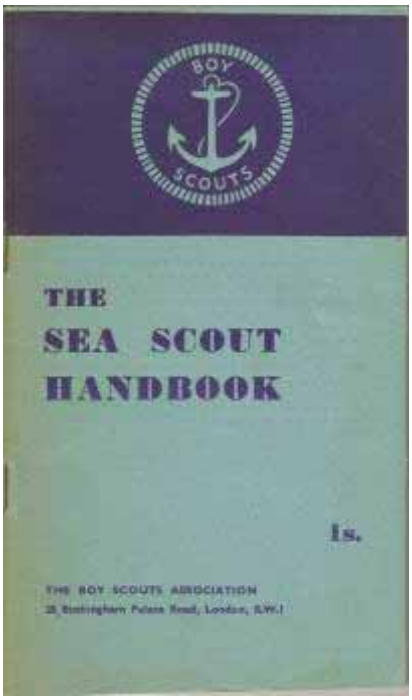

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Editor's Note:

The reader is reminded that these texts have been written a long time ago. Consequently, they may use some terms or express sentiments which were current at the time, regardless of what we may think of them at the beginning of the 21st century. For reasons of historical accuracy they have been preserved in their original form.

If you find them offensive, we ask you to please delete this file from your system.

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CHAPTER I

TENDERFOOT

(1)

I expect you've all heard a song that often comes over the air which begins, "I must go down to the seas again, to the lone sea and the sky; And all I ask is a tall ship and a star to steer her by." It's by John Masefield, a poet and a fine writer of yarns, who was for many years himself a sailor before the mast. He called his song "Sea Fever," because he knows that, like himself, many Englishmen had a feeling like a fever in their blood for the sea: we belong to an island race; fine ships sail through the years of our country's history with fine seamen in them. And that's why two years after the first Scout Camp on Brownsea Island in Poole Harbour, B-P, said, "We must have Sea Scouts" – that is, members of the brotherhood of Scouts who are particularly interested in the seas and the ships that sail on them. Now, too, all these years later we have Air Scouts, who are interested in the problems of flight and the great oceans of the air, just as the great body of Scouts are interested in special activities of the land – in forestry and pioneering and the countryside. But this is what we must remember, whatever sort of Scout hat you wear, and whether your interests be in woods and over the hills, or on rivers and seas, or in the cloud-inhabited air-ways, that you are all SCOUTS, and that is what every fellow who comes to our Movement must never forget. A Sea Scout is a SCOUT at all times, so that Sea Scouts, like all other Scouts, take the Scout Promise:

On my honour I promise that I will do my best –
To do my duty to God, and the King,
To help other people at all times,
To obey the Scout Law.

(2)

At the very beginning of man's venturing forth on the water, he realised the many dangers which faced him, and before he set out he offered up prayers to his God asking for protection on his perilous voyage. In the early days of Christianity it was the custom to place upon the main mast of large ships a statue of the Blessed Virgin or the patron saint of the ship, or perhaps a crucifix. Every seaman, upon coming aboard a ship, either took off his hat or made the sign of the cross as a form of salute. Later many of the great ships erected small chapels on the after part of the ship, so that men passing by the chapel, where the Blessed Sacrament was reserved, saluted as a sign of reverence. As the years went by and changes came, chapels were no longer erected on board ship, but sailors continued to salute the quarter-deck – and so do Sea Scouts, not only because they with the sailors know the dangers of the deep, but because it reminds them that they have made a promise to do their duty to God.

All Scouts remember their duty to God first and foremost. All Scouts – and this means you! – try to live obeying the same Scout Law, and have the same aim; to become First Class and King's Scouts. Of course, as you go along this road, as a Sea Scout you will look at things from your own angle, and will find time to train yourself in all these matters that those who go down to the sea in ships like to know. And all the while as a true Scout you will be trying to live a decent, happy, manly life, using your Scout Promise and the Scout Law as the charts to help you navigate the perilous oceans of the years.

(3)

"There is *nothing*," said the Water Rat (in "The Wind in the Willows"), "absolutely nothing, half so much worth doing as simply messing about in boats . . . in boats – or with boats . . . in or out of 'em, it doesn't matter!" But I'd better point out to you right away that there's a certain amount of training that all Scouts are proud to do, and your Tenderfoot and Second Class tests are not only good Scouting – if you learn them properly as a Sea Scout should – but exceedingly good seamanship at the same time.

As a Sea Scout you must know something about First Aid; you must be able to deal with the average accident before a doctor can be brought in. As a Sea Scout, if you cannot do signalling, you are both deaf and dumb when you are aboard a boat or a small ship that hasn't got wireless. Observation is absolutely essential – and knowing what you have observed and being able to reason from it. If you are Coxswain, and have to bring your boat alongside anywhere, you have to judge the direction and strength of the wind, and whether the wind is stronger than the current; you must decide whether your crew can be depended on to carry out your instructions and bring your boat alongside for whoever is a passenger to get out. Unless you are trained in observation you will never do it. A Sea Scout must know how to use an axe, which should be part of the equipment of every boat – and heaven help you using one in a small boat on the water if you haven't learned first to use your axe correctly on land! So go straight ahead for that First Class Badge.

But first of all a word about logs – not the sort you sit on. Every Sea Scout should keep his own log, just as every Patrol should keep a Patrol Log – and just as a ship has a ship's log, in which is included the distance a ship has done, her position, and anything which may have happened on board. And that's what *your* logbook should contain – your progress in Scouting and an account of the things you do; and if you can illustrate it with some drawings and snapshots, all the better. So save up and buy yourself a fat exercise book, and then (as decoratively as you can) inscribe on the first page "This is the log-book of Sea Scout whoever-you-are of wherever-you-live, of the whatever-your-Patrol-is of the whatever-your-Troop-is!" And you might add a decorative sea serpent or two as the old map-makers used to do.

There are other Scout books which will give you most of the information you require about Tenderfoot and Second Class tests. But there are one or two points we must emphasise as you're a Sea Scout.

First of all, about the Union Jack. Do you know the difference between the Union Flag and the Union Jack? The combined crosses of St. George, St. Andrew and St. Patrick should always be known as the Union Flag, unless they are flown from a Jack staff, which is a small staff on the end of the bowsprit (a large spar projecting over the bows) or at the fore end of a ship; when they are flown thus they should be known as the Union Jack.

The Union Jack is flown at the Jack staff by all H.M. ships of war when at anchor, but not at sea, unless the ship is dressed for some special reason like the King's birthday. At sea the only man who can fly the Union Flag is an Admiral of the Fleet, and he flies it at the main masthead.

Merchant ships fly a Pilot Jack, which is a Union Jack with a white border.

In the days of the Stuarts a fleet of King's ships might number up to as many as 200 sail, and these were divided into three main squadrons: the senior squadron in the van flew the Red Ensign, and the Admiral in command flew the Union Flag at the main; the second squadron in the rear flew the White, and the Vice-Admiral had the Union Flag at the fore; the junior squadron in the centre flew the Blue Ensign, and the Rear-Admiral wore the Union Flag at the mizzen. Thus it could be told to which squadron a ship belonged by a glance at her ensign.

This system continued for many years, but it had its drawbacks, as a number of different ensigns in battle tended to cause confusion.

As ships got larger, numbers became fewer, and the three colours became less important, while foreigners sometimes had difficulty in understanding the changes of ensign. Therefore, in 1864, Queen Victoria gave orders that in future the White Ensign should be flown by all ships of war, the Blue Ensign by ships commanded by officers of the Royal Naval Reserve after receiving special permission from the Admiralty, and the Red Ensign by all other British ships, and thus it remains to-day. Actually the White Ensign is also flown by Royal yachts and yachts belonging to the Royal Yacht Squadron. Both the White and Blue Ensigns come under Admiralty control, and the Red, too, if it is "defaced," that is, if it carries some device in addition to the Union; it may then only be flown by the holding of a personal warrant (or permission) from the Admiralty. The Blue Ensign defaced or the Red Ensign defaced may be flown in peace time by members of certain yacht clubs who hold personal warrants, and the Blue Ensign defaced is also flown by ships belonging to certain Government departments. The personal warrant must be carried, and the captain of any warship has the right to send an officer aboard to examine it; in addition, when the owner is not aboard the Red Ensign must be flown.

The correct position for the ensign in power-driven craft is from the ensign staff aft when at anchor, and from the ensign staff or at the peak of the gaff when under way. In sailing craft it should be flown from the ensign staff when at anchor and at the peak when under way.

The correct time to hoist colours when in port is at 8 a.m. between March and September, and 9 a.m. from September to March, the colours being lowered at sunset. When at sea the ensign should always be flown, and or getting under way after sunset it should be hoisted if there is light enough to see it.

When a merchant ship or a yacht meets a British warship, she should salute by dipping her ensign, that is, she should slowly lower the ensign, keeping the halyards taut, and keep it dipped until the warship has answered by dipping hers and hoisting it again.

If a ship enters a foreign port and any special celebrations are on, she may fly the ensign of that country from the masthead, wearing, of course, her own British ensign aft.

As a sign of national mourning the ensign should be flown at half-mast; if it has not been hoisted previously it should first of all be hoisted close up and then lowered to half-mast, while to lower an ensign from half-mast it is first hoisted close up and then lowered.

A national flag hoisted upside down is a signal of distress, and indicates that assistance is required; while to hoist another nation's flag upside down is an insult, so care should be taken that it is always hoisted correctly!

If a ship is seen with the ensign of one country flown above that of another on the same mast, it means that the ship has been captured by the country whose ensign is on top.

Should a ship be flying her ensign at half-mast, it is a sign of mourning. Various reasons have been given for this custom, and one interesting suggestion is that the ship has been overcome by death, and that his invisible flag is supposed to be flying above the half-masted ensign. Another more probable reason is that it is just a mark of respect in the same way as a man removes his hat when a funeral passes him.

Often in port a ship may be seen with her ensign hoisted in the signal halyards with a knot tied in it. This means that the ship wishes to open her bonded stores which have been sealed by the Customs, and wants an official to come aboard and do it.

On certain rivers on a day that a new ship is to be launched, a Red Ensign is hoisted on her ensign staff; then when the carpenters are about to remove the last blocks the ensign is

lowered. This warns the authorities that the ship will be ready for launching, and they stop all traffic on the river. When the last blocks are out and the ship begins to move down the ways, the ensign is hoisted again, so that she enters the water for the first time with colours flying,

(4)

I want to have a word with the younger Sea Scouts about the third test in the Second Class badge. Let me quote you what our great Founder, B-P., wrote in *Scouting for Boys:* "Remember that it is a disgrace to a Scout if, when he is with other people, they see anything big or little, near or far, high or low, that he has not already seen for himself." Now I don't need to tell you how keen-eyed sailors have always been: the ability to use his eyes well has always been an essential quality for the good seaman. And you want to start now, training yourself to notice things – because it is a matter of training, and it is training that you can do by yourself, or with your pal, any day and every day. Let's see how good you are! Try yourself (and then your Patrol) with these: –

(i) How many masts has the ship on a halfpenny?
(ii) In what hand does Britannia hold her trident, and what is she doing with the other hand?
(iii) How many holes for shoe-laces are there in your *other* shoes – the ones you're *not* wearing?
(iv) Does a dog get up on forelegs first or on hind-legs first, or on all legs at once?
(v) On the front page of *The Scout,* under the title, are five words. What are they?
(vi) Make an exact list (from memory!) of everything in your pockets at present.
(vii) How many windows of all kinds has your house?
(viii) What rings does your mother wear on what fingers of which hands?
(ix) What badge does your postman wear on his hat?
(x) Suppose your best friend was missing. See if you could write out an *exact* description of him for the police.

There you are! By the way, find out any answers to the above quiz you didn't know! Keep your ears and eyes open; train your sense of taste and smell and touch; the more training you do – a little stunt every day – the better Sea Scout you will become.

And, of course, be ambitious about ALL the tests; set yourself a little higher standard than you have to do, whether it's in cooking or first air or morse – or keeping your knife sharp or your nails clean!

(5)

For Your Patrol Meetings

1. Prepare a selection of articles for Kim's Game. Then after a minute, while your Patrol turn away, take *one* article from the table. The Patrol turn round again and the first to discover what is missing wins. This should be continued for some time. It can be varied by allowing each member of the Patrol to take away an article – which is, of course, replaced each time.
2. Have a painting evening – when every Scout draws carefully (and colours) in his log-book, or to adorn the walls of the den, the Red, White and Blue Ensigns.
3. Choose a Patrol motto. Get a Patrol box and paint on it your Patrol emblem. Decide what you're going to keep in it.

4. Let each fellow bring a picture of any ship. These are passed round, each Scout having about two minutes to examine each picture. The pictures are then put away, and each Scout asks the rest three questions about his own picture. It is best to have answers written down!

5. Take the Patrol for a stroll, and at a certain point every fellow has to write down in one minute (say) all the things he can see beginning with (for example) C. At the end each Scout only scores a point for each thing that no other fellow has written down. Winner chooses next stopping place and next letter.

CHAPTER II

SEA SCOUT'S PROGRESS

Rope has always been associated with seamanship and the ability to handle rope, to make knots, bends and hitches without hesitation or clumsiness is the mark of a true seaman. You should be able to make them blindfold or behind your back or with one hand!

(1)

You've already learnt two or three simple bends and hitches for your Tenderfoot, and there are some more for your Second Class, but all your life as a Sea Scout or a boatman of any kind you'll need to know and use bends and hitches and knots. Do you think there's a proverb which says "the rope knows the sailor's hand"? Well, there is now – Sea Scout proverb No. 1! Certainly the Sea Scout must be handy with rope, understand it, care for it, and be able to use it with great skill.

Ropes are of two kinds: those made of vegetable fibres and those made of metal or wire rope. Fibre ropes are made of: (i) Manilla, which is made from the fibres of the leaves of the wild banana. This gives a strong, smooth handsome rope, (ii) Hemp, which gives a strong rough rope, (iii) Coir, which is the fibres of the coconut husk. This gives a light, very rough rope, not very strong, which will float in water, (iv) Sisal, which is made from the fibre of aloe leaves. This gives a stiff hard white rope which does not stand sea water very well.

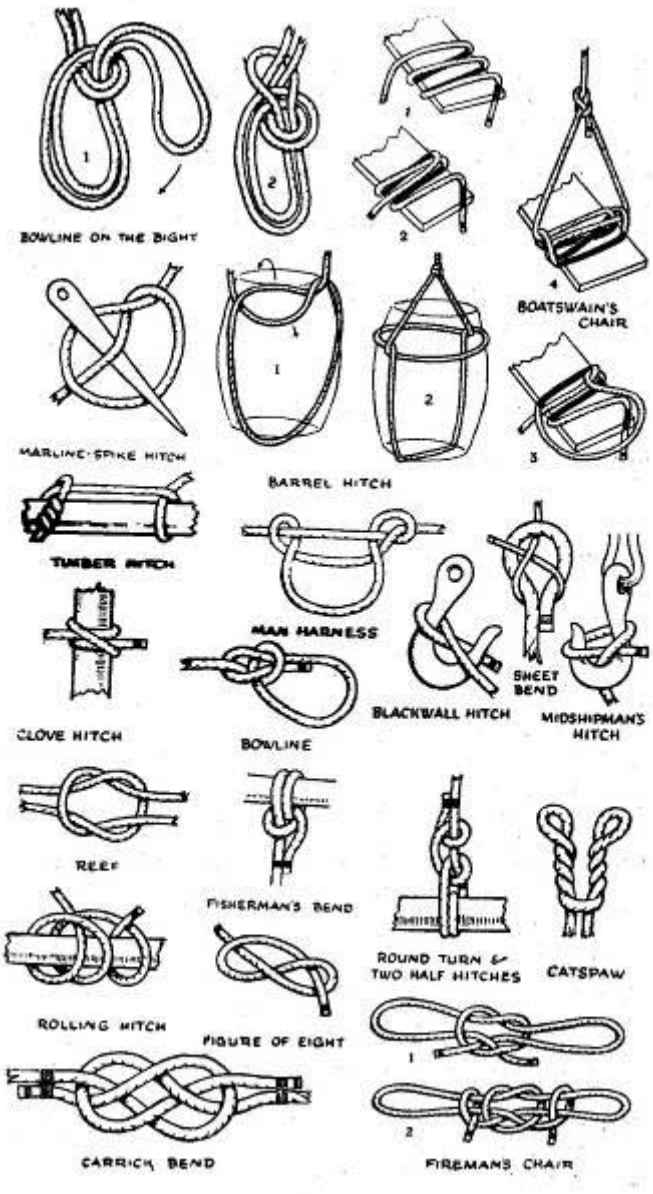
In all cases of ropes (other, of course, than wire) the fibres are twisted up into yarns, the yarns into strands, and the strands into ropes. If, when you look at a rope, the strands go up and to the right, it is said to be a right-handed rope, and if the strands go up and to the left, it is said to be a left-handed rope. When coiling down ropes, a right-handed rope is coiled down "with the sun" or "clockwise" and a left-handed rope "against the sun" or "anti-clockwise." The size of a rope is measured by circumference in inches and in length by fathoms.

Plain laid rope is three-stranded, right or left: the most useful lay is right, and this is the commonest type of rope for all ordinary purposes. Cable-laid consists of three ropes, laid together into a larger rope.

All rope for naval use is now made in the roperies at Chatham and Devonport. It is marked by a distinguishing "rogue's yarn" of coloured jute, laid up with the other yarns: Devonport – red, Chatham – yellow, trade manufacture – blue. Sisal rope is distinguished by two rogue's yarns.

On the next page you will see drawings of some of the bends and hitches Sea Scouts should know – and these you should learn NOW, that is, during your first few months as a Sea Scout.

By the way, you ought to know the difference between a bend, a hitch and a splice. A bend is a way of fastening two ropes together; a hitch is a way of fastening a rope to any object, e.g., a spar; and a splice is a way of joining ropes together, or joining the end of a rope to itself (as in an "eye-splice").



Now it's no good knowing a lot of bends and hitches if you don't know what they're used for – so make sure you know that, and whenever you're practising one in these early days, whisper to yourself what it's used for! I'll go over them for you now: –

Reef Knot; The best way of tying two ends together; it doesn't jamb; used in fastening the reef points when shortening sail.
Round Turn and Two Half-hitches: A common way of making a rope fast.
Clove Hitch: For making a rope fast to a spar, and many other uses.
Rolling Hitch: For bending (i.e., attaching) a small rope to a larger.
Timber Hitch: For towing a plank or log or for tricing up a roll of canvas or other soft gear.

Fisherman's Bend: For bending a rope or boat's painter to a rail or ring-bolt, and for bending a line to an anchor.

Carrick Bend: For bending two ropes of equal size when required to go round a capstan,

Sheet Bend: For making fast a smaller rope to a larger one or for bending a rope to a loop, or for securing the lazy painter of a boat.

Figure of Eight Knot: A **"**stopper" knot to prevent a rope from unreeving.

Bowline: A secure loop for putting round a person.

Catspaw; A temporary loop for booking on the block of a tackle.

Marline-spike Hitch: For getting a "purchase" with a marline-spike, etc., when putting on a seizing or lashing.

Manharness Hitch: To provide a bight for hauling.

Blackball Hitch: For hooking a tackle to a rope. (A double Blackwell Hitch holds better, and is used for the same purpose.)

Midshipman's Hitch: If the rope is greasy, this is used instead of Blackwell, as it holds better.

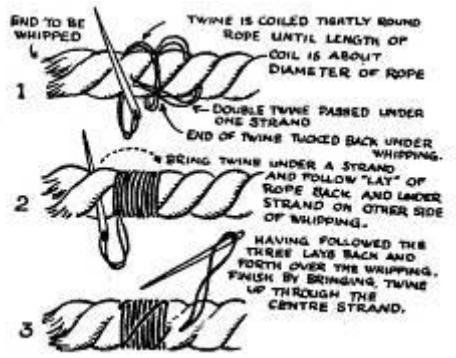
Bowline on the Bight: For lowering a man from aloft, or slinging a man over the ship's side, one bight being placed under the man's arms and the other under his thighs. (Use both parts of the rope together, and commence as ordinary bowline; to finish off, open out bight, and, taking it in the direction indicated by the arrow, pass the whole through it and haul taut.)

Barrel Hitch: For slinging a barrel (etc.) when you want to hoist it up end on.

Bosun's Chair Knot; For painting over the side of a ship, for example.

(2)

You must be able to whip the end of a rope for your Tenderfoot, and do square and diagonal lashings as part of your Second Class: all Sea Scouts should be proud to do these with *extra* efficiency. Remember, "it is when the gales come that the lashings count"! Here is a sailmaker's whipping you might like to try: –



You should take great care of rope, and in this you can set a fine example to other Scouts. If you cut a rope, whip the end as soon as you can, but don't cut it if you can avoid it. Stretch a new rope before using it. Keep your rope dry as far as you can. If it has to pass at any time over a sharp or rough edge, cover the edge with a padding of sacking or canvas or something like. Always coil your rope carefully.

(3)

Can you box the compass? No, it's nothing to do with packing it in a parcel. It's being able to start at North and go round like this: "North, North-by-east, North-north-east, North-east by north, Northeast," and so on. That's just a matter of getting down to it, so get down to it! And here it is: –

1. *North.*
2. North by east.
3. North, north, east.
4. North east by north.
5. North east.
6. North east by east.
7. East, north, east.
8. East by north.
9. *East.*
10. East by south.
11. East, south, east.
12. South east by east.
13. South east.
14. South east by south.
15. South, south, east.
16. South by east.
17. *South.*
18. South, by west.
19. South, south, west.
20. South west by south.
21. Southwest.
22. South west by west.
23. West, south, west.
24. West by south.
25. *West.*
26. West by north.
27. West, north, west.
28. North west by west.
29. North west.
30. North west by north.
31. North, north, west.
32. North by west.

(And so back to North!)

But you should know a bit more about the compass than that! A ship's compass (or Mariner's compass) isn't like a land-lubber's compass, which you have to whizz around until your card agrees with the needle which points to magnetic N. A Mariner's compass has two or more small magnets, and the card being fixed on top of the magnets swings with them.

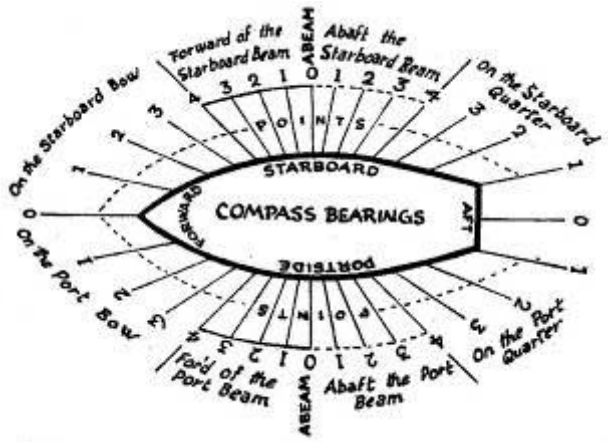
What do I mean by magnetic N.?

Well, there are *two* Norths, the reason being that although the earth is a large magnet, the Magnetic Poles do not coincide with the North and South geographical poles. The North Magnetic Pole is located in Baffinland (approximately Latitude 71° N., Longitude 96° W.), and the South Magnetic Pole in Victoria Land (approximately Latitude 72° S., Longitude 155° E.). The angle between the True North and the Magnetic North (which, remember, is the way the compass points) is called the magnetic variation, and the variation varies from place to place (and changes slowly with time as well!). That is why on a big chart there must be several compass roses printed.

North, East, South and West are called the cardinal points; North-east, South-east, South-west and North-west are called the inter-cardinal points.

Each of the 32 points of the compass is again subdivided into quarter-points for purposes of fine steering, but you can leave that for the moment. But you ought to know about relative

bearings, which is a system of directions taking their names from the ship itself, and is also divided into 32 points.



Suppose, for example, a ship is heading north, and the wind is blowing from the north, the direction of the wind with respect to the vessel is "ahead." Suppose the wind is E.S.E., the direction of the wind with respect to the vessel is two points abaft starboard beam. Suppose the wind is S. by E., the direction of the wind with respect to the vessel is one point on starboard quarter.

Try these for yourself, the ship still heading north: – What is the direction of the wind with respect to the ship if the wind is (i) S.E., (ii) W., (iii) S.E. by E., (iv) N.W., (v) W.N.W.? One last word: remember, you describe the direction FROM which a wind blows and IN which a tide sets.

(4)

It has been said before, and it is worth saying again, that the three best ways of learning signalling are by (i) practice, (ii) practice, (iii) practice.

Remember that semaphore is an outdoor method of signalling, so when you are learning, stand at least 50 or 100 yards from the receiver or sender as the case may be. Take care to get your angles correct. There are no separate signs for numbers in semaphore, but you use the letters from A to K, omitting J. First you signal the numerical sign (opposite to T), then your numbers, then the alphabetical sign J ("numbers ended"). Numbers should be checked back.

Morse is a matter of rhythm and timing. A dash is always three times as long as a dot, whatever instrument is being used, and between the end of one letter and the beginning of the next, an interval equal to one dash is made.

In both codes the calling-up sign is VE, and this is answered by the receiver with K ("carry on") or Q ("wait"). The "general answer" is A in semaphore and T in morse, and is sent by the receivers after each group when they are satisfied that they have read it correctly. The repeat sign is IMI; the end of message sign is AR; and the receiver's answer to this is R, which shews that the message has been received and understood. As many letters sound alike, these words are used to make identification easier.

A — Able.	J — Jig.	S — Sugar.
B — Baker.	K — King.	T — Tare.
C — Charlie.	L — Love.	U — Uncle.
D — Dog.	M — Mike.	V — Victor.

E — Easy.
F — Fox.
G — George.
H — How.
I — Item.
N — Nan.
O — Oboe.
P — Peter.
Q — Queen.
R — Roger,
W — William.
X — X-ray.
Y — Yoke.
Z — Zebra.

Now, go to it!

(5)

All Scouts are campers, but all are not (unfortunately) as good campers as Scouts ought to be. So I thought we must certainly find room in your little handbook for a dozen hints about camping which will help you to lead the way as you would want to do: –

1. When you are packing your kit (i) only take necessities; (ii) consider the order in which you will need to take things out; (iii) fill up the spaces as you go along.
2. In making your kitchen or galley, again do essential things first. You *must* have a fireplace and a grease pit: first things first.
3. The idea of gadgets is to get your utensils *off the ground,* and put them where they're handiest, not where they're in everybody's way.
4. Don't waste a fire – always have billies of water on it if nothing else.
5. A good larder is the hall-mark of a good camp.
6. Birch bark, gorse, dry bracken, are all good tinder. On a windy day sit down with back to wind and laid fire between legs before lighting match.
7. K.Y.B.O. and K.Y.B.A.
8. Before you turn in (i) loosen the guys of the tent; (ii) cover your wood; (iii) cover your fireplace.
9. Leave your camp site better than you found it and with nothing but your thanks.
10. Make a short written report with sketch map on every site you use, so that you can help other Scouts who are planning camps.

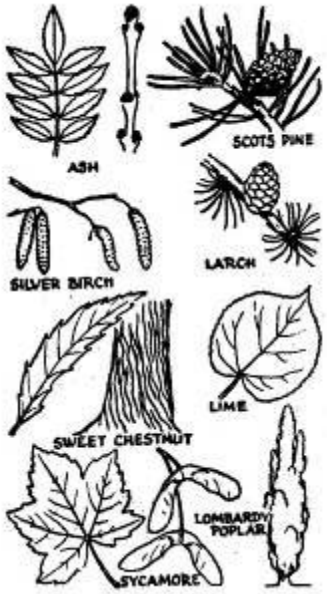
(6)

When it comes to lighting a fire at camp, all trees are not equally friendly. Ash is "worth its weight in gold," as we say, for it will burn just as well green as dry, splits easily, and lasts! Beech will also burn green or dry, and gives a hot big flame. Oak, of course, burns beautifully though slowly, but is not such good tinder as birch, which lights easily, but is quickly gone. Scots pine and other conifers are good starters. Sycamore, maple and lime must be dry, but are then satisfactory. Don't use poplar. For starting fires use soft woods-pine, fir, larch, birch, etc.

Of course, you must be able to recognise these (and other) trees. Here are some brief notes about a dozen: recognition of these will help you to train your powers of observation and to get your First Class badge!

But for Sea Scouts there is a third reason. Sea Scouts should have a proper knowledge of the method of construction and repair of their boats. To do this they must know something about the various types of timber used and as the property of the timber depends to a large extent upon the type and habits of the tree that it comes from, it is important to know about the tree in its natural state. Thus you would expect a quick-growing tree like the spruce to produce a very soft wood, while an elm, which is a much slower-growing tree, produces a hard wood. Again, the oak, with its gnarled and twisted branches, should be suitable for producing knees and

crooks, which for strength purposes should be grown to shape. Larch is extensively used for the planking of boats; while ash makes good shafts for such tools as hammers and axes, and oars made from this wood are probably the best obtainable; good masts and spars can also be made from it. The English elm makes a very good skin for clinker built boats, and naval whalers axe usually planked in this material.



Tree	Summer	Winter
Ash	Characteristic compound leaf, lighter on underside.	Ash-grey trunks; thick twigs; black buds.
Beech	At first leaves emerald green and delicate, edges hairy; become darker.	Smooth usually greyish trunk; bronze nestling leaves; long spear-like buds; beech "mast" (nuts) underneath tree.
Oak	Dome-like shape; unmistakable leaf.	"Tangled" branches; lower branches horizontal; sturdy rough barked trunk. Acorns; "oak-apples."
Scots Pine	General "lop-sided" shape of tree; reddish-brown flakey bark; carpet of pine needles; dark-green needles in pairs; hard cone with close diamond-shaped scales.	
Silver Birch	Silvery bark, small pendant leaves and catkins.	Silvery bark, slender trunk.
Elm	Foliage arranged in several masses, often giving lop-sided effect; leaf dark on upper side, light on lower, rough and hairy.	Very rugged trunk.
Larch	Needle-shaped leaves growing in tufts; delicate green in spring; egg-shaped cone with loose curved scales.	Sheds its leaves in autumn; very slender, twigs hang down
Horse Chestnut	Well-known leaf with 7 leaflets; tall spikes of cream, pink or scarlet blossom.	Sticky buds with "horseshoe" markings on twigs. "Conkers."

Sweet (Spanish) Chestnut	Characteristic leaf.	Twisted lines on trunk, giving criss-cross effect.
Lime	Heart-shaped lop-sided leaf.	Knobbly trunk, each knot sprouting small twigs.
Sycamore	5-lobed leaf; winged seeds. (Buds large and in pairs.)	Greyish trunk, peels off in patches.
Lombardy Poplar	Upward sweep of branches with fluttering, almost diamond-shaped leaves.	Unmistakable upward sweep of branches. "Witch's broom" tree.
Silver Spruce	Short grass-green needles: Young spruce is "Christmas tree."	

(7)

For Your Patrol Meetings

1. Try making bends and hitches blindfold – any land lubber can make them when he can see what he's doing!

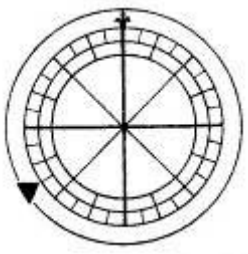
2. Make a relative bearings model: –

3. Quiz! or find it out for yourself!
   (i) How would you report a 180° wind on board ship going north?
   (ii) A ship heading due E. sights a buoy abeam. What is its direction?
   (iii) Your ship is going S. by E., and sights a ship broad on the starboard quarter. What direction is it?
   (iv) What is the binnacle?
   (v) What errors can you discover in the following: –

   The new Commissioner for Wessex then addressed the Patrol Leaders. He seemed rather nervous, and was constantly playing with his shoulder-knot. He said he had been interested in Scouting ever since the Founder's camp in 1908 at Brownsea Island in the mouth of the Thames, but till now had not done much practical Scouting.

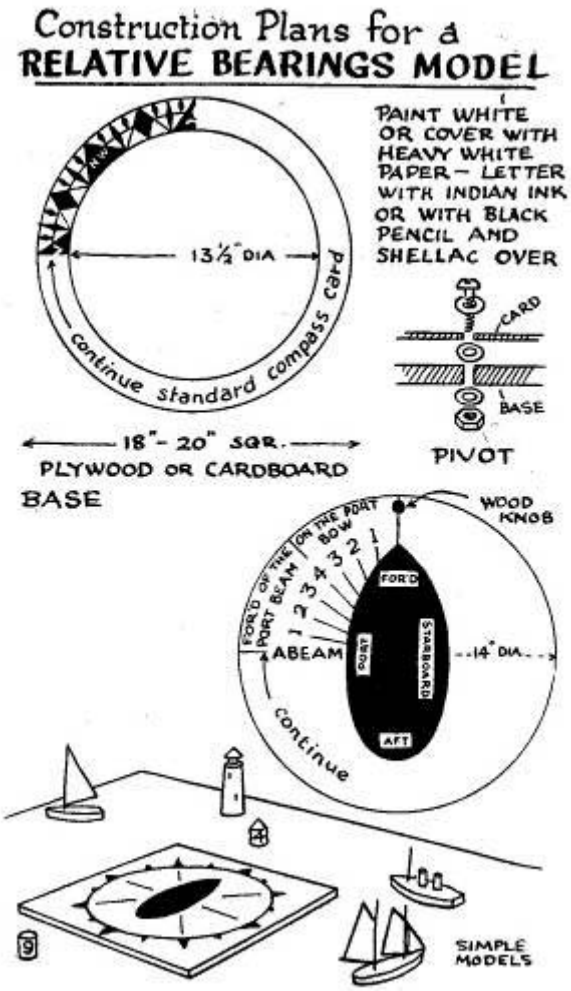
   But he had made a beginning. He knew most of the 16 pressure-points; he had found that a timber-knot was the best knot for tying parcels; and that for Wessex magnetic north was E. of true north. He was practising Kim's Game – and the P.L.s might be interested to know that when he was in India he had met Kim and had a long talk with, him; and he soon hoped to be able to remember the 18 out of 24 articles that the Tenderfoot badge demanded. He himself was a Scotsman, and as every Scout knew, his flag was St. Andrew's, the diagonal blue cross on the white background. He wished them good luck, and in conclusion would give them a sign they would all recognise, dash dot dot dot, the "V" for Victory.

4. Make a set of compass-cards for training your Patrol. Get a piece of cardboard about 10 ins. by 12 ins. and rule it into 30 squares o£ 2 ins. side. In each square draw a diagram like this (but with a different direction marked on each one): –



   Then cut the squares out carefully, and you have a pack of cards for teaching compass or for use in compass games and competitions. (This is an idea of the Wallsall Sea Scouts.)

5. Have a Patrol exploring afternoon, looking for a good specimen of each of the dozen trees in this chapter. Make a rough sketch map in your log, noting the position of these trees, and then make a point of watching them change in the four seasons.



CHAPTER III

HISTORY OF SHIPS

(1)

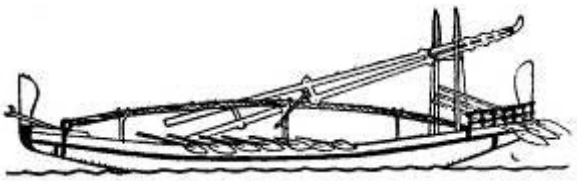
It was a long, long time ago. Why, how, when or where the first man invented the first ship we don't know. It is unlikely that we ever shall. Perhaps man's insatiable curiosity came into it: perhaps a desire to pursue seal or walrus, or to see what was beyond the horizon; maybe it was just an accident. All we know is that it was a long, long time ago. We know that there were ships sailing on the Tigris eight thousand years ago, and men must have been transporting things by water thousands of years before this, for water transport came before land transport. The first "boat" was probably a log, and then you can see the line of progress from the logs as it was, the log roughly-hewn and shaped, propelled with stick or paddle, the dug-out canoe, the several logs lashed together to become a raft. What is interesting is that examples of

all these primitive vessels are still in use, e.g., roughly shaped logs are still used by aboriginal tribes in North Australia, and dug-out canoes, are still used by West African tribes on their fishing expeditions.

There would always be enquiring minds as there are to-day anxious to find a better way, and so one hit on the idea of fastening animals' skins blown up like bladders beneath the raft. Another got the idea of fastening a row of planks along the sides of a hollow tree, and with wooden ribs to hold the planks together you are beginning to see the boat as we know it slowly emerge. And another bright spirit thought of the quaint device of fastening to the outside of his boat a long narrow piece of wood running parallel to it 5 or 6 feet away. Thus from the easily capsizable canoe came the almost unsinkable "outrigger." Then there was the round coracle, consisting of a skeleton (of willow perhaps), with a water-tight covering; and in that beginning you see faintly the method of the shipbuilders of to-day.

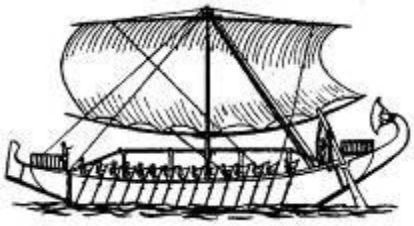
(2)

We know something of the Ships of Egypt from the paintings and drawings on their vases and tombs; indeed small models of boats were often placed in the tombs for the use of the occupant in the next world. And I hope you will become interested in these early boats and their builders, and in fact in the way they lived altogether. History doesn't begin with 1066! We know, for example, that about 2900 B.C. a king called Senefem built 60 ships which voyaged to the Syrian coast for timber of which Egypt was always in need. Another king, Sahure, about 2700 B.C. had many fine vessels.



I want you to note: (i) The A-shaped mast, which when up would be turned sideways; there are no shrouds (i.e., ropes rising from each side of the ship to the mast-head), (ii) The thick rope running from prow to stern, and raised above the deck on forked posts – you can see it has been twisted tight with a piece of wood which has been securely lashed; this rope was made necessary because such a boat had no keel and ribs springing from it – it was made by tying together hundreds of pieces of shaped wood with thongs passed through holes in their edges, (iii) the steering was done by three paddles.

Now we might compare this ship with another, one of a very famous expedition sent by Queen Hatshepsub about 1500 B.C. to the land of Punt, an expedition which brought back frankincense, ebony, ivory, panthers, peacocks and baboons and greyhounds!! You should note (i) the single mast is now fixed amidships with a boom and a yard (two spars *lashed* together, you will note); (ii) there are two *fixed* paddles for steering. It is probable that the Egyptians discovered the art of rowing and how much more effective it is than paddling.



(3)

The most famous of the sea-going peoples of the ancient world were the Phoenicians, the traders of the Mediterranean. These great sailors certainly reached Britain, possibly India, and probably China. About 600 B.C. a crew of them sailed southward from the Red Sea to try and find a way back to the Mediterranean. The voyage took about three years, which was partly due to the fact that they landed each autumn and sowed corn and waited on shore till it was ripe for harvesting. This voyage was not accomplished again (so far as we know) for 2,000 years!

And what about their ships? Well, the Phoenicians were responsible for three great inventions: –

(i) In building their ships they laid down a solid keel first and then erected on this strong wooden ribs to which planks were fastened with pegs: they had no shortage of good wood. This is the way ships are built to-day, though we use steel,

(ii) They increased the speed of the ship by arranging the oars in banks one above the other. A ship with two banks was called a bireme, with three banks a trireme.

(iii) They invented the ram, which was built out from the keel several feet in front of the bows, and made the ship a dangerous fighter.

Their ships had a high stern and an upper deck (above the heads of the rowers) which, was protected by strong bulwarks hung with shields; earlier on they had one mast with a square sail and no boom, but later as the length increased two masts were fitted.

This capable nation was finally destroyed by the Romans, who along with the Greeks, took over the Phoenician "galley" and developed it. They fitted each of their vessels with a sort of drawbridge, which was slung up against the mast until such time as they could let it down on the deck of the Carthaginians (as the Phoenicians came to be called from their great city of Carthage) and board the enemy ship for hand-to-hand fighting. The largest possible galley would seem to have been a quinquireme, having five banks of oars.

(4)

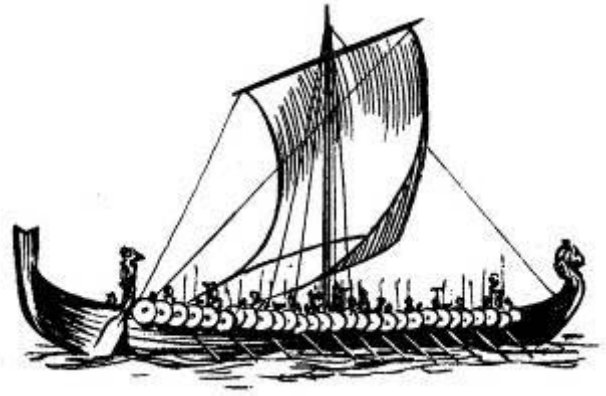
Now we'll go northward and consider those hardy seafarers, the Vikings, and we know exactly what their ships were like, because it was often the practice, when a chieftain, died, to drag his ship ashore and raise a great burial mound over it. The great differences you should note are: (i) the bow and stern are almost alike, and stand higher out of the water; (ii) they are clinker – or clencher – built, that is, the upper edge of each plank is overlapped by the lower edge of the one above, and all are secured by means of nails driven through the lap-overs (a carvel-built ship, like those of the Mediterranean, is when it is built with the planks not overlapping); (iii) they are built of oak, and are much stronger.

a) **The Nydam ship**. This is dated by coins found inside it as about A.D. 217. She was discovered in 1863 buried in marshlands. She is 76 foot long, of oak, has no deck, her beam is 10.5 ft., her depth 4 ft. She was propelled by 14 oars each side; there is no indication of a mast, and there was a single steering paddle lashed to the starboard quarter.

b) **The Gokstad ship**. This dates from the 9th century, and was found in a burial mound in 1880. She is 79 foot long, nearly 17 ft. broad, and over 6 ft. deep, of oak. She is stepped for a single mast; she was propelled by 16 oars a-side, and these (which were 17 ft. long) projected through small round oar-ports cut in the side of the vessel about 18 ins. below the gunwale;

these could be closed by sliding, covers when the vessel was under sail. A steering paddle was set on the star board quarter.

c) **The Oseburg ship**. This dates also from the 9th century, and was found in 1903. She is 70.5 foot long, nearly 17 ft. broad and over 5 ft. deep. She has 15 oars, and a lighter mast than the Gokstad ship.



You will notice that there was no deck – they were tough these Vikings – and that the stern rudder was still uninvented. But the Vikings had invented reefing the sail by means of reefing-points, which are cords sewn to the canvas, the sail being rolled up from the foot and secured by tying cords together.

In 1892 the Norwegians reconstructed one of these old Viking ships, and with twelve fellows aboard, sailed her across the Atlantic to America!

Most of the changes until the 15th century came from the Mediterranean again, and chiefly from the Arabs. When the Crusaders came into these parts they found two-masted and three-masted ships, though the latter were less common, and they found them equipped with "fighting castles," which were tall towers which could be set up in any part of the ship to aid the fighting. Gradually they became more and more a definite part of the ship, and one was set up in the bow (the forecastle) and one in the stern (the after-castle); also the shape of the ship was slightly altered to fit the castles, and bow and stern begin to appear different – the bow being pointed and the stern square. And the stern-rudder has come into being. The first English picture showing it is on the seal of the town of Poole for the year 1325, but it is shown on a German seal of 1242. About this time, too, the mast was supported with rigging fixed to the ship's sides, and also by fore-stays and back-stays, and winches with wooden drums were used for weighing the anchor. These galleys had a deck covering their entire length, and a guard-bridge on it where the galley masters walked up and down with their long whips to keep the galley-slaves at their jobs. The oars, which were 40 or 50 feet long, had four or five men to each, and although the ships look very gay and charming from their pictures, we must remember that they stank with the smell of the sweating and diseased slaves who were chained to the benches they were never allowed to leave.

Although these lateen-rigged (i.e., triangular-sailed) two-masted ships were common in the Mediterranean, it was not until the 15th century that two and three masts became common. Henry V's famous ship "Grace Dieu" had a "mesan" (i.e., mizen) as well as a great mast, and it is worth noting that whereas the biggest ship we know of in Edward Ill's reign was 300 tons, in Henry V's reign it was 1,000 tons. (For an explanation of the tonnage of a ship, see Chapter V.) But with the increase in tonnage a third mast was soon added.

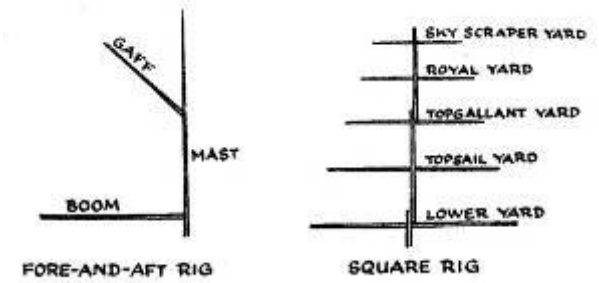
By the end of the century the building of three-masters (and the introduction of the mariner's compass from China) had made possible the voyages of such explorers as Columbus,

Diaz and da Gama. These points about these ships are worth remembering: – they were clinker-built; the stern-post had been straightened to make a firm support for the rudder; the forecastle projected well over the stem, and the decks of the bow, the waist and the stern were of different heights.

The introduction of cannon – the first in an English ship was in 1461 – gradually produced changes which distinguished the war-ship from the merchant-ship. At first the cannon were mounted on the after-castles; as they grew larger they had to be carried at a lower level, and port-holes were cut in the hull of the ship.

Henry VIII is remembered by most of us because of his unfortunate wives, but Sea Scouts should remember him for his interest in the British Navy, which during his reign first came to be considered as a separate unit from the Army. At the beginning of the 16th century English ships were clinker-built, had round sterns, and carried all their guns in the forecastle or the poop. But by 1523 big ships were carvel built and had their sterns cut square like a modern dinghy. One of Henry VIII's most famous ships was the "Henry Grace & Dieu," or "Great Harry," built in 1514. She was a great four-master of 1,000 tons, with very lofty poop and forecastle; she carried 186 guns, including four muzzle-loading brass cannon, and top-gallant masts and sails on both fore and main masts.

Most ships were smaller than this, however – half the ships that went out against the Armada were not more than 360 tons, and only a quarter of them were 600 tons or more. And so the tale goes on, but the rest of it must be told more briefly here. I hope you'll all be keen to find out more for yourselves, and keep your wits about you when you're reading anything historical in or out of school. For example, during the 17th century our great rivals were the Dutch. You all know the song about their famous Admiral, Van Tromp and our Admiral Blake, I expect – it's a fine song for Sea Scouts to sing. Well, that song tells of "battles long ago"; what is more important is that the Dutch were fine naval architects, and it is probably they who invented the fore-and-aft rig.



In the I8th century the high poops and forecastles became lower and the length of the ship in proportion to its beam increased. These were the days of the East Indiamen and the West Indiamen and the Navy that won the Battle of Trafalgar. Such ships would carry in fair weather six times as many sails as the three-masters of a hundred years before. And so we come to the American clipper, which was one of the finest sailing ships the world has ever seen; perhaps the Aberdeen clippers were the very best. In the ocean carrying trade speed was what mattered most – for the tea trade, the wool trade, for the gold rushes, against the imminent competition of steam. These were the days when the great clippers raced: "Thermopylae," for instance, running from London to Melbourne in 60 days, and from New South Wales to Shanghai in 28 days, and back home from China in 91 days – a record beaten a fortnight later by "Sir Lancelot" in 89 days. In 1866 three British clippers, "Ariel," "Toeping" and "Serica" left China on the same day with a tea cargo and raced home. They did not sight one another from the day they left until the English Channel was reached. "Toeping" won by less than half an hour! They were beautiful ships, and I hope you will have a picture of one in your Patrol dens. They had their

day, and now have ceased to be, but with their going a certain amount of loveliness went out of the world for ever.

(5)

And so to steam!

It came gradually, of course. For example, as early as 1707 a Frenchman named Papin had put a steam-engine into a boat and made it sail down a stream under its own power. For years inventors received nothing but discouragement, and everyone was very sceptical. In 1801 (for example) an engineer named Symington produced the first successful British steamboat, "Charlotte Bundas," having a double stern with two rudders, and a single paddle wheel between them. On her trial she towed two 70 ton vessels for 19 miles against a strong head wind – but nobody cared, and the inventor, discouraged, left steamboats alone. But the change was inevitable. First steamboats plied on river and lakes and canals, like the "Comet" on the Clyde or the "Clennont" on Hudson River. Then they were trusted on the open sea, but it was the Atlantic crossing that at last convinced a doubting world.

In 1819 the "Savannah" (full-rigged, 350 tons, auxiliary steam engine, detachable paddles, 90 h.p. direct action low pressure engine) had crossed the Atlantic – but the greater part was made by sail alone; the "Royal William" (three-masted schooner, 363 tons, auxiliary engines, 180 h.p.) took 19 days in 1833, but again considerable part of the crossing was by sail alone. But in 1838 the "Sirius" (703 tons gross, 320 h.p., 24 ft. diameter paddle wheels) crossed the Atlantic under continuous steam power in 18 days, an average speed of 6.7 knots – the first ship ever to make it. The "Great Western," with a crew of 60, and accommodation for 140 passengers, followed almost at once with a crossing which took 14 days 5 hours, an average speed of 8.2 knots.

In 1836 the screw-propeller was invented, and in 1843 our Admiralty adopted it. In 1845 Brunei, the great engineer, built the S.S. "Great Britain" of iron, and this was the first iron screw steamer to cross the Atlantic. She measured 3,270 tons gross, and had accommodation for 360 passengers; she took 15 days. The "Great Eastern," financially a loss, yet showed the way to larger ships; her displacement was 32,900 tons loaded, a vast increase; she had 6 masts and 5 funnels; along her length below the water-line she was built with a double "skin" of iron plates, the skins being 3 ft. apart; she was divided into sections by horizontal iron bulkheads, and was lit by gas.

With the S.S, "Servia" in 1881 we pass from iron to steel – and to a ship lit by electric light! (How glad the seasick passengers must have been to say farewell to the old oil lamps.) Triple screws, steam turbines, "Bremen," "Mauretania" – the story goes on and is going on; but the rest I will leave you to find out for yourself, for it belongs to the age in which you live.

(6)

For Your Patrol Meetings

(1) Let each fellow in your Patrol spin a yarn about how he thinks the first man came to make the first boat.

(2) Your ship strikes a rock. You are given 10 minutes by the Captain to collect what you consider would be the most useful to you before taking to the boats and landing on a desert island. Omitting food, write down the six things you would choose.

Each fellow reads out his list and the Patrol talks each list over, and then votes for the best list.

(3) Play "ship-recognition" with the ships drawn for you on page 21 or by getting your Patrol to collect (and paste on cardboard or in a scrap book) as many pictures of all types of ships as you can.

(4) Quiz! or Find it out for yourself:

(i) How do you think our word "starboard" originated?

(ii) What ranks in the R.N, correspond to Flight Lieutenant, Squadron Leader, Wing Commander and Air Vice-Marshal in the R.A.F.?

(iii) What was a powder monkey?

(iv) How did an Englishman come to be called a "limey"?

(v) What does coloured cloth worn between the stripes on the naval officer's arm mean when the colour is orange? scarlet? white? dark green?

(5) Find out as much as you can and tell yarns about these famous ships: – "Golden Hinde," "Ark Royal," "Santa Maria," "Cutty Sark," "Mayflower," "Dreadnought," "Victory," "Revenge," "Discovery," and "Mauretania."

CHAPTER IV

SEA SCOUT MISCELLANY

(1)

The Rule of the Road

There was once a poet (J. B. Connolly) who wrote: –

"I love old Ocean's smile,
I love old Ocean's frowning;
I love old Ocean all the while,
My prayer's for death by drowning!"

but most of us, I think, would prefer NOT to be drowned! – and the avoiding of collisions will help towards this desirable end, and, as on land a "rule of the road" helps to avoid the collisions. Before you can avoid a ship you must be able to see her and a ship must carry certain lights – a steamship, for example, carries a white light at her fore-mast head, a green light on the starboard side and a red light to port. (Remember – port wine is red!) We'll get the artist to draw you a selection of ships carrying lights and you'll soon get the idea.

Now the rules of the road are simply these: –

(i) An overtaking ship gives way.

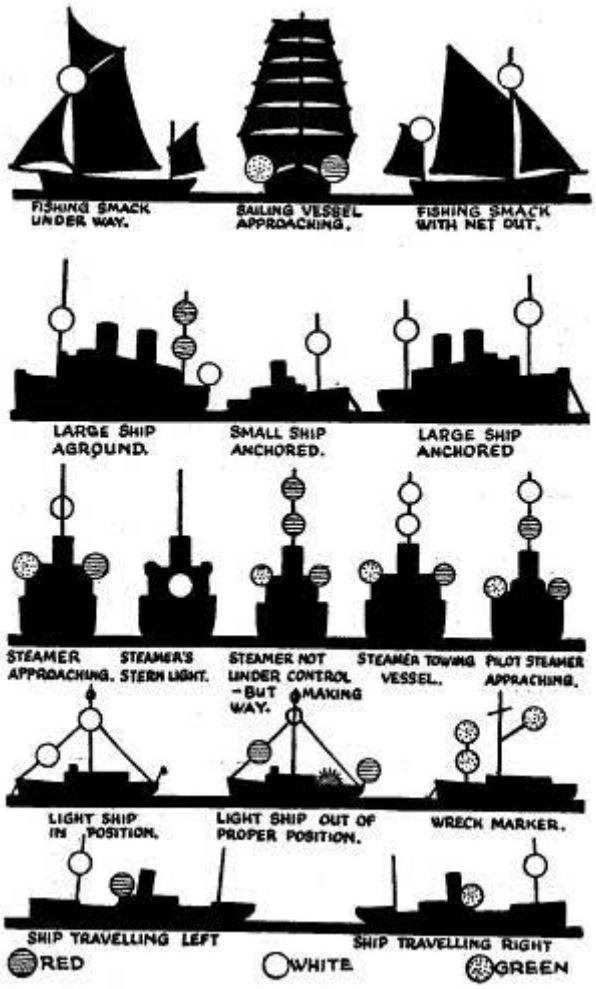
(ii) A rowing boat gives way to a sailing ship and a steamer gives way to both, except when sailing ship is overtaking a steamer.

And you should know these which apply to sailing ships only: –

(i) A vessel running free (i.e., with the wind abaft the beam) gives way to a vessel close-hauled (i.e., with the wind before the beam),

(ii) If both are free, or both close-hauled, the vessel with the wind on her port side gives way.

(iii) When two ships ate sailing on the same tack, the one to windward gives way.



And for steamships: –

(i) When meeting steer to starboard (i.e., keep to the right!).

(ii) When crossing, the green light gives way to the red (i.e., the vessel on the left gives way). Green to green, red to red. Perfect safety, go aheadl

And then there's fog! (or mist or falling snow or heavy rain-storms!). Signals are given by "steam vessels" on a whistle or siren and by "sailing vessels" and "vessels towed" on the fog-horn.

Vessel and Circumstance	Signal
Steam vessel having way upon her	Booo . . . ooh Every 2 minutes
Steam vessel under way but stopped	Booo . . .oooh, Booo . . . oooh every 2 minutes
Sailing vessel under way, on the starboard tack	Blaa . . . aah every minute
Sailing vessel under way, on the port tack	Blaa . . . aah, Blaa . . . aah, every minute
Vessel at anchor	Clangalangalang every minute
Vessel towing, not under control, towed or not able to manoeuvre	Booo . . oooh, Boo, Boo.

And when two vessels are in sight of each other:—

Message	Whistle or Siren
"I am directing my course to starboard."	Burp !
"I am directing my course to port."	Burp ! Burp !
"My engines are going full speed astern."	Burp ! Burp ! Burp'
"Get out of my way, I cannot get out of yours."	Burp! Burp ! Burp! Burp !

(2)

Buoys

Buoys, of course, signal to those *who* can read their meaning.

Buoys, generally, are used to mark navigable channels, sunken dangers such as sandbanks or rocks, telegraph cables and wrecks, while mooring buoys are means by which a ship can be secured without having to anchor. Buoys themselves have to be anchored to the bottom by a cable or cables: a certain amount of "slack" being allowed so that they can rise with the tide, but at the same time not swing too far out of position. When they are used for indicating the "fairway" or navigable channel leading to a port or harbour, buoys with a flat top showing above the surface, known as "can" or "staff and cage" buoys, are always placed on the "port" or left-hand side of the channel when entering, whilst those with a conical top, or "staff and globe" buoys, are always used on the "starboard" or right-hand side.

Buoys of each series must be painted a characteristic colour, port hand buoys being as a rule checkered and starboard hand plain colours, so as to be distinguished readily one from the other, irrespective of their shape. When a channel is divided into two by a sandbank or other obstruction, this is known as a "middle ground," and its two ends are indicated by "spherical" buoys, which are always distinguished by white horizontal stripes: the one at its inner end being surmounted by a triangle, and that at its outer end by a diamond-shaped structure.

Buoys at the same side of the channel may be distinguished one from the other by names, numbers or letters.

Those consisting of a tall central structure upon a broad "flat" are known as "pillar" buoys, and like all other special buoys such as gas buoys, bell buoys and automatic sounding buoys are so placed as to mark special positions or dangers. Gas buoys enclose a chamber containing compressed gas which gives a light, and requires recharging at infrequent intervals, but no other attention. Electric-light buoys are gradually coming into use: a turbine, operated by the movement of the water being connected with a dynamo which generates electricity. The so-called whistling buoy is operated by compressed air acted upon by the movement of the waves, while the bell buoy is kept in motion by the same means. The nun buoy indicates the position of an anchor after it has been let go; it is painted red for the port anchor, and green for the starboard.

Mooring buoys are of various shapes and sizes, but when marking telegraph cables they are always painted green with the word "telegraph" painted on them in white letters.

Wreck buoys are painted green with the word "Wreck" in white letters, and are usually placed to the side of the wreck nearest to the fairway.

(3)

Finding the Depth of the Sea

In spite of recent electrical inventions which simplify depth soundings for big liners and warships, the old method of sounding by log and line is still used in most ships to-day. The lead is 7 lbs., 14 lbs. or 28 lbs., according to the depth to be reached, and the line is marked at certain intervals, the markings being different so that they can be distinguished by sight and also by feel in the dark.

Fathoms from the lead	Marked off with a piece of :
2	leather with 2 ends.
3	leather with 3 ends.
5	white calico.
7	red bunting.
10	leather with a hole in it.
13	blue cloth.
15	white calico.
17	red bunting.
20	whipcord with two knots.

The fathoms above are termed "marks" and the fathoms not marked are termed "deeps."

If the vessel is stationary, you just lower the lead into the water until it touches bottom, but if the vessel is under way you must "heave the lead." You (the "leadsman") would stand by the shrouds, and with the coil in your left hand and the lead with a couple of fathoms of line hanging from your right hand, you give it a few preliminary swings to and fro, then swing it twice in a complete circle and finally launch it as far ahead as you can, so that the lead has time to sink and reach bottom before the vessel arrives at the spot. If it is 5 fathoms you sing out "by the mark 5"; if it is 9 fathoms you sing out "by the deep 9", and so on. But remember a good leadsman is only made by continual practice!

(4)

Time Aboard Ship

"Strike the bell eight!"

It would be difficult to estimate the number of times this order has been given for striking the bells on board ships to denote the passing of time. Long before the dawn of the Christian Era, men had gone to sea in ships, and, even previous to that, men had sailed on the inland waters of the great continents. The very earliest records of China depict stories of Chinese ships travelling up and down its great rivers.

Clocks, as we know them now, were not invented until the 14th Century. However, there were various ways of approximating time in the old days, including the sundial, the water clock, and the hour glass. On board ship it was not possible to use the sun dial or the water clock because those called for a solid foundation and steadiness. So it was necessary to use the hour glass for denoting the passage of time on board ship. History indicates that in the early days, on large ships, the emptying of the sand from the upper to the lower half of a so-called hour glass was announced by the striking of a gong in the central part of the ship.

Before the use of sails the passage of time was extremely important to the poor slaves in the days of the slave ships of Assyria and Egypt, and even in the time of the Romans and Greeks. It requires no stretch of the imagination to appreciate how welcome the sound of the gong must have been to the slaves who manned the oars of the biremes and triremes, the two and three-banked rowing crafts of the Greeks, Romans, and Carthagenians. They must have enthusiastically welcomed the sound of the gong informing them of the passing of time and approach of a rest period from their back-breaking work at the oars. The alternate work and rest periods were of variable duration, depending upon prevailing conditions. Certainly, less time was spent rowing against the wind and tide than when rowing with these elements.

In these very early days, sand passed from one half of the glass to the other in approximately one-half an hour, and a normal turn at the oars consisted of two shifts of the glass, that is, one hour of time. The gong was struck once at the end of the half-hour and twice at the end of the hour.

When the use of auxiliary sails came into being, the spell at the oars was extended over a longer time – four turns of the glass. This period of time was indicated by striking the gong four times, with an interval between the second and third strikes. When sails entirely superseded oars, the length of time that men were on watch (on duty) was extended up to eight turns of the glass, which corresponds to the present length of a watch, namely, four hours. To-day these watches are indicated by the striking of the ship's bell at half-hour intervals, thus making a total of eight bells for each watch. (It is common practice in Sea Scout Units to strike ship's bells throughout the meetings.)

The passage of time on board ship is now indicated by bells almost universally. It is interesting to note that official time on board English Naval vessels was recorded by hour glasses as late as the year 1859, in spite of the fact that all other nations had long since been using clocks.

To-day, the day of 24 hours is divided into seven watches, the three different methods of describing them are: –

0001 to 0400	midnight to 4 a.m. – middle watch.
0400 to 0800	4 a.m. to 8 a.m. – morning watch.
0800 to 1200	8a.m. to noon – forenoon watch.
1200 to 1600	noon to 4 p.m. – afternoon watch.

1600 to 1800	4 to 6 p.m. – first dog watch.
1800 to 2000	6 to 8 p.m. – last dog watch.
2000 to 0000	8 to midnight – first watch.

The purpose of the two dog watches is to make an odd number of watches in the 24 hours, thus giving the men different watches each day.

Time is denoted on board ship by striking a bell every half hour, the rule being: – One stroke of the bell at half-past four, half-past eight, and half-past twelve, one more stroke being added for each half-hour until eight strokes of the bell or eight bells are reached at four, eight, and twelve. The dog watches are different, 6.30 p.m. being one bell, 7 p.m. two bells, and 7.30 p.m. three bells, but eight o'clock is always eight bells. "Little one bell" is a light stroke struck five minutes after the beginning of the night watch, and calls the watch to muster.

(5)

The Plimsoll Line

The Board of Trade requires every British merchant ship to carry a mark known as the Plimsoll line, painted on both sides of the outside of the hull. This mark is designed to prevent overloading and shows to what depth the ship may be loaded in fresh water and in salt water, in different oceans, in different seasons, e.g., Indian summer is the line to which a ship can be loaded in the Indian Ocean during the summer months.

Mr. Hall, a Newcastle shipowner, felt that the unusual number of disasters at sea in his time was due to overloading, and by the co-operation of Samuel Plimsoll, M.P., he saw the much-needed reform become law in the Merchant Shipping Act of 1876. Watch out for the Plimsoll line whenever you see a merchant vessel!

(6)

Some Nautical Terms

Every Sea Scout must be familiar with the language of the sea, which often seems a little quaint to landlubbers, but which has grown up through the long years:

Blue Peter: Code flag to signal departure.
Back: A change in direction of wind anti-clockwise (W. S, E, N).
Veer: A change in direction of wind clockwise (W, N, E, S).
Beam: The greatest width of a ship.
Scupper: An opening to allow water to run off the deck.
Donkey-engine: A small deck-engine used for working the windlass, etc.
Patent-log: An instrument towed astern for ascertaining the rate at which a ship travels.
Bilge: The round of the ship's bottom near the keel.
Bilge-water; Water collected in the bilge.
Companion-ladder: Steps from above to cabin.
Davy Jones's locker: The sea bottom.
Galley: Kitchen. (Also a 6 or 8 oared boat.)
Hawser: a rope.
Hawse-pipe: The pipe through which the anchor-cable runs.
Larboard: Old term for port, which is the left-hand side looking from the stern toward the bows.
Lee side: The side opposite to that against which the wind is blowing.

Spar: Any mast or boom.
Yard: A spar across a mast. (The yard-arm is the end of a yard.)
Backstays: Rigging running from the masthead to the vessel's side, slanting a little aft.
Bobstays: Standing-rigging running from bowsprit to stem.
Brace: Rope used to swing a spar about.
Gaff: Spar to which head of fore and aft sail is bent.
Jury mast: Temporary mast rigged to replace one lost.
Painter: Rope at bows of a small boat to make her fast.
Ratlines: Light lines secured across the shrouds, forming a rope ladder.
Taffrail: The rail round a ship's stern.
Tonnage: There are four types: gross tonnage is the internal capacity of the vessel expressed in terms of 100 cubic feet; net tonnage is space used for cargo; deadweight tonnage is actual carrying capacity; displacement tonnage is the weight of the volume of water displaced by the ship.
Vang: Rope leading from a gaff to ship's side to steady the gaff.

CHAPTER V

CHART

(1)

For the Scout his map, for the Air Scout his air-map, and for the Sea Scout his chart!

A chart is simply a map of the coastline and sea prepared by the Admiralty after (of course) the most exact survey, giving details of the coast itself and the dangers near it and in the adjacent waters. The depths of the water are given, usually in fathoms, but sometimes in feet: these are the little figures that you notice on the part of a chart on another page. These figures give the depth of water at low water ordinary spring tides. Tides, as you probably know, are the daily risings and fallings of the sea, due to the attraction of the sun and moon on the waters of the earth. When the sun and moon are in line with the earth we get the highest tides, which are called spring tides; when the sun and moon pull against each other at right angles we get the lowest tides, which are called neap tides. It takes about 7½ days for a spring tide to reduce to a neap tide again. Tides occur twice in 24 hours 50 minutes approximately, that is the average time between two "high waters" is 12 hours 25 minutes. The difference in a high water level and a low water level (immediately following) is known as "the range of tide"; this varies from day to day, and it may be as much as 50 feet, while over most of the Mediterranean it is seldom more than 2 feet. "Slack tide" is the period of rest when the tide is about to turn; at most places on the coast the times of ebb and flow are roughly the same, but in estuaries the tide usually rises more quickly than it falls.

(2)

The chart has on it a number of horizontal lines which are called parallels of latitude, and a number of vertical lines which are called meridians of longitude. Now the earth is a sphere more or less: your chart is a flat surface – how do you show accurately then the one on the other? It is done by what is called a projection, which merely means an orderly method of showing the meridians and parallels of latitude on a flat surface. Most charts in use are on the Mercator projection; "Mercator" was an inhabitant of Flanders called Gerhard Kremer, and he published his method in 1556 – so it has stood the test of time. In this projection the top of the chart is

north, the bottom south, the right-hand side east, and the left-hand side west. On your chart the meridians are parallel to one another, but on a sphere they come together towards the poles, so you will see that actually on the chart they have been stretched apart, or, as we say, "distorted," and it becomes necessary to distort the parallels of latitude as well. Thus;

(i) Meridians appear as straight lines parallel to one another, the space between each pair being equal to the distance between meridians at the Equator. (This means that the length of a degree of longitude *appears* to be the same at any latitude, although in fact it isn't.)

(ii) Parallels of latitude appear as straight lines parallel to one another, the space between each pair increasing as either Pole is approached. (This means that a degree of latitude *appears* to increase as latitude increases, although in fact it is always the same, 60 nautical miles.)

The reason why all this is important for you is simply this: that you must measure distances on the scale of latitude which you will find in the margin of the chart opposite to your own position. Charts carry compass "roses" (as they are called) that show both true and magnetic directions, give the amount of variation and the annual change, and the date for which the rose is correct.

(3)

Charts use many "conventional signs" (or picture signs) and abbreviations with which you should become familiar: –

Miscellaneous:

An arrow with feathers on both sides denotes currents. And arrow with feathers on one side denotes flood tide stream.

A plain arrow with feathers on neither side denotes ebb tide stream.

No bottom at depth expressed below the line

Figures underlined on a bank denote the depth of water over it at H.W. or else the height of the bank above L.W.

$$\left.\begin{array}{l} = \frac{\cdot}{160} \quad \frac{\cdot}{480} \\ = \underline{3} \quad \underline{6} \\ = \underline{\cdot} \text{ or } \underline{\cdot\cdot} \end{array}\right\}$$

Note. – Whether the figures are to be understood as feet or fathoms will be indicated on the chart as well as which of the above methods has been adopted.

Conventional Signs

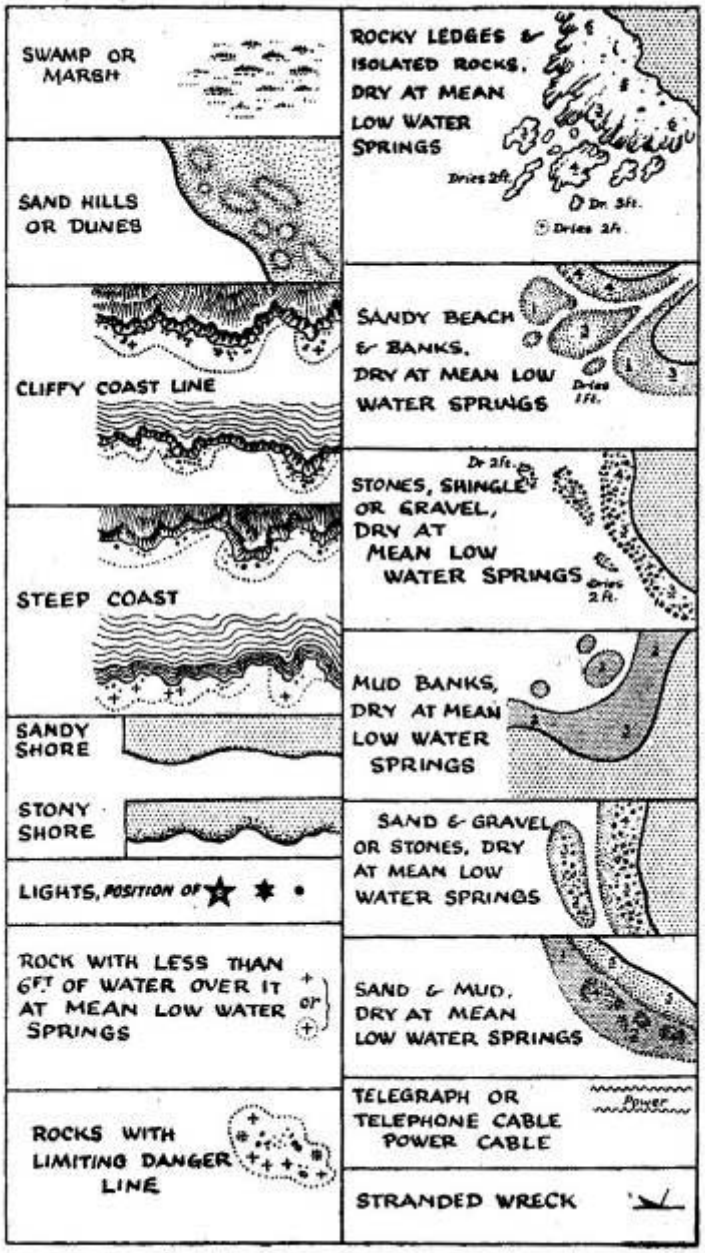


Chart Abbreviations

Relating to Colour:

b ..... blue	blk .... black	br ..... brown
d ..... dark	gn ..... green	gy ..... grey
w ..... white	y ..... yellow	spk .... speckled

Relating to Substance of Bottom:

cl ..... clay	m ..... mud	oys..oysters
crl ..... coral	r ..... rock	mrl..marl
peb ..... pebbles	s ..... sand	for ..foraminifera
shg ..... shingle	g ..... gravel	gl ... globigerina
sh ..... shells	oz ..... ooze	pt .. pteropod
st ..... stones	wd ..... weed	rad..radiolaria

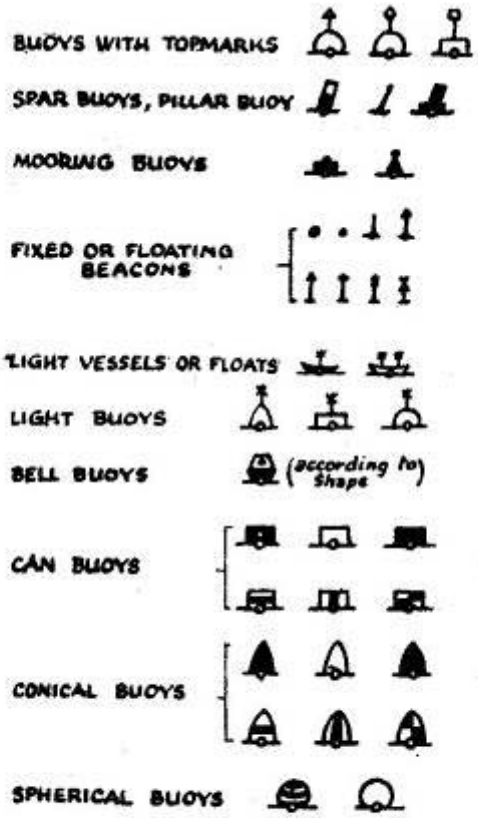
Relating to Nature of Bottom:

brk ..... broken	stf .... weed	sft .....soft
rot .....rotten	grd ... ground	c ..... course
f .... ..fine	h ..... hard	

General Abbreviations Used on Charts:

Alt ..... Altitude
Anchge..... Anchorage
B ..... Bay
B ..... Bank
Bn ..... Beacon
Bar ..... Barometer
Baty ..... Battery
C ..... Cape
Cr ..... Creek
Ch ..... Church
C.G. ..... Coastguard
Cath ..... Cathedral
Chan ..... Channel
Cold ..... Coloured
E.D.....A rock or shoal reported whose existence is doubtful.
Ft ..... Feet
F.S. ..... Flag Staff
Fms ..... Fathoms
Kn ..... Knot
G ..... Gulf
Gt ..... Great
H ..... Hour
Hd ..... Head
Ho ..... House
Hr .....Harbour
H.W. ..... High Water
H.W.F. & C..... High Water Full & Change
I ..... Island
Is ..... Islands
L ..... Lake
L.B. ..... Life Boat
Lt ..... Light
L.S.S...Life Saving Station
Lat ..... Latitude
Long ..... Longitude
L.W. ..... Low Water
Np ..... Neaps
Magz ..... Magazine
Magc ..... Magnetic
Mt ..... Mountain
Obsn Spot ..... Observation Spot
P ..... Port
Pk ..... Peak
Pt ..... Point
R ..... River
Rf ..... Reef
Rk ..... Rock
Sh ..... Shoal
Sp ..... Springs
Sd ..... Sound
Stn ..... Station
Stt ..... Strait
Tel ..... Telegraph
Therm ..... Thermometer
Vil ..... Village
Varn ..... Variations
W. Pl. .... Watering Place

P.D.....A danger known to exist, but its position is doubtful.



Abbreviations Used to Denote Colour of Buoys:

B ..... placed near a buoy ....Black
Cheq ..... ,, ,, ,, ...Chequered
H.S. ..... ,, ,, ,, ...Horizontal Stripes....
R. ..... ,, ,, ,, ...Red .....
V.S. ..... ,, ,, ,, ...Vertical Stripes
W ..... ,, ,, ,, ...White

Anchorages:

Anchorage for large vessels is shown by an anchor with two flukes.

Anchorage for small vessels is shown by an anchor with one fluke or by a kedge anchor.

Sounding Lines:			Fathom lines
Single dots thus :	- - - - -	=	1
Dots in pairs thus :	-- -- -- -- -	=	2
Dots in threes thus :	--- --- --- --- -	=	3
Dots in fours thus :	---- ---- ----	=	4
Dots in fives thus :	----- ----- -----	=	5
Dots in sixes thus :	------ ------ ------	=	6
Lines and dots thus :	—- —- —- —-	=	10
Lines and pairs of dots thus :	—-- —-- —--	=	20
Lines and threes of dots thus :	—--- —--- —---	=	30
Continuous dots thus :	----------	=	100

CHAPTER VI

THE WEATHER

(1)

Do you know the song "It always rains before the rainbow?" You do? That's as well, because it's time you started keeping a weather log. It doesn't need much of a brain (which is just as well, too!) to realise that weather is an important matter to most men, and especially to seamen, who in the old days more than any men had to watch the skies, the moving clouds and the veering winds. And any who go upon the face of the waters must know how to read the weather signs. For this the best discipline for you young sea-dogs is to keep a log, a weather log, because this will get you into the splendid habit of observing the weather. So get for yourselves a third fat sturdy note-book and rule it out like this: –

Date	Direction	Wind Force	Cloud	Temperature	Barometer Reading	Inches of Rain	Hours of Sunshine	Additional information	Forecast

And here are some notes to help you:

(1) *Wind.*

You must record (a) the direction the wind is blowing *from*, and (b) its force. The first necessitates an accurate knowledge of the points of the compass which (I hope) you already have. Then to help you to estimate wind force fairly accurately. Admiral Sir Francis Beaufort in 1805 devised a scale (known as the Beaufort scale); it consists of a scale of numbers ranging from 0 to 12 "based upon the amount of sail that a well-conditioned man of war could carry in wind of various forces."

Beaufort Number	Limits of Velocity in Knots	Mean equivalent pressure in pounds upon a circular disc of 1 square foot	Descriptive Terms	Coastal Criterion
0	Less than 1	0	Calm	—
1	1-3	·01	Light air	Sufficient to give good steerage to fishing smacks with the "wind free."
2	4-6	·08	Light breeze	Fishing smacks with topsails and light canvas, "full and by," make up to 2 knots.
3	7-10	·28	Gentle breeze	Smacks begin to heel over slightly under topsails and light canvas; make up to 3 knots "full and by."
	11-15	·67	Moderate breeze	Good working breeze. Smacks heel over considerably on a wind under all sail.
	16-20	1·31	Fresh breeze	Smacks shorten sail.
	21-26	2·3	Strong breeze	Smacks double-reef gaff mainsails.
7	27-33	3·6	Moderate gale	Smacks remain in harbour and those at sea lie to.
8	34-40	5·4	Fresh gale	Smacks take shelter if possible.
9	41-47	7·7	Strong gale	—
10	48-55	10·5	Whole gale	—
11	56-65	14·0	Storm	—
12	Above 65	Above 17·0	Hurricane	—

(2) *Cloud.*

Clouds are classified as follows, the letters in brackets being the abbreviations you may use hi your logs: –

(i) Cirrus (Ci.). Light wispy clouds, delicate and feathery pencilled in on a blue sky. ("Mare's tail") cloud is an example. 25-30 thousand feet.

(ii) Cirro-cumulus (Cc). Small white flakes of cloud or sometimes in the form of ripples like those on a seashore ("mackerel sky"). 20-25 thousand feet.

(iii) Cirro-stratus (Cs). Whitish, veils of cloud, giving the sky a milky appearance; this type of cloud causes halos round the sun or moon, 20-30 thousand feet.

(iv) Alto-cumulus (Ac). High masses of clouds, sometimes as though row on row. 6,500-20,000 feet.

(v) Alto-stratus (As). Greyish veil of cloud through which sometimes sun (or moon) can be dimly seen. 10-25 thousand feet.

(vi) Strato-cumulus (Sc). Rolls of dull grey cloud often with blue patches between. Banks of cloud 2-4 thousand feet.

(vii) Stratus (St). Low layers of darkish cloud. 500-2,500 feet.

(viii) Nimbo-stratus (Ns.). Low, gloomy-grey rain or snow clouds. 500 feet and upwards.

(ix) Cumulus (Cu). Thick heaped masses of cloud, often with bright edges ("fine weather" cloud). Base height 2,000-3,000 feet and upwards.

(x) Cumulo-nimbus (Cb). Masses of cloud heaped above dark rain clouds ("thunderstorm" cloud). Top at 21,000 feet or higher. Base about 3,000 feet, down to 100 feet over sea.

There is no short cut to cloud recognition: only diligent and continual *observation* of the sky's face. A book you would find helpful (and delightful to have) is "Clouds," by C. J. P. Cave, published by the Cambridge University Press. The 1943 edition has grand photographs.

(3) *Temperature. (First find your thermometer!)*

The two commonest types of thermometer are Fahrenheit (freezing point 32° F.; and boiling point 212° F.) and Centigrade (freezing point 0° C., and boiling point 100° C.). The Fahrenheit is usually used by meteorologists and by householders, but the Centigrade, being easier to read under difficult conditions, is better for aeronautical instruments. This formula F.= 9/5 C.+32 will turn Centigrade readings to Fahrenheit readings; this formula C. = 9/5 F.-32 will turn Fahrenheit to Centigrade.

By the way, don't forget to record the temperature readings for your log at the same time each day, and of course your thermometer must be outside!

(4) *Barometer Reading.*

The earth is surrounded with a layer of air some 200 miles in height; this "atmosphere" is divided into two parts:

(i) The Troposphere (don't be afraid of a new word!) In this the temperature continues to fall as the height increases. But there comes a point when this ceases, when the temperature no longer falls with increase of height; and this is called – now, ready? – the Tropopause. This region is some six miles up over the poles and some eleven or twelve miles up over the equator; but these figures are *very* approximate. Beyond this we have –

(ii) The Stratosphere, which hasn't any "weather." Now the atmosphere is held in place by the law of gravity and, of course, exerts a pressure on the earth's surface. The pressure varies, but is about 14½ lbs. per square inch. Atmospheric pressure is measured by means of a barometer. You'll probably have to use an aneroid barometer, and you will have to read the pressure in "millibars." And what *they* are I haven't room to tell you in so small a handbook; but somewhere in your Troop programme should be a series of yarns about all this – you can always find an expert if you look round for one, and they're usually only too willing to help any fellows who *really want to know.*

But to help you with your Weatherman's Badge (which you're now working at – didn't you know?) I'll add one or two more facts: –

(i) On weather maps points of equal barometric pressure are joined by lines, and these are called ISOBARS. You know perhaps that when contour lines are close together there are steep slopes and when they are wide apart there are gentle slopes. So with isobars; isobars close together indicate that the air-flow is rapid, i.e., that the wind is strong; isobars very far apart mean that the air-flow is gentle, i.e., that winds are light.

(ii) Wind is the movement of air from areas of high pressure to areas of low pressure; but it doesn't go directly from one to the other owing to the earth's rotation, and it has been found that in the northern hemisphere it is deflected to the right and in the southern hemisphere to the left. Buys-Ballot's Law, formulated by Professor B-B. of Utrecht in 1853, states: "If, in the northern hemisphere, you stand with your back to the wind, pressure is lower on your left hand than on your right; in the southern hemisphere the reverse is true."

If you study weather maps you will often find places where the isobars are joined, enclosing a shape which is usually roughly oval or circular. If these isobars enclose a low pressure area you have a "cyclone" or "depression" or a "low," and you'll have some rain. If these isobars enclose a high pressure area, you have an "" anti-cyclone" or "high," which in summer generally bring periods of fine quiet weather, with clear skies at night and ground mist in the morning; in winter a "high" brings either fine cold frosty nights, and the frost may continue all day, even with bright sunshine, but fog often spoils this. Sometimes a "high" brings grey cloudy and rather mild days in winter. All Sea Scouts should understand weather maps; it's worth a bit of real hard work!

(5) *Dew, Mist, Fog, Hail, Snow, etc. (or English Climate!).*

The atmosphere contains a certain amount of water vapour, and when we're talking about it we talk of the "humidity" of the atmosphere. At any temperature there is a definite maximum amount of water vapour that a certain mass of air can be made to hold; and when it has it all, the air-mass is said to be "saturated." It will also hold more water vapour if the air-mass is warm than if it is cold.

Now, supposing the air-mass containing *some* water-vapour (but not its maximum amount) is cooled, a temperature would be reached at which the air-mass *would* become saturated (since as it cools it can't hold so much water-vapour). This temperature is known as the *dew-point.* Any further cooling beyond the dew-point causes some-of the water-vapour to appear as dew, or cloud, or rain, or frost, or mist, or fog, or snow.

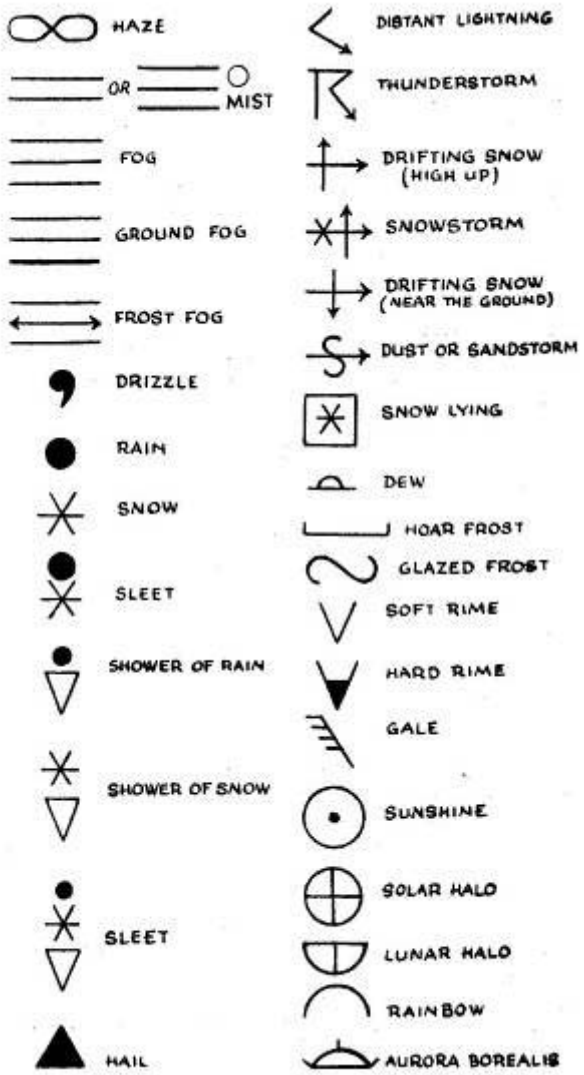
(i) *Dew* is found on roofs, roads, etc., on summer mornings, and appears owing to the earth cooling during the night and thus causing water-vapour to condense from the

lower layers of air. Dew also forms readily on grass and other plants; in this case the dew is the moisture out of the plants, condensed by the cold air as it comes out.

(ii) *Mist* consists of fine drops of moisture suspended, that is, hanging, in the air. It probably condenses on tiny dust particles when the lower layers of the air became cooled. (Mist occurs when visibility is less than 2,200 yards, but more than 1,100 yards.)

(iii) *Fog* is caused by a further fall in temperature when there will be greater condensation. (Fog occurs when visibility is less than 1,100 yards.) These are called "radiation fogs," and are formed generally between sunset and sunrise, and occur mostly in autumn and whiter. (The "pea soup" fogs of London and our large towns are caused by the condensed drops absorbing the carbon particles, etc., which are sent forth in the smoke from many chimneys; the smoke doesn't cause the fogs; it causes the blackness.)

(iv) *Clouds* are formed when condensation takes place at height, and the varying cloud-hues are caused by the degree of condensation. If condensation takes place at temperatures below the freezing point, the cloud-formation will be composed of feathery ice crystals which will fall as *snow*.



(v) *Hail* is caused by waterdrops which have been condensed at a temperature above freezing-point, and have then been whirled up by ascending currents of air, where they contact ice crystals which freeze on to them. When they are heavy enough to overcome the ascending currents they descend as hailstones.

(vi) When the dew-point is lower than 32° F. the water-vapour condenses in the form of *frost.*

(6) *forecasts and Weather Maps.*

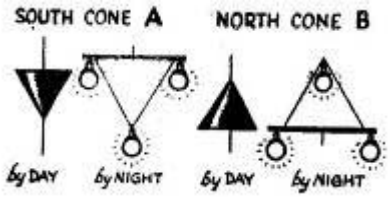
Forecasts are carried out by means of weather maps, and weather maps are made from information given by "meteorologists," i.e., weather experts, who, stationed at various parts of the country (or of the world for that matter) observe their local conditions just as you are doing, though with more knowledge than you have as yet, and with more accuracy than you can obtain! These observations made at certain fixed hours of the day and night are sent (using Beaufort wind arrows, letters and symbols and isobars) to a central headquarters, where they are combined to make a complete weather map for the whole area.

Now you will see that your forecasts, unaided by precise instruments or other observers, will be rather rough and ready. But observation of wind and cloud and temperature and pressure with experience will help you to become reasonably expert; for example, a rapid fall in the barometer would lead you to suspect that a fast-moving depression was on its way! Don't of course rely on popular sayings about the weather: forecasting is a scientific process based on observation and knowledge. So beware of believing in St. Swithin or of such phrases as "February fill dyke"; actually February is one of the driest months in the year in the British Isles! A red sky at night may always be the sailor's delight, but it certainly doesn't always foretell a fine morrow. The trouble with all these weather superstitions (and that is what they are) is that people are apt to remember the times when they appear to come true and conveniently forget those other times when they don't! Remember saying a thing often doesn't make it true, so forget all weather verses and proverbs and rely on your powers of observation and the knowledge you acquire.

Finally, remember all Sea Scouts should be "weather-minded"! You should practice each morning making forecasts from your own observations – of clouds, *changes* in wind direction, and whether the barometric pressure is rising or falling. And I hope the day will come when you will understand all about cold fronts, warm fronts, wedges, cols, depressions, cyclones, and all the rest. Here's something for you to look forward to study in some of those winter evenings when you are a Senior Sea Scout.

(2)

Gale Warnings



When you see a gale warning signal this is what it means: –

(i) The Meteorological Office has sent a telegram to the place concerned telling them that a gale is expected in that neighbourhood.

(ii) If you see the South cone (or the lights corresponding to it) it means that the gale is expected from the S.E. (veering to S.W., W. or N.W.), or from the S.W.

(veering to W. or N.W.), or from the W. (veering to N.W.), or from the E. (veering to S. or S.W.).

(iii) If you see the North cone (or the lights corresponding to it) it means that the gale is expected from the S.E., N.E. or E. (backing to N.), or from the N.W. (veering to N., N.E. or E.), or from N. (veering to N.E. or E.), or from N.E. (veering to E.).

(iv) You have been warned that bad weather is *probably* approaching you, and you'd better be on your guard.

(3)

For Your Patrol Meetings

1. Quiz, or find it out for yourself: –

(i) Why does a sailor's collar have three rows of tapes?

(ii) Whose ship flew the signal: "Follow the flagship and ask no questions"?

(iii) Who sent 32 wagons of treasure to London after what historic voyage?

(iv) What is meant by "catching a crab"?

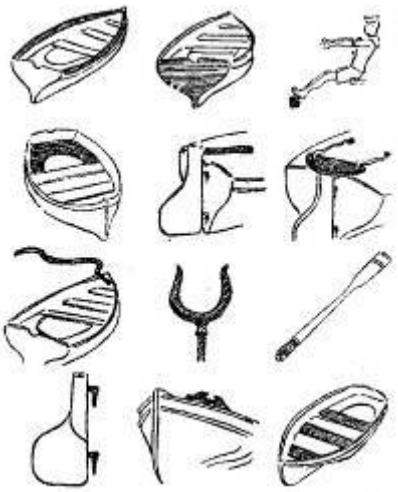
(v) You sight a white light at sea: can you suggest five things it might mean?

2. Try some speed knotting. Here's a standard for your Patrol to achieve: (i) Make seven clove-hitches over post in 20 seconds; (ii) bowline around own waist in 5 secs.; (iii) bowline behind back in 6 secs,; (iv) bowline around another's waist in 10 secs.; (v) join three lengths of rope together with sheet-bends in 15 secs.

3. Make up your own Patrol code of signals like this. Write out the alphabet along the page and down the page, and draw lines thus: –

	A	B	C	D	E	F	G	H	etc.
A								5	
B		1							
C				2					
D					3				
E							4		
etc.									

Then BB (1) might mean "Tea's ready," CD (2) "Go home," DE (3) "Guests aboard," EG (4) "Have you any matches?" and so on. It shouldn't be taken too seriously, but a few Patrol secrets are always worth while.



4. Copy these sketches and paste them on rather larger cards. They can be used to teach Tenderfoot Scouts, or for relay races. (This is another idea from the Walsall Sea Scouts.)

5. Each fellow brings his torch, two being transformed into green and two into red lights. Each in turn

arranges some of the torches, to represent the lights of a vessel. The others write down the answer.

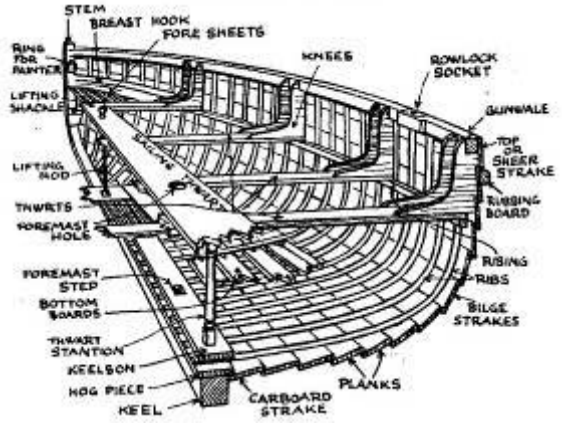
(Don't forget to warn the Patrol one week to come prepared for this the next week.)

CHAPTER VII

BOAT

(1)

The Parts of a Boat

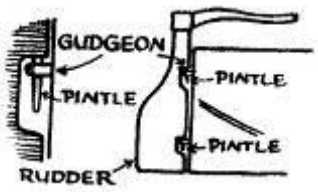


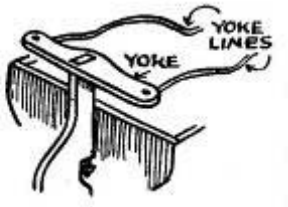
Apron. A piece of English elm fitted on the inside of the stem, shaped to take the run of the planks and to which the ends of the planks are secured.

Bottom Boards. Are pieces of wood fastened together and laid over the bottom of the boat as a flooring.

Bow. The fore end of the boat.

Cleats. Pieces of wood or metal secured to the sides of the boat for belaying sheets and halyards to.





Counter. The overhanging portion of the stern.

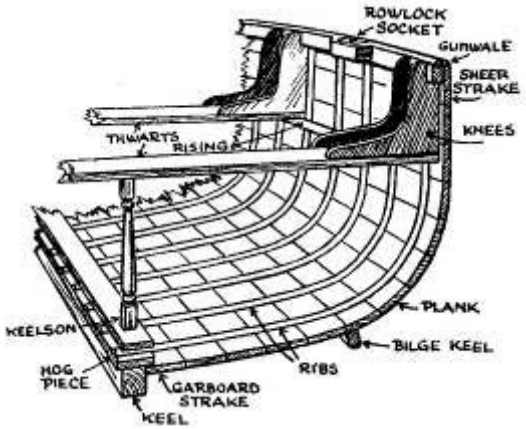
Deadwood. A piece of oak worked into the fore and after end of the hog, strengthening the junctions of the stem and stern posts with the keel, and to which the lower plank ends are fastened.

Garboard Strake. The first range or strake of planks laid upon a boat's bottom next to the keel throughout the whole length of the boat. The edge of this plank is let into a groove in the side of the keel, which is called the rabbet of the keel.

Gudgeons. Eyes which slip over the pintles, which are usually on the boat, the gudgeons being on the rudder.

Gunwale. A square piece of wood running round the inside of the boat at the top.

Hog Piece. A piece of Canadian elm worked on and secured to the inside of the keel from fore dead-wood to after deadwood, and to which the garboard strake is fastened, as well as the floors and timbers.



Keel. The lowest part of the boat; it forms the backbone on which the boat is built.

Keelson. A piece of wood at the middle line of the boat, running along on the top of the hog and above the door; it extends for about two-thirds of the length of the boat, to which the mast steps are secured, and into which the thwart pillars are stepped.

Knees. Pieces of wood grown to the shape required, and used for securing the thwarts to the sides of the boat.

Mast Step. A piece of wood secured to the keelson into which the heel of the mast steps.

Mast Clamp. A metal fitting attached to the thwart for securing the mast.

Painter. A piece of rope spliced into a ring secured to the apron and stem of a boat; used for making the boat last.

Pintles. Vertical pins on which the rudder ships and turns. (See Gudgeons.)

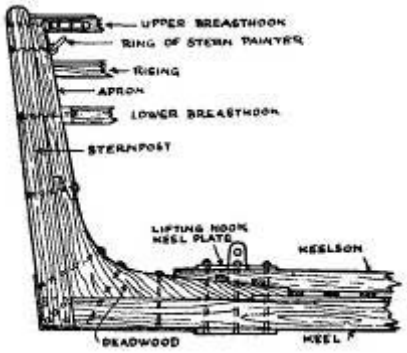
Risings or Stringers. Are the pieces of wood worked fore and aft the boat on each side to take the ends of the thwarts.

Rowlocks. Spaces cut in the boat's washstrake to work the oars in.

Rudder. Either of wood or metal, hung on the stern post, by means of which the boat is steered. It is fitted with a lanyard which is sometimes secured to the boat.

Running Hook. A hook fitted in the bow of the boat, to which the tack of the foresail is shifted when running.

Shutters. Are pieces of wood which fit into the rowlocks spaces. They are shipped whenever the oars are not being used, except when the boat is hoisted as a sea boat. They are fitted with lanyards. Though shutters is the correct designation of these fittings, they are referred to as Poppets.



Stern. The after end of the boat.

Stern Post. Is the after continuation of the keel, scarfed into the same, on which is hung the rudder by means of pintles and gudgeons.

Stern Sheets. Is the platform extending from the after thwart to the athwartship stern bench.

Stretchers. Pieces of wood laid athwart the bottom boards and fitting into cleats, against which the oarsmen place their feet.

Tack Hook. A metal hook on the stem for hooking the tack of the foresail to.

Thole Pins. Pins, often wooden, shipped in the gunwale of a boat instead of a rowlock, to work the oars with.

Thwarts. Benches fitted across the boat on which the oarsmen sit,

Tiller. A long piece of wood or metal fitting into the rudder head for working it.

Transom. A board fitted to the after side of the stern post to which the after ends of the side planking are fastened.

Yoke. A crosshead of wood or metal shipping on the rudder head, to which yoke lines are attached for working the rudder.

(2)

Sails

"Square-rigged" means that the centre of the "yard" lies across the mast; "fore-and-aft-rigged" means that the yard or boom is fastened at one end to the mast, so that the whole sail will extend to either side of the mast.

The parts of a sail are: –

Head. The upper edge of a sail.

Luff. The foremost edge of a sail.

Leach. The after edge of a sail.

Foot. The lower edge of a sail.

Roach. The curve in the foot of a sail.

Throat or **Knock.** The upper foremost corner.

Peak. The upper after corner.

Tack. The lower foremost corner.

Clew. The lower after corner.

Cringles of various sizes are worked into the corners of the sails, and at each end of each reef.

Eyelet-Holes are worked into the head of sails, for bending the sails to the yard or gaff.

Reef-Points. Are pieces of line worked into and through the sail for stopping up reefs.

The roping of a fore-and-aft sail is always on the port side.

By the rigging we mean everything on a ship connected with the masts; the yard, the sails, and the ropes that hold the masts and sails and yard together.

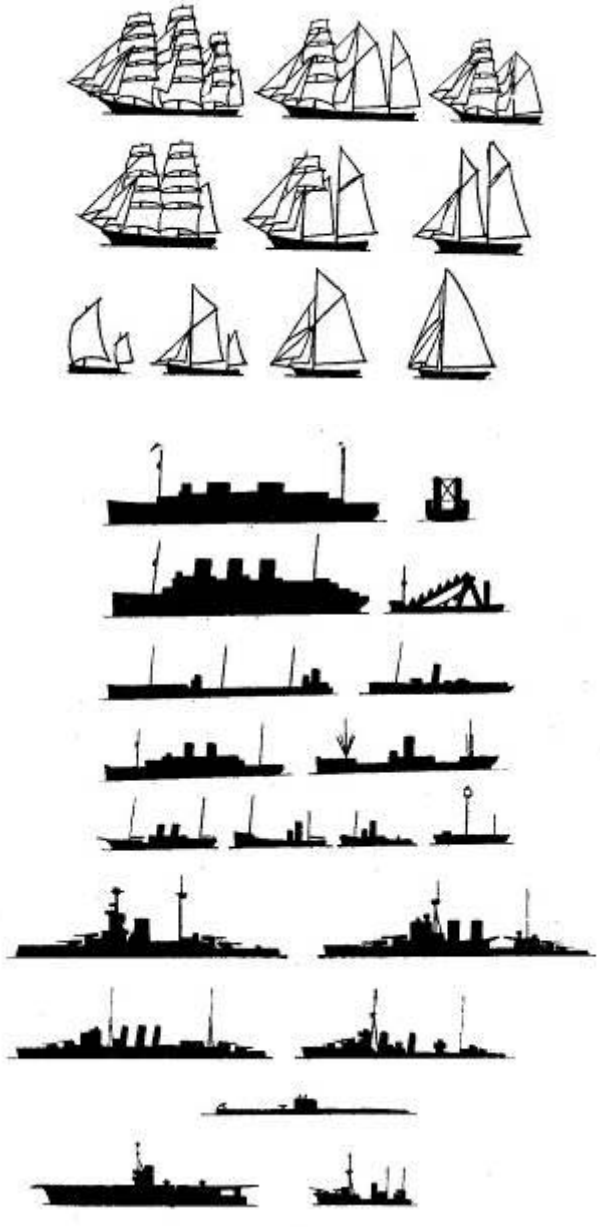
Stays are ropes that connect the mast with the bow sprit and the deck; shrouds are heavy ropes that run from the masthead to the sides of the ship to support the mast and enable the sailors to climb to the yards and handle the sails. I think a three-master will be enough for us to consider. The three masts are the fore-mast, the main-mast and the mizen-mast. Each mast is composed of several parts; the lower mast (nearest to the deck), the top mast (which is really the central part), and the top gallant-mast. If a mast consists of four pieces, the piece

above the top gallant-mast is known as the royal mast; a fifth piece would be known as the skysail mast!

Rigging is divided into two types: (i) Standing rigging, or all ropes of a stationary nature, such as shrouds, stays, etc.; and (ii) running rigging or all hauling ropes.

(3)

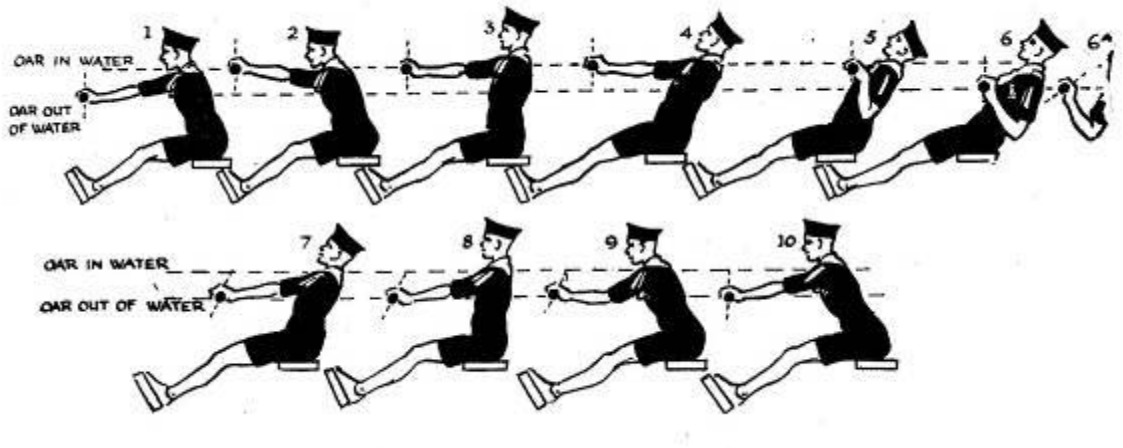
Ship Recognition



(4)

Now you're going to start to row. See that the boat is properly trimmed, that is with your weight the right distance from bow and stern, so that the stern isn't higher than the bow, and the bow isn't higher (anyway more than two or three inches) than the stern.

You must brace your feet against the "stretchers" – and see that these are happily placed to suit your size, neither too far, so that you have to imagine you're on a rack to reach them, nor so near that your knees are all bunched up. So adjust your stretcher.



You hold your oar (if you're one of a crew in a gig or a whaler) with both wrists on top of the "loom" (or "handle"), the hands being a few inches apart. *Don't* have one wrist over and the other wrist under the oar. Sit well up, with a fine straight back. Now there are four parts to a complete stroke: –

(i) Putting the blade in 1he water ready to start the pull.

(ii) The sweep of the blade toward the stern to give headway.

(iii) Raising the blade out of the water and turning it flat.

(iv) (iv) Swinging the oars back to position for the next stroke.

Now your coxswain will give you (as a member of a crew) certain orders, which will come something like this: –

"OARS READY" or "OARS ON THE GUNWALE." You "ship" your crutch – to ship in this sense means place it ready for use – and place your oar ready in it.

"SHOVE OFF, BOW." Bowman does so.

"OUT OARS." You run the oar nearest to you through its crutch and take the loom of your own oar.

"GIVE WAY TOGETHER." You stretch forward as far as you can, arms straight, wrists straight, with the blade of your oar now vertical. You dip your oar – not too deeply, but so that you are still able to see a little of the blade clear of the water. Keep your arms straight until you pull, when you bend your arms with your elbows tight into your ribs. Now lower your hands to bring your oar out of the water. Turn the blade flat to the water's surface again to "feather." Shoot your hands out straight in front, and bend your body forward. Now you're ready to be off again.

Of course, the only way to learn to row is to go and do it! But you may as well remember these points: –

(i) Don't put your blade too deep in the water,

(ii) Keep your hands about level, as though they're in a groove.

(iii) Always look aft – don't watch the blade of your oar.

And there are one or two more orders you should understand: –

"BOW!" This will be given when your boat is some 50 yards from the landing-stage or your guard ship. The bowman lays his oar on-board between the oarsmen. He stands ready with boathook or painter.

"WAY ENOUGH!" You pull *one more stroke,* then lean back, let your oar go fore and aft, and so let it trail.

"BOAT YOUR OARS!" Lift your oar in, and "boat" it (i.e., stow it in its usual place when it is not being used), blade aft. You *may,* in an emergency, get a definite order.

"TRAIL OARS." You obey this *at once* (not waiting one stroke) by swinging your loom backward over your head, so that the blade comes into the side of the boat.

"HOLD WATER ALL" (or "PORT" or "STARBOARD"). To check the way on the boat.

"BACK TOGETHER" (or "BACK, PORT," etc.). For manoeuvring in confined places.

Sea Scouts in boat work have to be alert, quick to obey and well-disciplined. They are smart and proud of it. Don't let them down!

(5)

You ought to be able to scull a boat over the stern, and I hope you can go straight off and have a try in a dinghy belonging to your Troop. If your dinghy hasn't got the necessary notch in the transom, arrange for one to be provided!

Face aft, feet well apart, hold the oar with both hands, with the wrists under the oar and the thumbs towards you. Make the strokes without pause, your hands describing a horizontal figure of 8. Let the wrists work loosely, acting merely as hinges, pulling the hands after them as the strokes are made. If the wrists are allowed to act in this way – as hinges – the blade of the oar will twist naturally at the end of the stroke, and assume the correct angle for the return stroke. But go and do it – and you'll soon learn.

(6)

Constructing a Ship in a Bottle

The following method is that used by Dick Laws, a Newcastle Scout: –

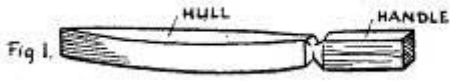
Tools. Penknife, file, sandpaper. Fine drill (made from pin or needle filed square), tweezers and wire,

Materials. Soft wood (pine), bottle, paints, brown thread, glue, putty, lime blue (from any painter or decorator).

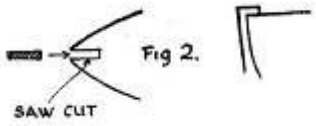
The bottle should have a fairly narrow neck, as this makes the finished article look more effective. The best bottles are the three-sided ones.

A full-rigged ship with all sails set looks best, and is most difficult to make. It is best to start on an easier type, such as a cutter; then, having mastered the method of "bottling" it, more difficult kinds can be made, following the same general principles.

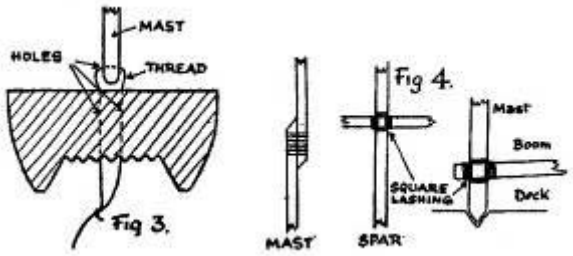
The hull must be modelled first. The shape depends on the type of ship it is to represent, but it must slide easily through the bottle neck, allowing for the sails and rigging. In carving the hull it is best to leave a piece of wood as a "handle."



The underside of the hull is hollowed out slightly so as to grip the "sea" of putty. The cutwater is best made separate and slotted into the bows. The bulwarks can either be carved out of the solid or pinned on as strips. A little sheer on the hull gives the boat a *more* seaworthy and buoyant appearance. The "handle" can now be cut off and the hull sandpapered smooth and painted. The deck fittings are glued on. Hatches can be made of thin cardboard squares painted brown.



The ship is now ready for rigging. The masts and spars are shoped from pine – match sticks are not really strong enough. The masts are hinged. Two holes are drilled through the hull, one on each side of the mast and another hole through the mast itself. A length of thread is run through these. The bottom of the mast is cut to a wedge shape and the point of this fits into a small groove cut into the deck at right angles to the length of the hull.



The spars and boom are fixed on with brown thread and a touch of glue.

The actual rigging is tricky. It is best to wax the thread first to make it easy to handle.

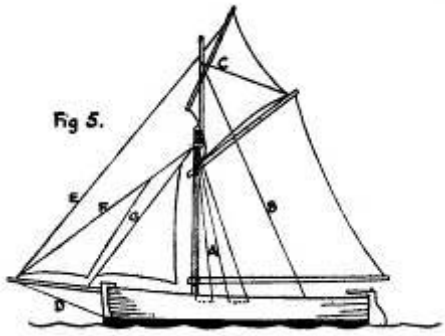


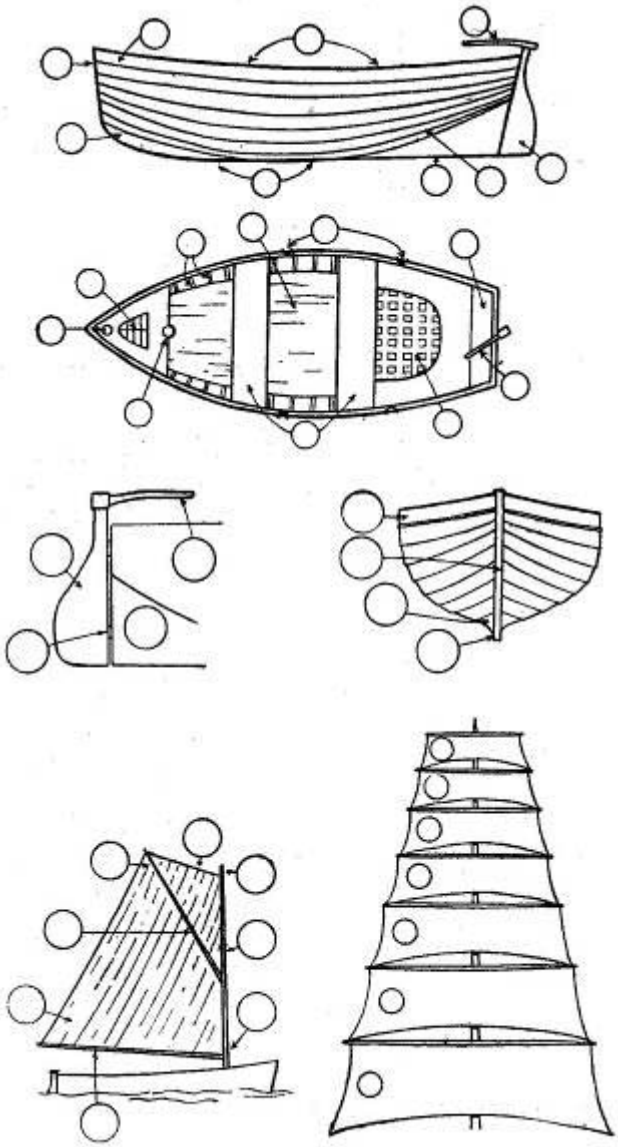
Fig. 5 shows the rigging of a cutter.

The threads A, B, C, D are made fast, through drilled holes. The threads A are made from one piece of thread. The other threads E, F and G must be left fairly long. A slit is made in the bowsprit, and after passing the threads E, F and G. through holes drilled in the bowsprit, they are pulled into it.

Fig 6.

The rigging is now quite taut and should be complete.

The sails are cut from stiff paper and glued on to the spars. The seams are marked in pencil. With a little care the sails can be made to look as though they are catching the wind. A flag can be attached.



The threads should then be pulled out of the slit and the mast collapsed backwards.

The boat is now ready for bottling.

Some putty is then mixed with lime blue to colour it, and is put into the bottle, bit by bit, in rolls. With the aid of a piece of bent wire waves can be created.

The ship, with sails rolled so as to take up as little room as possible, is placed in the bottle stern first. Care must be taken that the sails do not get marked by the putty. They can be cleaned, if necessary, with a piece of cotton wool soaked in turps and tied on to a piece of wire.

The mast is pulled up by means of a piece of bent wire, and the threads E, F and G pulled tight and placed in the slit. The wedge at the bottom of the mast should fit into the corresponding groove in the deck. The thread forming the hinge is pulled tight and buried in the putty, and the hull is pressed down so as to grip the putty.

A touch of glue is applied to the threads in the slit. When this dry their loose ends are cut off with a piece of razor blade mounted in a split stick.

A buoy may be put into the "sea."

White tops are put on to the waves with a wire dipped in white paint.

Any marks on the sides of the bottle are removed with turps. The bottle is placed in a cool oven so that the oil the putty may evaporate.

The battle is corked, the cork cut off flush with the mouth of the bottle, and about 1 in. of the neck painted black. If the bottle is not three-sided, it may be mounted on a wooden stand.

(7)

For Your Patrol Meetings

1. Make a model of one of the ships illustrated in this chapter.
2. Name the parts of a boat and sails on the previous page and rigs on page 40.
3. Draw sketches like those on cards and cut out small discs numbered 1 to 9 or 1 to 10, etc. The game is to put the numbered discs in the right positions on the sketches according to the key, which should be read out by the P.L.
4. Quiz, or find out for yourself:
   (i) What is the difference between a seam on a bag and a seam on a boat?
   (ii) What are the badges of rank of an Admiral, a Vice Admiral, a Rear Admiral, a Commander, a Captain Royal Navy?
   (iii) What "milestones of Scouting" were reached in 1916, 1918, 1920, 1929, 1932?
   (iv) What were Nelson's three great victories?
   (v) Who (and when) discovered Canada, New Zealand, Hawaii, Pacific Ocean, the North Pole?
5. Each member of the Patrol brings three pictures of different ships, cuts them each up into half a dozen pieces, mixes them in an envelope, and passes the envelope to his neighbour. At "Go!" the Patrol race to sort out the jigsaw pieces and put the three ships together.

6. Discover for yourselves the ships on pages 40.

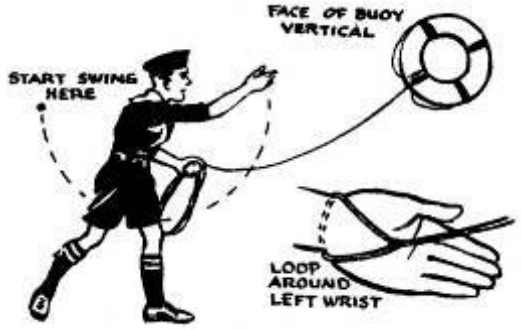
CHAPTER VIII

SEA SCOUT MISCELLANY. II

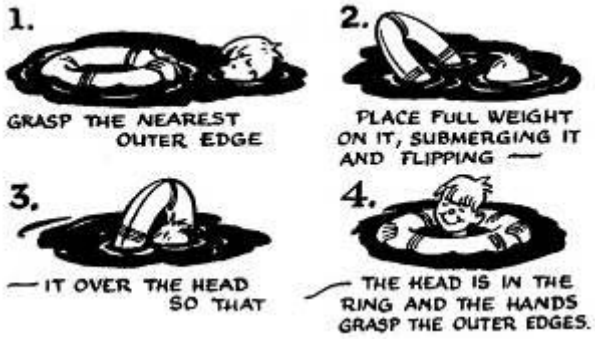
(1)

The Lifebuoy

1. How to throw it.



2. How to put it on.

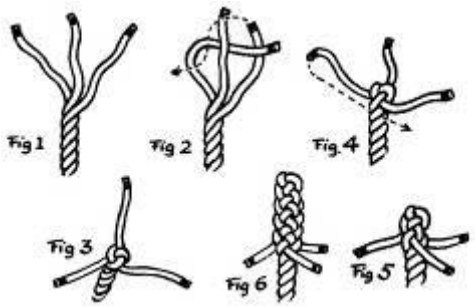


(2)

Splicing

(a) The back splice.

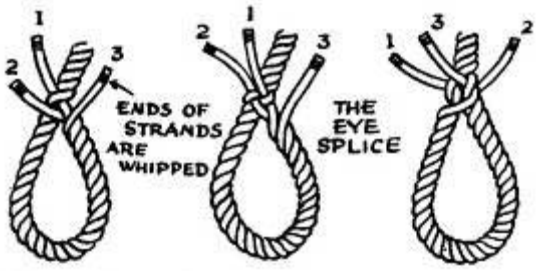
This is a method of preventing the end of a rope from unlaying: (i) unlay, (ii) crown knot (Figs. 2 and 3), (iii.) tuck in.



(b) The eye splice.

Unlay the rope for a sufficient distance from the end, according to the size of eye required and the size of rope. Have enough length of strand unlayed to tuck full once and twice more with "thinned" strands.

When you have tucked in two strands turn over the eye before tucking the third strand in the same direction, which if we are looking at the rope as in the figures would be from right to left.



Make sure that each strand is under its own (different) strand. Pull taut and continue the tucks. "Thinning" is done by cutting out about one-third from the underneath side of the strand. After another tuck, another third can be cut away and the spice would then taper nicely.

(c) Short splice.

Unlay the ends of the ropes to be spliced together. "Marry" with alternate strands and tuck in against the lay.

(d) Long spice.

This is the splice wherein the Sea Scout really shows his skill: let it be your ambition to do this so that the join is hard to detect. It is used for joining ropes which must run over the sheaves of a block without trouble.

(i) Unlay *at least* six times the circumference of the rope,

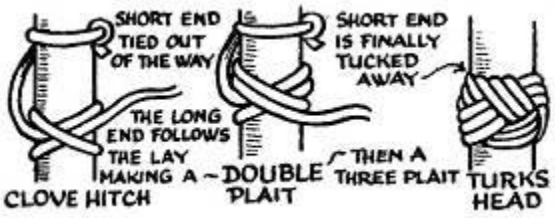
(ii) Crotch the strands as in the figure,

(iii) Holding them firmly, carefully lay back one strand from the crotch, laying in the strand from the other part as you go.

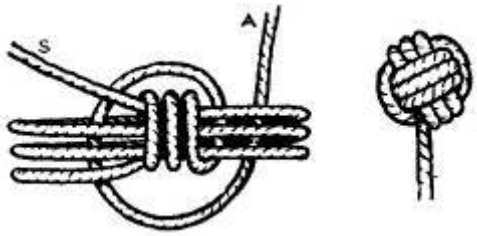
(3)

Turk's Head and Monkey's Fist!

1. To make a Turk's Head:



This knot was often worked on to the end of a heaving line to give it weight and make it "carry." (Make a hank of 3 turns; take 3 turns round the waist of the hand with the end A; pass this end then through the loops of the original hank and over the 3 turns round the waist – also 3 times; work the knot tight; cut off the end A or splice it into the standing part S.)

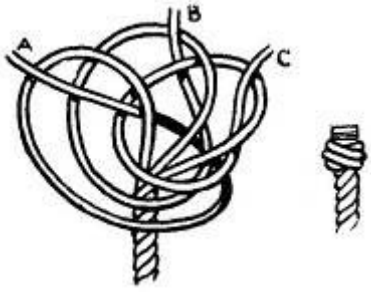


(4)

Some More Useful Rope Work

1. Double Matthew Walker.

This knot is almost always used on the end of lanyards.

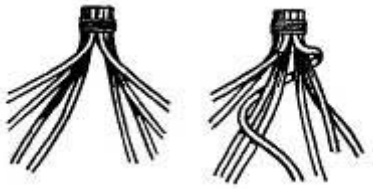


2. To make a grommet.

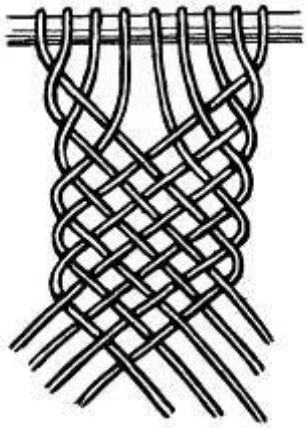
Cut a strand about 3½ times the length of the grommet required. Unlay the rope carefully so that the turns of the strand remain in. Form a ring as in the first sketch below, and then pass the ends round and round in their original lay until all the gaps are filled up. Finish off as in a long splice.

3. Sennits.

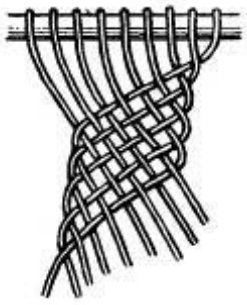
Sennits are braided ropes. Here are three, the English sennit, the French sennit and the square sennit. First the English: – You can use any number of strands. Make them fast over a rod or line. Take the right hand strand and pass it over and under the other strands, bringing it out on the left; take the next right hand strand and do the same thing, and carry on! You pull the strands very tight – in the sketch the strands are left loose to help you.



The French: – You must have an uneven number of strands, which you divide so that one side has an extra one. You take the outside strand of this side and pass it under and over it to the other side! Now you take the outside strand of *that* side and carry on!



The square for 8 strands: – Make fast the strands and divide them into two lots of four each. Take one strand from the right-hand side, pass it round the back and inside two strands from the left-hand lot, and then *bring it back to its own side.* Do the same with a strand from the left-hand side, and so on alternately.



(5)

Worming, Parcelling and Serving

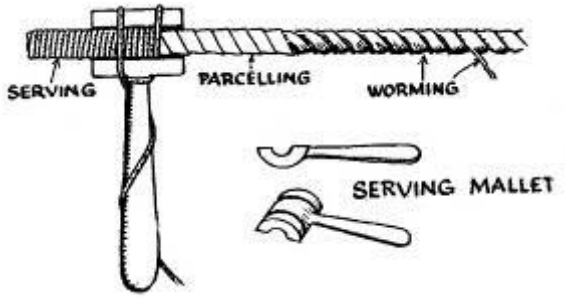
Worming consists in laying a strand of marline, spun-yarn, etc., in the hollow between the strand of a rope. It should be laid on the lay. It is used to make the surface of the rope smoother for parcelling and serving. A very thick worming was put on cables near the anchors to protect them against chafe. It was then called keckling.

Parcelling consists of a bandage of canvas wrapped round a rope. It should be well tarred and laid with the lay of the rope. It is commenced from the bottom and worked upwards so that the overlapping layers tend to shed the water running down the rope.

Serving is a tight, close binding of marline or spun-yarn over wormed and parcelled rope or over a splice, etc. It can be put on "by hand," but where possible ought to be put on with a serving mallet. The sketch shows the mallet in use. It is finished off as in whipping. It is put on against the lay.

Remember the old sailor's rhyme –

"Worm and parcell with the lay
And serve the other way."



(6)

Anchors and Cables

There are two main types of anchor at present in use. They are: –

1) The stocked anchor.

2) The stockless anchor.

The next sketch shows; a stocked anchor of the Admiralty pattern. The stock is held in position by a pin which can be withdrawn, the stock can then slide through the hole in the shank until it eventually lies in its stowed position paralled to the shank when the anchor is not in use. The gravity band is placed at the point of balance of the anchor, and is used for attaching the tackle when the anchor is being hoisted inboard. This is a most efficient type of anchor, but it suffers from difficulty in stowing; when the anchor is lifted clear of the water, a man has to be lowered over the side of the ship to hook on a tackle to the gravity band of the anchor, which is then hoisted on board by means of an anchor crane or cat davit. It is then placed on the anchor bed at the side of the forecastle, and is securely lashed in position. This all takes time, and can be a dangerous operation.

In the stockless anchor the flukes are hinged to the stock, and when the anchor is dragged over the sea bed the tripping palms force the flukes downwards, so that they

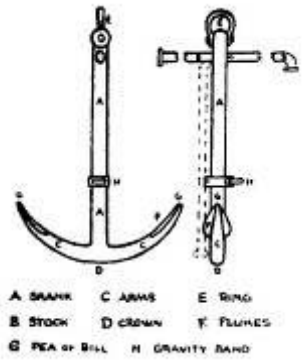
dig themselves in. Weight for weight this type of anchor is not quite so good as the stocked anchor, but as it will stow close up, and does not require lifting aboard, most ships prefer to make their anchor slightly heavier and have them of the stockless type.

The anchors usually carried by ocean-going ships are bower anchors, stream anchor and kedge anchor, all of which have their special work to do.

Three bower anchors are usually carried; these bower anchors are the ones commonly used for anchoring the ship, and two of them are kept shackled on to the anchor cable and ready for instant use; the third is a spare. In the Royal Navy the spare bower is called the "sheet anchor," and in the larger ships is carried in an extra hawse pipe on the starboard side of the ship.

The stream anchor is usually stocked of the Admiralty pattern, and is stowed on the after part of the ship. It is used if it should be necessary to lay out an anchor from the stern, to keep the ship from swinging in a narrow harbour, or if the ship has run aground. A wire hawser is usually carried for this anchor, and is known as the "stream wire."

The kedge is a small anchor, and can be used for a variety of jobs that require an anchor.



The chain cables used for working the bower anchors are made of stud link cable, and are made up in lengths, each length being known as a shackle of cable, and being 12½ fathoms long in the Royal Navy and 15 fathoms in the Merchant Navy. These lengths are joined together by means of shackles, and care should be taken to see that the open ends of these shackles look aft, otherwise when the anchor is running out the shackle might foul something and open up, in which case the anchor and the chain still attached to it would be lost. There is a special type of shackle made now, which is fitted in the Royal Navy and in certain merchant ships which looks very like an ordinary link, and does not suffer from the above defect.

The links of the chain are made with studs in the centre to avoid kinking and to reduce the chance of the link itself pulling out of shape under a heavy strain, as if it did so it would not pass round the windlass or capstan, and the whole shackle of cable would have to be replaced at considerable cost.

The size of anchor cable is always given in inches, and is the diameter of the iron from which the links are made. When lying at anchor it is usual to have out about three times as much cable as the depth of water, thus making sure that the strain on the anchor is not in an upward direction. In the Merchant Navy it is usual to refer to the length of cable out in fathoms; in the Royal Navy it is spoken of as so many shackles.

It is usual to mark the cable so that the number of shackles out can be seen at a glance. This is done by securing a length of wire to a link of cable, so that at the first shackle the wire is on the first link, at the second shackle on the second link away from the shackle, and so on.

The anchor cable passes through the ship's side and up to the forecastle deck by means of "hawse pipes," and when stockless anchors are carried they are stowed with their shanks in the hawse pipes and their flukes flat against the ship's side. From the hawse pipe the cable passes over a revolving gypsy, specially made to fit the links of the chain, and driven by a steam engine or electric motor; it then passes through a spurling pipe in the base of the windlass, it is usual to fit a compressor between the windlass and the hawse pipe, this compressor being used to grip the cable and take the strain off the windlass. Sometimes, instead of a compressor, a "devil's claw" is fitted; this is a sort of hook, secured to the deck by a length of chain, which engages in a link of the cable.

In warships, capstans or cable holders are usually fitted instead of a windlass. The cable passes from the hawse pipe along the deck to the cable holder, which is usually driven by an engine situated on the deck below the forecastle; it passes round the cable holder, and then down the "naval pipe" to the chain locker below.

In certain ships, specially those which have to go through narrow locks in rivers and canals, it is not satisfactory to have anything projecting from the side of the ship, and the head and flukes of the anchor are housed in a special recess in the shell plating; this recess is called an "anchor pocket."

(7)

THREE PRAYERS FOR USE BY SEA SCOUTS

O Lord, help us as Sea Scouts to take to ourselves the spirit of courage and endurance that has been handed on to us by those old seamen of other days. May the great traditions built up by them be ours to-day, that this blessed land may still be famed for her spirit of bravery, and that her seamen may still be known as upright and God-fearing men. Help us to take all that is best of the spirit and traditions of our seamen and to carry them on in our lives as Scouts. Amen.

O Almighty God, whose way is in the sea, and whose paths are in the great waters; be present, we beseech Thee, with our brethren in the manifold dangers of the deep; protect them from all its perils; prosper them in their course; and bring them in safety to the haven where they would be, with a grateful sense of Thy mercies; through Jesus Christ our Lord. Amen.

O Almighty God, who madest the sea, and gavest all that moveth therein for the use of man; bestow Thy blessing we beseech Thee, on the harvest of the waters that it may be abundant in its season; protect from every peril of the deep all fishermen and mariners, and grant that they may with thankful hearts acknowledge Thee, who are the Lord of the sea and of the dry land; through Jesus Christ our Lord. Amen.