

THE
COASTGUARD
MANUAL



C.G. 4.

H.M. COASTGUARD.



ISSUED BY THE

BOARD OF TRADE.

THE
COASTGUARD MANUAL

This handbook is supplied for the
guidance of all members of H.M. Coast-
guard and of the Coast Life Saving Corps.

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TABLE OF CONTENTS.

	PAGE
CHAPTER 1.—Introductory, The Life Saving Service	1

PART I.

ORGANISATION AND DUTIES.

CHAPTER 2.—The Watchman and his Duties ...	6
" 3.—Signals, Pyrotechnic Lights, etc., used by and in conjunction with the Life Saving Service ...	24
" 4.—Chart Work	42
" 5.—Drifting and Distant Casualties ...	49
" 6.—Life Saving Appliances, Transport and General Organisation ...	55
" 7.—Wreck Services	66
" 8.—Restoration of the Apparently Drowned	90
" 9.—Cliff Rescues and Cliff work generally	94
" 10.—The Coast Life Saving Corps ...	96

PART II.

THE ROCKET LIFE SAVING APPLIANCES, DETAILS OF DRILL, ETC.

CHAPTER 11.—Notes for Inspecting Officers and Officers in Charge	99
" 12.—Directions issued by the Board of Trade to Mariners regarding the use of Rocket Life Saving Appliances	101
" 13.—Details of Drill with various types of appliances and notes on same ...	106
" 14.—Specimen Hand Transport Scheme ...	134
" 15.—Stowage of Vehicles and Gear ...	137

CHAPTER I.—INTRODUCTORY.

THE LIFE SAVING SERVICE.

1. His Majesty's Coastguard is a Life-Saving Service. The main features of the organisation are the lookout system, the system for communicating intelligence to the proper quarter, the provision of life-saving appliances and the arrangements for despatching the most appropriate assistance when the need arises. The lookout system and the intelligence system are operated by the Coastguard and its auxiliary service, the Coast Life Saving Corps. About 350 Stations are equipped with Rocket Life Saving Appliances under the direct control of the Coastguard but the other main form of assistance—the Lifeboats—are owned and managed by the Royal National Lifeboat Institution.

2. For the purpose of control, the coast of Great Britain and Northern Ireland is divided into Divisions, each Division being placed under an Inspector of Coastguard. A Division comprises a number of Districts, each under the charge of a District Officer of Coastguard. The number of Stations in the different Districts varies according to the nature of the coast, the amount of sea traffic and other circumstances, but these Stations are, as far as possible, situated on prominent

headlands with commanding views, or in the approaches to large ports or groups of ports.

3. On the less important parts of the coast, Auxiliary Watching Stations are established at which watch is kept by part-time Watchers who, as members of the Coast Life Saving Corps, are ordinarily placed on watch on instructions received from a District Officer or Coastguard Station. Where, however, the Auxiliary Watching Station is any considerable distance from a Coastguard Station, or where any delay occurs in securing communication with a Coastguard Station, the Watcher-in-Charge sets watch when, in his opinion, the local weather conditions require such action reporting as early as possible, to the Coastguard, that this has been done.

4. The degree of lookout or watch kept by the Coastguard varies according to the nature of the coast, the proximity or otherwise of the Stations to main traffic routes, and the conditions of wind, sea and visibility. On the more dangerous and important parts of the coast, constant watch or constant night watch is maintained. When, however, the conditions of weather and/or sea are such that, in the event of a casualty, the lives of the crew of the vessel would be endangered, either if they remained on board or attempted to land in their own boats or by other means available from resources on board or when the

state of the sea is such that there is an element of risk to open boats, watch is set at all Stations where these conditions obtain.

5. In a Life Saving Service prompt action is imperative, as any delay in affording assistance may mean the loss of life. Wherever possible, Stations are provided with telephones to enable them to communicate quickly with one another at any hour of the day or night, either through exchanges or by means of private lines so that information of casualties and instructions as to the action to be taken may be passed, without delay, along the coast. Priority is given to all messages on Life Saving Service by telephone and telegraph.

6. Telephone facilities are also provided for a very large number of Lifeboat Stations and, as a general rule, communication can be secured by this means with every Lifeboat Station. In a few instances the distance between the Coastguard Station and the Lifeboat Station is so short that separate telephones are unnecessary. A number of lighthouses also are provided with telephones for life saving purposes while most others employ visual and sound signals to indicate that a vessel is in distress in their neighbourhood. Signals of a similar nature are also made by all light-vessels certain of which are, in addition, in

direct communication by radio-telephony with selected Coastguard Stations.

7. The Coast Life Saving Corps has been established for the purpose of assisting the Coastguard in all branches of the life saving service. Its members are recruited on a voluntary basis and it is organised in local Companies or Brigades, care being taken to ensure that recruitment does not prejudice the manning of the lifeboats. The bulk of the members of the Corps are required for the purpose of assisting the Coastguard to work the Rocket Life Saving Appliances. Under the supervision of officers of H.M. Coastguard, these members are practised, at regular intervals throughout the year, in the use of the appliances and they are also instructed in the restoration of the apparently drowned. Systematic instruction is also afforded to members of the Coast Life Saving Corps who undertake to qualify as Watchers in order that they may either perform watchkeeping at Auxiliary Watching Stations or afford assistance, as necessary, to the Coastguard personnel at Coastguard Stations.

8. The equipment of a large proportion of Merchant vessels with wireless apparatus makes it possible for vessels so fitted to communicate, at once, with the shore when in difficulty or distress off the coast. Wireless distress messages can ordinarily be transmitted over distances of at

least 100 miles, and when received by a Post Office Coast Wireless Station, they are at once passed to the Coastguard if the ship in distress is within such a distance from the coast as to make it at all possible for assistance to be given from the shore, whether by Lifeboat, Line throwing Appliances or Tug. The action to be taken by the Coastguard when S.O.S. messages are received from Coast Wireless Stations is dealt with fully in Appendix XVII to the Instructions to the Coastguard, Part I. Where the vessel in distress is too far from the coast for such assistance to be given, the coast Wireless Station endeavours to pass on the S.O.S. message to other vessels in the vicinity of the one in distress.



PART I.—COASTGUARD DUTIES GENERALLY.

CHAPTER 2.—THE WATCHMAN.

9. The efficiency of the Life Saving Organisation depends, in the first instance, on the vigilance of the watchman. He must be alert and attentive throughout the whole of his watch. Many watches may be devoid of incident, but the greatest care must be taken to avoid the growth of a feeling that nothing is likely to happen. It may be just at the moment when the attention wanders, that a vessel burns an inefficient flare and founders before any further signal can be made. Conscientiousness and a high sense of responsibility are, therefore, the first essential of a watchman. Other necessary qualities are power of observation, initiative and resource, combined with tact in dealing with all others engaged in the Life Saving Service; while local knowledge is of the utmost importance. Imagination, also, provided it is properly controlled, is of value, as it affords the power to envisage the directions in which a given situation may develop.

10. It is a well known fact that a really first-class watchman develops a sense which instinctively warns him when something unusual is happening to seaward. In many cases, of course,

vessels in distress employ efficient distress signals so that the watchman is immediately aware that prompt action on his part is necessary. It is not, however, invariably the case that signals are used which can immediately be recognised as indicating distress and a considerable measure of responsibility devolves, therefore, on the watchman in deciding whether or not a vessel is in need of assistance. While it is impossible to lay down any hard and fast rules for cases of this sort, the watchman will be assisted if he asks himself the question "If the signal I have seen is not intended for a distress signal for what other purpose can it have been made?". If he is unable definitely to decide that the signal has been made for some other purpose than to indicate distress, he should assume that it is a distress signal and take action accordingly.

For example: A white flare consisting of rags dipped in paraffin, although not a statutory Distress Signal, is frequently used by small craft to indicate distress. A similar signal is also used by fishing vessels for warning purposes, under Article 9 of the Regulations for Preventing Collisions at Sea. If, therefore, a white flare is observed and other vessels' lights can be seen in the vicinity the presumption is that the signal is being shown for warning purposes. If,

on the other hand, no other vessels' lights can be seen, it may be assumed that the signal is being made to summon assistance.

11. The above forms, of course, only one example of the doubts which may arise in the mind of a watchman and affords an indication as to how they should be dispelled. In all cases, however, the watchman should act on the following principle:—

Whenever there is a doubt as to the significance of a light seen at sea, it should be treated as a distress signal even though this may result in the Lifeboat or Life Saving Appliances being called out unnecessarily.

12. It follows, therefore, that every Coastguardsman and every member of the Coast Life Saving Corps, who, at any time, may be employed on watchkeeping duty, should not only commit to memory the Statutory Signals of Distress, but should have a thorough knowledge of the character of all lights and signals, visual and sound, authorised to be carried or made by vessels under the Regulations for Preventing Collisions at Sea.

13. The Statutory or authorised Signals of Distress are included in Chapter 3, Article 36.

14. Although the procedure, following the observation of a vessel in distress or of a possible distress signal varies according to circumstances, the

normal sequence of events is somewhat as follows:—

(a) The Watchman fires a signal rocket, or burns a Coastguard light, indicating to the vessel that her plight has been observed and that assistance is being summoned. This is done first to allay the anxiety of those on board;

(b) The Watchman rings up the appropriate Lifeboat Authority and reports the need for the launch of the lifeboat. He next rings up the Housing Station to advise the officer in charge as to the need for calling out the L.S.A. If the L.S.A. is considered to be required, a maroon is fired to assemble the Company and to summon horses or motor transport as the case may be;

(c) The Watchman reports to the District Officer, giving a general appreciation of the situation;

(d) The Watchman keeps the vessel under observation and if possible establishes signal communication;

(e) From this time onwards the Lookout is the intelligence centre and connecting link with the lifeboat after her launch, and it is of the greatest importance that the closest possible watch should be maintained for any

further signals which may be made either by the vessel in distress or by the Lifeboat, etc.

15. It is a good plan to have posted up in the look-out, a list, compiled to suit local requirements, of all authorities to be informed, and of all other action to be taken, in the event of a vessel being in distress, etc.

16. Every member of H.M. Coastguard is required to reach a specified standard of proficiency in signalling and it is highly desirable that any person, who is employed on occasion as a watchman, should be able to make and read signals by semaphore and flashing lamp. Although a watchman may only rarely be called upon to communicate with a vessel by signal, the fact of his being able to signal, if the occasion demands, may prove to be of great value during life saving operations. It may, for example, be necessary for the crew of a vessel to abandon her before assistance in the form of the Lifeboat or L.S.A. arrives, and if this information can be communicated to the shore it enables suitable steps to be taken to ensure the crew's safety, while the watchman, on his part, can advise the crew of the vessel as to their action pending the arrival of assistance (See Landing Signals, Chapter 3, Article 44). During a life saving service it may be vitally important to the success of the life saving operations for certain information to be passed to a lifeboat by signal

from the shore. A code of pyrotechnic signals has been devised for use between the lifeboat and the shore and every watchman should therefore also have a thorough knowledge of these signals which are shown in Section 43. Moreover, practically every lifeboat carries a trained signalman and the ability of the watchman to signal by flag, flashing lamp, sound signal, etc., adds greatly to the efficiency of the operations as a whole.

17. As to the use of the telephone is necessary. At the large majority of look-outs, the telephone circuits are so arranged that the watchman can communicate with the Exchange and also with the Housing Station. This arrangement is, as a rule, controlled by a switch and it is highly important for the switch to be correctly placed. Normally, when the Look-out is manned, the switch should be at the "Exchange" position, as communication from and to the Exchange is then possible. When it is desired to communicate with the Housing Station the switch should be placed to "Extension" before the call is made, while, if for any reason the watchman has to go beyond hearing of the call bell at the look-out the switch should be placed to "Through." This means that if the Exchange rings, the call bell at the Housing Station will operate and thus no calls from outside sources will be missed. The switch should also always be put to "Through"

when the lookout is not manned. A watchman who finds it necessary to leave the lookout for any appreciable time should acquaint the Housing Station before leaving the vicinity.

18. All messages received by telephone which affect the working of the Station should be reported to the Officer-in-Charge without delay. Great care should be exercised in telephoning in a proper manner, and slovenly habits should be avoided. When dealing with Authorities and persons outside the Service, special care must be taken to ensure that messages are not only clearly and correctly given so as to obviate misunderstanding, but that a favourable impression of the Service is conveyed by the manner in which the message is given. The instructions "How to use the Telephone Service," contained in the Telephone Directory, should be followed and in particular, the habit of answering "Hullo" should be avoided. The reply should be "Coastguard (name of station)" or "Watchman (name of Look-out)." All messages received and transmitted should be recorded clearly on the proper forms. Messages should be as brief as possible consistent with clarity. When possible, the assistance of a second person to write down and send messages should be obtained.

19. The systematic distribution of intelligence forms a very definite and important part of the

Life Saving Organisation. Unless information is distributed carefully, confusion may arise in an emergency. This might result in doubt and uncertainty on the part of those responsible for taking action and seriously prejudice the efficiency of the operations.

20. The first essential in the distribution of intelligence is that persons or authorities who have to initiate or execute life saving measures should be placed in possession of the necessary information on which to base their action. Any report made to them must indicate clearly what are facts, and what is merely surmise, deduction or inference from the known facts, opinion or advice. Similarly when any doubt as to the facts exists, this should be indicated in the message and the recipient informed of the steps which are being taken to clear up the doubt. Further, it is the duty of a watchman who observes or receives information of a casualty to maintain touch with the situation until it is ascertained that all possible steps have been taken, or need for action is past.

21. It must be borne in mind that the Coastguard acts as the Intelligence Service of the whole Life Saving Organisation serving not only the L.S.A. but also the Lifeboat Organisation. Messages, therefore, should contain, in a properly digested form the information upon which a plan

of operations can be based and those responsible for the life saving measures must, during the progress of those operations, be informed of any change in the position which might affect the action taken or to be taken.

22. Article 37 C.G.I. requires the Coastguard to report to the Lifeboat Authorities every case of a vessel grounding or apparently in distress whether or not distress signals are made, and the Coastguard are permitted no discretion in this matter. It must not be assumed, however, that the Lifeboat Authorities when being informed of a casualty need only be given the bare facts or that it is necessary to wait until a casualty actually occurs before informing the Lifeboat Authorities. In many cases, for instance, the watchman's local knowledge might tell him that, while a vessel which he sees is not at the moment actually in distress, it may be in imminent danger if the weather becomes worse or other unfavourable circumstances arise. In such cases it is desirable that what is termed an "anticipatory" message should be sent to the appropriate Lifeboat Authority. An anticipatory message, although it does not call for immediate action by the recipient places him on the alert and enables him to take preparatory measures.

23. A thorough knowledge of the nature of the coast and of the position of outlying dangers is

essential. A Watchman must be acquainted with the best landing places in the various directions of the wind and states of the sea, in order that he may be able, if necessary, to direct a boat to safety. He should know the direction and rate of the tide at all hours and the rise and fall and the depth of water on outlying shoals or rocks at all states of the tide. If outlying dangers are marked by a light-vessel, lighthouse or light-buoy he should know the characteristics of the light shown so that he may at once detect any irregularity. The same remark applies to any local sound signals made during a fog, while in the case of a light-vessel or lighthouse he should be acquainted also with the visual and sound signals employed to indicate that a vessel is in distress.

24. On occasions when the visibility is poor, a vessel in distress may be expected to indicate her plight by means of sound signals. In such conditions the watchman should go just outside the lookout at frequent intervals and listen carefully for any possible signals. He should also, where possible, keep the sliding shutter of the lookout window open. Similar action is also necessary in cases where there is a lighthouse or light-vessel in the vicinity which may indicate, by explosive sound signals, that a vessel is in distress. A megaphone placed to the ear, the body being

turned slowly round, will greatly assist the watchman to pick up a sound signal.

25. During misty or foggy weather, when navigation is likely to be impeded, it is the duty of the watchman to be on the alert for any vessel which may be steering a dangerous course or be running into danger, in order that the appropriate warning signal may be given. These signals are shown in Chapter 3, Article 41.

26. In order that he may carry out the prescribed warning procedure when the occasion demands, it is necessary that the watchman should have a thorough knowledge of the various sound signals authorised for use by vessels under the Regulations for Preventing Collisions at Sea.

27. Not only should the watchman exercise vigilance in the matter of the lookout he keeps, but he should be equally vigilant as regards other details of his duty. The importance of ensuring that the telephone switch is correctly placed and is in proper working order when using the telephone, which has been referred to previously, cannot be overstressed. Other important matters are:—

(a) The use of a minimum amount of light in the lookout at night. Except when telephoning or receiving a telephone message, the lookout should be, as far as possible, in total

darkness. Any light used, and the glare from the oil stove, should be carefully screened, bearing in mind that it takes some twenty minutes after an individual has been exposed to a bright light for him to become "dark adapted," or, in other words, to regain full vision in the darkness.

(b) The windows of the lookout should be kept clear of fogging. This can best be done by a periodical rub down with a moistened chamois leather.

(c) The ventilation of the lookout should be regulated—by opening sliding windows or door—so as to keep the air fresh. Unless this is done, drowsiness may result and the efficiency of the watchman be impaired. The heat from the stove should be regulated as necessary.

(d) On taking over duty, the watchman should see that the pyrotechnic signals are readily available and that the arrangements for firing three rockets in quick succession are in order. If the lookout is supplied with an electric flashing lamp it should be tested and if with an oil or carbide lamp, he should see that the wick is trimmed, the container full of oil or that the burner of the acetylene lamp ignites properly. *A box of matches should not be forgotten.*

(e) The telephone should be tested as frequently as is necessary to ensure that it is in working order, bearing in mind that it is desirable to avoid unduly disturbing the local Exchange at night. During a gale of wind the test should be more frequent than in fairer weather. The watchman should be aware of the nearest telephone which he could use in the event of a breakdown in the telephone at the lookout. If it is found that the connection to the Exchange has broken down, the line to the housing station should at once be tested, as it is possible that it may still be intact. The watchman should also know the nearest spot at which a messenger can be obtained should it be necessary to send a message to the Housing Station in the event of a complete breakdown of telephones. At some Stations it is possible, by means of a switch near the Housing Station, to connect the latter direct to the Exchange in the event of the line between the lookout and Exchange or that between the lookout and Housing Station being out of order.

(f) While it is not desirable to burden the memory with too many details of matters which can be obtained from the reference books available, the telephone numbers of the District Officer's Headquarters, the flank

Stations and the local Lifeboat Authority should be memorised.

(g) It is important that telescopes and binoculars should always be in good condition. In wet weather, glasses should, as far as possible, be kept under cover, except when actually in use. When a glass has become wet, it is very important that the sliding tube should be wiped dry, otherwise moisture will be conveyed to the cloth packing and this moisture will set up condensation inside the glass for a considerable time afterwards. Care should be taken to avoid rough usage of binoculars and to prevent them receiving blows, particularly at the eye-pieces. Except when actually in use, binoculars should be kept in their case.

28. Not everyone, without training, can use the telescope or binoculars correctly, especially at night. The following affords guidance in this matter:—

(a) The arc of vision from the lookout should be systematically swept, *not* "dabbed" here and there. When sweeping with a glass the horizon must be kept level, just below the centre of the field. Do not look at the horizon but just above it. When in doubt whether a suspected object is real or not, look about and all round it. A faint light on the horizon

at night generally shows up best when one looks about two finger breadths (held at arms length) above the horizon. Looking directly at it causes it to disappear.

(b) When anything is thought to have been seen when sweeping the arc, swing back at once to the suspected position and, keeping the glasses on the spot, let the eyes travel slowly all round the field of vision. If still not quite sure sweep very slowly backwards and forwards over the neighbourhood, repeating the process as necessary.

(c) With a difficult horizon it will generally be found better to look a little higher than usual. When sweeping round over a portion of the arc where sea and sky or cloud merge together, and the horizon is lost, it can often be picked up again by raising or lowering the glasses until the level where dark sea changes to light sky becomes noticeable, or by swinging rapidly to a part of the arc where it is easily discernable and tracing it along afresh. The necessity for keeping the correct level lies in the fact that the tendency is to go high and time may be wasted in scrutinising the clouds.

(d) Objects roughly in the direction of the moon or other source of light show up more clearly than objects in the opposite direction.

It is advisable, therefore, to sweep in the latter direction more slowly than in the former.

29. In order to become skilled in lookout duties by night it is necessary that the above procedure should be practised by day. In addition a Watchman should accustom himself to keeping his glasses fixed on an object for considerable periods.

30. *The habit of taking notice of every occurrence should be cultivated.* Any passing vessel, seen to be making particularly heavy weather, with signs of damage or with a pronounced list, should be kept under close observation and *if immediate action is not necessary*, information should be passed on to the Station on the flank towards which she is proceeding, in order that that Station may, in turn, keep the vessel under observation.

31. Anything unusual seen or heard to seaward, close in shore or on the cliffs should be investigated, and unless the watchman is entirely satisfied that nothing out of the normal is occurring, or that a light seen or sound heard is not intended as a distress signal, he should at once initiate action appropriate to the occasion. The circumstances may be such that the watchman at the lookout on either flank may be in a position to give an opinion, or that a second man is available at the lookout at which the watchman is on

duty or that the Housing Station is so close that a second man can quickly be called to the lookout but the watchman must *always bear in mind that rapidity in forming an opinion is of the first importance and that time lost through hesitation may mean lives lost.*

32. *Every watchman may feel assured that he will not be taken to task for taking action which may later have proved to be unnecessary provided he acted in good faith.*

33. Finally, not only for the watchman, but for all those who hold important positions in the Life Saving Service the following "first principles" will afford a guide when an emergency arises.

- (1) If the Station is an "Action" Station:—
 - (a) Carefully weigh all the factors involved in any given situation;
 - (b) Initiate appropriate action without delay, bearing in mind that it is better to do too much than too little;
 - (c) Leave nothing to chance;
 - (d) Keep all others who may be concerned in the life saving measures accurately informed of developments;
 - (e) Maintain touch, as far as possible, with the lifeboat and lifeboat authorities throughout the service;

(f) Never assume that all the survivors of a wreck have been saved or that all have been lost until there is definite evidence to either effect.

(2) If the Station is not itself taking action but is acting as an "Intelligence" Station:—

(a) Transmit the information to "Action" authorities without delay;

(b) Ensure that the information reaches at least one "Action" Authority. It may be necessary to duplicate or even triplicate reports to ensure this when electrical communications are dislocated;

(c) In the absence of reports to that effect, *never assume* that action is being taken by any of those who may have been informed of the circumstances, but *take steps to ascertain* whether or not action has been initiated.

(3) Whether the Station is an "Action" or "Intelligence" Station, information must be passed to the appropriate lifeboat without delay, it being understood that the "appropriate" lifeboat does not necessarily mean the windward lifeboat or the lifeboat nearest to the scene of the casualty. The lifeboat best placed and best equipped to reach the scene in the shortest time is the appropriate lifeboat.

34. Enquiries are often received by the Coast-guard as to the safety of small craft, on passage

between coastal harbours, which are overdue or have not kept to pre-arranged plans. An enquiry of this nature does not necessarily imply that the vessel in question is in difficulties but it should always be followed up until the vessel is found or definite news of her whereabouts obtained. The public expect sympathetic interest in such matters, especially when the safety of relatives or friends is involved, and enquirers should be informed that the matter will receive immediate attention. All such enquiries should be at once reported to the District Officer, as similar communications may have been received at other Stations.

CHAPTER 3.—SIGNALS, PYROTECHNIC LIGHTS, ETC., USED BY AND IN CONJUNCTION WITH THE LIFE SAVING SERVICE.

35. As shown in the following Articles Codes of Signals exist for the purpose of indicating distress or the need for assistance, for replying to distress signals, for warning vessels standing into danger, for assembling Life Saving Companies and Lifeboat Crews, and for communication between lifeboats at sea and the shore. Stations are supplied with flashing lamps, flags, sound signalling appliances and pyrotechnic lights, etc., for the

purpose of making the shore signals on appropriate occasions. It is of the greatest importance that all members of H.M. Coastguard and Watchers of the Coast Life Saving Corps should fully understand the significance of, and be competent to make, all the signals used by and in conjunction with the Life Saving Service. Apart from memorising the Statutory Signals of Distress a complete knowledge of all other signals referred to in this Chapter is essential.

DISTRESS SIGNALS FOR SURFACE CRAFT.

36. The Statutory or authorised signals of distress for surface craft are as follows:—

(a) DAY.

- (i) The International Code Signal of distress indicated by "N C":
- (ii) The distant signal, consisting of a square flag, having either above it or below it a ball or anything resembling a ball:
- (iii) The distant signal consisting of a cone point upwards, having either above it or below it a ball or anything resembling a ball.

(b) DAY AND NIGHT.

- (i) A gun or other explosive signal fired at intervals of about a minute:
- (ii) A continuous sounding with any fog signal apparatus.

(c) NIGHT.

(i) Flames on the vessel (as from a burning tar barrel, oil barrel, etc.):

(ii) Rockets or shells, throwing stars of any colour or description, fired one at a time at short intervals.

The ordinary *white flare* is not a recognised distress signal, although it is often used as such, and care is necessary when such signals are observed. On the other hand a *red flare* although not a Statutory Distress Signal, is definitely regarded as a distress signal and must always be treated as such.

37. Mariners have been informed that two of the existing Statutory Distress Signals, viz. "continuous sounding with any fog signalling apparatus" and "flames on the vessel" are not only liable to abuse but, when used as distress signals, have often given rise to misunderstanding. It has been impressed on mariners that distress signals should be as distinctive as possible so that they may be recognised at once. For instance, they have been advised, when in distress, to make a "continuous sounding" by repeating the Morse signal "S.O.S." (... --- ...) on the whistle or fog horn instead of making an indefinite succession of blasts on the fog signal apparatus. Similarly, they have been advised that if signalling for

help by means of a lamp or flashing light at night, the same signal "S.O.S." should always be used, and they have also been warned that it is often impossible to decide whether "flare up" lights are being shown for warning other vessels or whether distress signals are being made, especially in areas where fishing is carried on.

38. In addition to the signals of distress described above, certain signals have, by long usage come to be regarded as indicating distress. They are:—

- (a) Ensign upside down;
- (b) ensign made fast high in the rigging;
- and
- (c) (in the case of small boats) a coat or article of clothing on an oar.

In some cases, also, local fishermen may have special arrangements with the Coastguard whereby they indicate distress, e.g., a piece of canvas hoisted at the masthead.

DISTRESS SIGNALS FOR AIRCRAFT.

39. The signals of distress laid down for use by aircraft differ somewhat from those used by surface vessels. They are:

- (a) The International signal "S.O.S." by means of visual or Wireless Telegraphy or

in the case of Radio Telephony the spoken word "Mayday";

(b) The International Code Signal of distress indicated by "N C";

(c) The Distant signal consisting of a square flag having above it or below it a ball or anything resembling a ball;

(d) A continuous sounding with any sound apparatus;

(e) A signal consisting of a succession of white pyrotechnical lights fired at short intervals;

(f) A white flare from which at intervals of about five seconds a white light is ejected into the air.

In addition, a special procedure has been laid down for signalling between British aircraft in distress and merchant vessels. This procedure is as follows:—

If for some urgent reason any aircraft wishes to communicate with a merchant ship, she will fly low round the ship and fire a succession of green Verey's lights to attract attention. The aircraft will then signal by Visual. Aircraft not fitted with any means of visual signalling and wishing to call assistance to an aircraft in distress, will do so by en-

circling the ship, firing a succession of green Verey's lights and then proceeding in the direction of the aircraft in distress. The firing of a succession of Verey's lights will indicate to the ship concerned that the communication following is a distress signal.

REPLIES TO DISTRESS SIGNALS.

40. Signals of distress are replied to from the shore by one or more of the following signals:—

(a) A Coastguard Light (when no lifeboat is out on service in the vicinity);

(b) A Rocket showing white stars on bursting;

(c) An explosive maroon showing a white or green star on bursting.

These signals indicate to the vessel that her plight has been seen and assistance is being summoned, and they may be employed from the shore even if the vessel does not make distress signals but is seen to be in distress or imminent danger.

WARNING SIGNALS.

41. Vessels seen to be standing into danger are warned by one or more of the following signals:—

(a) The International Code Signal "J D."

(b) The letter "U" (· · -) flashed by lamp or made by fog horn, whistle, etc. If it should prove necessary to attract the attention of the vessel to these signals one of the following signals should be employed:—

(i) A rocket showing white stars on bursting, i.e., 1 lb. Signal Rocket,

(ii) a Coastguard light, or

(iii) an explosive sound signal (i.e., maroon).

As the firing of a maroon may have the effect of assembling the Life Saving Appliance Company this means of attracting the attention of the vessel standing into danger should only be employed when all other methods have failed, unless it is deemed necessary to summon the L.S.A. Company as well as to attract attention.

ASSEMBLY SIGNALS FOR LIFE SAVING COMPANIES
AND LIFEBOAT CREWS.

42. The signals used for this purpose and their significance are shown below:—

Signal.	Signification.
No. 1. One explosive maroon showing a white star on bursting	L.S.A. Company to assemble.
No. 2. Two explosive maroons showing green stars on bursting.	Lifeboat Crew to assemble.
No. 3. Three explosive maroons, the first showing a white star on bursting and the second and third showing green stars on bursting.	L.S.A. Company and Lifeboat Crew to assemble.

Note.—No. 3 signal is only used where the signal for assembling the lifeboat crew is made from the same position as that for assembling the L.S.A. Company.

In other cases No. 1 signal will be made by the Coastguard and No. 2 signal by the Lifeboat Authorities.

LIFEBOAT SIGNALS.

43. The following table describes the signals used for communication with the Lifeboat:—

Signification.	Signals.		Remarks.
	Night.	Day.	
No. 1. LIFEBOAT CREW TO ASSEMBLE. ALSO SERVES TO SHOW THAT CASUALTY THAT THEIR FLIGHT IS KNOWN TO THE LIFEBOAT AUTHORITIES.	Two Maroons, showing Green Stars on bursting (some Lifeboat Stations use a Bell in lieu).	Red Flag, followed by the usual Night Signal for assembling the crew.	Should there be a Coastguard lookout in the vicinity of the Lifeboat Station, the Coastguards are responsible for informing the Casualty or Light-Vessel that the danger is seen and that assistance has been summoned. At Lifeboat Stations near which

there is no Coastguard lookout and where maroons are not used for assembling the crew, a White Star Rocket will be fired to notify the Casualty or Light-Vessel that assistance is being sent.

No. 2. APPROACHING CASUALTY OR SEARCHING.	White Flare (from Lifeboat).	Nil.	
No. 3. ATTENTION, CLOSE, LOOK OUT FOR FUR- THER SIGNAL.	White Flare and if necessary three White Star Rockets fired in rapid succession and repeated if necessary (from shore).	As for (4) or (5) whichever is appropriate. No. 3 Night Signal may be used to attract attention.	If the Signal cannot be clearly distinguished Lifeboat should close.

Signification.	Signals.		Remarks.
	Night.	Day.	
No. 4. WISH TO SPELL MESSAGE.	Succession of short flashes by lamp. Morse procedure. On seeing suc- cession of shorts, show alight until spelling commences, then acknowledge each word with a flash and the whole mes- sage with R.D.	A square shape or square flag repeatedly dipped and hoisted or sema- phore flags waved. No. 3 Night Sig- nal may be used to attract at- tention.	Coastguard Stations use a Blue Flag with White Stripe. Lifeboat Stations use the R.N.L.I. House Flag.
		Semaphore pro- cedure. On see- ing semaphore flags waved,	

No. 5. RECALL RETURN TO YOUR STA- TION OR SER- VICES OF LIFE- BOAT NO LONGER REQUIRED.	Green turning to White Flare, to be answered by Signal No. 6. If the Life- boat is beyond range of the Flare she may be directed to close by Signal No. 3 (White Star Rockets).	A wave in reply, then acknow- ledge each word with a wave and the whole message with R.D.	Coastguard Stations use a Blue Pendant with White Ball. Life- boat Stations use a Red Pendant.
		A triangular shape or trian- gular or pendant shape Flag repeatedly dipped and hoisted until the boat alters her course. No. 3 or 5 Night Signal may be used to attract attention.	

Signification.	Signals.		Remarks.
	Night.	Day.	
No. 6. LEAVING WRECK OR RETURNING TO STATION.	A Green Flare denotes that none or part only of the ship- wrecked are in view in the Lifeboat.	A Green Flare turning to White Flare denotes that all survivors are in the Life- boat.	Large motor Lifeboats carry 6 Red, 6 White, 3 Green and 3 Green turning to White Flares. Other Life- boats carry 4 Red, 4 White, 2 Green and 2 Green turning to White Flares. No. 6 Signal should be shown after the Life- boat has left the wreck and again when nearing the Lifeboat Station.

Shore Station on
the approach of
the Lifeboat. (See
Article 44).

No. 7.
MORE AID RE-
QUIRED.

One or more Red
Flares, to be an-
swered by White
Star Rocket and/or
by maroons calling
out other Lifeboats.

Red Flag to be
answered by the
code pendant
hoisted close
up. (Red with
White Bars).



LANDING SIGNALS.

44. In the event of the crew of a wrecked vessel taking to their own boats in order to get ashore the following signals should, if necessary, be used to indicate the spot at which landing can best be attempted. Normally, the Coastguard and/or the Life Saving Appliance Company would be in attendance.

Signal.	Signification.
<p>No. 1. By day: Flag held upright overhead. By night: Coastguard light held steady or stuck in ground.</p>	You may attempt to land here.
<p>No. 2. By day: Flag waved from side to side. By night: Coastguard light waved from side to side.</p>	Landing extremely dangerous. You are advised to lay off until lifeboat arrives.
<p>No. 3. By day: Flag waved to right or left and then pointed in direction. By night: Coastguard light held steady and carried along shore to right or left.</p>	The best landing will be found in the direction in which flag is waved or pointed, or light carried.

Signal.	Signification.
<p>No. 4. By day: Two flags held upright overhead, the men holding them being about 50 yards apart in the line of approach and the innermost man being, if possible, on higher ground than the other. By night: Coastguard lights held or stuck in the ground, or two bonfires placed as above.</p>	<p>You should attempt to land here and by this line of approach.</p> <p><i>Note.</i> This signal will be used when approach is dangerous except by a particular channel.</p>

SIGNALS FROM LIGHTHOUSES AND LIGHT VESSELS TO INDICATE TO THE SHORE THAT A VESSEL IS IN DISTRESS.

45. All light vessels and certain selected light-houses employ visual and explosive signals to indicate that a vessel is in distress in their vicinity. These signals are shown in detail on a poster, C.G. 18, which is supplied to all Coastguard and Auxiliary Stations.

PYROTECHNIC LIGHTS ETC.

46. The various types of pyrotechnic lights or fireworks in use in the Coastguard Service for signalling purposes are described below. These

should not be confused with the line-carrying rockets which form part of the Life Saving Appliances.

(1) *Coastguard Light*.—This is a pyrotechnic light which shows a brilliant white flare lasting about four minutes; it can be held in the hand whilst burning or it can be stuck into the ground for which purpose the case is provided with a point. This light may be used for any of the following purposes:—

(a) Warning a vessel standing into danger (see Article 41):

(b) Directing a boat to a safe landing (see Article 44):

(c) Answering a distress signal (see Article 40):

(d) Indicating the whereabouts of a wreck to a Life Saving Appliance Company:

(e) Attracting the attention of a Lifeboat (see Article 43, No. 3):

(f) Igniting a Boxer rocket.

To ignite a Coastguard Light tear off the strip on the case so as to expose the striking surface (similar to that on a matchbox); remove the striker from the sheath on the case and draw the striker smartly across the striking surface as in striking a match.

(2) *Portfire*.—This is smaller than, but is otherwise similar to, a Coastguard Light, and is

ignited in the same manner. It is used for firing Boxer rockets.

(3) *One lb. Signal Rocket with Stick*.—This is used for the following purposes:—

(a) Warning a vessel standing into danger (see Article 41):

(b) Answering a distress signal (see Article 40):

(c) Attracting attention of a Lifeboat in cases where the distance is too great for a Coastguard Light to be effective. *Three rockets are fired in quick succession for this purpose* (see Article 43, No. 3).

To ignite a 1 lb. signal rocket: First see that the rocket is properly secured to stick and that the metal catch is engaged in the notch. Then remove wooden base plug or break the paper at base of rocket according to the type of rocket in use. Place rocket in the firing frame if one is provided or lean it on a rail etc. at an angle. Tear off strip on side of rocket, thus exposing the igniting surface. Remove striker from sheath on rocket and draw it sharply along the igniting surface as when lighting an ordinary match.

(4) *Maroon*.—This is an explosive sound signal used to call out the L.S.A. Company. It may also be used as a warning signal when other means have failed.

Maroons are also used to assemble Lifeboat crews, but whereas the L.S.A. maroon shows a white star on bursting the Lifeboat maroon shows a green star. Maroons are fired from a mortar and *should not be handled except by persons specially trained in their use*. Instructions for firing are given in C.G. 3.

CHAPTER 4.—CHART WORK.

47. Comparatively little chart work is required from the average Coastguardsman but all members of the Coastguard should be able to

(a) read a chart;

(b) plot a position given in latitude or longitude;

(c) lay off a bearing;

(d) convert a position given in latitude and longitude into bearing and distance from a point of land or navigational mark.

48. Except in very small scale charts covering large areas, the compasses shown on the charts consist of two graduated circles clearly separated from each other. The outer circle is a True Compass, graduated from 0° (True North) to 359° , measured clockwise. The inner circle is a Magnetic Compass, graduated in points and in degrees, each quadrant consisting of eight points

and 90 degrees. When laying off courses or bearings care must be taken not to confuse the two circles.

49. The angle between the Magnetic North and the True North is called the Variation. The Variation undergoes a small but regular change, the annual increase or decrease, as the case may be, being shown on the chart. For all practical Coastguard purposes, however, this annual change may be ignored, sufficient accuracy being obtained by working direct on the Magnetic Compass shown on the charts.

50. When a chart is properly spread out, so that it can be read like the page of a book, the top is the North, the bottom is the South, the side to the right is the East, and the side to the left is the West. The Parallels are represented by straight lines drawn across the chart from East to West. The Meridians are represented by straight parallel lines drawn from North to South. The two Meridians which bound the chart on the right and left are called *Graduated Meridians*, because they are marked to degrees—and to minutes if the width between the parallels is sufficient. On these Meridians latitude is measured from the Equator towards the Pole, in degrees and minutes according to the scale of the chart. *Distance is always measured on a Graduated Meridian*, one minute of latitude being

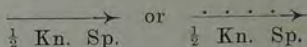
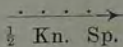
equal to one nautical mile. The two parallels which bound the chart at the bottom and top are called *Graduated Parallels*, being marked to degrees—and minutes if the scale is sufficiently large. Longitude only is measured on these parallels. *Distance is not measured on them.*

51. Soundings on charts are reduced to the level of low water of ordinary spring tides unless otherwise stated. As the tide occasionally falls below this level, there may, therefore, at times be less water than is shown on the chart. Fathom lines joining equal depths are given on charts, the usual lines being 1, 3, 5, 10, 20, etc.

52. In most charts the hills are denoted by contour lines. Figures on the land denote the height in feet above the level of high water of ordinary spring tides, while the thin black line denoting the coastline is the high water mark of ordinary spring tides. Underlined figures on the banks usually denote the number of feet the bank dries above the level of low water of ordinary spring tides.

53. Current or tidal arrows on a chart show only the approximate mean direction of the stream, but it must not be assumed that the direction of the stream will not vary from that indicated by the arrow. This applies also to the rate shown. An arrow feathered on both sides

indicates a regular current; if feathered only on one side, it indicates the tidal stream due to the flood; and if not feathered at all, that due to the ebb. Roman figures placed against these arrows indicate the various hours of Ebb or Flood. Dots on the shaft of the arrow also indicate this. For example,

IV.  or 

$\frac{1}{2}$ Kn. Sp. $\frac{1}{2}$ Kn. Sp.

indicates that: the tidal springs run at a rate of $\frac{1}{2}$ knot roughly in this direction at the fourth hour of the ebb, i.e., four hours after high water by the shore. This should not be confused with the turn of the stream.

54. To mark a position given in latitude and longitude on the chart, take from the Graduated Meridian with the dividers the given latitude and mark this on the Meridian nearest to the given longitude. Lay a parallel ruler on a near parallel, and work one side to the exact latitude you have marked on the Meridian. Then, with the dividers, take the given longitude from the Graduated Parallel. Lay this off from the Meridian along the edge of the parallel ruler which already marks the latitude, and you have the position. It should be noted that in order to work parallel rulers accurately the chart should be spread out on a flat surface and chart

work generally is much facilitated if charts, when not in use, are kept folded instead of rolled. Those who are not accustomed to use parallel rulers with facility can fix the position as follows:—

Take two pieces of thin string, each slightly longer than the width of the chart, and four drawing pins. Pin one end of the string on the graduated parallel at the top of the chart at the *longitude* given. Stretch this string down the chart and pin the other end on the graduated parallel at the bottom at the *longitude* given. Then take the second piece of string and pin one end on the graduated meridian on one side of the chart at the *latitude* given and stretch it across the chart, pinning it on the graduated meridian on the other side at the *latitude* given. The point of intersection of the two strings is the position required. A flat table is, of course, essential.

55. To convert the position given in latitude and longitude into a bearing and distance from a point of land or navigational mark, first mark off the position on the chart by either of the above methods. Then take the parallel rulers and lay one of its edges over the position shown on the chart and also over the point of land or navigational mark. Then move the two parts of the

ruler in succession until the edge of one of them passes through the centre of the compass on the chart, and that edge will point out the bearing, True or Magnetic, whichever may be desired. To ascertain distance, set the dividers on the graduated meridian on either side of the chart to a convenient distance—say 5 miles. Then place one point of the dividers on either the latitude and longitude position, headland, etc., and the other point on the line joining the two places. Then, lifting one end slightly, turn the dividers a half circle in the direction of the other object and repeat this as necessary. The last fraction, if less than the distance on the dividers, should be measured off on the graduated meridian. If the distance is small, one point of the dividers should be placed on the latitude and longitude position and the other on the point of land (or other navigational mark). Lift the dividers, and, without altering them, measure the distance on the graduated meridian on either side of the Chart.

56. On certain stretches of the coast, where the Coastguard stations are relatively close together, it may be possible and desirable to fix the position of a vessel in distress or a vessel suspected to be fishing illegally by means of bearings from two stations. In such cases the station which desires to fix the position of the vessel calls up

by telephone the flank station in a position to see the vessel or distress signal and arranges for a bearing to be taken, by bearing plate, from both points simultaneously. The second station then reports the bearing to the first station. The two bearings are then laid off on the chart, lines being drawn from the two points of observation, the point of intersection of which is the appropriate position of the vessel. It may even be possible to arrange for a bearing from a third station.

57. The signs and abbreviations used on charts are shown on a special "Abbreviation Chart" of which a copy is supplied to each District Officer for instructional purposes.

58. *It should be noted that "Magnetic" bearings should be used for inter-Coastguard purposes and also in the case of messages passed to Lifeboat and other authorities which either give a position in relation to a point of land or navigational mark or indicate a course to be steered.* Bearings contained in the text of messages received from Coast Wireless Stations are, as a general rule, "true". Such bearings should be converted by the Coastguard into "Magnetic" as may be necessary when passing the information indicated above to other authorities.

59. Bearing plates or boards at look-outs, etc., should be fixed in relation to the Magnetic North.

CHAPTER 5.—DRIFTING AND DISTANT CASUALTIES.

60. It may, on occasion, be necessary for the Coastguard to calculate the course (Magnetic) which a Motor Lifeboat should steer to locate a vessel in distress which is out of sight of the land and is drifting. To do this accurately and rapidly requires thorough proficiency which can be attained only by constant practice. It is quite useless to attempt to do it when the occasion arises if the procedure is not thoroughly familiar.

61. Information regarding a vessel in distress out of sight from the land would, as a general rule, be received from a Coast Wireless Station and it is possible that the vessel may afford information as to the direction and rate of her drift. If she does not do so, but indicates the nature of distress, some inferences may be drawn. Distress will generally be due to one of the following causes:—

- (a) lost propeller;
- (b) rudder damaged;
- (c) steering gear disabled;
- (d) cargo shifted;
- (e) hatches stove in by heavy seas.

In the case of (a), (b) or (c) it may be assumed that the vessel is in a "light" condition and will therefore drift fairly rapidly with the wind, while in the case of (d) or (e) she is probably in a "loaded" condition.

62. With a wind force of 6 and upwards the rate of drift, in miles per hour, due to wind alone may be taken to be about half the force of the wind, in the case of a "light" vessel, and at about a quarter of the wind force in the case of a "loaded" vessel. Thus with wind force 8 a "light" vessel may be expected to drift, through force of wind alone, at a rate of about 4 miles an hour, while the same vessel in a "loaded" condition would drift at the rate of about 2 miles an hour. With a wind force lower than 6 the drift would be proportionally less.

63. The following is a suitable method for the purpose of calculating the direction in which a Lifeboat should proceed in order to locate a drifting casualty out of sight of land:—

Material Necessary.—A suitable chart of not too small a scale, showing outlying waters; a strip of stout cardboard about half an inch wide and of convenient length according to the scale of the chart; two drawing pins, rulers, dividers and pencil.

Procedure.—(a) On receipt of the first intelligence of the casualty, the position of the vessel should be plotted on the chart and a line drawn from this position in the direction of the probable drift *due to the combined effect of wind and tide.*

(b) Estimate the distance the vessel will probably have drifted due to wind and tide

between the time she reported her position and the time of the receipt of the message at your Station. Mark this position with a "X" on the line of the drift already drawn on the chart.

(c) Make a calculation of the total time that it will take:—

(i) to work out the course for the Lifeboat on the chart;

(ii) to pass this course to the Lifeboat Authorities;

(iii) for the Lifeboat to proceed after receipt of message;

(d) Estimate how much the vessel will have drifted due to wind and tide, in the interval calculated under (c) from the position "X" and mark this position with "O" on the line of drift on the chart, calling the position "Zero." *This will be the estimated position of the vessel at the moment the Lifeboat proceeds to her assistance.*

(e) From "Zero" position continue the line of probable drift, marking off the estimated position each hour, counting from "Zero" thus:—1, 2, 3, 4, etc., denoting the successive positions each hour after "Zero."

(f) Now turn to the cardboard strip and proceed as follows:—

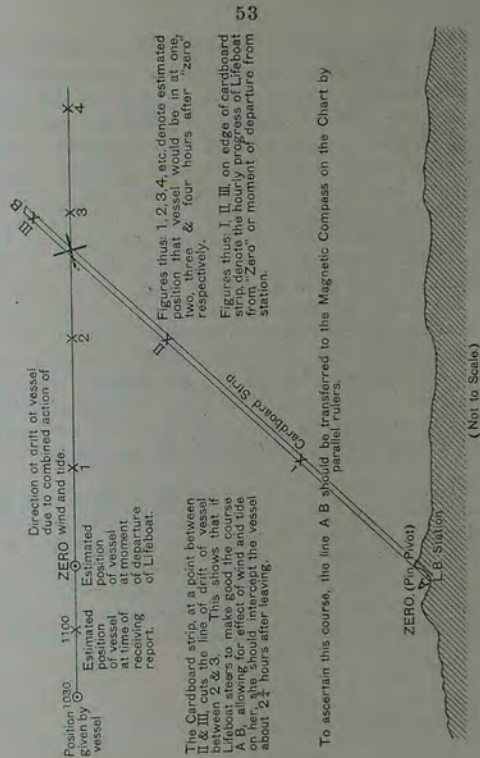
(i) Mark one end "Zero" and along the edge mark off—on the same scale as

the chart that is being used—the speed it is considered that the Lifeboat will make each hour, numbering this I, II, III, IV, etc., to correspond with the case of the drift of vessel after “Zero” position.

(ii) Pin the “Zero” mark on the strip to the position of the Lifeboat Station on the chart. Point the strip in the direction of the vessel and move it, pivoted about the pin, until the hourly marking on the strip cuts the same hourly marking on the line of estimated drift of the vessel. *The line in which the strip is now pointing approximately indicates the direction in which the Lifeboat would have to make good to intercept the vessel.*

(iii) Pin down the other end of the strip and draw a line along the edge. Remove the strip and transfer the pencil line, by means of parallel rulers, to the Magnetic compass on the chart. The Magnetic course which the Lifeboat would have to make good is thus obtained, but any allowance necessary for the effect of wind and tide on the Lifeboat must be made by the Coxswain whilst on passage.

64. The following diagram illustrates the method described in Article 63:—



65. It may happen, however, that the vessel gives no indication either of her rate of drift or of the nature of distress. In these circumstances the "Zero" should be calculated as indicated in the previous article, the allowance made for wind drift being calculated as the mean between that for a "loaded" and that for a "light" vessel, and the bearing of the "Zero" point from the Lifeboat Station ascertained. If the Lifeboat steered on this bearing she would be subject to approximately the same drift effects as the vessel in distress and should locate her unless the distance of the casualty from the Lifeboat Station is considerable. *This method (i.e., The Lifeboat steering on the calculated bearing) may also be employed, even if the vessel indicates the rate of drift or nature of distress, in cases where only moderate distances are involved.*

66. It will be found a good plan, if done neatly and accurately, to paste a compass-cut from an old chart of same variation as the position in which it will be used—with its centre over the position of the Lifeboat Station with which the Coastguard station concerned has to work. This will facilitate laying off a course when required.

CHAPTER 6.—LIFE SAVING APPLIANCES.

TRANSPORT AND GENERAL ORGANIZATION.

67. A full description of the Life Saving Appliances used in H.M. Coastguard is contained in C.G. 3, copies of which are available at every Station, and details are, therefore, omitted from this Manual. The duties of the members of the Life Saving Companies are described in subsequent chapters.

68. The rapid transport of the Life Saving Appliances to the scene of a wreck is of the greatest possible importance, and it is, therefore, necessary for the organization of every Station to be devised to this end. Conditions vary very considerably as between Stations and localities, and it is necessary to amend the organization from time to time in order to keep it abreast of changes in local conditions. Such changes as the construction of a new road, the elimination of farm horses in favour of tractors and lorries, etc., must be carefully noted in order that the transport arrangements for a particular set of Life Saving Appliances may be kept fully up-to-date.

69. The Appliances provided for the use of the Life Saving Service are normally kept stowed in a horse wagon or cart according to the type of gear supplied, but many of these vehicles have already been adapted for motor towage and others can similarly be adapted when changes in

local conditions render this desirable. Experiments are being carried out with other types of vehicles, notably trailers capable of being towed by cars or lorries at a rapid pace, and sufficiently light and manageable to be man-handled when further towage by motor vehicles is impracticable. Where Appliances are in the "mobile" or "light" categories, vehicles are not generally provided, reliance being placed on local motor transport or man power according to the circumstances at the Stations concerned.

70. As under modern conditions horse transport is generally less satisfactory than motor transport from the point of view of rapidity of movement, every opportunity must be taken to employ motor vehicles in an emergency unless the wrecked or distressed vessel is close at hand, and the emergency organization must be carefully worked out beforehand, in order that it may be applied at a moment's notice.

71. The method of transport to be employed is dependent on the type of roads available. This applies not only to main roads, but to the roads or tracks leading from the main roads to the coast. The early location of the exact position of a wreck is of great importance, and in many cases, it is desirable that an advance party in a car with or without light communication gear (line throwing

pistol or 1 lb. rocket) should be despatched immediately the necessary men are available. Such a party in addition to effecting communication with the vessel, if possible, can make a rapid survey of the ground, in order that the main Apparatus may, on its arrival, be brought into action without delay and in the most advantageous position. An advance party should be provided at night with Coastguard Lights to enable them to guide the main party to the spot. A careful review of all the circumstances which are likely to attend a wreck in the locality enables it to be decided beforehand whether it is necessary so to arrange the transport that an advance party shall be sent ahead. If the decision is in the affirmative either for the whole area served by the L.S.A. or for part of it, the standing arrangements at the Station must include those for providing the necessary transport for the advance party, in order that there may be no delay when the Appliances are required for wreck service.

72. Where circumstances permit, it will be found convenient to allot each set of Life Saving Appliances an area of operations and, as indicated in the preceding paragraph varying conditions within this area may require different methods of treatment when the transport organization is being devised. To enable this organization to be clearly summarised, the limits of the area of operations are shown

on a map. The map is prepared by the Coast-guard, and shows the roads available to various points on the coast for heavy and light motor vehicles, and also for horse-drawn traffic only. A number of rendezvous are arranged and marked on the map, both on the main roads and on the shore. These serve as points to which the Appliances may be ordered by the Officer-in-Charge, when dealing with a casualty. The map also includes the following information:—

(a) Farms at which horses can be obtained to meet the appliances at the various rendezvous;

(b) Positions from which farm tractors may be obtained;

(c) The names and addresses of persons with whom arrangements have been made for the supply of lorries, cars, motor cycles and horses in time of need;

(d) Telephones available along the coast;

(e) Certain observation points to which despatch riders can be sent to locate a casualty if the exact position is not known.

The limits of the area shown on the map have no necessary connection with the limits of the coast for which any particular Station is responsible for watching and general purposes. Copies of the maps are held by the Inspector of the Division, the District Officer and, at Coastguard Stations,

one is provided for the use in the lookout and one for the duty room. The organization which is summarized on the maps is not intended to limit initiative or discretion, but it provides a definite scheme of operations in order to obviate the necessity for hastily devised measures when an occasion arises for bringing the Life Saving Appliances into use.

73. Where the main roads and side roads are suitable for motor traffic, or where a main road runs so close to the coast that hand transport can be employed from the road to the scene of a wreck, motor transport is preferable if it is likely to be available when an emergency occurs and in such cases the Appliances are transferred to the motor vehicle before leaving the L.S.A. house. Where fairly good main roads exist but where access to the coast is possible only by rough cart tracks which are longer than would be convenient for conveying the gear from the road by hand transport, towage of the L.S.A. wagon by a motor lorry, if available, is better than using a motor lorry for transporting the gear itself, because for the last part of the journey it may be necessary for the L.S.A. vehicle to be drawn by horses or drag ropes. When there is a possibility that a wagon which is being towed by a lorry may subsequently have to be drawn by horses, care must be taken to ensure that the harness and shafts or

pole are carried on the wagon. Existing wagons, although not designed for the purpose are suitable for towing up to a speed of from 12 to 15 miles per hour according to the condition of the road. Excessive speed must be avoided and care must be taken on bends and corners. Wheels should be kept well lubricated and brakes, lynch pins, washers, etc., must be carefully examined periodically, as well as before departure of the gear on service or for exercise and on its return. When a lorry is being used to tow a L.S.A. wagon, the members of the Company should ride on the lorry, care being taken that the legs of any members do not hang over the side. Those on the wagon should be confined to the brake-man and, possibly one other to assist him.

74. When a casualty is known to have occurred the Officer dealing with it decides whether the attendance of the L.S.A. is necessary. If so, he has the choice of the following measures:—

(a) Send wagon complete:

- (i) by horses for short distances;
- (ii) in tow of a motor lorry for longer distances.

Note.—Transport by lorry can of course be used if suitable (see Arts. 72-3).

(b) Send whip apparatus only by a fast light motor vehicle;

(c) Send belts and lines by motor car.

Note.—This also applies to Stations not equipped with other Life Saving Appliances.

(a) Is adopted when conditions indicate that the complete apparatus will be required.

Note.—Circumstances may arise when the attendance of the whole Company may be desirable although the full apparatus may not be required (e.g., to line or search the coast in case of the crew landing in their own boats).

(b) Is adopted when the vessel is in danger of breaking up or is so small that the usefulness of the hawser is in doubt.

Note.—In certain circumstances it may be advisable to despatch the whip with sufficient men to work it in advance of the main apparatus (e.g. when the scene of the casualty is at a considerable distance or there is a possibility of any delay in assembling the full Company).

(c) Is adopted when some time must elapse before even the whip can arrive (see (b)).

75. The following action is taken by a Station not equipped with L.S.A. when Appliances are required from another Station:—

(a) Inform the L.S.A. Station shown on map as serving the area concerned that the

L.S.A. is required, stating whether full apparatus or the whip only is required;

(b) Give the number or letter of the rendezvous to which the apparatus is to proceed;

(c) Call out the horses or horse and cart from the farm, etc., indicated on the map for that rendezvous;

(d) Summon despatch rider;

(e) Arrange for a Coastguard guide to meet the apparatus, if necessary. This is essential where the personnel of the L.S.A. Station do not know the roads.

76. If the L.S.A. Station is itself dealing with the casualty, the Officer-in-Charge of that Station himself decides what apparatus is to go and acts accordingly, summoning lorry, van or horses as required and also his despatch rider.

77. If the L.S.A. is called out by a distant Station, the Officer-in-Charge at the L.S.A. Station despatches apparatus as requested, using only the route laid down and proceeding only to the rendezvous named. When the position of the wreck is known the apparatus can be ordered direct to the rendezvous nearest to it, but when the position of the wreck is uncertain it will generally be found best to order the apparatus to a suitable rendezvous on the main road near the supposed position, where it should receive definite

instructions where to proceed. In this latter case the Station dealing with the casualty at once sends the despatch rider to a suitable "spotting point" with orders to locate the casualty and return with definite information to the rendezvous to which the L.S.A. has been ordered. The L.S.A. can then proceed direct to the rendezvous nearest the casualty. If a lorry is being used up to this point, arrangements should always be made for horses to meet the apparatus at the last rendezvous unless the distance from the casualty is very short or it is known that the lorry can proceed. Similarly, farm carts must be provided at the last rendezvous whenever the whip apparatus only is sent by motor van or car, unless it is definitely known that the motor vehicle can reach the shore at the scene of the casualty.

78. Despatch riders on motor cycles or light cars are summoned by both the Station dealing with the casualty and the L.S.A. Station. The despatch rider of the former Station is used to locate the wreck and, if necessary, to summon horses to meet the L.S.A. with a local guide or fresh orders. The apparatus must always follow a pre-arranged route, whether it is being conveyed by a lorry, the L.S.A. wagon or a light van with the whip, as it is essential that it may be found by the despatch rider without difficulty or delay.

79. A form of request for horses is supplied to all Stations to avoid confusion when the need arises and definite instructions are given thereon as to how the horses are to be harnessed.

80. In addition to the organisation described above, it is also necessary to provide for occasions when it may not be possible for the vehicle or vehicles to approach close to the scene of a wreck, consequently necessitating hand transport during the final stage. In drawing up the plan of action it is essential that the following general principles should be borne in mind:—

(a) that all gear required to obtain communications and, if necessary, to work the whip gear, together with the reserves of essential stores (spare rockets, lines, etc.) should reach the scene of the wreck without delay; and

(b) that, sufficient men having been left at the scene of the wreck to effect communication and to work the whip gear if necessary, the numbers not so employed should be used to provide, as quickly as possible, the remainder of the stores required to work the full apparatus, in order that the hawser may be available, if required, by the time communication with the whip has been effected.

81. A specimen hand transport scheme is given in Chapter 14 but, as it is based on the assumption that a full Company is available, it should

only be regarded as a guide for those who may have to detail members of the Company for hand transport at a wreck service. As it will not usually be the case that the full Company is present, lists should be made of the stores to be included in the first, second, and if necessary, subsequent transports in order that the members available may be at once detailed to the various items. These lists should be carried in the vehicle. The extent to which they are adhered to will, of course, depend on the particular circumstances of the case, and must be left to the discretion of the Officer-in-Charge. For example, it may prove essential that the cliff ladder should go with the first transport, in which case the other stores which normally would be provided would have to be reduced in proportion. In every case, however, endeavour should be made to secure that at least the rocket machine with fitted rocket, one line box, whip box, breeches buoy and brass snatch block should go with the first transport and that sufficient numbers should remain at the scene of the wreck to obtain communication and, if necessary, to effect a rescue with whip only.

82. If members of the Company normally detailed for carrying certain stores are absent, and assistants have to be employed, it may be found advantageous first to complete the Company with

the assistants and then to detail the whole according to a pre-arranged plan. This also is a matter which must be left to the discretion of the Officer-in-Charge.

83. Each member of the staff at Coastguard Stations equipped with L.S.A. and the Volunteer-in-Charge and No. 1 at Auxiliary L.S.A. Stations should have a copy of the normal hand transport scheme for the Station and he should be thoroughly conversant with it. The arrangements should occasionally be put into practice. This can best be done at an ordinary exercise by halting the vehicle about a quarter of a mile from the exercise ground and completing the last stage by hand transport, coming into action with the communication gear in the first instance, subsequently completing the whole procedure of sending out and setting up the hawser.

CHAPTER 7.—WRECK SERVICE.

84. The following notes are for guidance only. It is impossible, and even dangerous, to attempt to lay down a definite course of action to meet all eventualities. Every wreck service produces certain features peculiar to itself. All factors should be weighed and a certain course of action

decided upon. It is both to assist those who have to decide upon a course of action and to facilitate the consequent operations that these notes have been prepared, *but the correct judgment of the man on the spot is all important.*

LAYING AND FIRING THE ROCKET.

85. In practice, it will usually be found that the rocket machine should be at an elevation of 30° to 40° , according to the range required. When firing from the top of a cliff and the vessel is fairly close in under the cliff considerably less elevation will probably be necessary and it may even be advantageous to lay the rocket machine flat on the ground at the cliff edge. If the machine is brought into action on uneven ground, causing one foot to be lower than the other, or if one foot sinks deeper in the ground than the other, the effect will be to carry the rocket towards the lower side. When firing from a slope on the side of a hill or cliff, a trench will have to be dug for the tail of the rocket machine in order to obtain sufficient elevation; the rocket line box should lie close up to the rocket machine.

86. Difficulty may be experienced in effecting communication, from the top of a high cliff, with a vessel ashore close under the cliffs. In these circumstances, if it is not possible to set up the rocket machine on a ledge lower down on the

cliff, it is better not to attempt to go into action immediately over the wrecked vessel, but, if possible, to set up the apparatus a short distance to the right or left, preferably to windward. By this means it is usually possible not only to make a better shot, but to obtain a larger target; while, should the line not go over the vessel, but fall to seaward and windward, it might be possible to "walk" the line down to the vessel along the cliff top, the rocket forming an anchor at the seaward end. Further, the fact of working from the side would make it easier to use the hawser by considerably lessening the angle of descent. The use of a line-throwing pistol would, of course, under the above conditions, tend to facilitate communication.

87. On service it is preferable to await a suitable moment for firing the rocket—a lull in the wind for instance—than to be over-anxious to fire as soon as possible after arrival on the scene. To take full advantage of a lull in the wind, it may be desirable to dispense with the use of a fuse and to ignite the rocket by applying a Coastguard light or portfire directly to the composition at the base. Care is necessary when this method is employed. The man firing the rocket should stand to windward as usual, place the Coastguard light or portfire well into the base of the rocket and step smartly aside immediately ignition occurs.

USE OF ROCKETS WHEN OIL TANKERS ARE WRECKED.

88. Where an oil tanker is wrecked, or stranded, and her tanks have been badly holed before communication is effected, due regard must be paid to the possible risk of a serious fire if a rocket is fired and the oil carried on the tanker is oil with a "low flash point." In such circumstances due consideration should be given to any alternative methods of rescuing the crew that may be possible. In this connection the following points should be observed:—

The oils carried in tankers are (a) heavy fuel oils (flash point above 150° F.), (b) lamp oils (Kerosene) of medium flash point (say 80°-100° F.), and (c) low flash crude oils and motor spirits.

(a) *Heavy fuel oils.*—These may be leaking from the ship or may be pumped over the side to calm the water. No vapours will be given off. The only possibility of ignition would be a flaming rocket plunging into the oil, and it is probable that the rocket will pass through the oil layer into the water so quickly that ignition of the oil would not take place.

(b) *Kerosene.*—The vapour above the oil would be inappreciable. The oil on the water would probably be ignited by a rocket flame unless the layer were quite thin. The nearer

the ship, the greater the thickness of the oil layer to be expected, subject, of course, to the rate of discharge.

(c) *Spirit and Crude Oil*.—Here there would be a large amount of vapour in the air, and if at all concentrated a dangerous atmosphere would be formed.

Petrol vapour is very heavy and under favourable conditions of low wind, this explosive atmosphere would be within three or four feet of the water, and might be fired by a rocket falling short.

89. The conditions under which the Life Saving Company was called out to service would, however, generally be those accompanying a gale and in such conditions it is probable that petrol vapour would be so diluted and dispersed as not to be dangerous two or three feet above the surface of the sea. The spirit on the surface would, however, be highly inflammable.

90. As regards the rocket party, it has to be remembered that a light air blowing in shore might contain enough vapour to be dangerous to the party if working near the sea level. If the firing party were elevated some distance above sea level they would run little or no risk although great care would be necessary. In a heavy wind no great danger need be feared.

91. Further, wind carries the oil with it on the surface of the water, and as the rocket apparatus is almost always used from a lee shore, the danger area for oil on the water would be between the ship and the shore. A rocket falling short might cause ignition, but one falling well over the ship would hardly be likely to reach sufficient oil to cause danger.

92. It is important to remember that under the Merchant Shipping (Line Throwing Appliance) Act, 1928, every ship of 500 tons gross tonnage or upwards, when proceeding on a voyage or excursion from a port in the United Kingdom, is required to carry a line-throwing appliance capable of throwing a thin line a distance of 120 yards in calm weather. The circumstances may be such, e.g., a strong off-shore wind, that it would be safe for the oil tanker to effect communication with the shore with her own line-throwing appliance, while grave risk would be involved if a rocket were fired from the shore.

93. If, however, it is in any way possible to attempt a rescue by means which do not necessitate the use of a rocket it is highly desirable that this should be done rather than incur the slightest risk of igniting either the oil or the vapour from the oil. For instance, it is likely that a Lifeboat would be in attendance. All Motor Lifeboats are equipped with line-throwing guns by means of

which a line is fired without the agency of a rocket and, where possible, use should be made of this means of getting a line on board. Alternatively, circumstances might admit of a line being floated ashore from the vessel by means of a cask, raft or buoy.

94. Mariners have been specially warned as to the danger of attempting to effect communication, by means of Rocket line-throwing apparatus, with an oil tanker. This notice is as follows:—

“Attention is called to the danger of attempting to establish communication, by means of a Rocket line-throwing apparatus, with an oil tanker, should that vessel be carrying petrol spirit or other highly inflammable liquid and be leaking. In such a case THE ASSISTING VESSEL SHOULD LIE TO WINDWARD OF THE TANKER and the communication should be established from the ship requiring assistance. THEREFORE BEFORE FIRING A ROCKET TO SUCH A VESSEL, IT SHOULD BE ASCERTAINED WHETHER IT IS SAFE TO DO SO.”

PROCEDURE IN THE EVENT OF FIRST ROCKET FAILING TO CARRY LINE OVER THE SHIP.

95. If communication is not effected with the first rocket, further rockets must be used and immediate steps should be taken for the recovery

of the used rocket lines in preparation for further use if necessary. It has been found that the best method of re-stowing a rocket line efficiently and expeditiously for immediate use on wreck service is as follows:—

That part of the line which has not been carried out by the rocket should be left lying as it is in the box, the remainder being re-stowed, *without any replacement of pins*, by making figures of 8 across the box beginning at the hole end of the box and snaking back from the other end. This process should be continued until the whole of the line is re-stowed in the box, but care should be taken when using the line again not to cant the box more than is necessary when placing on the canting legs.

In re-stowing a rocket line which has to be hauled in over sand, it is advisable, if possible, when stowing it in the box to pass it through fresh water in order to remove the sand, which would reduce greatly the range of the rocket.

WORKING THE APPARATUS.

96. The efficacy of the measures taken to save life will depend primarily on the knowledge and judgment of the Officer in charge, combined with intelligent co-operation of the Company and their strict obedience to orders. Although, with a well-trained Company, the working of the appliances

should proceed smoothly, the success of the measures for the preservation of life depends to a very large degree on local knowledge. Especially is this the case where cliffs are concerned and, wherever possible, it is better to avoid firing the rocket and working the appliances from the top of the cliff. In cases of this nature, the gear should, if possible, either be transported to the beach at the cliff foot or to a suitable ledge on the cliff face. Generally speaking, the lower down a cliff the appliances can be worked, the more the life saving operations will be facilitated, due consideration being given to the state of the tide.

97. If it should prove necessary to work the appliances from the top of a cliff, a small brass snatch block secured well up on the leg of the triangle will assist in keeping the lee whip clear of the cliff edge, while the gear should be set back sufficiently to obviate the risk of men falling over the cliff. The successful working of the appliance, especially from the top of a cliff, depends largely on the alignment between wreck and shore, in order to facilitate the passage of the rescued persons over the cliff edge and to avoid overhanging rocks, etc. The position in which the anchor is buried should, therefore, be very carefully selected by the Officer in charge, while in such cases the triangle should be erected as close as

possible to the cliff edge, having regard to safety. It should be secured, if necessary, by lashing the legs to stakes driven in the ground.

The landing of men in breeches buoy can, in certain circumstances, be facilitated if the white leg of the triangle is lengthened by lashing the wagon pole to it and projecting the triangle over the cliff edge. The blue legs must, if this is done, be secured by stakes and a preventor made fast to top of triangle and secured to a stake in rear. This method should not, however, be employed unless it has previously been practised at a drill.

When setting up the hawser, it is advisable to detail someone to see that the anchor (and backer if used), is holding. It will probably not be possible to erect the triangle if the hawser is hauled too taut, and it is therefore advisable, after the hawser has been hauled sufficiently taut to get the alignment, to ease it up whilst the triangle is being raised.

98. Nos. 2 and 3 should take up position near to the edge of the cliff and allow no one to pass beyond them. It may even be desirable specially to detail another member of the Company for the purpose of ensuring compliance with this rule.

99. Even when the triangle is erected close to the cliff edge, it almost invariably happens that the hawser touches the ground and it is therefore

necessary, unless the rescued person in the breeches buoy can be landed on a ledge a short distance below, to put a cliff ladder over when bringing rescued persons up a steep cliff. The ladder should be placed *under* the hawser and care is necessary to select the right time to put the ladder over so as to get it exactly in this position and clear of the whip. It is most essential to see both whips taut and clear of the wake of the ladder immediately before the ladder is thrown over. The person should never be taken out of the breeches until he is on the top of the cliff unless arrangements have been made to land him on a ledge below, and considerable judgment and care are necessary in carrying out these operations. Except where Companies are equipped solely with cliff ladder appliances, it is desirable that a squad of suitable men in each Company which has a cliff ladder should be detailed as a Cliff Ladder Party and should, when cliff ladders are brought into action, have special duties in which they should be practised, the drill laid down for Cliff Ladder Companies being taken as a guide (see Chapter 13, Art. 194).

100. Local conditions at a wreck may render it necessary to depart from the routine as taught at exercises. If, for instance, the vessel is working considerably, it is not advisable to set up the hawser with the luff but to keep it as taut as

possible by hand. Also, when working on a ledge on the face of a cliff, there may not be sufficient room to set up the hawser. In cases of this nature the hawser must be kept as taut as possible by hand, or taken round a convenient rock or projection, precaution being taken against chafing. Even if there is only a very slight movement on the vessel, it will probably be found that the drill procedure of No. 6 attending the luff would be unsuitable and additional numbers may have to be detailed to keep the luff fall in hand, the bight being rove through the ring of the anchor but not hitched.

USE OF THE WHIP.

101. To effect a rescue with the whip only, usually requires skill, initiative and judgment of a higher order than is the case when the hawser is employed, the operations in the latter case being more straightforward in their nature than is the case with the former. Whenever possible, however, the hawser should be used especially as its employment gives confidence to those being rescued.

102. When working with the whip only the probability that those being rescued will be less ready to trust themselves to the breeches buoy must be borne in mind and everything possible should be done to give them confidence. Experience shows that the intelligent use of the breeches

buoy and whip constitutes an efficient method of effecting a rescue, but it must be understood that this method should, as a rule, be employed only when:—

- (a) a hawser is not immediately available;
 (b) if hawser is available—

(i) on a flat beach in cases where it is not possible to erect a triangle in a position appreciably above sea level and consequently where the sag of the hawser, with the weight of the man in the buoy on it, is likely to be such that there is a danger of the man being forced under water by the hawser pressing on him, or, the buoy being water-borne, of his being struck on the head by the traveller block.

Note.—Circumstances may demand that this risk must be accepted as cases have occurred in which crews of vessels have hesitated to come ashore until hawser has been brought into use. There is a reasonable chance that, if the hawser touches the surface of the water, the man in the breeches buoy will be clear to leeward of the hawser. It is essential that a steady line should be used between the breeches buoy and the whip on all occasions where the hawser is being used if it is possible that the breeches buoy may

become water-borne at any point during its journey ashore.

(ii) when the vessel is likely to break up rapidly and it is imperative to effect a rescue without delay;

(c) where, owing to peculiar local conditions existing at the time, it is not possible or desirable to employ the hawser.

In all cases, when working with whip only, care is necessary in handling the whips when the weight of the man first comes into the breeches buoy, otherwise, especially if the whip block is made fast high up in the vessel, there is a danger of his being dropped and injured.

103. There are two *standard* methods for the use, according to circumstances, of whip with breeches buoy, and these are described below, together with a third method which is sometimes advantageous:—

Method A.—This is the most straightforward method and is suitable for employment on a flat beach which is clear of obstructions, or for use when effecting a rescue with the appliances embarked. In this Method the breeches buoy is used as a lifebuoy and is hauled backwards and forwards through the water, the buoy being water-borne the whole time between the wreck and the shore. The breeches buoy is secured to the lee

whip, the bight of the whip being made fast to the slings on each side of the buoy. The part of the whip between the slings should be of sufficient length (about two fathoms), to prevent any strain being brought on it, the slack being toggled to the side of the buoy to prevent its fouling obstructions on the bottom, etc. If using a buoy fitted with the old pattern whip slings the small brass snatch block should be stopped securely to the buoy to prevent possible injury to the man.

104. When employing Method A in a heavy sea, the man in the buoy may suffer by being partially submerged from time to time, and careful adjustment in working the whips is necessary in such cases. Access to the buoy from the vessel may also be difficult, more especially if the whip has been made fast at any height above the waterline. When the buoy is out at the wreck, access to it will be facilitated—provided it has been made fast in a suitable position—by keeping a heavy strain on the weather whip and then steadying taut the lee whip. With the wreck distant more than 100 yards, the buoy should not be hauled ashore at a speed greater than a smart walking pace, otherwise there is a danger of drowning the person in the buoy. *When it is not possible to see what is going on board the vessel, the first man landed should, if possible, be questioned on the point, and the working of the whips should be adjusted to meet the particular conditions.*

105. When working on a flat beach on which there may be piles or other obstructions between the wreck and the shore, or in cases where there is a very strong cross tide, which it is not possible to avoid by adjusting the alignment between the ship and shore, it may prove necessary to use Method B (which is explained below), but it should be realised that some discomfort will be caused to the man in the buoy and that there is a danger of the small brass snatch block getting clogged with seaweed, etc.

106. *Method B.*—This is the method, using a small brass snatch block, as laid down in the detail of drill (see Chapter 13 (B) Art. 180, etc.), and described on pages 22 and 26 of C.G.3. This method is suitable for employment when the apparatus is being used from a position which entails the weight of the person in the buoy coming on the weather whip (i.e., the part of the whip snatched in the brass snatch block), or, in other words, when the whips are being handled from a position appreciably higher than sea level. In these cases the operations can be facilitated by using the triangle, if available, snatching one part of the whip in the triangle snatch block, and the other in a spare snatch block secured immediately below the triangle snatch block. Care must, however, be taken in the erection of the triangle, the white leg of which must be placed so as to take the strain caused by the weather whip being eased

away while the man is coming ashore. If no spare snatch block is available, the weather whip should be snatched in the triangle snatch block, the triangle being erected with the white leg towards the wreck.

107. The whole secret of the successful employment of this method is to keep the weather whip as taut as possible whilst it is being eased away during the passage of the breeches buoy ashore. The weight of the occupant of the buoy is then on the weather whip, and he should be secure and reasonably comfortable. Considerable assistance in keeping the weather whip taut can be afforded by driving two iron stakes in the ground at right angles to the direction of the lead of the weather whip. The bight of the weather whip can then be taken round the stakes as is done in the case of a rope round a "cleat".

108. It must be understood, however, that it is not possible to avoid a considerable amount of sag on the weather whip owing to the weight of the rescued person being on it, but this method has been successfully employed when effecting a rescue at night from a point 250 feet above sea level under conditions where it was not possible to use a hawser. The sag on the weather whip was, however, such that the breeches buoy came into the cliff at a point 100 feet below that from which the appliances were being worked.

The use of stakes, however, as described above, would very considerably lessen the sag.

109. When the empty buoy is out at the wreck the lee whip should be eased right up, the weather whip being kept as taut as possible as this will facilitate access to the buoy. When hauling ashore, both whips should be kept well manned if stakes are not available for the weather whip.

110. *Method C.*—This is suitable for use, on occasion, with the breeches buoy fitted with general service slings as an alternative to Method B, but only in circumstances under which there is no chance of the buoy becoming water-borne or landing on rocks, etc., between ship and shore.

111. In this case the buoy is secured in the following manner:—The slings are separated and a figure of eight knot made in the wreck side sling. The slings are then brought together as for use with the hawser, using the small brass snatch block on the grummet. The lee whip is then clove-hitched over the neck of the slings, after which the block is snatched to the weather whip. A short steadying line, which must be of the same size as the whip, is then taken from the shore side of the breeches buoy to a point on the lee whip about 5 feet on the shore side of the clove-hitch, being secured to the lee whip with a rolling hitch.

112. The remarks under Method B as to handling the whips and keeping the weather whip as taut as possible when easing it away whilst the buoy is coming ashore, and on the use of the triangle apply equally in this case.

113. This method facilitates entry into the buoy, especially when the whip block has been secured high up on board the vessel. It has the advantage also that the man in the buoy has the slings to grasp if he needs such assistance, whereas, in the case of Method B, he may be inclined to grasp the weather whip, which is, of course, travelling in the opposite direction.

114. Caution is necessary in employing this method. It should not be used on service unless the circumstances clearly demand its adoption and the Officer in charge and the more important members of the Company are thoroughly conversant with it and have practised it at exercises.

115.—*Methods A and B should be regarded as the standards for use, according to circumstances.*

Notes.—(1) The conditions under which exercises are carried out, i.e., in a field or on flat ground, do not, as a rule, reproduce the conditions under which Method B should be used. Companies should therefore be instructed in the method, either A or B or both, which they are

likely to have to use on service, the circumstances in which a particular method should be used being explained and, if possible, reproduced.

(2) In the case of a small vessel, e.g., one with a crew of 3 or 4, it is necessary to "nurse" the whip out, easing as they give a haul on the rocket line and holding on when they pause for a rest.

116. If the whip is not long enough to reach the wreck, it should be tailed with a length of rocket line. Generally speaking, it may be assumed that if the whip will not reach the wreck the hawser will not do so either and consequently it is in such cases necessary to tail the whip and use it with the breeches buoy. In these circumstances, the whip should be tailed by cutting it at the splice on the swivel, and the ends of the portion of rocket line employed—which should be of sufficient length—knotted to each end of the whip. When securing the lee whip to the breeches buoy the whip should be so adjusted, after the whip block is fast to the wreck, that the knot is on the shore side of the short sling of the breeches buoy.

STANDARD SIGNALS USED FROM A WRECKED VESSEL AND PROCEDURE IN CASES WHEN THE WRECKED VESSEL FAILS TO MAKE THE STANDARD SIGNALS FOR OPERATING THE GEAR.

117. Normally, signals are made from a wrecked vessel as follows:—

First—When they have hold of the rocket line.

Second—When the whip is secured.

Third—When the hawser is secured.

Fourth—When the man is in the breeches buoy.

These signals, which may be termed "Operating Signals" may be supplemented by semaphore or morse.

118. *Where the crew of a wrecked vessel fail to make the signals referred to in Art. 117, careful judgment is necessary in order that the lines, etc., may not be hauled out of the hands of those on board the wreck, thereby causing delay and possible loss of life. In these circumstances the procedure below should be followed by the members of the Company indicated:—*

(a) *No. 2; when, if the line has ceased being carried out by the rocket, he sees it commencing to go out again, should report "Wreck hauling in the rocket line". The rocket line should then be cut and re-bent to the whip block as usual.*

(b) *No. 4; when the whip has ceased going out and it is clear to him that it is not merely a slight check should report "Whip block at wreck". The Officer in charge should, however, verify by personal observation that the*

evidence points to the whip block having reached the wreck rather than trust entirely to the report from No. 4.

(c) From the time the whip block arrives at the wreck, at least three minutes should be allowed by the Officer in charge before hauling commences on both parts of the whip to see that it is clear.

(d) When it is clear that the hawser has reached the wreck, an interval of about five minutes should be allowed by the Officer in charge before hauling on the hawser.

(e) About three minutes should be allowed after the breeches buoy reaches the wreck, before hauling ashore.

If the above procedure has to be adopted, it should be borne in mind that it is better to suffer a little delay rather than to haul too soon on any part of the gear.

USE OF A SEARCHLIGHT FROM A LIFEBOAT.

119. If a Lifeboat equipped with a searchlight is present at the scene of a wreck at night, the following procedure is suitable for using the searchlight to facilitate the working of the L.S.A., provided, of course, it is possible for the Lifeboat to lie in a suitable position:—

(a) The light should be kept on the wreck until those on board have hold of the rocket line;

(b) It should then be kept on each part of the gear as it is hauled out, being kept steady on the wreck whilst the whip and hawser are being made fast, and during the time each person is getting into the breeches buoy, the buoy being followed ashore and out again at each successive operation.

Opportunity should be taken to discuss this procedure with local Lifeboat authorities in cases where the Lifeboat has a searchlight, and, if possible, the attendance of the Coxswain at a drill should be arranged so that procedure can be agreed.

120. The pyrotechnic signals used by a Lifeboat to communicate with the shore are described in Chapter 3, Art. 43. If at a wreck service, at which both Lifeboat and L.S.A. are present, the Lifeboat is seen to leave the wreck and burn a green flare (indicating that she has none or part only of the shipwrecked crew on board) the L.S.A. Company should not leave the scene until it is definitely ascertained that all the crew or all the survivors have been rescued. It may be the case, for instance, that part of the crew are in the Lifeboat while the remainder have been landed by the L.S.A. Both by day and night.

therefore, the Officer in Charge of the L.S.A. must satisfy himself that all the crew of the vessel are accounted for before he orders the L.S.A. back to its station.

121. Should communication have been established with the L.S.A., and the crew either remain on board or return on board before the L.S.A. Company leave the scene, a line should, if possible, be left on board the vessel before the L.S.A. gear is cast off.



CHAPTER 8.—RESTORATION OF THE APPARENTLY DROWNED.

122. If help is available, send immediately for hot bottles, blankets, and dry clothing, and also for medical assistance, *but instantly proceed to treat the patient on the spot.*

123. The points to be aimed at are—first and *immediately*, the *restoration of breathing*; and secondly, the *promotion of warmth and circulation.*

124. 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 if necessary. Should a medical man pronounce life to be extinct before that time he should be informed of the Board's 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).

TREATMENT.

125. Not an instant is to be lost, even in loosening clothing; artificial respiration must begin without a moment's delay.

126. Immediately after removal from the water, lay the patient in a completely flat position, face downwards, with the arms laid forward and then proceed as follows:—

(a) Turn the face to the side, taking care that the mouth is clear of the ground and the armpit.

Kneel on one side of the patient (see Fig. 1).

(b) Place the hands on the small of the patient's back, the wrists nearly touching, the thumbs as near each other as possible without strain and the fingers passing over the loins on either side but not spread out.

(c) Bend the body from the knees, somewhat straightening the hip-joints, and swing slowly forward so that the weight of the body is conveyed to the hands. *No exertion is required, the necessary pressure being imparted by the weight of the body.* Expiration is thus produced (see Fig. 2). The pressure (expiration) should be maintained for about two seconds.

(d) Immediately after making this downward pressure the body should be swung slowly backwards to its first position thus removing its weight from the hands (which are

left in place and relaxing the pressure). The inspiration should last for about three seconds.

(e) Repeat the movement regularly about 12 times a minute; swinging the body alternately forwards and backwards from the knee. The downward pressure forces the air out of the lungs and the relaxation of pressure causes the air to be drawn in again. To ensure regularity count five slowly. *The arms should be kept straight the whole time: not bent at the elbows.*

127. When natural breathing has commenced, the patient should be allowed to lie in a natural position on the right 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.

128. The movements of artificial breathing are of the first consequence. If the operator is single-handed, he 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, blankets and dry clothing and medical assistance, as described in the first paragraph, and others should be directed to promote warmth and circulation, taking care not to interfere with the person who is restoring respiration. To promote warmth and circulation the limbs should be



FIG. 1.



FIG. 2.

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rubbed upwards with firm grasping pressure and energetically, using handkerchiefs, flannels, etc. 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 wrung-out flannels, hot bottles, etc., 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.

129. 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, before being removed, should be allowed to lie quiet, watched for at least an hour and encouraged to sleep, if possible.

TREATMENT AFTER NATURAL BREATHING HAS BEEN RESTORED.

130. 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.

CHAPTER 9.—CLIFF RESCUES: AND CLIFF WORK GENERALLY.

131. The following articles on cliff work should be studied closely. They provide a guide for most normal occasions.

132. In general, when any considerable height is involved, the lowering or raising of the rescued person *by stages* is advisable, where possible, as a short rope is easier to manipulate by the rescuer who is down the cliff. The more dangerous the cliff may be, the easier should be the stages in which either the ascent or descent is made. Stakes should be used on every possible occasion, both at the top of the cliff and by the rescuer down the cliff if the rescued person is to be lowered.

133. A running rope is likely to dislodge much more material than the movement of persons on the cliff. If, therefore, the cliffs are very much inclined to crumble, and if the rescuer who is to descend the cliff is experienced in holding on by a rope, it is advisable to place the rope over the cliff before the descent is made, rather than to lower the person from the cliff top. Those on the top of the cliff should remain still while the rescuer is lowering himself or the rescued person, in order that the danger which is necessarily run may not be increased by falling stones, earth, etc.

134. When the cliff is overhanging and friable at the edge, or when a fall of cliff is likely, owing to the nature or condition of the soil, it is preferable, if circumstances permit, to lower the rescued person to the beach rather than to haul him to the top of the cliff, even if this may entail waiting some little time for the tide to ebb. The advantage of this method, if it can be employed, is that the rescuer is in a position to see the rescued person as he is being lowered, whereas those on the top of the cliff will probably not be able to approach the edge of the cliff to see what is being done.

135. Where it is possible to lower the person being rescued to the beach, the lowering can, of course, be done either by the rescue party on the top of the cliff, or by the rescuer who is descending the cliff face. If the former method is adopted, two ropes should be used, and the rescuer should, as far as possible, keep in hand the rope attached to the person being rescued. If the lowering is to be done by the rescuer, he should use a stake, if possible. Where this cannot be done and provided he has a good stance on a ledge, he should pass the rope over one shoulder and under the opposite armpit so as to obtain the greatest amount of friction and command when lowering.

136. When it is necessary to bring up the cliff a person who is in possession of his faculties, the raising can best be done in stages. In such cases

it is generally advantageous to arrange, if possible, for the rescuer always to be above the person being rescued during each stage to the cliff top. In these cases two ropes should, of course, be used, one for the rescuer and one for the person being rescued, and, again, the rescuer should, as far as possible, keep in hand the rope attached to the rescued person, as this will greatly facilitate the passage of the rescued person to the cliff top.

137. Whenever possible, the rope or ropes should be man-handled from the cliff edge, and the rescuer and person being rescued should be lowered or raised on different ropes, either singly or together, by the rescue party.

138. Each cliff line at a Station should have a distinctive marking in order that when more than one cliff line is in use each may be readily recognised.

CHAPTER 10.—THE COAST LIFE SAVING CORPS.

139. As stated in Chapter 1, Article 7, this Corps is a voluntary organisation constituted for the purpose of assisting H.M. Coastguard to carry on the main functions of the Service, viz., Life Saving. Most of the Members of the Corps are L.S.A. men required for working the Life Saving Appliances but others are employed on important

duties as Watchers and as members of the Intelligence Section.

140. It is important that members of the Corps should be acquainted with the general organisation of the Service and a study of the foregoing Chapters of this Manual will provide this. The duties of individual members of Life Saving Companies are further explained in Chapters which follow.

141. Apart from possessing a general knowledge of the organisation, all members of the Corps should be acquainted with the Signals &c. which are set out in detail in Chapter 3, with the working of the Life Saving Appliances (Chapters 6 and 7) and with the restoration of the apparently drowned (Chapter 8). Watchers must in addition acquire a knowledge of the duties of the Watchman contained in Chapter 2, so that when on duty they may know

- (a) What to report;
- (b) To whom to report;
- (c) How to report.

142. Instruction will be afforded in all these and other matters by officers of the Coastguard while additional details regarding the Regulations for the Prevention of Collisions can be obtained from Brown's Signalling Manual, copies of which are supplied to all Coastguard Stations. This book contains much information of great

value to members of the Corps. If a copy of this book is not available, it is generally possible to obtain, for a few pence, at any Nautical Booksellers, a sheet showing graphically in colour the lights and signals.

143. A knowledge of signalling, by semaphore and morse is also exceptionally useful, while a "First Aid" qualification held by a member, renders him very valuable. An intimate acquaintance with the character of the local foreshore, the cliffs, if any, and the paths leading to the foreshore or down the cliffs, is essential. Every member should also know:—

(a) Places from which it is possible to communicate by telephone with the Coastguard, Life Saving Appliance Company or Lifeboat;

(b) Garages or farms at which motor transport can be secured in an emergency;

(c) Places from which horses and carts may be obtained. (In isolated localities this may be the only means of transport available or suitable).

144. Work in the Life Saving Service has an attraction of its own. Every member of the Coast Life Saving Corps will desire to become efficient and it is confidently hoped that a study of this manual combined with regular attendance for training will enable him to do so.

PART II.—ROCKET LIFE SAVING APPLIANCES.

Details of Drill, etc.

CHAPTER 11.—NOTES FOR INSPECTING OFFICERS AND OFFICERS-IN-CHARGE.

145. When inspecting a set of Life Saving Appliances particular attention should be paid to the stowage of the gear and its general condition. The rocket in the machine should be examined in order to see that the base plug works freely and that there is no paper on the base of the rocket. The rocket in the machine should be the oldest on charge and it should be ascertained that the stick is straight and that the rocket band is engaged by the spring, that the rocket works easily in the machine, and that it does not bear against either side of it. Care should be taken to see that the washers are correctly placed (the metal washer nearest the knot), that the snorter is drawn as far through the stick as possible and that the knot is made close to the washer.

146. Care should also be taken to ensure that the bight of the hawser has not been hitched over the toggle of the traveller block and that the records of the measurements of the rocket lines,

whip and hawser are correctly placed and give the exact lengths of these articles. The tally boards in use should be secured to the hawser and whip block respectively so that they stand out from the rope, care being taken that the correct tally boards are attached.

147. After an exercise, the hawser should be shifted end for end, and care taken that all the gear is thoroughly dried after an exercise or a wreck service. Rocket line boxes are to be shifted each time they are used, the one that has been next the tail board being restowed against the box seat and the others moved back accordingly.

148. Officers in charge must refrain from altering the men's numbers more than is absolutely necessary. If it is necessary, on account of absentees or withdrawals from the Company, to complete the lower numbers, the higher numbers should be taken, if possible, in the following manner:—No. 12 to replace No. 2, No. 13 to replace No. 3, No. 14 to replace No. 4, etc., and in order that this may be facilitated, opportunity should occasionally be taken to train the higher numbers in substitute duties. It is desirable that a specially selected number should be trained to undertake the duties of No. 1 in event of the absence of this important member of the Company. Generally speaking it is preferable that No. 10 should undertake No. 1's duties in the

absence of the latter, but suitability must be considered.

149. In order to secure the systematic instruction of each L.S.A. Company in all matters connected with the use of the appliances, it is desirable to draw up a suitable programme for each Station covering a number of exercises in advance. This programme should include ordinary exercises with whip or hawser, Service exercises by day and/or night, motor transport and hand transport, etc. Minor details such as accidents to gear, lengthening whip with rocket line, etc., should be introduced at certain of the exercises. While it is not intended that the programme should be of a hard-and-fast nature, its compilation will ensure that important items are not overlooked or omitted for long periods.

CHAPTER 12.—DIRECTIONS ISSUED BY THE BOARD OF TRADE TO MARINERS REGARDING THE USE OF THE ROCKET LIFE SAVING APPLIANCES.

150. Directions for the use of the Rocket Life Saving Appliances are promulgated in Notices to Mariners and other official publications. The "Wreck Party," at an exercise, should follow the procedure laid down for the crew of a wrecked vessel and should make the regulation signals,

On occasion, however, at a night exercise opportunity should be taken to work the apparatus without signals from the Wreck Party in order to enable the Company to practise working the gear when at an actual wreck the crew of the vessel fail to make the signals (Chapter 7, Art. 118).

151. The Directions are as follow:—

“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 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 flare should be burnt or a light should be waved. If the visibility should be poor, one short blast on the whistle can be employed in place of the above signals by day or by night.

Alternatively, should your vessel carry a Line Throwing Appliance and this is first used to fire a line ashore, which line would not be of sufficient strength to haul out the whip, those on shore will secure

it to a stouter line, and when this is done will wave a red flag (at night—a red light). On seeing this signal, haul in on the line until the stouter line is on board. Then make signal as indicated above, after which the procedure laid down in paragraph 2 onwards will be followed.

“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 (called the “whip”).

“3. Make the block fast, close up, to a convenient position, bearing in mind that the fall should be kept clear from chafing any part of the vessel, and that space must be left above the block for the hawser (see para. 5). Unbend the rocket line from the whip. When the tail block is made fast and the rocket line unbent 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 and will be hauled off to the ship by those on shore.

“5. When the hawser is got on board, it should at once be made fast to the same part of the ship as the tail block BUT JUST

ABOVE IT TAKING CARE THAT THE TALLY BOARD IS CLOSE UP TO THE POSITION TO WHICH THE END OF THE HAWSER IS SECURED (this will allow the Breeches Buoy to come right out and will facilitate entry to the Buoy). GREAT CARE MUST ALSO BE TAKEN TO SEE THAT THERE ARE NO TURNS OF THE WHIP LINE ROUND THE HAWSER.

"6. When the hawser has been made fast on board, unbend the whip from the hawser and see that the bight 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 will haul off to the ship the Breeches Buoy into which the person to be hauled ashore is to get. He should sit well down in the Breeches. When he is secure signal again to the shore as in para. 1 and the men on shore will haul the person in the Breeches Buoy to the shore. When he is landed the empty Breeches 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 Breeches Buoy will be hauled off by the whip which will be used without the hawser.

"The system of signalling must be strictly adhered to. It should, however, be noted that while the signals referred to in para. 1 are made only when the Crew have got hold of the rocket line; when the tail block has been made fast; when the hawser has been made fast; and when a person is in the Breeches Buoy ready to be hauled ashore, the rescue operations as a whole will, as a rule, be greatly facilitated if signal communication (by semaphore or flashing lamp) is established between the ship and the shore (or lifeboat). The large majority of Life-Saving Companies and lifeboats have trained signalmen.

"All women, children, passengers, and helpless persons should be landed before the Crew of the ship. Masters and Crews of stranded vessels should bear in mind that success in landing them by the Rocket Life-Saving Apparatus depends, in a great measure, upon their own coolness and attention to the instructions here laid down."

CHAPTER 13.

DETAILS OF DRILL WITH THE VARIOUS
TYPES OF APPLIANCES.

(A) HAWSER DRILL.

152. On arrival at L.S.A. House all members of the Company put on their appropriate armlets. In addition,

No. 1 provides himself with Fuse Box, Fuses, Port Fires and/or Coastguard Lights;

No. 4 puts on Knife;

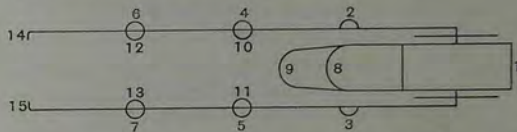
No. 8 ensures that the Life Belt and Life Line are ready for immediate use as it may be necessary for him to enter the surf directly the scene of the wreck is reached. The Officer in Charge should use his discretion as to whether No. 8 puts on the Life Belt before leaving the L.S.A. house. The part of the Life Line which it not round No. 8's waist should be made up in a coil and attached to the Life Belt by a strop and toggle.

The Company falls in as follows:—

Rear rank ... 2 4 6 8 10 12 14, etc.
Front rank... 1 3 5 7 9 11 13 15, etc.

(Note.—If no Coastguard or Volunteer-in-Charge is present, command of the Company is taken by No. 1.)

Should it be required to move the vehicle by hand, the order "FORM THE ORDER MARCH" is given, when the Company man the drag ropes and shafts as in the following diagram:—



153. On arrival at the scene of a wreck or on the exercise ground, the vehicle is placed, if possible, 8 paces from where the anchor is to be buried and the order "ACTION" is at once given.

154. At the order "ACTION",

(a) Gear is provided by the numbers as follows:—

Nos. 1 and 10.—Rocket Machine;

Nos. 2 and 3.—Line Box, Canting Legs and Water breaker;

Nos. 4, 8, 12 and 14.—Whip Box. Nos. 8, 12 and 14 then assist No. 6 with the anchor and backer;

Nos. 5, 11 and 13, and the remaining high odd numbers.—Hawser, then triangle;

Nos. 6, 16, 18 and 20.—First place the breeches-buoy and luff (and Hawser

Carrier if used for stowage) on ground, then anchor and backer;

No. 7.—Signal Flags and flashing lamp;

No. 9.—Remains by vehicle and hands out extra stores as required.

Note.—At night,

No. 13.—Provides portable light and furnishes illumination at different points as required by the Officer-in-Charge;

Nos. 14 and 15.—Provide and tend fixed lighting (Ecla and Flamba). One light, preferably the Ecla, if supplied, should be placed at the dump, which should be formed, well in the rear, of the stores not required for immediate use. (Spare rockets, etc.)

(b) Gear is placed as follows:—

The Rocket Machine.—In the most convenient position;

Line Box.—End on, three paces in rear of the rocket machine, with the inner end of the line to the rear;

Whip Box.—Two paces in rear of the line box;

End of Hawser.—In line with, and to leeward, of the rocket machine, pointing towards the wreck;

Triangle.—Flat on the ground, ~~level~~ towards the wreck, the white leg on top parallel to, but clear of, the end of the hawser;

Breeches-Buoy.—Alongside the triangle;

Anchor and Backer.—In a convenient position, about 20 paces in rear of the end of the hawser;

Luff.—Stretched out from position of the anchor towards the end of hawser, the hook block being alongside the anchor.

(c) The gear is prepared as follows:—

No. 1.—Sets up the rocket machine. Prepares the rocket for firing and, assisted by No. 3, secures the rocket line to the snorter by a double sheet bend, a figure of eight knot having first been made after the end of the rocket line has been rove through the hole in the stick. Adjusts the machine for elevation and direction and sees that the line box is in correct alignment with the machine. Lights port fire and awaits the order "FIRE".

Nos. 2 and 3.—Lift the line box off the pins. No. 3 then assists No. 1 with the rocket line, first wetting 3 fathoms of the line. No. 2 unreeves the inner end

of the rocket line from the hole in the box and secures it to the whip block by reeving the end through the becket and taking two half hitches round the swivel. When No. 1 has checked the alignment of the line box, Nos. 2 and 3 cant it in the direction of the line of fire by means of the canting legs, taking care not to disturb the stowage of the rocket line. Nos. 2 and 3 then stand by to attend the right and left parts of the whip respectively and *must never leave them*.

No. 4.—Places the whip block close alongside the line box and assists No. 2 to bend the rocket line to the whip. Then attends the whip throughout the service.

No. 5.—Stands by the end of the hawser.

Nos. 6, 8, 10, 12, etc.—Bury the anchor (and backer if necessary) about 20 paces in rear of the head of the triangle. Then hook the hook block of the luff to the ring of the anchor and place the tail block close alongside the end of the hawser, taking care that the tackle is clear.

No. 7.—Attends to signals throughout the service and keeps the Officer-in-Charge informed of all that is happening on board the wreck. Reports, in a loud

voice, as those on board the vessel signal that the various operations are complete.

Nos. 11, 13, 15, etc.—Stand by and await the next order.

155. **At the order " FIRE "**, which is given when the Officer-in-Charge is satisfied that all is ready, the line properly secured, and the line box off its pins and in correct alignment;

No. 1.—Fires rocket, standing to windward to do so. Waits to ensure that the rocket line has been secured on board the wreck and then removes rocket machine;

Nos. 2 and 3.—When rocket line has ceased running out, remove box, canting legs and water breaker. As soon as the whip begins to go out, separate the parts of the whip and spread them, taking care that the lee whip is under the hawser and luff. *When the whip is being hauled out to the wreck the two parts should be opened from the centre as much as possible in order to prevent fouling;*

No. 4.—When the whip is nearly all out of the box on one side (the last flemish), empties the whip on the ground by turning the box right over, forwards, and back again.

Note.—On wreck service, directly it is *quite certain* that those on board the vessel have hold of the line, it is cut at a convenient part by No. 4 and secured to the whip block, the end of the rocket line being first unbent from the swivel. Between the time of cutting the line and securing it to the whip block care is necessary not to lose the end which should be kept in hand by No. 2. It must be remembered, also, that those on board the wreck would probably be hauling in the rocket line. Care is necessary, therefore, to cut the line in such a position that there will be time to re-secure it to the whip block before a strain comes on it.

156. At the order "**MAN BOTH WHIPS, HAUL AWAY,**" given when the signal is made from the wreck that whip is fast, **even numbers man the right whip, odd numbers the left,** and all haul together. After whip has been hauled taut, the weather whip should be let go in order to see if whip renders freely.

Note.—*This is done to take out any turns that may be in the whip.*

157. At the order "**RIGHT AND LEFT WHIPS IN,**" given when it is seen that whip is all clear, **Nos. 2 and 3.**—Bring in their parts of the whip to the end of the hawser but keeping

them a short distance apart. The *lee whip* is then secured to the hawser by reeving about an arm's length of the bight through the becket towards the wreck and making the first part of a clove-hitch round the hawser on the wreck side of the becket, completing the hitch on the inner side of the becket. After the lee whip is secured to the hawser,

No. 5 makes a bowline round the weather whip with the end of the hawser taking care that there is not a half turn of the end of hawser round the lee whip.

Note.—*When there are rocks or piles between the wreck and the shore the bowline is not used and the lee whip only is brought into the centre.*

158. At the order "**MAN RIGHT (OR LEFT) WHIP, HAUL OUT,**" given when hawser is ready to be hauled out,

No. 1 takes the traveller block, when clear of the vehicle or bearer, to a point alongside the breeches-buoy and remains there keeping the traveller block in hand.

Note.—*Should No. 1 have to drop the traveller block for any reason it should be secured to a peg or anything convenient as, when working from the top of the cliff, there would otherwise be a danger of it*

going over the cliff and thus causing great delay.

No. 5.—Assisted by No. 9, guides the hawser out clear.

Note.—If the vehicle is not on the scene of the wreck, a high odd number should be detailed to assist No. 5 in place of No. 9.

Nos. 6, 8, 10, 11, 12, 13 etc.—Man the weather whip and haul out the hawser.

Note.—When the hawser is being hauled out the lee whip should be kept well clear of it, especially when no bowline is being used.

159. At the order "AVAST HAULING, RIGHT (OR LEFT) WHIP IN," given when the hawser is out at the wreck,

No. 1.—Holds the traveller block knee high;

No. 2 (or 3).—Brings the lee whip in to the traveller block and secures it by a clove hitch;

No. 5.—After the whip is secured to the traveller block, toggles on the breeches-buoy.

160. At the order "MAN THE HAWSER, HAUL TAUT," given when the crew on the wreck signal that the hawser is fast,

Nos. 1, 5, 6, 8, 10, 12, 13, 14, etc., man and haul taut hawser.

161. At the order "AVAST HAULING, ON LUFF," given when the hawser is hand taut,

No. 1.—Holds up the tail block of the luff whilst No. 6 secures it by dogging the tails round the hawser.

162. At the order "HAUL TAUT THE LUFF," given when the luff is secured to the hawser,

Nos. 6 and 8.—Round down slack of the luff fall. The hawser is then eased up and No. 1 takes a half hitch with the bight round the tails of the luff. Remaining numbers then man and haul away on the luff fall.

163. At the order "AVAST HAULING THE LUFF, UP TRIANGLE," given when the hawser is moderately taut and in a straight line between the anchor and wreck,

Nos. 6, 8, 10, 12 etc.—Keep luff fall in hand;
Nos. 5, 11, 13 and 15 etc.—No. 5 first sees that the bight of the lee whip is over the triangle. The triangle is then erected by opening it out, on the ground on top of the hawser, to a Y shape with white leg in rear and base of snatch block resting on the ground. No. 5 then snatches hawser. With Nos. 15 and 17 bearing down on the ends of the blue legs, No. 5 lifts up the centre of triangle while No. 11 pushes the white leg forward and upwards. Any slight adjustment which may then be

necessary being made under the directions of No. 1 who should stand at the anchor and face the wreck;

No. 2 (or 3).—Whichever number is on the weather whip then commences to haul out the breeches-buoy, assisted by all numbers above No. 16.

164. At the order "HAUL AWAY LUFF," given when the triangle is in place,

Nos. 1, 5, 6, 8, 10, 12, 13, 14, 15 and 16, haul away on luff.

165. At the order "AVAST HAULING, NIPPER THE LUFF, MAN THE RIGHT (OR LEFT) WHIP," given when hawser is taut,

Nos. 1, 5, 8 and 10, nipper the luff until No. 6 reports "luff secure" when they man the weather whip;

No. 6.—Takes the bight of the luff fall through the ring of the anchor and a half hitch round all parts of the luff and tends it. He reports "luff secure" when this is done;

Nos. 11, 12, 13, 14, 15 and 16, man the weather whip and haul out breeches-buoy.

166. At the order "AVAST HAULING, MAN THE RIGHT (OR LEFT) WHIP," given when the breeches-buoy is out at the wreck,

Nos. 2 (or 3), and 5, remain on the weather whip, the remaining numbers man the lee whip.

167. At the order "HAUL ASHORE," given when the signal is made from the wreck that a man is in the buoy,

The breeches buoy is hauled ashore by the lee whip;

Nos. 8 and 10.—Prepare for No. 8 to go into the surf to assist the man out of the buoy, No. 8 having on the life belt and No. 10 attending him.

Duties of Wreck Party—Hawser Drill.

168. When the rocket is fired and the wreck party have hold of the line they signal to the shore party, who, at a wreck, would cut the line and re-secure the whip block, then signal to the wreck party to haul off the whip. (At an exercise the line is not cut.)

169. When the whip is out, the wreck party secure the tail block to a convenient place on the post as high up as possible, but with room for the hawser to be secured just above it. When the tail block is secured they cast off the rocket line, signal to the shore party, and the hawser is then hauled out.

170. When the wreck party have secured the hawser just above the tail block of the whip, they cast off the whip from the hawser and signal to the shore party; the breeches-buoy is then hauled out. As soon as the man is in the breeches-buoy

the wreck party again signal to the shore party, and the rescue is effected.

171. Care should be taken that the whip block and tally board on the hawser are close up to the post where they are secured, as otherwise the breeches-buoy cannot be hauled close out.

Recovering Gear at conclusion of a Wreck Service—Hawser Drill.

172. At the conclusion of a wreck service, the following action is taken:—

At the order "CAST OFF,"

Nos. 2 and 3 bring their whips in to the hawser;

No. 4 provides hawser cutter and secures it outside the traveller block. The "cutter" is secured to the whip by means of two half hitches on the toggle end and a sheet bend on the other;

No. 5 untoggles the breeches-buoy and casts off the whip from the traveller block and attends the block;

No. 6 attends luff;

Remainder of odd numbers man left whip;

Remainder of even numbers man right whip;

The cutter is hauled out, and when as far out as it will go, the hauling-out part

of the whip is let go and a sharp jerk given on the other part. The knives should then cut the hawser;

The even numbers except Nos. 2 and 6 then haul in the whip, **No. 4** drawing a splice and providing spare tail block when the whip is re-rove;

Odd numbers haul in the hawser, **Nos. 1 and 6** coil down, whip the end of the hawser, and fix spare tally board.

Nos. 2 keeps the end of the rocket line clear, if necessary.

173. When the hawser is in, the order "**STOW THE CART**" is given, and all numbers proceed as detailed in Art. 179.

174. If any rocket lines have to be hauled in, it is done by the numbers who stow the line (see Art. 179) before stowing the line commences.

Exercise only.

175. At an exercise the cutter is not to be placed on the hawser. It should be provided, however, secured to the whip and left on the ground.

176. When the ground is very rough it will often save the whip unnecessary wear if, after the exercise, the whip is cast off, a bowline made round the hawser with the tail of the whip block, and both parts hauled to the smooth ground before the hawser is let go.

177. The end of the rocket line should be sent in attached to the breeches-buoy, except at places where the whip block is sent in along the hawser, in which case the rocket line is secured to the whip block.

178. The wreck party should bring in the end of the hawser as soon as it is cast off.

Restowing Gear—Hawser Drill.

179. At the order "STOW THE CART"—

No. 1, assisted by Nos. 6 and 9, stows the cart and all the gear except the rocket line and whip.

No. 2, places the pins in the rocket line box, then, assisted by Nos. 3, 5, 7 and 11, etc., stows the rocket line.

No. 3, places the water breaker and canting legs alongside the cart, then assists No. 2 in stowing the rocket line.

No. 4, gets the swivel, then, assisted by Nos. 8, 10, 12, etc., stows the whip.

No. 5, places the breeches-buoy alongside the cart, then, assisted by Nos. 7, 11, 13, etc., places the triangle alongside the cart, then assists Nos. 2 and 3 in stowing the rocket line.

No. 6, lets go the luff when ordered, and, assisted by Nos. 11, 13, 15, etc., overhauls the luff, takes the tails off the hawser, then

assists No. 1 in stowing the cart, first placing the backer and anchor close to vehicle.

No. 7 places flags or lanterns alongside the cart, and assists No. 5 to place the triangle alongside the cart, then assists Nos. 2 and 3 in stowing the rocket line.

No. 8. makes up the lifebelt and lifeline and places them alongside the cart, then assists No. 4 in stowing the whip.

No. 9 assists No. 1 in stowing the cart.

Nos. 10, 12, 14, 16, 18, 20 assist No. 4 in stowing the whip.

Nos. 11, 13, 15, 17, 19, etc., assist No. 6 in overhauling the luff, then unsnatch the hawser, and assist No. 5 in placing the triangle alongside the cart, then assist Nos. 2 and 3 in stowing the rocket line.

(B) WHIP DRILL.

180. On arrival at L.S.A. House the same procedure is followed as that laid down for Hawser Drill (Art. 152).

On arrival at the scene of the wreck the vehicle is placed in a convenient position as near as possible to the casualty.

181. At the order "ACTION",

(a) Gear is provided by the numbers as follows:—

Nos. 1 and 10.—Rocket Machine or Pistol and Tripod;

Nos. 2 and 3.—Line Box, Canting Legs and Water breaker;

Nos. 4, 6, 8 and 12.—Whip Box;

Nos. 5.—Breeches-Buoy;

Nos. 7.—Signal Flags and flashing lamp;

No. 9 remains by the vehicle and hands out extra stores as required.

Note.—At night lights are provided as laid down for hawser Drill (Art. 154 (a)).

(b) Gear is placed as follows:—

The Rocket Machine.—In most convenient position;

Line Box, End on, three paces in rear of rocket machine, with inner end of line to the rear. If pistol is used, the line box is placed immediately in front of tripod;

Whip Box, Two paces in rear of line box;

Breeches-Buoy, On the lee side of the whip box with the long slings to the front and short slings to the rear.

(c) Gear is prepared as follows:—

Nos. 1, 2, 3, 4 and 7.—Proceed as laid down for Hawser Drill (Art. 154 (c)).

182. At the order "**FIRE**", proceed as laid down for Hawser Drill (Art. 155).

183. At the order "**MAN BOTH WHIPS. HAUL AWAY**", as laid down for Hawser Drill (Art. 156).

184. At the order "**RIGHT AND LEFT WHIPS IN**",

Nos. 2 and 3.—Bring in their parts of the whip to a position near the breeches-buoy;

No. 5.—Secures the breeches-buoy by passing the bight of the lee whip (towards the wreck) through the thimble of the long sling of the breeches-buoy, and making two half hitches round the sling. He then takes the bight of the lee whip (towards the rear), passes it through the thimble of the short sling, making two half hitches round the sling, taking care to leave a bight of about six feet under the buoy. He then mans the weather whip.

For alternative methods of securing the buoy see Art. 106 and 111.

185. At the order "**MAN RIGHT (OR LEFT) WHIP, HAUL OUT**", given when breeches-buoy is secured, all numbers haul out the breeches-buoy.

186. The remainder of the drill is carried out as laid down for Hawser Drill.

Duties of Wreck Party—Whip Drill.

187. When the rocket is fired and the wreck party have hold of the line they signal to the shore party who, at a wreck, cut the line and re-secure the whip-block, then signal to the wreck to haul off the whip. (At an exercise the line is not to be cut.)

188. When the whip is out, the wreck party secure the tail block to a convenient place, and when secured, cast off the rocket line and signal to the shore party. The breeches-buoy will then be hauled out.

189. As soon as the man is in the breeches-buoy, the wreck party again signal to the shore party and the rescue is effected.

190. Care should be taken that the whip block is close up to the mast where it is secured.

Restowing Gear—Whip Drill.

191. At the order "STOW THE CART"—

No. 1, assisted by No. 9 stows the *cart*;

No. 2, places the pins in the rocket line-box, then, assisted by Nos. 3, 5, 7 and 11, etc., stows the *rocket line*.

No. 3 places the water breaker and canting legs alongside the cart, then assists No. 2 in stowing the *rocket line*.

No. 4 gets the swivel, and then, assisted by Nos. 6, 8, 10, 12, etc., stows the *whip*.

No. 5 replaces the *breeches-buoy* alongside the cart, and then assists Nos. 2 and 3 in stowing the *rocket line*.

No. 6 assists No. 4 in stowing the *whip*.

No. 7 places flags or lantern alongside the cart, and then assists Nos. 2 and 3 in stowing the *rocket line*.

No. 8 makes up the lifebelt and lifeline and places them alongside the cart, and then assists No. 4 in stowing the *whip*.

No. 9 assists No. 1 in stowing the *cart*.

Nos. 10, 12, 14 assist No. 4 in stowing the *whip*.

Nos. 11, 13, 15 assist Nos. 2 and 3 in stowing the *rocket line*.

(C) CLIFF LADDER DRILL.

(Cliff ladder Companies only.)

192. At the order "ACTION,"

No. 1, assisted by Nos. 2 and 3, provides maul, stakes, and breast ropes, drives in stakes at a slight angle from the perpendicular inwards, puts eye of breast ropes and rings of ladder-chains over stakes and secures end of tripping line. The eyes of breast ropes are placed over stakes before the rings of the ladder chains;

Nos. 2 and 3 then put on breast ropes and as soon as everything is ready roll the

ladder over the cliff edge at the order of the Officer in Charge. They then attend No. 4, and assist rescued persons over the cliff edge;

No. 4, assisted by No. 5, provides and puts on the life-belt, helmet and life-line, wears the knife, whistle and belt and, taking the heaving cane, if required, goes down the ladder. When down the ladder he will make the following signals by whistle or life-line as may be necessary:—

Signal.	Meaning.
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One short blast on whistle or one tug on life line ...	Stop.
Two short blasts on whistle or two tugs on life line ...	Haul up.
Three short blasts on whistle or three tugs on life line	Lower away.

These signals should be continued until answered by a repetition of the signal from the cliff;

No. 5.—After assisting and dressing No. 4, assists to tend the life-line;

No. 6, assisted by No. 7, 8, and 9, provides and places the ladder, or ladders, ready for Nos. 2 and 3 (being careful to see the chains are taut from the ladder to the stakes), and assists to tend the life-line;

No. 7 assists No. 6 to place the ladders, then provides the signal flag or lantern, attends to signals under direction of the Officer in Charge and places and attends the light, as required;

No. 8, after assisting No. 6 to place the ladders, assists to tend the life-line;

No. 9, after assisting No. 6 to place the ladders, guards the cart and gear.

If short-handed all numbers first provide and place the ladders.

With less than 6, No. 5 does No. 7's work as well as his own.

With less than 5, No. 1 assists No. 4 instead of No. 5, after seeing the stakes, etc., all correct. He also does No. 7's duty and assists to tend the life-line.

Restowing Gear—Cliff Ladder Drill.

193. All numbers first haul the ladder up the cliff by the tripping line, No. 4 remaining dressed in case he may have to go down the ladder to clear it. When ladder is up clear of the cliff it is run out flat;

Nos. 1, 2 and 3 then return stakes, maul and breast ropes to vehicle;

No. 4 assisted by No. 5 takes off his gear.

Nos. 4 and 5 then assist with the ladder;

No. 6 assisted by the remaining numbers rolls up the ladder from bottom end, and sees

that the tripping line is kept on top and along the centre of the rounds of the ladder whilst being rolled up.

After the ladder is rolled up taut it is placed on its side and the chains carefully secured round it. The remainder of the tripping line is then coiled and returned to the vehicle.

No. 7 returns flag, lantern, etc., and then assists with ladder.

(D) CLIFF LADDERS AT ORDINARY L.S.A. STATIONS.

194. In the case of a Life Saving Appliance Company which is supplied with cliff ladders in addition to the ordinary equipment, a special party should be detailed to work the ladders when required (see Notes on Wreck Service, Chap. 7, Art. 99). Wherever possible, this party should be practised in their duties once yearly.

195. The detail laid down for Cliff Ladder Companies (Arts. 192-3) should be followed, except that it is necessary only that the men performing the duties of Nos. 1 to 5 inclusive should be specially trained, as the actual man-handling of the ladders can be carried out by any spare numbers who may be available.

196. It will be found convenient to designate the numbers as follows:—

No. 1—Chargeman;

Nos. 2 and 3—Breast Rope Men;

No. 4—Ladder Man;

No. 5—Life-Line Man.

The Ladder Man should be carefully selected. If possible he should be a man accustomed to working on ladders or over cliffs.

Notes on use of Cliff Ladder.

197. In a wagon, the ladder is stowed on the tail board and in a cart, it is stowed on the two front line boxes, but it is not possible to carry more than two full lengths of ladder rolled up together.

198. If more than one length of ladder is required for a cliff, the length fitted with chains must be unrolled and the other end secured to the lanyards of a second length, the tripping-lines being secured together, and all rolled up before putting over the cliff. The tripping-line is secured by passing it through the two thimbles and hitching it to its own part, then brought straight up on top of the rounds and rolled up with the ladder. The tripping-line is never to be rove in and out of the rounds.

199. While, with a length of ladder not exceeding two twenty fathom lengths, the ladder can be rolled over the cliff without damaging it, with

a longer ladder there is a possibility of breaking the rounds of the lower part. It is necessary, therefore, if possible, to ease the lower part down. For this purpose the ladder should not be rolled up on the single part, but should be doubled back on the ground, securing the foot near the head. The ladder should then be rolled up as in the case of shorter lengths, the head secured to the stakes and pushed over the cliff edge. The ladder will then be hanging down doubled. When this operation is completed, lowering lines should be secured to the foot, which is then cast off from the head and the remainder of the ladder eased down the cliff side. It should be appreciated, however, that this method is effective only when the cliffs are sheer or nearly so. With sloping cliffs it will probably be the better plan to roll the whole ladder up and put it over in the ordinary way.

200. When driving in the stakes and putting the ladder over the cliff care must be taken that the chains take the edge of the cliff. The life-line should be secured to the man going down the ladder by a bowline round the life-belt with the knot at the front. The life-line must be properly tended; it is advisable to take a turn round one of the stakes, close to the ground, if there are not plenty of helpers.

201. Careful supervision is necessary to ensure that the stakes are driven in properly, that the

numbers rolling over ladder have their breast ropes on, and that the life-line is properly tended.

The use of the ladder will be facilitated if a short length of spar (about 4 feet \times 6 or 7 inches) is placed under the ladder at the cliff edge and secured in position by lashings.

NOTES ON DRILLS.

202. During the initial training of a new company, or when in an old company, a large proportion of the members are new to their duties, it will be found preferable for the officer in charge not to attempt to give the detail of drill in the usual manner, but to demonstrate the placing of the gear and its working item by item. When a recently-formed company is being drilled, the officer in charge should pay particular attention to the following points:—

No. 1 should carry the machine with the tail to the rear, taking care that the rocket does not slip out of the trough in front. Care is necessary to ensure that the legs of the machine are brought well forward and opened out to their full extent. Otherwise the machine will not be stable.

Nos. 2 and 3 should be careful to lift the line-box square off the pins, as otherwise a pin

may be broken and remain in unnoticed and, in consequence, the rocket line will part.

203. At a wreck service, after the rocket line has ceased running out, it is cut and re-secured to the whip block, but it is important that the line should be secured to the whip block before the rocket is fired, as it sometimes happens that a rocket takes all the line out of the box. The line should not, however, be cut until it is certain that those on board the vessel have got hold of it. This should be explained carefully to the responsible numbers.

In the hawser drill, special care is necessary to ensure that *No. 5 and the numbers assisting him* raise the triangle correctly. This should be done in slow time, the operation being repeated until proficiency is attained.

204. When the backer is used with hawser appliances, it is buried by **No. 6, etc.**, before the anchor lengthways and vertically, at right angles to the line to the wreck, and a small channel made for the chain; the anchor is then buried, the fluke of the anchor being passed through the loop of the chain (formed by passing the chain through the large open link at the end) and pulled as taut as possible, so that when the strain comes on the hawser the anchor is not disturbed before the backer also takes the strain. When burying

the backer in sand it should be sunk at least 18 inches deep and should slope from the top rear edge of the trench to the bottom front edge. It will then tend to bury itself when the strain comes on.

205. When securing the luff to the hawser, each tail should be alternately over and under the other; the easiest way to do this is every time to place the tail in the right hand next to the hawser, the tail in the left hand being outside it.



CHAPTER 14.

SPECIMEN HAND TRANSPORT SCHEME.

(See Chap. 6, Art. 81.)

206. First Transport.

Officer-in-Charge.—Megaphone, signal flags by day, signal lantern by night.

Nos. 1 and 10.—Rocket machine (with fitted rocket in trough), two spare sticks lashed to machine in such a manner that they secure rocket in place, pick, lamp (at night).

Nos. 2 and 3.—First line box with canting legs and water breaker.

Nos. 5 and 7.—Second line box, spare rocket in carrier, Red flag by day, red lamp by night.

Nos. 11 and 13.—Third line box, spare rocket in carrier, Lamp (at night).

Nos. 4, 8, 12 and 14.—Whip box with breeches-buoy secured on top, brass snatch block, No. 8 wears lifebelt with line stopped up on belt.

207. Remaining numbers, except Nos. 6 (see note in Art. 209) and 9, assist and afford relief as follows:—

Odd numbers.—Line boxes.

Even numbers.—Whip box.

At night No. 15 takes Ecla lamp.

No. 16.—Maul and stakes } If supplied.
 Nos. 17 and 18.—Cliff lines. }

Tools (axe, marline spike, etc.) should also be taken.

208. The following numbers remain at the scene of the wreck and carry out whip procedure:—

Nos. 1, 2, 3, 4, 5, 7, 8, 10.

Remaining numbers return to vehicle, taking with them the two empty rocket carrier boxes.

209. **Second Transport.**—While the first transport gear is being taken to the scene of the wreck, **Nos. 6 and 9** stow the luff and hawser on the bearer for transport, and fit snotters and washers to two spare rockets.

Note.—If hawser and luff are kept permanently stowed on the bearer No. 6 should proceed with first transport assisting with the whip box.

210. Remaining gear is then transported as follows:—

Nos. 6, 11, 12, 13 and 15.—Hawser, luff strops and hawser cutter, shovel and spade.

No. 6.—In general charge of the party with lamp at night.

Nos. 14 and 16.—Anchor and one rocket in carrier.

Nos. 18 and 20.—Backer and one rocket in carrier.

Nos. 17 and 19.—Triangle and one rocket in carrier with three rocket sticks secured to triangle.

Small strops should be provided for carrying purposes.

No. 9.—Musters gear and is responsible that everything goes.

211. Procedure at scene of wreck.—On the arrival of the first transport stores, place gear as usual, except that numbers carrying spare line boxes place them abreast about four paces to windward of line box to be used. A dump, marked at night by a light, should be formed, well in the rear, of the stores not required for immediate use (rockets, etc.). Ordinary whip procedure would then be carried out, the second transport numbers returning to the vehicle **under the charge of No. 11 (or No. 6 if that number has gone with the first transport stores).** If communication is effected with the first rocket, the whip should be sent out and, when fast, the Officer-in-Charge should decide whether the circumstances are such as to permit of waiting for the arrival of the hawser gear or whether immediate rescue by whip is advisable.

212. Should the first rocket miss, **Nos. 5 and 7** should remove the used line box to leeward—**No. 4** first casting off the line from the whip block—and at once begin to restow the line. **Nos. 2 and 3** place the second line box in position. Should the subsequent rocket miss, **Nos. 2 and 3** would move the box to leeward and replace with the third box. **All numbers except Nos. 1, 2, 3 and 4** then assist in restowing fired lines.

CHAPTER 15.—STOWAGE OF VEHICLES AND GEAR.

213. The Box Seat.—The box seat is divided into three compartments and 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 strop of the block. Then the port-fire 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 port-fire box.

Middle.—The megaphone and the tokens, where supplied.

Near Side.—Two illuminating lights, if supplied, in the lower brackets; six line-throwing rockets in the other brackets. The backbands, spare snotters and strop are placed at the bottom. Nothing else is to be stowed in this compartment.

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

214. In a wagon there is a partition across the vehicle in the rear of the box seat in the centre

of which are stowed upright three carrying boxes 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 wagon cover with the tent pegs secured to the lanyards inside it, is stowed between the life-buoy and carrying boxes. Inside each carrying box is stowed a line-throwing rocket, base up, with a snorter attached to it.

215. In a cart there is no partition, but the carrying boxes, life-belts and life-lines are stowed as described in Art. 214 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 backer 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 backer.

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

216. **The Hawser (in vehicle).**—Stow the end of the hawser on the left side a full arm's length

from the rear end of the vehicle and flemish down (a white mark is painted inside the vehicle to show the place). Leave a space of about 4 inches in the centre and take the hawser to the top left-hand corner to commence the second layer, leave the same space, and commence the third layer at the right-hand top corner, placing the traveller-block in this corner at an angle of about 45 degrees, the toggle showing all clear, and continue till the hawser is expended, then bring the end 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.**

217. **The Luff (in vehicle).**—First place the hook-block on the left hand side, close to the rear of the vehicle, then take all parts of the fall up the side, square across the vehicle just inside the bight 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 the vehicle close to the tail-board with the knot in the end of the fall on top; double the tails back and place them straight out close to the side of the vehicle. Three complete coils will be made in a wagon.

218. Place the **breeches-buoy** just inside the luff-fall with the letters L.S.A. nearest to the tail-board. (A short length of line should be kept secured to the buoy for use as a steadying line, when required, but it must not hang loose.)

219. **The hawser and luff (on bearer).**—In cases where the hawser and luff are stowed on the hand bearer it is done in a similar manner as in the vehicle commencing at the bottom left hand corner of the hand bearer. The second layer is commenced at the top left hand corner, the third at the bottom right hand corner and the fourth at the bottom left hand corner.

The traveller block is placed flat on the top right hand corner of the fourth layer with the toggle projecting over the edge and subsequent layers are brought inside the block so as to leave it clear. The fifth layer is commenced at the top left hand corner and the sixth at the bottom right hand corner. When the hawser is expended the end is brought down the centre to the rear of the hand bearer.

When the hawser and luff are stowed on the hand bearer the two sides of the canvas cover are laced together commencing at the centre and fastened at the ends, care being taken to ensure that the block is held firmly in position.

The Breeches-Buoy should be stowed on top of the bearer.

220. **On the top of the vehicle** are three line boxes and a whip box. 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 for use, with the canting legs secured on top, is stowed close to the tail-board and the whip box next to it, the two other line boxes being in front.

221. **The Rocket Line.**—At least 6 feet of the end is taken from inside to outside through the hole, or slot, in the box and a figure of eight knot made, it is then snaked from one end of the box to the other, taken over the pins, and faked back, taking care to start by going to the corner and round the two end pins first, then only round one pin each time till the finish of the faking, when it will come round the two end pins and out from the opposite corner, then continue to snake and fake alternately, taking care that the fakings, which should be quite slack, always cross each other, i.e., never lay the same way twice running. This will be done correctly if, when the faking leaves off at the front, it is restarted at the opposite front corner, or when it leaves off at the rear, it is restarted at the opposite rear corner. The last two layers should be quite taut over the pins. Care must be taken after firing a rocket that all damaged line is cut off and the end repointed.

222. **The Whip** is 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 as, if done the reverse way, 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.

There should be two swivels on the whip dividing it equally.

Note.—When stowing the lines and the whip do not coil them down near the boxes, but keep them out as straight as possible to avoid turns and kinks.

223. **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 machine.

224. **Outside the Vehicle.**—Drag ropes complete with shoulder straps, heaving canes and lines, head guard, 2 lanterns and hawser-cutter (where supplied).

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

Underneath: Anchor (close to tail-board), water-breaker, hand-bearer, pickaxe, shovel, 2 spades, also in a cart, the backer; the hand-bearer, if room cannot be made for it underneath the cart, is placed on top of the boxes.

225. As stated in Art. 214, the **Tent Pegs** are secured to the lanyards of the vehicle cover, and rolled up inside.