, Red, Rear	1	35
Lantern, Bulbless, Flashing	1	29
" Hand, Acetylene	1	27
" Signal, Red	1	29
* Lanyard for ladder	1	29
Lights, Coastguard	1	27
Lights Illuminating Wrecks (for Lamp, Ecla)	3	27
Lines, Rocket	3	12
" Life (length 20 fms., size 1 1/2 ins.)	2	26
* Line, Life, size 1 1/2 ins.	1	27
Lines, Hoisting 6-thread, 25 fms	2	26
* Lines, Standing	1	24
" " Tripping, 1 1/2 in.	1	27
Machine, Rocket	1	11
* Magazine for Maroon	1	30
" " for Socket Signals	1	31
Marlinespike	1	32
* Maroons	4	30
" Mortar for	1	30
" Tampion for	2	30
" Strikers for	1	30
Megaphones	1	30
Oil, Colza	1	32
" Sweet	1	32
Palm Sail	1	32
Pikaxe	1	32
Portfires	1	32
* Post for Exercise, with Stays	20	11
Rockets, Life Saving, Boxer	1	32
Rocket Sticks, Life Saving	14	10
Sail Needles	1	32
Screwdriver	2	32
Shovel	1	32
* Shutter for Ecla Lamp	1	29
Shutters (made at Station)	3	14
* Socket, Bronze	1	31
" " Signals	6	30
† " Post for	1	30
Spades	1	32
Sprayers	2	32
* Stakes, Iron	1 lb.	32
Strap	2	20
Tackle, Luff, with two Sails and Fall 25 fms. (size 2 in.)	1	17
Tally Boards, Hawser	3	16
" " Whip	3	12
Tent Pegs	3	12
Tokens (not exceeding)	8	35
Tripping	25	32
Tripod for Illuminating Light	1	17
" Ecla Lamp	1	27
Twine	1	29
Wagon or Cart	1 lb.	32
Washers, India-rubber	1	32
Water Breaker	28	12
Whip, 1 1/2 ins., left-handed, 250 fms.	1	14
* Whistle with Chain	1	14
Wrench, Screw	1	32

* Supplied to certain stations only.
† Supplied by H.M. Office of Works.

APPENDIX II.

Rocket Life Saving Apparatus.

LIST OF STORES TO BE KEPT IN CART OR WAGON, AND WHERE STORED.

Description.	No.	Where Stored.
Anchor	1	Underneath vehicle.
" Baker	1	In body of wagon.
Axe, Small	1	Underneath cart.
Back Band (for Man in Shafts) for cart.	1	Under footboard.
Back Band (for wagon)	1	In box seat.
Bolts, Life, Cork	2	"
" " Kapok (where Rope Ladders are supplied)	1	In wagon, in partition. In cart, each side of carrying boxes.
Block, Snatch	1	On triangle.
" " (for Whip)	1	Under footboard.
Block, Tall	2	One on ship.
" Traveller	1	One in box seat.
Boatswain's Whistle	1	On hawser.
Boxes, Rocket Line	3	Fastened to Head Guard.
" Rocket Carrying	3	On top of vehicle.
" " " "	3	In wagon, in partition. In cart, upright in centre against box seat.
" Fuse with Bolt	1	In box seat.
" Whip	1	On top of vehicle.
" Portfire	1	In box seat.
Buoys, Breaches	1	In centre of vehicle on top of hawser, close to tailboard.
" Life	1	In wagon, in partition. In cart, on top of line box seat box seat.
Candles	1 lb.	In box seat.
Canting Legs	1	On top of Rocket Line Box.
Cart Cover	1	In wagon, between carrying boxes and life buoy. In cart, on top of life buoy.
Cover for Signal Flags	1	On flag.
Drag Ropes (complete with shoulder straps)	2	Hung outside vehicle.
Flags, Signal (Red), with Staff	2	"
Flags, Semaphore	2	Outside vehicle.
Fuze, Rocket	2	"
Hammer, Claw	10	In fuze box.
" Sledge (where Rope Ladders are supplied)	1	Under footboard.
Hand Bearer	1	Left hand side of vehicle, inside, hung in buckets next tailboard.
Hawser	1	Under vehicle.
" " "	1	In vehicle.
" Cutter	1	Hung outside vehicle.
Head Guard (where Rope Ladders are supplied)	1	"
Hoisting Canes	2	"

Description.	No.	Where Stowed.
Knife, Sheath	1	Under footboard.
Ladder, Rope (where necessary)	—	On top of line boxes or on tail board.
Lamps, Side	2	In sockets outside vehicle.
Lanterns, Bull's Eye, Flashing	1	} Outside vehicle.
" Hand, Acetylene	1	
" Signal, Red	1	} On footboard.
Lamp, Eola or	1	
Lights, Illuminating	2	Bottom of box seat, in rests.
" Coastguard	2	In box seat.
Lines, Rocket	3	In their boxes.
" Life	2	One on top of life belts, one on life buoy.
" Heaving	2	Outside, on heaving canes.
Machine, Rocket	1	In brackets, outside vehicle.
Marlinpike	1	Under footboard.
Megaphone	1	In box seat.
Pickaxe	1	Under vehicle.
Potfires	12	In potfire box.
" Heaving	6	In box seat in rests above illuminating lights.
Rockets, Life Saving, Boxer	3	In carrying boxes, with snotters on each.
" Heaving	1	In rocket machine, with snotters.
Rocket Sticks, L.S.	9	In brackets, outside cart.
Screwdriver	1	In machine.
Shovel	1	Under footboard.
Snotters	10	Under vehicle.
Spades	2	4 on rockets as above, 6 in box seat.
" Heaving	2	Under vehicle.
Sprynary	4 lb.	Under footboard.
Stakes, Iron (where Rope Ladders are supplied).	2	One each side of vehicle, hung in brackets, next tailboard.
Strap	1	In box seat.
Tackle, Luff	1	In vehicle.
Tally Boards, Hawsers	3	2 on hawser, 1 in box seat.
Tent Pegs	3	2 on tail blocks, 1 in box seat.
Tokens (where supplied)	6	On cart cover.
Triangle	—	In box seat.
Tripod for Illuminating Lights of Eola Lamp	1	Outside, in brackets.
Washers, India-rubber	18	Outside vehicle.
" Metal	2	In fuse box.
" Rope	9	On rocket stick in machine.
" Whip	1	In fuse box.
Water Breaker	1	On rocket stick in machine.
Whip	1	Underneath vehicle.
Wrench, Screw	1	In whip box.
" Life	1	Under footboard.

Should the stores fall below the quantities enumerated on this list a demand for new stores should be made immediately.

APPENDIX III.

Conditions of Enrolment of Volunteers.

The conditions under which the Volunteers will be enrolled are as follows:—

(a) That the Apparatus shall be used on all occasions in accordance with the printed instructions issued by the Board of Trade.

(b) That they shall attend the exercise of the Apparatus at the date and times fixed by the Officer of the Coastguard or other person appointed by the Board of Trade to have charge of the Apparatus, and that any Volunteer failing to attend the usual quarterly exercise for a period of 12 months shall cease to be an enrolled Volunteer, and forfeit all rights and privileges as such. His name should be reported to the Board, who will give instructions as to whether the vacancy is to be filled or not.

(c) That each member of the Company shall wear the armband issued by the Board of Trade.

(d) That on a given signal (to be arranged and understood in each case) each member of the Company shall at once repair to the L.S.A. house, get the Apparatus ready, and await orders.

(e) That whenever the members of the Company are called together either for exercise, look-out, or actual service, the senior member of the Coastguard, or, in the absence of the Coastguard, the Officer in charge of the Royal Naval Shore Signal Station or Senior Officer of Customs and Excise on the spot, shall take command. In the absence of these officers, command shall be taken by the senior member of the Company present.

(f) That on all occasions of exercise or wreck service each member shall yield implicit obedience to his superior officer, and discharge the duties assigned to him as readily and so quietly as possible.

(g) That whenever the Apparatus has been used for wreck service or for exercises, the members of the Company shall assist in restoring the wagon or cart ready for service.

(h) That each member of the Company shall do his utmost to prevent disorder and plunder at a shipwreck, and to cause property to be reported and delivered to the Receiver of Wreck.

(i) That all the members of the Company, or any members to be selected, shall, if the Board of Trade require it, be enrolled as special constables, to enable them the more effectively to keep order and suppress plunder.

REMUNERATION.

On each occasion of using the Apparatus at an exercise, the Board of Trade will pay to each of the Volunteers of the Company present the sum of 5s. on application being made on the printed Form CG. 14. A prize of 2s. 6d. is also given each quarter for throwing the heaving canes, and the sum of 5d. per mile is allowed for travelling an exercise when the distance from the station is four miles out and home, or over.

On all occasions of using, or taking out the Apparatus for use at a wreck, the Board of Trade will pay to each of the members of the Company present a sum, if life is saved, varying from 2s. to £1 10s., if life is not saved, a sum varying from 2s. 6d. to £1 10s., according to the nature and description of the services rendered, on application being made on the printed Form CG. 15. The Board of Trade will pay, in addition to this allowance, the sum of £1 for each life saved by the Apparatus, which reward will be divided among the Coastguard and enrolled Volunteers.

RETIREMENT.

The Board of Trade reserve the right to require any Volunteer to resign his membership of the Company at any time they think fit to do so and without giving any reason. Every Volunteer will be called upon to retire on reaching the age of 65, unless his retention is desirable for special reasons.

APPENDIX IV.

INFORMATION AND INSTRUCTIONS FOR THE GUIDANCE OF MASTERS AND SEAMEN.*

In the event of your vessel being in distress off, or stranded on, the coast of the United Kingdom, the fact that your signal of distress or plight has been observed, and that assistance will, if possible, be rendered from the shore, will be indicated by one or more of the following signals:—

Bright White Pyrotechnic Light.

Rocket, showing White Stars on bursting.

Explosive sound signals, showing White or Red Stars on bursting.

The use of an explosive sound signal showing white stars on bursting means that the Rocket Life-Saving Apparatus Company is assembling, and the use of an explosive sound signal showing red stars on bursting means that the Lifeboat Crew is assembling. The actual launching of a Lifeboat is notified by a green Verry's light, and the approach of a Lifeboat is notified by the burning of a white flare.

ROCKET LIFE-SAVING APPARATUS.

1. Should lives be in danger and your vessel be in a position where rescue by the Rocket Life-Saving Apparatus is possible, a rocket with a thin line attached will be fired across your vessel. Get hold of this line as soon as you can. When you have got hold of it, signal to the shore as follows:—

By day one of the crew—if possible separated from the rest—should wave his hand, or handkerchief, or hat, or a flag. By night a rocket or gun, or blue light, should be fired, or a light should be waved.

2. When you see a red flag (at night—a red light) waved from the shore, haul upon the rocket line until you get a tail block with an endless fall rove through it.

3. Make the tail of the block fast to a mast well above the deck with the block close to the mast, or, if the masts are gone, to the best place that can be found, bearing in mind that the lines should be kept clear from chafing the wreck, and that space must be left above the tail block for the hawser (see para. 5 and illustration on page 21). Unbend the rocket line from the whip. When the tail block is made fast and the rocket line ambient from the whip, signal to the shore again as in para. 1 above.

4. As soon as this signal is seen on shore a hawser will be bent to the whip line, and will be hauled off to the ship by those on shore.

5. When the hawser is got on board, the crew should at once make it fast to the same part of the ship as the tail block but about two feet higher. Great care must be taken to see that there are no turns of the whip line round the hawser and that the tally board is close to the mast (this will show the Breaches Buoy to come close up to the mast).

* This is issued as a Poster to be displayed in a prominent position on board British vessels. The Diagrams included in the poster are not reproduced as similar illustrations appear in the body of this book.

6. When the hawser has been made fast on board, unbend the whip from the hawser and see that the light of the whip has not been hitched to any part of the vessel and that it runs free in the block. Then signal to the shore as in para. 1.

7. The men on shore will then set the hawser taut, and by means of the whip line will haul off to the ship the Breaches Buoy into which the person to be hauled ashore is to get. When he is in and secure, signal again to the shore as in para. 1 and the men on shore will haul the Breaches Buoy to the shore. When he is landed the empty Breaches Buoy will be hauled back to the ship. This operation will be repeated until all persons are landed.

8. It may sometimes happen that the state of the weather and the condition of the ship will not admit of a hawser being set up; in such cases a Breaches Buoy will be hauled off by the whip which will be used without the hawser—(see illustrations on pages 23, 22 and 24).

The system of signalling must be strictly adhered to. All women, children, passengers and helpless persons, should be landed before the crew of the ship.

Many lives are saved annually on the coasts of the United Kingdom by the Rocket Life-Saving Apparatus, but Masters and crews of stranded vessels should bear in mind that success in landing them in a great measure depends upon their own coolness and attention to the instructions here laid down.

APPENDIX V.

SIGNALS IN CONNECTION WITH THE LIFE-SAVING SERVICE.

SIGNAL.

SIGNIFICATION.

(a) Signals to Vessels in Distress.

Rocket throwing white stars, or white flare. Distress signal or plight observed—Assistance summoned.

One explosive sound signal showing bright white star on bursting. Distress signal or plight observed—Life-Saving Apparatus called out.

Two explosive sound signals showing bright red stars on bursting. Distress signal or plight observed—Lifeboat called out.

Three explosive sound signals the first showing white star on bursting and the second and third red stars. Distress signal or plight observed—Life-Saving Apparatus and Lifeboat called out.

NOTE.—By day a Red Flag (Rectangular or Swallow-tailed) will be flown when the Life-Saving Apparatus is called out, and a Red Flag (Triangular) when the Lifeboat is called out.

(b) Landing Signals.

By day.—Flag held upright over head. You may attempt to land here.

By night.—White flare held steady or stuck in ground. Landing is extremely dangerous. You are advised to lay off until Lifeboat arrives.

By day.—Flag waved from side to side. The best landing will be found in the direction in which flag is pointed or light carried.

By day.—Flag waved to right or left and then pointed in direction. The best landing will be found in the direction in which flag is pointed or light carried.

By night.—White flare held steady and carried along shore to right or left.

SIGNAL.

SIGNIFICATION.

<p><i>By day.</i>—Two flags held upright overhead, the men holding them being about 50 yards apart in line of approach.</p> <p><i>By night.</i>—Two white flares held or stuck in ground or two bonfires placed as above.</p>	<p>You should attempt to land and by this line of approach.</p>
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(c) *Standing into Danger Signals.*

<p>The International Code Signal J.D.</p> <p>The letter U (— —) flashed by lamp or made by foghorn, or whistle, etc.</p>	<p>You are standing into danger.</p>
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NOTE.—If it should prove necessary, the attention of the vessel is called to these signals by a white flare, a rocket showing white stars on bursting, or an explosive sound signal.

Breeches buoys permanently fitted for the use with whip are not now being issued, but in the case of those already issued the long sling should be shortened and the lee whip secured to the long sling as above and round the strop of the brass snatch block by means of two half hitches. ←

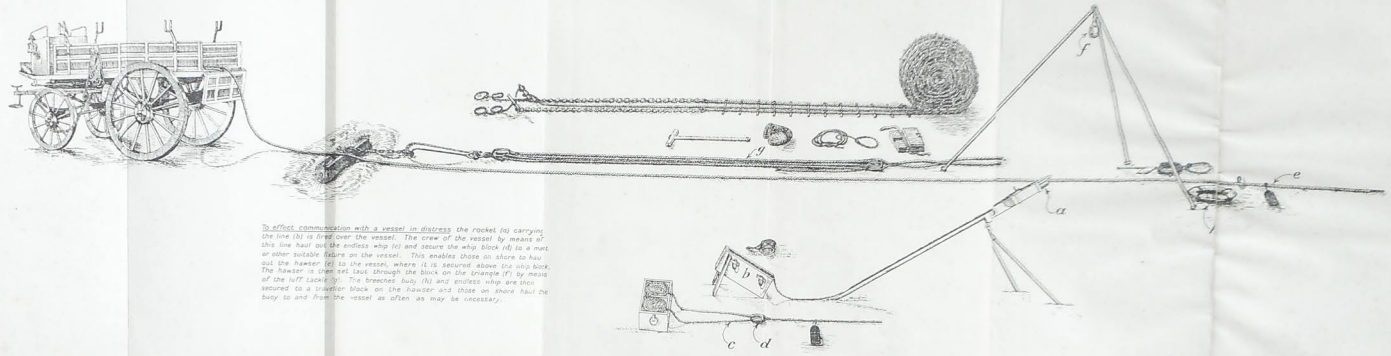
To prevent the bight of the lee whip, which is underneath the buoy between the two slings, fouling rocks or obstructions, a small toggle with light strop should be fitted to the side of the breeches buoy, so that the bight of the lee whip may be secured to it.

At a wreck service much depends on the intelligent handling of the two parts of the whip according to the position in which the whip block has been made fast on board the wreck. A practice should be made, therefore, of questioning the first man landed as to the position of the buoy when it arrived out at the wreck and the manner of access, for it may be possible to facilitate access to the buoy by working the whip suitably.

At all exercises with whip only, the Officer-in-Charge and other important numbers should proceed to the exercise post and study the position of the buoy when it is out, and the effect of snatching the weather whip in the triangle, and of ~~keeping~~ handling the whip in different ways, e.g. keeping the weather whip as taut as possible and easing lee whip right up whilst man is entering buoy; easing up both parts of the whip in order to represent the hauling of the buoy inboard by those in the vessel.

19th. April 1928.

LIFE SAVING APPARATUS



To effect communication with a vessel in distress the rocket (a) carrying the line (b) is fired over the vessel. The crew of the vessel by means of this line haul out the endless whip (c) and secure the whip block (d) to a mast or other suitable fixture on the vessel. This enables those on shore to haul out the hawser (e) to the vessel, where it is secured above the whip block. The hawser is then set taut through the block on the triangle (f) by means of the luff tackle (g). The breeches buoy (h) and endless whip are then secured to a traveller block on the hawser and those on shore haul the buoy to and from the vessel as often as may be necessary.