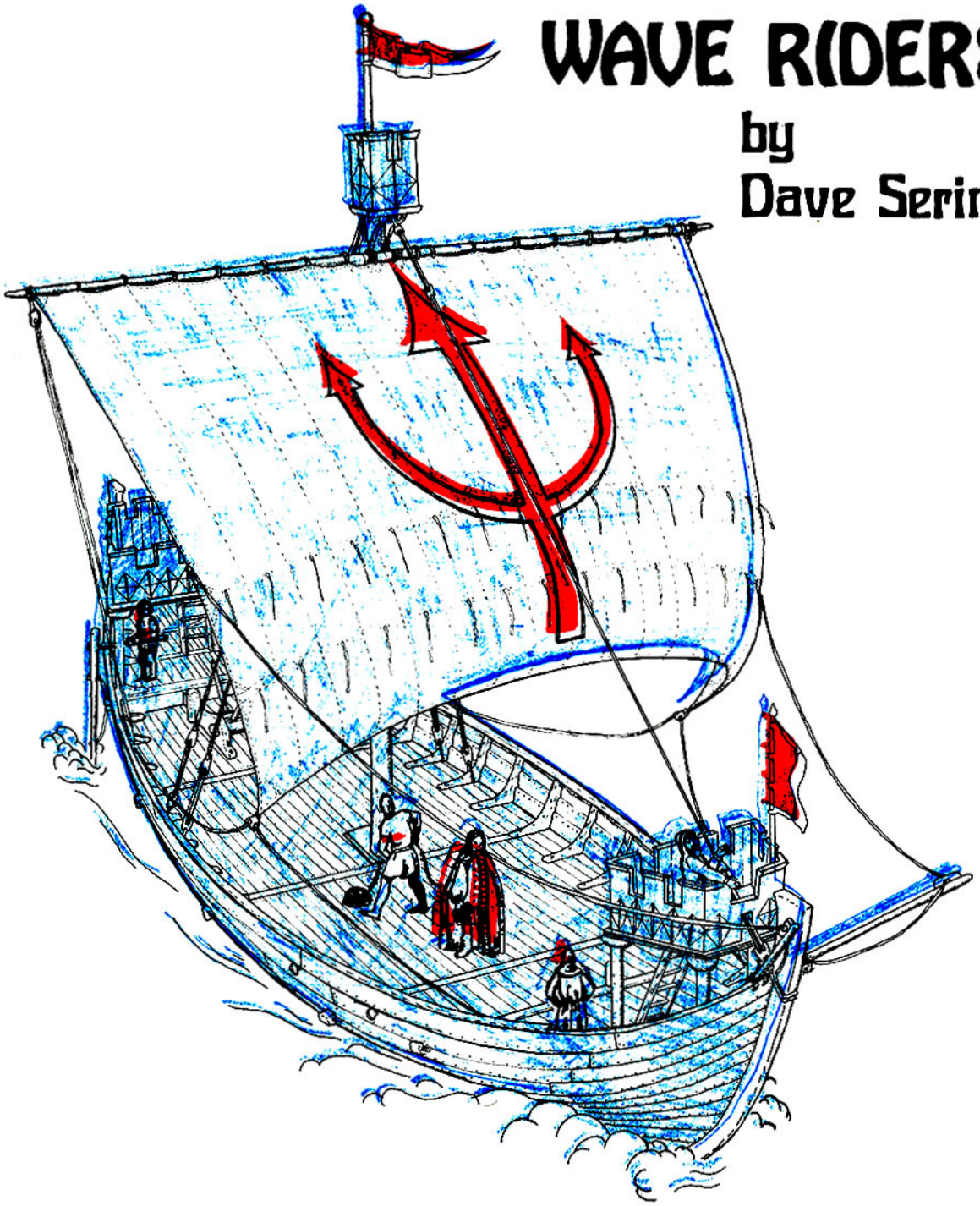
Judges Guild

SEA-STEEDS AND WAVE RIDERS

by
Dave Sering



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SEA-STEEDS AND WAVE RIDERS

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Judges Guild

Any simularity to persons or things, living or dead, is purely coincidental.

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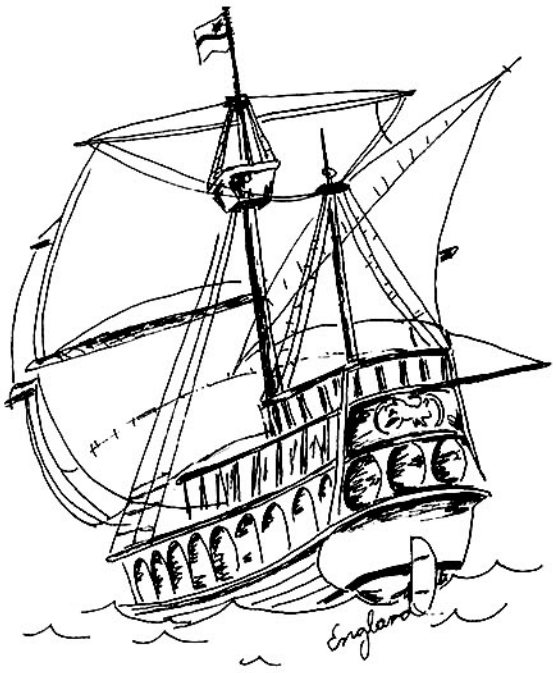


Introduction

During the portion of the Earth's history up until the invention of the railroad and the development of an efficient road system, the only practical means of moving large quantities of goods or heavy items was by water. Since the relative levels of technology in your fantastic universe are similar to those of Earth in the late Middle Ages, we must assume this holds true here also. Thus any item too bulky to fit on an ox cart, or items which require more than a couple of mules to carry them, are more cheaply moved by water transport. True, some of you very high level magic users could summon up a dragon or two for a fast "air freight" service, but at what it's going to cost you, I don't expect you are going to do it very often. It's much less expensive to ship by boat.

Water transport effectively divides into two categories; that of inland waterways--rivers, lakes, and canals; and that of the seas and oceans. The principles of operation are the same in each category though the hazards encountered are different in degree of severity. Weather hazards are much more important at sea, although large lakes can have as severe storms as any ocean.

Vessels may be classified by size or use. There is no hard and fast dividing line, but for our purposes we will consider all vessels of 40 feet or less to be small craft. Small craft tend to be multipurpose. Though the methods of construction are quite similar, due to the modifications to obtain designs efficient for special purposes, appearances differ radically. A ship is basically a box made of wood. It has a framework of thick sticks (frames) to maintain the shape and a thin skin of planks (hull) to keep the water out. This "box" is moved about from place to place by the wind, the currents, and muscle power. Those ships which are built for the purpose of causing harm to other ships and men are quite logically called warships. Those ships which are built to carry stuff from one place to another are called cargo ships. Some ships have characteristics of both types: Viking Longships not being used to fight other ships, but to carry a bunch of fighting men to someplace where they may loot, plunder, or stage other fun-type activities.

The requirements to build any ship are construction materials, workers, tools, a place to build, and some water to float the thing when finished. For small craft all these requirements are easily met. As the vessel increases in size the requirements quickly grow more difficult to fulfill. Construction materials are primarily wood, with minor fittings of metal work, and a great deal of ropes and cloth for propulsion systems. Some of the small craft can be hacked into shape with a sharp rock. However, the larger vessels need an increasing number of sophisticated metal tools as the size and complexity of the ship grows. Wood for the smaller vessels can be grabbed out of any local brush patch. The larger the vessel, the larger the pieces of wood it requires, the longer it takes to find a tree the correct size and shape, and the harder it is to cut it down and move it to the construction site. Any thumb-fingered individual can lash together a useable raft, but it takes a number of highly skilled and experienced workers to make a large ship out of wood. Ships are limited in size by several factors; the intended function, the extent of water to float them, the availability of construction materials, and the number and skill of the crew members who must operate them.

In a campaign context, as our characters wander about the land, they will encounter the occasional lake, river, or stream, and the need to travel across or along this body of water. For the most part any local inhabitants of this region will also have had this need, and they will already have built some sort of watercraft to serve this need. All our intrepid adventurers need do is find, rent, buy, or steal the appropriate small craft. Where there are no local inhabitants, our characters must build their own vessel. Most Judges have already easily solved what few problems arise in this line. This installment provides a few general guidelines in this area and a number of suitable drawings for use as visual aids. The specific features of each small craft are listed in the second section of this article. All of these small craft may be easily built by local artisans using no more tools and resources than are available in any village.

Larger vessels are much more restricted in where they may be built. Shipyards are best located near a city on a large river or seacoast. There must be an adequate number of skilled shipwrights. The larger and more complex a vessel, the greater the number of skilled shipwrights and the greater the number of other skilled craftsmen necessary to build it. For example, the lumber must be brought from the forest to the shipyard. It requires a skilled lumberman to pick the correct tree and to fell it. The lumberman must cut it so that he does not waste any timber; so that when it falls, it does not split or break; and so that once the excess branches are trimmed off, a peasant with an ox team can move it away. Oxen can pull a great load, but they travel quite slowly, moving at best but five miles per day. In such circumstances it was often more efficient to drag the logs to the nearest stream. If the water level was insufficient to float the logs, it would be necessary to raise the stream level with a dam, or to wait till the spring floods. The rivermen who handled such log drives were another skilled trade. It takes a great deal of skill and experience to move scores of logs down a narrow twisting stream in the chilly leaping waters of a spring flood where the slightest misstep will jam the timbers in an immovable mess, or could smash a timberman to a pulp. Once the logs reach a river, they are collected together in large rafts for the journey down to the shipyard. Here again great skill is needed for a few men to guide thousands of logs down the river in the face of storms, shifting currents, and altering shoals, sandbanks, and snags.

Once these logs reach their destination, they must be sorted as to size and type, and hauled from the water to season. Wood, as freshly cut from a tree, has a great deal of fluids in it. As these fluids dry out, the timber may shrink, crack, split, or warp. Because of this factor, vessels built of green timber seldom last long. They pull apart at the joints, split their seams, and develope cracks and structural weaknesses. Under any strain at all, they leak badly and sink. thus the timber that the shipwright is now using arrived at his shipyard from one to five years ago.

The seasoned logs must next be prepared for use in ship building by having any remaining bark peeled off. Yet another skilled tradesman then comes into play, the sawyer. Teams of men using oxen, levers, and block and tackles move the logs to the vicinity of the shipyard. They are placed in a holding frame which extends over a "sawpit". This apparatus permits a team of two or more sawyers to trim the logs into shape and to cut them up into square timbers and rectangular planks. Suitable logs are also hewn and smoothed into the long tapering shapes required for the masts and spars necessary to fit the ship for sailing.

Finally the shipwright now commences his work. A long area at right angles to the water is cleared and made to slope smoothly and gently into the water. Blocks are set up in a precise straight line upon which the keel is laid. The keel is a large piece of wood which runs the length of the ship. It serves as a backbone of the vessel, giving it the stiffness required to keep its length straight. It also serves in some ships as the reinforcement which strengthens the bottom of the ship and takes the strain and wear when the ship is pulled up onto the land. Once the keel is laid, shipwrights begin to fit together the planking to form the "skin" of the ship. Medieval ship builders worked from the outside in. They laid the thick skin of planks which formed the overall shape of the ship, and only then installed an interior framework of strong timbers which served as the "skeleton". During construction, an exterior scaffolding of scrap lumber held the planks in position and permitted access of the workmen to all points on the surface of the hull. On Earth the planks were fastened together in two different ways. The Northern Europeans overlapped the edges of the planks. This permitted a more flexible hull which required little internal framework to make it seaworthy. It was somewhat wasteful of hull planking material, but permitted economies in the use of large internal timbers. This method of construction is called "Clinker-built", and the Viking longship is an example of its use. The Southern Europeans set the planks edge to edge. This required less work in the shaping of the hull skin, but meant that a stronger and more closely set interior framework of timbers was required to to hold the vessel together. Here economies were made in the use of hull planking at the expense of needing more large timbers for the frame. This method of construction is called "Caravel-built", and the Roman and Greek vessels are examples of its use.

"Clinker-built" vessels are more difficult to build and to repair than "Caravel-built", but have advantages in increased seaworthiness in the hazardous Northern Seas. "Caravel-built" vessels could easily be built larger than their "Clinker-built" counterparts, and also had the advantage of being much easier and cheaper to "sheathe". The latter was a practice of covering the portion of the ship's hull that was in the water with thin sheets of lead or copper. This practice protected the ship from a number of small marine "critters" which consider wood to be a tasty meal.

All during the collection and preparation of materials and construction so far, the blacksmith or skilled metal worker has been busy making tools, repairing tools, and keeping them sharp. Now the metal workers are called upon to make all the metal fittings for the ship: hinges for the rudder, reinforcing straps for all weak points, blocks and pulleys for the ropes, gears and ratchets for the winches, and all other items. Specialists might have to be called in to make major castings such as lead stocks for the anchors and the bronze ram beak for a warship. These workers all require a large number of other workers to support them. Someone has to mine and refine the metal ores, cast them into ingots, and transport the metal to the blacksmiths. Someone has to make the charcoal used as fuel for the forges. All these trades and numerous others unmentioned contribute to the manufacture of the metal parts of a ship.

At this point, still other craftsmen come into view. Rope makers have to make up the hundreds of feet of ropes of various sizes needed to hold and move the sails, to handle and tie down cargo, to anchor the ship, and for numerous other nautical functions. Sailmakers have been busy collecting the specially made strong cloth from the weavers, cutting and sewing it together in the special shapes and sizes necessary to make the sails. Other cloth items are made such as awnings, hatch covers, rain collectors, and spray shields. Potters provide the jars and containers for holding food stuffs and other materials. They provide the tiles for the cabin roof and the bricks to make the hearth for the cook's fire. Coopers provide the barrels to hold the drinking water. Carvers and painters provide the decorations, figureheads, and colorful coatings which also protect the wood from weathering, and make the ship look "classy" enough to attract business. Scribes provide the meticulously hand copied charts and lists of sailing directions necessary for long distance navigation. Long distance being anywhere that requires more than 24 hours to get there. Instrument makers provide the compass and special navigating items needed to maintain a course at sea.

Now that the ship is almost finished, it is necessary to get it into the water. First, though, it must be "caulked", that is, the cracks between planks must be sealed with some waterproof substance such as tar or pitch (tree sap). The braces and props are carefully removed as grease is poured onto the blocks the keel rests on. Finally all but the last prop is eliminated. The final step is to knock out the final prop and let the ship slide down the gentle slope into the water. This removal of the final prop was so dangerous that it was common practice to give the task to a slave or prisoner, freeing him if he was successful! If someone had goofed and the ship didn't move by itself, the laborous job of setting up winches, pulleys, and levers to drag the ship into the water had to be gone through. Our medieval ship builders didn't have recourse to a local sorceror who could simply have a water elemental bring the water level up to the ship on command!

There she is, floating gently on the water. But now we see she took all the various skills of everyone in a small city to produce her. It is simply not economically possible to get all these people together to produce just one ship. A shipyard is always working on several ships, starting a new vessel as soon as one is launched. Though working in somewhat of a production line fashion, each ship is individual, unique, a work of art. Medieval shipbuilders did not work from detailed plans. At most they would decide how long one of the major dimensions would be. Then according to custom and experience the shipwrights would by eye and feel adjust every item to fit in a traditional rule of thumb. They made every step just as their forefathers did because tradition showed it could be guaranteed to work if done that way. Nevertheless, like any skilled artist, they would not fear to "adjust" items and proportions slightly to make their work more individual or to gain some advantage over a rival. Shipwrights would thus be highly skilled at building certain things in certain ways. If someone came up to them and asked them to build a ship type they had never built before, the shipwrights would be hesitant. "It's not been done before! We have no custom to guide us. It will take twice as long to build, and cost twice as much!" would be the reply of the local shipwright. Judges will have to watch for players asking craftsmen to make things they aren't familiar with and charge accordingly.

Ships are generally not built on a whim. Someone, somewhere has to pay for the ship, and ships don't come cheap. They are built to fulfill specific needs. Ships also require continual attention to keep them in efficient condition. Otherwise they will quickly deteriorate and become useless. Therefore, unless a ship is always earning its keep, it will soon be discarded. Cargo ships earn their keep by moving goods and people from a place of low demand to a place of high demand. Buy low, move elsewhere, and sell high to make a profit. Warships earn their keep by protecting cargo ships, providing employment for otherwise idle warriors, put slaves and prisoners to use, and enhance one's own realm's social and financial stability (while often destroying someone else's peace of mind and fat purse!)

Thus under normal circumstances, cargo ships are playing back and forth between ports, carrying merchandise and passengers from one city to another. This may be on a regularly scheduled basis with a fixed route, or may be at the whim of the ship owner/captain who moves to wherever he smells a profit. Fishing boats are continually out trying to make a good catch. Warships are patrolling trade routes, hunting pirates or rival nations' ships, guarding harbors against surprise attacks, or going on raids of their own.

Small Coasters (16) could be built with the resources of a small fishing village. The smaller Longships (11) could be built by a rich Viking chieftan. Larger ships would require the resources of a powerful noble. While much larger vessels were built, it was only with the authority of a strong king. A prosperous town would easily be able to finance the building of several moderate sized Merchant Ships (12). However, it would take the resources of a small city-state to set up the shipyards necessary to build such specialized ships as a War Galley (2) or a "Round Ship" (1). Once such a yard was established, though, it would be relatively easy for commercial or political groups to finance the building of a vessel in it. (Numbers in parenthesis refer to the Ship Deck Plan Sheet.)

Sailors

Now that we have our vessels built, where do the crews come from? On sheltered inland waters anyone with reasonable coordination and patience can learn to handle almost any small craft tolerably well. It takes skill and experience to handle a small craft on even the calmest of open waters. Though with such skill and experience it is only a small step up to handling a small coaster. The next step up requires an additional skill, the ability to coordinate the efforts of several other individuals, sometimes with only verbal instruction. Navigational skill is also vital, the ability to know just where you are at all times under all conditions. For the captain of a cargo boat, a business sense is vital, the ability to juggle profits and losses, cost margins and expenses. A warship commander must have the skill and the courage to handle his ship in combat. The training of a merchant crew is not too difficult. One or two skilled men can easily direct the brute force efforts of from six to eight unskilled helpers. They don't have to know why they are to perform a certain action, only when to perform it under command. A warship crew has much tougher standards. They must perform correctly under the stress, noise, and confusion of combat when it may become impossible to even hear an order. In the ancient triremes even one oarsman who mistimed his stroke could throw the whole crew of oarsmen into confusion.

In any small fishing village enough experienced sailors can always be found to crew a small coaster (16) for a trip of several days duration. In a fair sized town in addition to the coasters, about once every ten to fourteen days a moderate sized merchant ship would call. Ninety percent of the time such a ship will have room for from 2-12 passengers seeking transport to the next port of call. Such ships normally travel between towns of the same size and port cities. These port cities would have ships going to all other nearby port cities at least once a week. Coasters would leave daily for all nearby towns and would stop at any village by arrangement. These statements are sufficient to set general guidelines. For specific items refer to the encounter tables elsewhere in this issue.

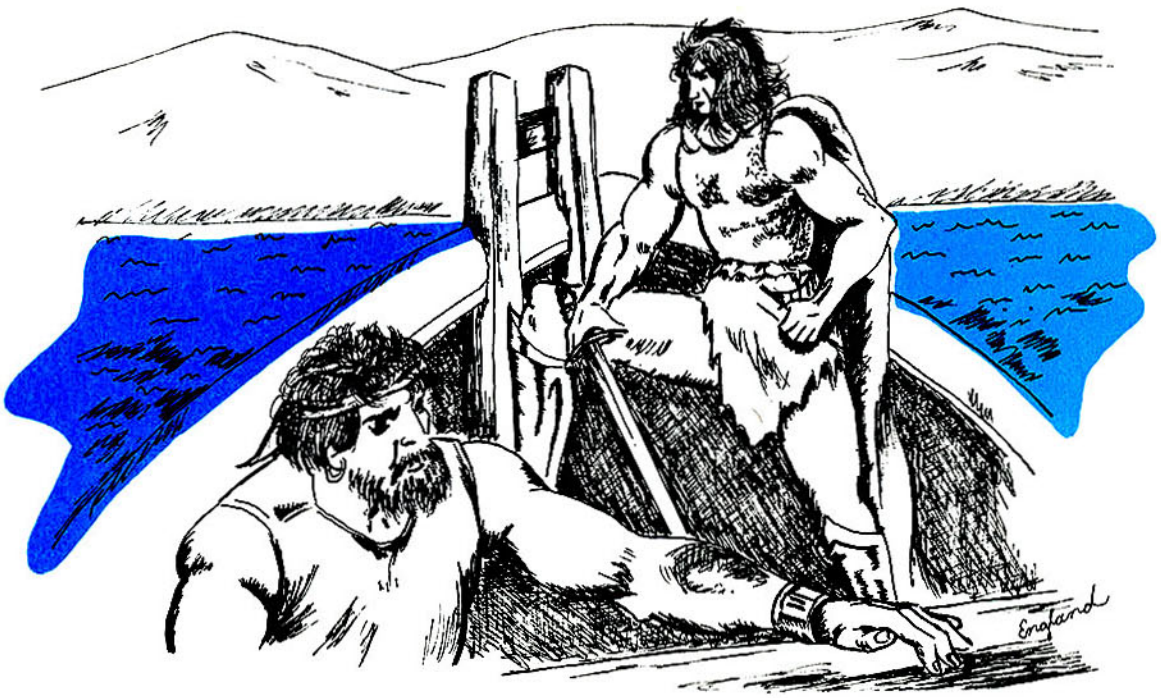
The men who crew the ships must next be considered. They too are skilled tradesmen, requiring years of practice at their craft to become proficient. The basic recruit must be of above average constitution, strength, dexterity, and intelligence. The sailor has to learn his world of his ship so well that he can tell the position and condition of each and every part of the equipment in the dark and driving rain of a storm. He must also be able to repair broken items in the midst of such a storm. This is not just convenient, his very life depends on it. He must never lose his footing on or off the wet and slippery deck, no matter how violently it may pitch and toss. He must remain in excellent health since his total strength may be called upon at any moment to move cargo, hoist or lower sails and anchors, or row a vessel out of danger. He must also know the sea, the locations and configurations of all dangers (reefs, shoals, rocks, currents) as well as all havens (harbors, coves, ports, river mouths). He must always have an eye to the mood of the weather; sudden drops or shifts in the wind may wreck his ship.

As a sailor gains in experience, he is given additional responsibility and additional pay. Senior sailors are given charge of tasks such as repair of ship's gear, sails, and structure. Senior sailors handle and arrange cargo in the hold. The task is far more important than it might first seem. Slight changes in the attitude of the vessel have a great effect upon the ease with which a ship steers and sails. If the cargo shifts during a sudden change in course or breaks free in stormy weather, it may turn the ship over on its side or smash open holes in the hull.

Greater experience results in promotion to the position of Mate. Mates are essentially ship's officers, sharing in the tasks of steering and navigation. They are the ones who oversee the actual day-to-day routine of running the ship. They assign individual tasks to sailors, inspect the condition of the ship's equipment and cargo, and order the conduct of passengers. They require some slight skill in simple mathematics, enough to help them apportion food and water, or estimate distances sailed. Mates have actual charge of the ship in the absence of the Captain. They must also be skilled in the use of weapons and in small unit tactics as they must bear the brunt of any fights against pirates, toll collectors, and other such riffraff

The Captain of a ship, though, is someone special. He must have the charisma and strength to compel respect and obedience from crew and passengers alike. He must have high intelligence and wisdom. He must know and be able to influence all of his world and all of the people in it. The Captain of a ship must deal with the laborers and thieves of the wharves to the merchants and businessmen of the markets to the nobles and officials of the Court. He must be able to speak many languages and be skilled in mathematics. He must be diplomatic and skilled at persuasion and the delicate business of bribery. Business deals and profits are his way of life. A ship's Captain must be adept at navigation, able to read charts, use instruments, and predict sea and weather conditions. He must be a warrior, able to lead his crew and passengers in defending their lives and property. No ship's Captain was above the temptation to gain a little more property or money if the opportunity offered, but most maintained a reputation for holding to their business deals. Captains frequently owned their own ships, sometimes in partnership with other businessmen, sometimes in shares with the crew. In those instances where a Captain was hired by the owners of the ship, it was common practice to give the Captain and senior members of the crew shares in the profits.

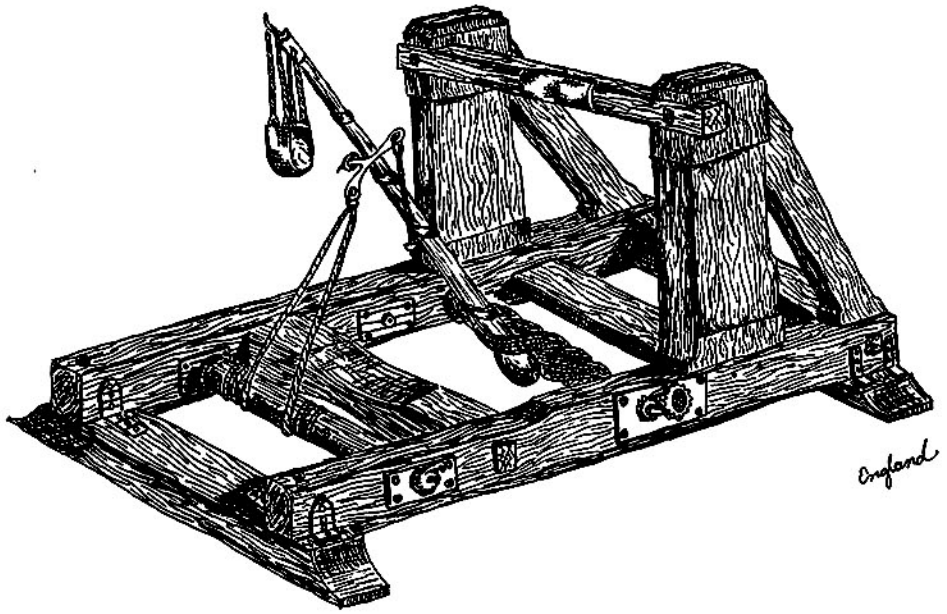
Though up to this point we have exclusively mentioned only men in connection with the sea, this was not necessarily the case. On the sea, skill and knowledge are often of more importance than brute strength. Women frequently served on shipboard along side their men. Often it was the Captain's wife who ran the ship in his absence (often in his presence too!) She was the one who drove the business deals and kept track of the money.



Naval Combat

At this level of technology, naval combat was pretty much an affair of individuals. Signals were very primitive. A fleet admiral or squadron commodore was limited to saying; "Follow me!", "Everybody fight!", or "Everybody run!". Ship building was still an art, each vessel a unique creation. Nowhere was this more apparent than trying to manuever fleets under sail. Not only did each vessel respond differently to the same wind, but also if the fleet was spread out, many vessels recieved different winds. Thus, controlled fleet manuevers were possible only under oars. Here, too, there were limiting factors, primarily the distance at which the signals and maneuvers of the flagship could be accurately determined. Therefor, the upper limit of the number of ships directly under the command of a single officer worked out to be around twenty. Combat maneuvering under oars required constant practice. Most fleets will spend days not engaged in battle in exercising the oarsmen and practicing squadron formations. It took at least several weeks to train raw recruits to be able to row. Several more months would be required to turn this green crew into a trained crew. An entire season would be necessary to have a trained crew become an experienced crew. But a week or two of inactivity would be sufficient to take the fine edge off their expertise. One day's exercise per week is necessary to maintain a crew's level of stamina and coordination. Otherwise such a crew would maneuver at a slight penalty their first day out. Subsequent days would see them regain their previous level of skill. Whenever a fleet is organized after a slack season, the first week or two must be spent on shakedown maneuvers before any admiral would dare face combat.

Whether sailed or oared vessels predominate, any navy worth the name must have a large and complex arsenal or base. In order to prolong its life, any ship which does not have its bottom sheathed in lead, must be pulled up out of the water when not in use. The more advanced societies have special slips in buildings specifically constructed for such purposes. The Vikings just smeared an extra coat of pitch on the hull and built a temporary roof on the hull itself using logs and thatch. After a season of use,even without combat damage, the lightly constructed warships required an overhaul. Repair usually cost about half as much as the original building cost. Part of this expense was due to needing to make new sets of oars and sails. A warship would have a normal attrition rate of 150% of the oars she carried, every oarsman wearing out at least one oar per season. A set of sails would usually last only one season. Manyropes and fittings would need to be replaced. Water casks and provision barrels would need to be removed and their interiors purged. The entire espanse of hull planks and every inch of the frame timbers must be checked for splits, cracks, and rot. Suspect items must be removed, and replacement parts fabricated and installed. Thus the arsenal is busy year round, if not with new construction, then with maintainance.



Because of their expertise in precision metal work and large scale complex timber construction, naval shipyards or arsenals usually build the siege machines and artillery for the army as well as the navy. As a rule, catapults and ballistas on shipboard are somewhat smaller than their landside counterparts. Drawing 9 is a ballista, a moderate sized dart thrower. Using the energy stored in twisted strands of horsehair, this device can cast a large arrow to a maximum distance of 500 yards. Drawing 10 is a catapult, a moderate sized rock thrower. Generally using but one large strand of horsehair or rope, this machine throws a large rock in a flat trajectory against the side of a ship's hull or castle walls. With slight modifications, a sling can be attached. This reduces the maximum range somewhat, but lobs the missile at a high angle. These "engines" would have a range of about 500 yards at maximum. Though of formidable appearance, these artillery engines were not deadly enough to sink an enemy vessel by themselves. Their main purpose was to attack the crews of enemy vessels. Long range bombardment might kill marines and warriors and lower the odds against a successful boarding action. Alternately missile fire could kill oarsmen and ruin the rythm of the stroke, preventing the enemy from maneuvering quickly. Hits on the mast, sails, or helmsman could temporarily destroy the opponent's ability to move at all. The Romans, with their usual superiority in trained soldiers, invented a new use for ballistas. They fired special grappeling hooks with lines attached so as to catch an enemy ship and pull it close enough to board.

Until the invention of Greek Fire by the Byzantines, only two effective modes of attack exhisted. The first mode was ramming, punching a hole in the side of the enemy ship and sinking it. The second mode was boarding, comming alongside the enemy ship and gaining control of it with one's own warriors. In the first instance the ship itself was the primary weapon, its sharp bow being specially constructed to withstand the shock of ramming. Ramming tactics required maneuverable ships and needed crews and officers with a high degree of seamanship. The attacking ship need not impact the target hull solidly to be deadly. The oar rake could cripple a target just as thoroughly as a hole in the hull. The oar rake consisted of passing close alongside the target vessel, smashing into and breaking off oars. If the target vessel could not pull its oars inside the hull quickly enough, terrible damage would be done to the rowers by the splintered and flailing inboard ends of the oars. In fleet actions, such a crippled vessel would then be left for the less well trained ships of the supporting second line to finish off.

Those navies which preferred boarding tactics tended to build larger vessels than those which preferred to ram. Larger vessels could be built sturdier ro resist damage when rammed. A slight increase in size permitted a much greater number of marines to be carried. Also larger vessels were able to mount heavier projectile engines. Then, too, their crews had the advantage of height, their siege towers and shipsides (bulwarks) over-topped and dominated the decks of the lower lying vessels.

As more efficient sea-going sailing ships were developed, tactics had to change. In any sort of breeze at all, the Longship could simply sail away from the oared galley. The Longship, with its keel and more effieient sail could travel much closer to the wind. Also merchant vessels with their taller masts and longer yards were making more effective use of an old weapon. This was the "Dolphin", a heavy sharp-pointed weight hung out at the end of a yard or boom. When released, this "Dolphin" would plunge down through the lightly constructed galley and punch a hole in the ship's bottom. A device like this made a galley captain exceedingly wary about comming alongside a sailing vessel. In Northern waters, normal weather and sea conditions were such that a rowing galley was frequently not operable even during the best part of the sailing season.

Maneuver and ramming thus became less important in combat between the sailing northern vessels. The fight became a mobile seige as two traveling castles tried to storm each other. The ships sides, built high to enhance seaworthiness, were built even higher. Miniature castles were built up at the bow and stern, complete with parapets and battlements. small fortified posts were built at the tips of the masts. Fire became an important weapon, clay pots of incindiary material being thrown or dropped on an enemy's deck. Chemical warfare was also used. Quicklime was hurled to blind the enemy. Oil and soap were dumped on the enemy decks to make them slippery and hamper his movement. MIssiles of all sorts were flung at the enemy crew: stones, arrows, spears, javelins, etc. Attempts were made to cut the enemey's rigging with axes and blades on long poles. Finally when one side or the other achieved the advantage, its warriors stormed across to conquer the enemy in hand-to-hand combat. Defensive measures were tosome extent possible. Bulwarks could be hastily reinforced with deck planking removed from nonstrategic spots. Sand from the ballast was brought on deck. Such sand was used to smother fires, improve deck footing, or thrown at the enemy to blind him. If possible, fishing nets were attached to the tops of the bulwarks and streatched upwards. This gave some protection from missiles and made it very difficult for the enemy to board. While enemy warriors were trying to cut their way through the nets, spearmen could easily pick them off.

A third mode of combat was developed by the Byzantines in the 7th Century A.D. This was the use of Greek Fire, an incindiary mixture. The "secret weapon" of the Eastern Roman Empire, it was sprayed from tubes like a modern flame-thrower. It could also be flung in fragile clay pots, like hand grenades. Its most frightening property was the fact that it ignited upon contact with water. Yet today the exact composition of this petroleum-based substance is still uncertain. In its day it was the ultimate weapon.

In medieval societies, warfare was a curious blend of advancing technology and uncompromising tradition. Actual weapons utilized every innovation, but tactics changed ever so slowly. Strategy was almost nonexhistant, personal considerations of honor, glory, and profit took immediate precedence over any thought of long term gain for one's self or society. In naval matters this incongruity was also evident. New methods of rigging and innovative weapons were placed on hulls whose shape and method of construction had remained unchanged for a thousand years.

Ships

The following section contains detailed descriptions of the vessels whose deck plans are given in the large sheet of drawings. These deck plans were drawn as campaign aids for players of medieval and fantasy campaigns. These plans are printed in 25mm scale so that metal miniatures may be used in resolving battles and situations. Any set of miniatures encounters or battles rules may then be applied. Note that the drawings have woodgrain pattern applied to the places where a figure might stand. The plans have been overprinted with a hexagonal grid to ease play. On the scale of one inch equals five feet, each of these hexes is a little over three feet or one meter across. Also printed on the drawings are grey-toned areas which indicate the approximate location of the sail. These areas do not impeed movement on the decks but could block sighting.

The numbers in parenthesis refer to the drawing numbers printed by each vessel on the Ship Deck Plan Sheet. The vessels depicted here were chosen as the types of most use to the general gamer. Details of the various ships may be altered by the umpire to more accurately reflect the precise situation being gamed. Statistics of the ships may also be altered, but the relative proportions should be retained to prevent incongruities in play.

Prices given for construction at a shipyard or building site that has the raw materials, tools, and workmen already assembled. If starting from scratch to make built-up vessels, a shipyard and associated workshops must be established. To reflect the cost of building the shipyard, tripple the cost of the first ship to be built and double the length of time taken to build it. Small craft and the cruder vessels would only require unskilled labor. Larger vessels require one skilled artisan for every two laborers. Costs work out at about one weeks labor per ton of ship. Rafts may be lashed together cheaply, needing only unskilled labor and taking about one day per ton.

In the Judges Guild Fantasy Universe, a days labor is 15 hours; a weeks is 6 days. An unskilled laborer recieves 3 copper pieces per day. A skilled artisan recieves at least 12 copper pieces per day. If a warship is to be built, because of special construction features, the cost is 150% of a normal commercial vessel of a similar tonnage. Any new type of vessel requires the special supervision of a Naval Architect and doubles the cost.

Plans

1. SOUTHERN TRADER
2. HARBOR GALLEY
3. BARGE/FERRY
4. LONGBOAT
5. CORACLE
6. LARGE RAFT
7. DUGOUT
8. OUTRIGGER CANOE
9. BALLISTA
10. CATAPULT
11. LONGSHIP
12. MERCHANT SHIP
13. CEREMONIAL BARGE
14. FISHING BOAT
15. SKIFF
16. COASTER
17. UMIAK
18. SMALL RAFT
19. CARGO
20. BARRELS

MERCHANT SHIP (#12)

Length: 92½ feet Beam: 22 feet
Draught: 3 feet (Empty) 5 feet (Loaded)
Cargo Capacity: 40 tons and 10 passengers to 10 tons and 50 passengers
Crew: 8 to 10 men
Cost: 4,800 gold pieces; 20 men takes 10 weeks to build

This is the vessel depicted on the front cover, the most common type of northern medieval european waters. This craft is a multi-purpose type developed from the Longship (11). Its lines are much fatter and the sides are built higher. The primary mode of propulsion is sailing. Though it has but the one mast and sail, it is effeciently handeled by a crew much smaller than the Longship. The mast remains permanently fixed in place, but with the aid of the winch or capstan, the sail and yard may be moved about and raised and lowered using only a few men. This ship has oar holes built into the sides to accomodate eight sweeps. With six to eight men rowing, the ship could move at one to two knots. With sixteen men rowing, a speed of four to five knots would be possible. This is sufficient to maneuver the ship in restricted waters. The Merchant Ship has a heavy keel and a relatively shallow draft. Though "clinker-built" she has much thicker planks and stiffer ribs than the Longship. This vessel is a practical compromise between a large heavy ship able to carry a lot of cargo and a small light ship able to be easily beached on most any shore. Heavy beams extend from side to side, supporting the deck and allowing quite heavy cargos to be carried on the deck. Also the planks comprising the deck could be removed and cargo stowed on the top of a layer of wet sand which lined the bottom of the ship. This sand served as a ballast, keeping the center of the ship's gravity low enough that she would not capsize when tilted by the wind. Also this cool sand was used by the crew and passengers to chill their wine on hot days.

This ship was constructed with several improvements in sailing rig over the Longship. The sail had reef points, small paired pieces of rope which permitted the lower edge of the sail to be rolled up and tied in place. Thus where the Vikings found it necessary to carry sails of different sizes to fit the different wind conditions, this new type was adjustable in area. Also a new system of lines permitted the attitude of the sail to be maintained or changed without the use of a lot of muscle power.

A ship's boat was also carried on deck or towed astern on a rope. This boat was a light open Skiff (15), used to run errands in harbor and to help move cargo. Often this small boat was sent ahead into shallow water to find a safe passage for the larger vessel. It was also common practice inmaneuvering in restricted waters to use the ship's boat to pull on a rope attached to the bow or stern. A rudder only works to turn the ship when the vessel is moving. With the crew rowing the ship's boat, it was possible to turn the ship arround in place, not risking stranding by moving close to bands or shoals in small rivers. This flexibility of maneuver allowed the Merchant Ship to carry cargos directly to and from towns located quite far up the course of relatively small rivers. The Southern Trader (1) type of vessel, while it could carry much more cargo, could only visit ports with deep water.

There was also another kind of flexibility associated with this type of vessel. Though built for trade, it was easily addaptable to war. In fact many medieval rulers gave their commercial port towns certain tax advantages. In return these towns agreed to place specific numbers of their ships at the disposal of the ruler in time of war. This type of medieval merchant was easily converted to a warship by the building of temporary structures in the bow and the stern. These structures in fact served as miniature castles. They were high platforms made of wood, mounted on stout pillars and edged with sturdy wooden walls pierced with battlements. In addition a small box or basket was mounted at the top of the mast. This was called a "top" or "topcastle". It served as a lookout point and also as a place from which to hurl missiles down on an enemy's decks. The "forecastle" and "sterncastle" were strong points in battle and fortresses protecting the men at arms and crew from enemy missiles, serving also as vantage points for archers. Quite often the castles were brightly decorated. Along with brilliant sail insignia and flags, the colors and patterns served to identify friend and foe in battle. They were also intended to be of imposing appearance and thus frighten the opponent. Drawing Number 12b has these castles printed as seperate items. Gamers may thus add them to or remove them from the basic drawing (12a) as circumstances require. The cover art shows the ship as converted for war and sailing into battle. Most of the warriors that would have been carried have been omitted to show ship details. Other modifications might be made for special war missions. To participate in sieges of costal fortifications, artillery could be added. Field Ballistas (9) could be mounted along the sides. A vessel of this size could carry four such dart throwers if not under sail, two aft of the mast and two forward of it. If sailing, only the forward pair would be useable. As an alternative armament, by reinforcing the deck, a single Catapult (10) could be mounted forward of the mast. This stone thrower would require removal of the forecastle and would be aimed by turning the ship. It was not unknown for a single tall tower to be constructed in the center of the ship in place of the mast. From such a tower, archers might fire down on defenders of seawalls,alsoa storming bridge might be lowered to permit an assault party to attack the top of the wall. This tower would make the ship difficult to handle and would require a lot of weight to be placed in the bottom of the ship's hull to prevent her from capsizing. She would also be restricted to oar movement in sheltered waters, unable to brave the open sea. Battles at sea with these ships mostly consisted of bringing the vessel alongside the enemy and exchanging missile fire, arrows, slingstones, javelins, firepots, and suchlike. When one side or the other had gained an advantage, they would try to board the enemy ship and finish off its crew in close combat. Since most men at arms would be wearing metal armor, falling overboard meant drowning.

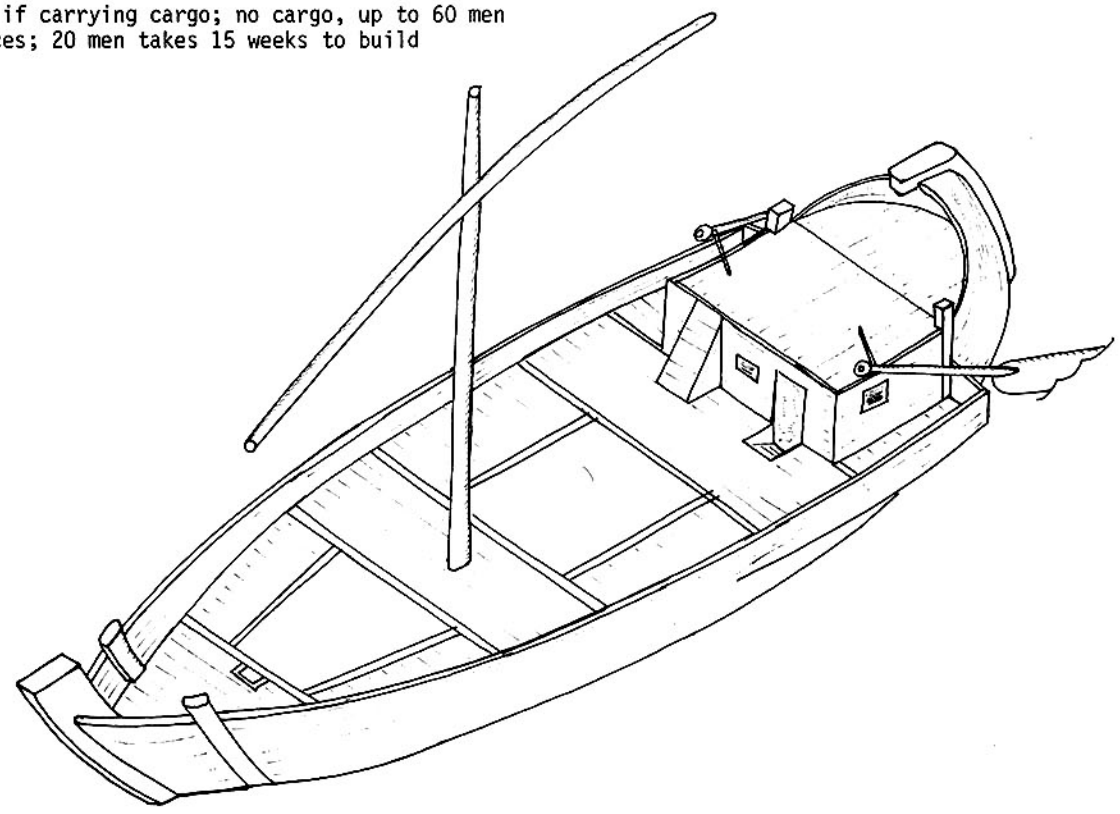
The main features of the Merchant Ship are from the bow: the cutwater, foredeck, bits, main deck, mast, capstan, after deck, and sternpost. The foredeck is slightly raised above the level of the main deck. At the rear edge of the foredeck are the two stout posts, called bits, which serve to control the anchor rope. The anchor rope is stored under the foredeck. Just after the bits, on either side of the front end of the main deck, are located the forward pair of sweep ports. These large heavy oars were worked from a standing position. In the center of the deck is the mast, with a rope ladder or cleats nailed to the mast to permit access to the top. Next aft comes another pair of sweep ports, and then the catspan. The catspan is essentially a horizontal winch, pry bars inserted into the ends of the drum providing leverage to easily wind up or let down the ropes controlling the sail. Finally the stern of the ship has the afterdeck. The helmsman stands here, controlling the large steering oar on the right side by means of the right-angled extension to its top, the tiller. When carried, the forecastle and sterncastle were entered by means of a ladder under their center, leading to a trapdoor in the floor.

Cargo was carried on the main deck, lashed down with ropes and covered with oiled cloth or leather to protect it from the weather if necessary. If passengers were being carried rather than cargo, tent-like shelters of leather would be setup on the deck. As many as fifty passengers could be carried on short voyages. Half that number would be more likely on normal trips. All except high-born passengers would be expected to help in working the ship, rowing, and raising the anchor. This vessel would normally work its way along the coast, stopping at each little harbor. Only when it had a complete cargo for a specific point would it sail direct. As many as three to five days might be spent continually at sea, although it was common to anchor for the night in a sheltered spot just offshore.

Sailing with the wind the Merchant Ship would make 8 knots or 150 miles (30 hexes) in a 16 hour day. Reaching across the wind 6 knots or 110 miles (22 hexes) in a 16 hour day would be traveled. Sailing Close-hauled against the wind only 4 knots or 75 miles (15 hexes) would be possible.

SOUTHERN TRADER (1)

Length: 80 feet Beam: 25 feet
Draught: 8 feet (Empty) 12 feet (Loaded)
Cargo Capacity: 100 tons or 5,400 cubic feet
Speed: 5 knots sail only
Crew: 9 to 12 men
Passengers: up to 10 if carrying cargo; no cargo, up to 60 men
Cost: 7,200 gold pieces; 20 men takes 15 weeks to build

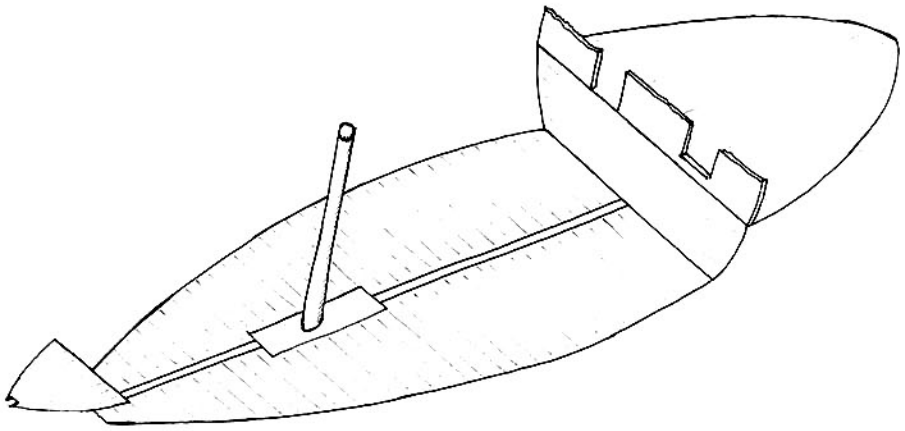


This Southern Trader is similar to the bulk of the moderate sized trading vessels which plied the waters of the Black and Medditteranean Seas during the height of the Byzantine Empire. It is appropriate for the period from 600 A.D. to 1400 A.D. It is most often encountered in the lesser sea areas where its ability to maneuver under sail is an asset in the hazards of shoals, rocks, and foul waters. Its lanteen-rigged sail permits the vessel to tack quickly with only a couple of crewmen handeling the sail. Though she does carry several large oars, called sweeps, this ship was not made to be moved by rowing. The most that a crew could do would be to turn the ship in the open sea or shift from one berth to another in a calm harbor.

Owing to the deep draft necessary to obtain cargo carrying capacity, this vessel cannot be pulled up on shore. If it runs aground in an area subject to tides, because of its rounded bottom shape, the ship would tend to roll over on its side, shifting any cargo not fastened firmly in place. Thus this ship would tend to frequent ports where it could be tied up next to a dock or wharf for loading and unloading cargo. If the items carried are relatively small, it would be possible to anchor the ship in deeper water and transfer the cargo into small boats for transport ashore. An alternate method would be the use of the Harbor Barge/ Ferry (3).

Depending upon the amount of deck cargo carried, the ship's boat (Skiff 3) would be lashed down on top of the main hatch opening or towed astern on a rope.

Observing the Drawing #1a, the main features of this vessel are as follows. The pointed end is the front and the more rounded end (with the shelves on either side carrying large oars for steering) is the rear. The main features of the ship, going from bow to stern, are the cutwater (a vertical extension of the keel), the hawsehole (through which the anchor ropes pass), the bits (a pair of sturdy posts), the forward cargo hatch, the mast, the main cargo hatch, and the cabin. Steps on the forward side of the cabin lead up to the roof and also down into the interior of the cabin, the floor being set below the level of the main deck. The roof of the cabin has a rail around the edge. The ends of the steering oars extend up to the level of the railing and right angle projections on their ends (called tillers) permit a person standing on the roof to control the course of the ship.



Going down to the next deck, Drawing #1b, the cargo hold, at the very front there is an area raised three feet and partially walled off from the rest of the cargo hold. This area is for the storage of the anchor ropes which lead up through a hole in the main deck (hawsehole). The major section of this deck is the cargo hold. It is eight feet from the floor of the cargo hold to the underside of the main deck. A large round timber called the mast projects vertically from the keel of the ship up through the cargo hold and continues through the main deck to support a long horizontal pole which carries the sail. Two large rectangular holes in the main deck above are the cargo hatches, through which the materials carried by the ship are loaded and unloaded. Normally when at sea these openings are closed and made watertight with canvas covers. At the rear of the cargo hold is a wall which seperates the cargo hold from the cabin. There is a small door in the wall leading through into the cabin. The floor is raised four feet from the level of the cargo hold floor with steps leading up another four feet through a door in the front wall of the cabin onto the main deck. The floorboards of the cabin are removable so that certain valuable items of cargo might be stored beneath. The rear wall of the cabin is formed by the rear portion of the ship's hull. There are a pair of nitches on the right and left sides of the cabin which are formed by the platforms supporting the steering oars on the main deck above. The cabin is lit by several small glass windows set into the fron and side walls, each window having a stout wooden shutter hinged to it which will close it tightly. A stout wooden door may also be fitted to close the opening to the main deck.

The crew and high-paying passengers sleep in the bunks built into the sides and rear of the cabin. A small brick hearth is located against the front wall of the cabin where the cook prepares meals. Those passengers paying minimum fare or working for their trip, sleep on the main deck when the weather is nice or on top of the cargo in the weather is poor.

The crew would consist of a captain, a mate, a helmsman, and from six to nine men, the exact number depending upon the number of passengers working their way. Working passengers are required to help load and unload cargo, bail out water from the bilges, and assist in keeping the vessel clean.

This vessel would mostly be employed in taking cargo and passengers from one port to another on a somewhat regular basis. Seldom would she be at sea for more than three to five continuous days. Her voyages would follow the coastline, frequently anchoring at night. Only in the most favorable of conditions would she continue under sail at night or cut directly across open sea areas. Her speed under sail would average five to six nautical miles per hour when running before the wind. When reaching, or sailing at an angle to the wind, she would average four to five knots (nautical miles per hour). Tacking, or sailing against the wind, she would at most be able to average two to three knots. In campaign terms this translates to 110 miles (22 hexes), 74 miles (15 hexes), or 37 miles (7 hexes) of distance covered in one sixteen-hour day of sailing in a brisk wind.

LONG SHIP (#11)

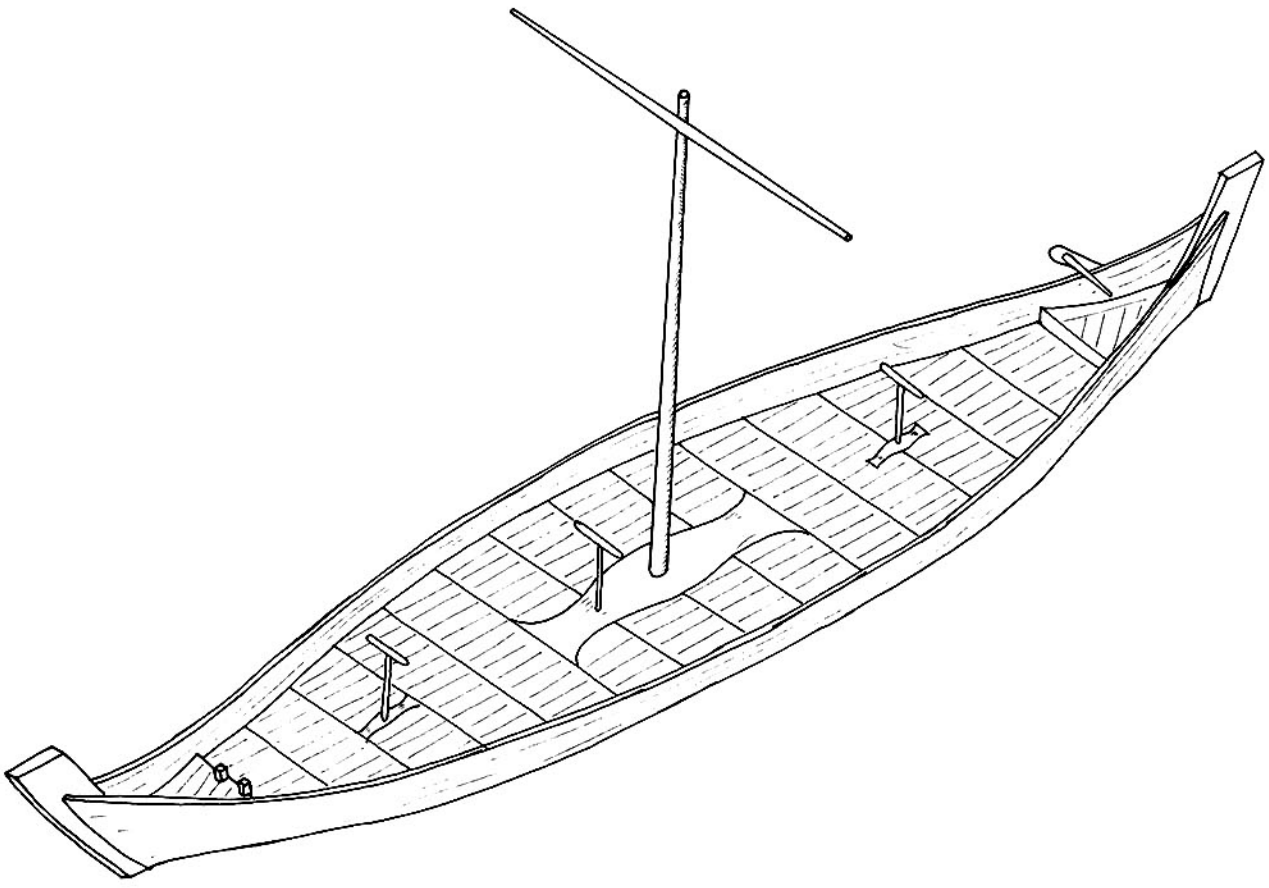
Length: 96½ feet — Beam: 22 feet
Draught: 4 feet (Loaded — 2½ feet (Empty)
Cargo Capacity: 20 tons with 40 oarsmen, 5 tons with 80 oarsmen
Speed: 10 knots max. oars, — 12 knots max. sail
Crew: 50 to 90 men (all warriors)
Cost: 5,000 gold pieces; takes 20 men 10 weeks to build

This vessel is exactly the same type as the Drakkar, the sea going warship of the Scandanavian Vikings. With twenty pairs of oars and one square sail, this size of long ship was the smallest suitable for ocean voyages. With one man to each oar, the center of the single deck was clear to carry a moderate amount of cargo. Putting two men to each oar eliminated the cargo area but doubled the number of warriors carried. The long ship was designed primarily as a raider. She was built to carry the maximum number of warriors in the smallest vessel that would be extremely sea-worthy. The type was remarkably successful in Earth's Nautical History, the Vikings using it to raid the entire coast line of Europe for over 400 years.

The smooth, streamlined shape permitted high speeds under both sail and oar. Viking ships are known to have maintained sailing speeds in excess of 12 knots for hours. With one man per oar this long ship is able to make 8 knots, with two men per oar this increases to 10 knots. These are maximum speeds which can only be held for half an hour or so before the crew tires. A fast cruising speed of 6 land 7 knots could be maintained about three hours A slow cruising speed, part of the orrsmen resting at all times, 3 and 4 knots could be maintained all day.

Like the Vikings, the Seafolk who use these long ships are excellent mariners. They do not hesitate to spend six to ten continous days at sea, though perhaps reducing the sail area at evening, the crews continue the voyage both day and night. When raiding they are sufficiently confident of their navigation to strike out directly across the open sea. The raiders thus hit their target from the sea, not permitting word of their presence to be spread along the coast ahead of them.

The construction permits the ship to be run up on any gently sloping shore. The raiders would run the bow onto the beach and jump over the side, confident that the water would at most be just above waist level. After the raid, a quick push and the ship is afloat again. The shallow draft and light weight made it easy to row up river mouths. When they came to shallow stretches of river, the crew would cut wooden rollers from the nearby woods and drag the ship around the rapids on land. By this means the Vikings were able to strike far inland, and also cross Russia from the Baltic to the Black Sea.



The hull is built around a heavy keel, usually a one piece timber which runs from bow to stern. The planks are overlapped and fastened together with rivets in the Northern Clinker fashion. Made watertight with moss and tree pitch in the cracks, this construction was lashed to a light framework of ribs. Therefore the ship was flexible, giving with strains and riding over waves that would break a more rigid ship. The mast was removable and could easily be put up or taken down by five or six men even when under way. A set of three T-shaped supports on the centerline of the ship gave a place to store the mast, yard, and sail when taken down. In this position, the yard also acted as the ridge pole of a tent which could be sep up to shelter the crew in harbor or in stormy weather.

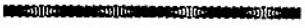
Drawing 11 shows the deck plan of the Long Ship. At the very bow is a carved figure-head. This wooden image was made removable so that it might be taken down, thus not offending the spirits of the land when the ship was not on a war mission. Next comes the forward platform. This platform is raised six to eight inches above the main deck and has two sturdy wooden posts set vertically at its rear. The space under the forward platform is used to store the anchor rope. The anchor itself was lashed between the posts when at sea. The two posts also served as a place to fasten the rope when at anchor. The main deck occupies all the rest of the ship except for the extreme stern. The main deck is flat and is made up of short planks set between the ribs. These planks are held in place by removable wooden pegs. Cargo and supplies are stowed beneath to give a better balance to the ship and to clear the deck for rowing and fighting. No rowing benches are provided, the oarsmen sit on the tops of their own personal sea chests. The oars project through holes in the side of the ship. These holes have small wooden shutters to close them and keep the water out when proceeding under sail. The rails of the ship have small wooden cleats to which shields were fastened and hung over the sides of the ship. This was done only in calm water and only for ceremonial purposes. The slightest waves would wash them off. It is far more likely the oarsmen slung their shields over their back on straps where they would afford some protection and be quickly ready for combat. The Viking crews kept their equipment in their sea chests wrapped up in water proof sealskin bags. They also used these bags to sleep in during cold weather. At the Center of the main deck is a large wooden block which has a hole in its center for the mast. The mast is held in place with a removable wedge. At the rearend of the main deck is another small raised deck, the after platform. This is the station of the Helmsman. The steering oar is fastened to a flexible mount on the rearmost right hand side of the ship. This single steering oar is controlled by a handle projection from the upper end which is grasped by the Helmsman.

For all its size and seaworthiness the Long Ship is rather lightly constructed. It is not designed to withstand damage from nor to deal out damage to another ship. Its main weapon is its crew, all the oarsmen are warriors. Usually the Long Ship only serves as transport, taking the crew to or from the battle, which is fought on land. On the occassional instances where Long Ships fought at sea, they were brought alongside the enemy vessel and the crew fought its way on board the other vessel to capture it. When Viking fought Viking it was common practice for the defending side to chain its ships together. This assemblage served as a floating fort which was difficult for the attackers to assault, the defenders being able to concentrate all their best fighting men at the point of contact. The Vikings did build special ships called "Knarr bards" or "Iron beards" which had reinforced bows for ramming tactics. These special vessels were limited to coastal waters since they were not as sea worthy as regular Long Ships. The sea-going Long Ships ranged in size up to 40 pairs of oars. This was the largest size that the single piece keel timber could be supplied in. Much larger warships were built by the later Viking kings, able to carry as many as 500 to 600 men. However, because of their weaker construction, they were limited to coastal waters.

Long Ships do not normally mount artillery. Their construction is too light to withstand the weight and the shock of firing the heavy catapults. They can mount small field ballistas, but owing to the space needed on the single deck, there is no room for crew men to row on either side of them.

The Long Ship here, with one man per oar, would be able to carry food and water for up to ten to twelve days without imparing her maneuverability or fighting effeciency. With two men per oar, she would only be able to carry three to four days supplies. Long Ships, as any other ships, can be overloaded, but seaworthyness will suffer. Still the crew might hope to avoid battle until the excess supplies are used up. Alternately, excess items might be thrown overboard in times of heavy weather or if time permits before battle.

With their smooth streamlined form and efficient keels, Long Ships could sustain a speed of ten to twelve knots when running before the wind and when "reaching" or traveling at an angle of up to 60 degrees from the wind. They could sail at six to eight knots when "close hauled" or moving at 120 degrees to the wind direction. When traveling in open waters a Long Ship could move a maximum of 300 miles or 60 hexes with the wind in a 24 hour period. Sailing against the wind, a maximum of 200 miles or 40 hexes could be made.



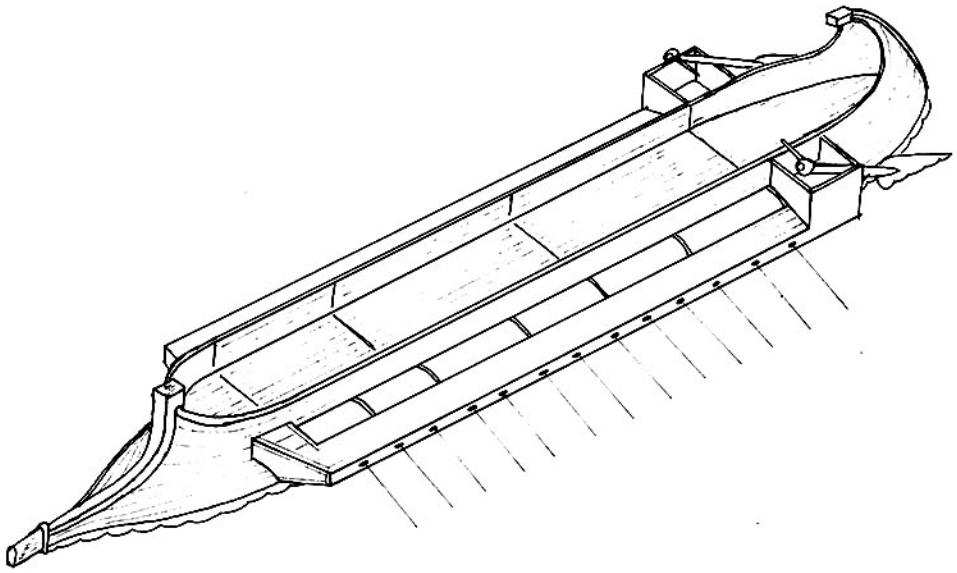
HARBOR GALLEY (#2)

Length: 75½ feet Hull Beam: 10 feet Outrigger Beam: 15 feet
Draught: 2 feet Loaded 1½ feet Empty
Cargo Capacity: 2 tons
Speed: 3 knots Cruising 10 knots Maximum
Crew: Captain, 4 Crew, 8 Marines, 48 Oarsmen(Slaves)
Cost: 6,000 gold pieces; takes 20 men 10 weeks to build

This small warship type is utilized by the City State of the Invincible Overlord. It's primary mission is that of harbor patrol and customs duty. The small size and shallow draught also make it ideal for river patrol. As a by product, these Vessels also serve to keep slaves and prisoners occupied. The construction is very light and the freeboard very low. Thus these ships do not travel upon the open sea. Not having any sails or masts, the Harbor Galley is propelled by oars only.

The City State maintains around 6 of these ships in constant service. There are twelve oars per side with two men working each oar. The oarsmen are slaves and criminals and are chained to the rowing benches. Forty Eight oarsmen are required. To supervise this unwilling power source, a slave master is required, generally carrying appropriate instruments of pain and punishment. Also to coordinate the oarsmen, a drummer provides a timing beat on his musical instrument. Two helmsmen for the twin steering oars and the Captain complete the crew. The Marines carried depend on the particular mission. For customs collection and control of merchant shipping in the harbor, one customs officer, two assistants, and four guardsmen are normally carried. For river patrol the marines might comprise one corporal and seven guardsmen, four of whom are archers. As an alternative, one field ballista and two crewmen might be substituted for four marines.

Such small warcraft as these are never far from a base. They might at most carry food and water for two days. Their major task is simply to keep an eye on things. While in a battle they could do serious damage to a large warship, they are mostly used for scouting and carrying messages. Several of these small galleys might combine forces against a larger war vessel and could cripple her by breaking her oars. This would leave the enemy vessel easy prey for one of their own sides larger warships. A Harbor Patrol Galley could ram an enemy warship but unless it was very lucky could never hope to sink it. However, she would be deadly against ships her own size and any merchant ship or transport.



The Harbor Patrol Galley is built as lightly as is possible so that she may obtain maximum speed and maneuverability. She has very little wasted space. Two small areas below at the bow and stern could be used for storage of supplies. Owing to the light construction, she frequently leaks and often has a spare slave or two who does nothing but bail out this incoming water. Drawing #2 gives the main features of this ship's construction. At the very bow is the ram, tipped with a metal beak cast of bronze. Heavy timbers reinforce the bow. A small hatch leads from the upper or fighting deck down into the main or rowing deck. Under this hatch is a small storage space, immediately ahead of the oarsmen. The major portion of the main deck is occupied by the twelve pairs of rowing benches. Each pair of oarsmen sit with backs forward, pulling on the weighted inboard end of a twelve foot long oar. In order to give sufficient room for the oarsmen, and to place the pivot point of the oar far enough out board for efficient leverage, a shallow rectangular box (called the outrigger) is attached to the side of the hull. The bottom of the outrigger is closed and leather sleeves seal the openings around the projecting oars. This outrigger adds to the effective freeboard of the ship and adds stability when the ship heels or leans over on its side. The space between the upper inner edge of the outrigger and the fighting deck is left open for ventilation.. This space may be closed off with flaps of heavy leather. Hopefully this would keep waves out in heavy weather and be some protection against enemy missiles in battle. At the after end of the rowing benches is another small storage space. Here is where the drummer sits.

The fighting deck begins a short distance from the bow and ram. The rounded front edge of the fighting deck is reinforced by a vertical extension of one of the heavy bow timbers. A semi-circular railing is built out of thin planks covered with leather at the front edge. This provides a shield against enemy fire and makes it hard for warriors from a rammed vessel to board the Harbor Galley. This railing extends all the way along the sides of the fighting deck to the stern, though for most of its length it is just an open frame covered with leather. At the aftermost ends of the outrigger are constructed, on either side, the platforms for the helmsmen. These too are surrounded by a railing covered with leather. The captain stands on the fighting deck between the two helmsmen. Situated immediately beneath the Captain on the rowing deck is the drummer. Thus, the control of the ship is within easy voice command of the Captain.

The Harbor Galley can sustain its top speed of 10 knots for only a half hour before the oarsmen become exhausted. A fast cruising speed of from 6 to 7 knots could be maintained for about three hours. A slow cruise of 3 knots could be maintained for about twelve hours, a daily movement of 40 miles (8 hexes).

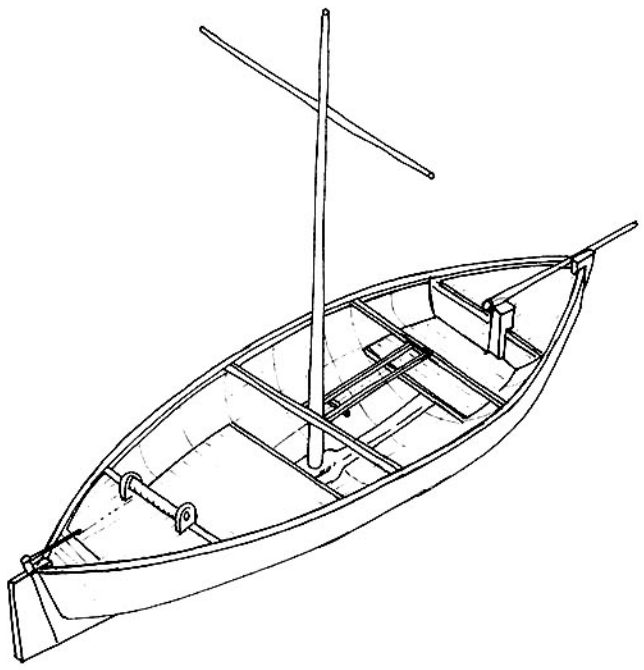
COASTER (#16)

Length: 45 feet (hull) 53 feet (O/A) Beam: 15 feet
Draught: 4 feet Loaded 2½ feet Empty
Cargo Capacity: 5 tons or 20 passengers
Speed: 8 knots maximum Sailing speed
Crew: Three men
Cost: 500 gold pieces 5 men 4 weeks to build.

The Coaster (Drawing 16) is essentially a large fishing boat. It is used for fishing and for cargo and passengers. This vessel may be built by one or two skilled shipwrights and a couple of laborors with only the resources of a fishing village. These small vessels are the work horses of the coastal trade, carrying most of the trade between the port towns and the surrounding villages. They are easily maintained. No part is so complex that a village blacksmith cannot replace it in a day or so. All wooden parts are produced with only hand carpenter tools.

While the Coaster may load or unload cargo at the town wharf when in port, at the villages it is easiest to run the ship up on the shore and carry the cargo through the shallows. Though the Coaster may tow a Skiff along astern on a rope, there are few places that the ship cannot go directly. As the name indicates, the Coaster seldom ventures far from shore. It is sufficiently seaworthy for long voyages but most of its travel is along the seashore from town to village and back again. In addition to coastal trade, such vessels would frequently be used in fishing. A Coaster might accompany four or five Fishing Boats (Drawing 14) to a distant fishing ground. It would collect the catch each day and sail it back to the village for preservation or to the port town for market. Thus the Fishing Boats would be free to concentrate on catching fish. Also a Coaster might carry spare lines, bait, or equipment. Certain types of fighing require heavy nets too large for the Fishing Boats to handle, thus necessitating the bigger Coaster.

The Coaster is structually a large open boat. At the bow a long pole projects forward several feet. This is the bowsprit and the ropes attached to it help handle the sail. A short section of the bow is enclosed, serving mainly for storage of equipment. Several beams extend across the open hull of the boat. These beams stiffen the ships structure, hold the mast in place and serve as spots to fasten ropes of the rigging or fishing tackle. The bottom of the hull has a number of flat planks fitted in it to provide a place to stand or to set cargo. Then comes another enclosed section, extending to the stern. This serves as storage area for food and water, provides a space for the helmsman to operate the single centerline rudder, and has a small windlass or catspan mounted at the front edge. This catspan is used to raise and lower the sail, haul in the nets or fishing lines, or to raise the anchor.



At any port town a number of Coasters will be found serving as taxies. They may be cheaply hired for a quick trip of several days duration in any direction. They serve as the seagoing version of the "quick horse out of town", for those characters needing to be suddenly elsewhere. It is normal for the Coaster to travel during daylight hours only, beaching or anchoring for the night. Owing to its shallow hull, the Coaster sails much better when it is carrying at least a partial load. Running before the wind the Coaster makes 8 knots which in sixteen hours means a distance of 150 miles (30 hexes). Reaching across the wind at 6 knots means 110 miles (22 hexes) per day. Travelling close hauled against the wind at 4 knots means a distance of 75 miles (15 hexes) per day.

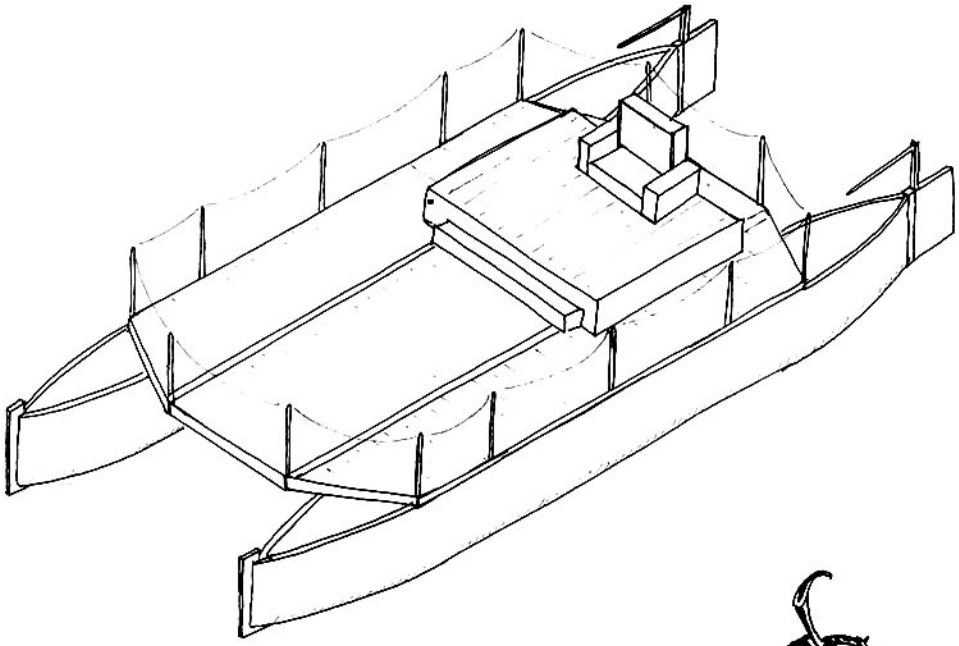
CEREMONIAL BARGE (#13)

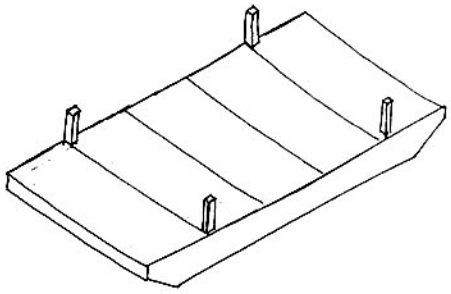
Length: 50 feet
Beam: 26 feet
Draught: 3 feet
Capacity: 3 tons
Speed: 2-3 knots
Crew: Varies
Cost: 10,000 gold pieces
5 men 12 months to build

This vessel is used for ceremonies only. It has no workaday function. It provides an impressive vehicle from which an important person may show off to the public. Because of its ornate and delicate construction, it is suitable for travel only on sheltered waters. It may be paddled, poled, or towed for its short journies on lake, river, or canal. The number of crewmen required varies on the mode chosen. One helmsman is required, controlling both tillers by means of attached lines. Two attendants usually stand in the bows with ceremonial boathooks. Six to Eight men would fit along each side to pole or paddle. Voyages in this craft seldom last more than several hours.

The Ceremonial Barge is a catamaran configuration, that is it has two equal-sized hulls joined together by a flat platform. It takes such a long time and a large sum to build because of the large amounts of gilding, carving, and painting employed to decorate it. Expensive woods are used for its frame and many fittings are made of precious metals. Thus it makes a gaudy setting for a VIP.

High level Magic-Users are fond of using such vehicles for travel. It makes a very impressive entrance to arrive in such a craft, especially when the Ceremonial Barge is towed by a Dragon Turtle!





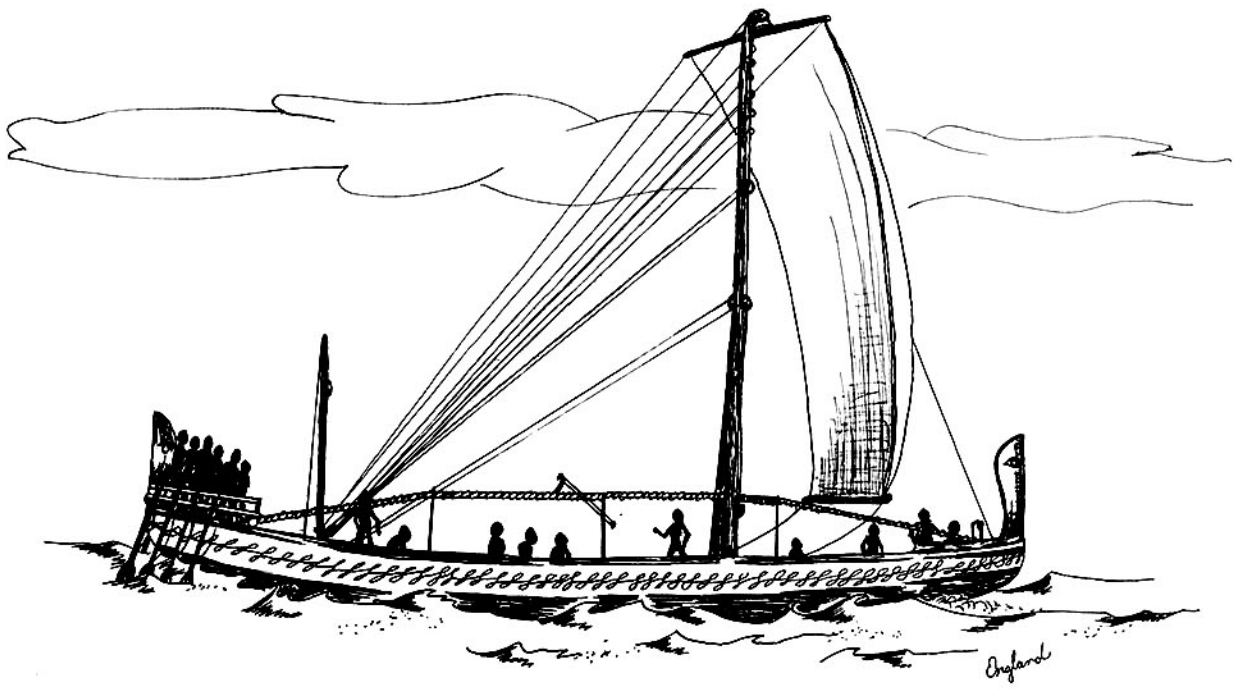
BARGE/FERRY (#3)

Length: 42 feet Beam: 22 feet
Draught: 3 feet Loaded 1 foot Empty
Cargo Capacity: up to 20 tons
Speed: 1 to 3 knots whether rowed, towed, or poled
Crew: no set number
Cost: 10 gold pieces 5 men 1 week to build

This vessel is a simple flat-bottomed rectangular wooden box. It is useful only upon calm and sheltered waters. In harbors, cargo is piled up on its flat top and tied down with ropes. Then the barge is pushed with poles, rowed, or towed to its destination where the cargo is transferred. In the harbor, the barge may also serve as a mobile wharf or a work platform.

This vessel is also common on rivers where it frequently serves as a ferry. In additon to the previous modes of movement, passengers and crew can move the ferry across a river by pulling on a rope stretched between the two banks. It may also be pulled along the banks of a river or canal by means of a tow rope and a pair of oxen or other draught animals.

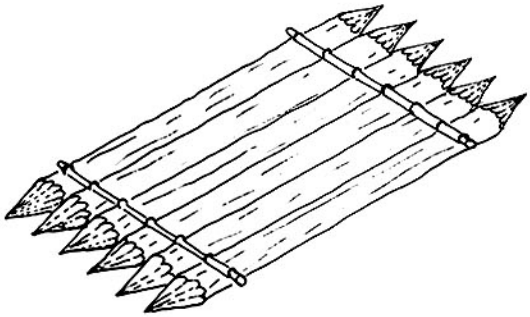
Barges do have uses in war and siege. Protective bulwarks may be built up around their edges. Ballistas and Catapults may be mounted on them. Two barges could be joined together and a siege tower built up on the super structure. In principle a barge is a simple floating platform, used for any purpose but useful only on calm sheltered waters.



LARGE RAFT (#6)

Length: 45 feet
Width: 30 feet
Draught 2 feet
Capacity 10 tons
Construction: (Cost 2 gold pieces)
5 men 5 days to build

This craft is lashed together out of large tree trunks. The primary factor in constructing this conveyance is the distance the logs have to be transported from the place of felling to the water. Rope or natural lashings of some sort are then used to bind the raft together. Cargo arrangement is not very picky. The raft will support anything which doesn't submerge it or overturn it. Motive power is usually conspicious by its absence. Sails and a mast could be rigged, but owing to the difficulty of steering such an ungainly object, it could only move down wind. Normally a raft is used to travel with the current. Sweeps are used to steer and long poles are used to fend off constant and strenuous efforts by at least a dozen paddlers, the raft could be propelled short distances. Rafts like this are often found in use as river ferry, being pulled back and forth across the current by a rope stretched from bank to bank.



SMALL RAFT (#18)

Length: 31 feet
Width 5 feet
Draught: 1 foot
Capacity: 4 tons
Construction 6 copper pieces
one man 2 days to build

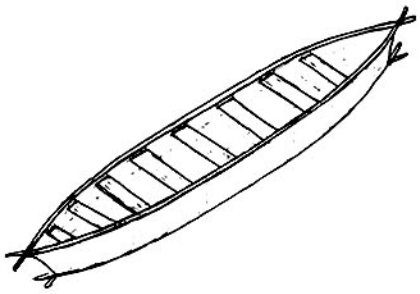
The only difference between this craft and the Large Raft is the size of the logs comprising it. This raft is composed of logs small enough that one man could manage to move them into position unaided. The raft is the simplest type of all water craft to build, requiring absolutely no skill for its construction.

CORACLE (#5)

Length: 12 feet
Beam: 5 feet
Draught: 1 foot
Cargo Capacity: 1,000 lbs.
Speed: 2-3 knots
Crew: 2-4 paddlers
Cost: 9 copper pieces
1 man 3 days to build

The Coracle, while one of the earliest known types of boats, is also one of the most efficient. It is constructed by tying together a hemispherical frame of flexible branches. To this frame is laced a cover of animal skins. The edges of the skins are sewn together and the seams are water-proofed with tar or pitch. Lastly, seats are tied in place and the boat is finished. The drawing given is of a fairly large version, but even this one is so light that it may be carried by one man. The size may range from a one-man boat of 5 foot by 3 foot up to a 30 foot by 12 foot size. This vessel must be paddled. larger types have a sufficiently strong frame that oarlocks can be fitted. This type of boat is known to many peoples who live far from major bodies of water and is often used by nomad tribesmen to cross large rivers.

UMIAK (#17)



Length: 32½ feet
Draught: 1½ feet
Cargo Capacity: 2,500 lbs.
Speed: paddled- 4-5 knots
Crew: 8-12 people
Cost: 48 copper pieces to build

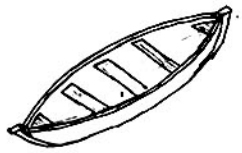
Beam: 5½ feet

Sailed- 6-7 knots

4 men 4 days to build

This vessel is very similar in construction to the coracle. Usually it is built in areas which have very little timber. Therefore, the frame is skillfully pieced together out of small branches and reinforced at stress points with bone. The more slender shape makes for faster speeds at sea. In it's larger forms, which may be up to 40 feet in length, it is very seaworthy. The Irish Curragh, which is of this type, has been sailed across the Atlantic Ocean. Most often island tribesmen use vessels like this to raid their neighbors. Generally insufficient wood is available to strengthen the sides enough for oarlocks. Thus, these boats are more often paddled than rowed. With the addition of flat stones in the bottom for ballast these craft sail quite well. On ocean voyages covers of leather are laced over the open top to keep out spray. Though it is quite sturdy, the crew must take care to avoid puncturing the sides with sharp objects. The bottom is reinforced with a wooden runner to permit the Umiak to be drawn up on the beach. As light as this vessel is, only 6 or 8 people are needed to carry it overland on long portages. Though a fair amount of skill is needed to construct it originally, repairs may be made by any reasonably competent person.

SKIFF (#15)



Length: 16 feet
Draught: 1 foot
Cargo Capacity: 500 lbs.
Speed: rowed 3-6 knots
Crew: 3-5
Cost: 6 gold pieces

Beam: 5 feet

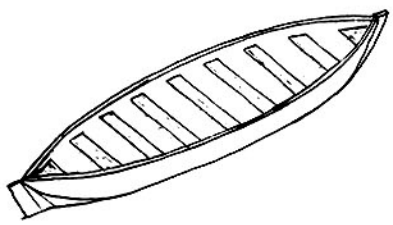
Sailed- 7-8 knots

4 men 6 days to build

Skiffs vary in size somewhat but all are intended to be work boats handled by one or two crewmen. Though used primarily in harbors and in sheltered waters, they may put to sea when crewed by those with a high level of seamanship. Endurance is limited to no more than one or two days with a full crew of 4. Its broad beam adds to stability but prohibits high speed. Usually this boat is rowed by two to four crewmen. It is fitted for a collapseable mast and may carry any one of a number of different sailing rigs. Though most often employed to transport people, small items of cargo may be carried. Also the skiff is used to fish on sheltered waters, mostly hook and line technique although some small nets may be utilized.

Larger vessels often carry a skiff as an auxillary. It is used to scout out unknown anchorages and to move cargo and personel though water too shallow for the main vessel to transit. The skiff may be carried on board the main ship or it may be towed behind on a rope. The skiff is the most common type of civilized water craft and is encountered nearly everywhere.

LONGBOAT (#4)



Length: 29 feet
Draught: 1½ feet
Cargo Capacity: 750 lbs.
Speed: Rowed 8 knots
Crew: 16
Cost: 15 gold pieces

Beam: 7 feet

Sailed 10 knots

6 men 10 days to build

The Longboat is constructed in the same fashion as the skiff. It is specialized for transport of people. The Longboat is most often used by the military. This vessel is employed in harbor areas to move crew members and passengers between ships and the shore. Seldom are long journeys undertaken in this craft as it is primarily rowed and supplies for the large crew would take up too much room. In time of war Longboats are used to land assault parties or raiding forces in areas where the major warships cannot land directly. Also in sea battles Longboats are used to pick up survivors or carry messages between fleet units. Sometimes boarding parties in Longboats are sent around from the unengaged side of a ship to make a sneak attack on the unengaged side of the enemy ship. Though equipped with a collapseable mast, Longboats are not often sailed.

FISHING BOAT (#14)

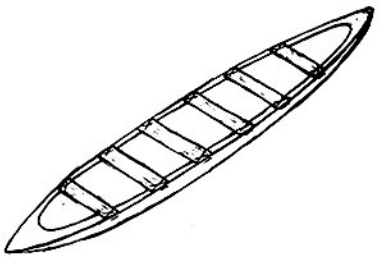
Length: 29½ feet
Draught: 1½ feet
Cargo Capacity: 1,000 lbs.
Speed: 3-4 knots rowed
Crew: 6 people
Cost: 12 gold pieces

Beam: 6 feet

8-10 knots sailed

6 men 8 days to build

The Fishing Boat is encountered on any coast where there are people and fish to catch. It is much the same size and construction as the Longboat but carries a smaller crew and is specialized for sailing. Seaworthy enough for long voyages, it has a covered area in the bow for storage and for shelter in rough weather. The open center portion of the boat provides working space for the fishing crew and for the catch. The boat is useful for general purpose tasks. Any size port or harbor will always have several Fishing Boats available for hire for short trips. Cargo can be carried in the center open section and landed on any beach. Though it requires a skilled crafts man to build, any fisherman may make emergency repairs to his boat. Any fishing village will have at least one carpenter capable of making complete repairs.



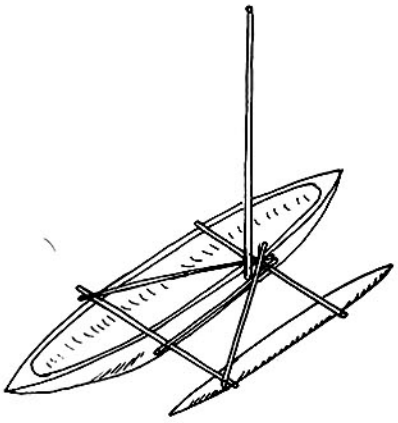
DUGOUT (#7)

Length: 31 feet
Draught: ½ foot
Cargo Capacity: 500 lbs.
Speed: 5-6 knots paddling
Crew: 6 people
Cost: 12 copper pieces

Beam: 5 feet

Two men two days to build

This vessel is one of the simplest types to build since it is simply a hollowed-out log. It may be made by peoples of low technology with only stone tools and fire. The vessel depicted is of moderate size, Dugouts ranging from 6 feet and one person to over 80 feet long accomodating 100 or more people. The primary consideration is the size of the tree-trunk available. The Dugout must be paddled only. It requires dexterity and balance to use since it is unstable and capsizes easily. Dugouts are not often found in open waters because of their susceptibility to rough weather. Dugouts can carry some cargo but they are limited in their capacity. The primary advantages of these vessels are their cheapness of construction and ease of maintainance.



OUTRIGGER CANOE (#8)

Length: 30 feet
Draught: ½ foot
Cargo Capacity: 500 lbs.
Speed: 5-6 knots paddled
Crew: 6 people
Cost: 18 copper pieces

Beam: 16 feet

8 knots sailed.

Two men three days to build

This vessel is a simple modification of the Dugout. In order to prevent capsizing a streamlined float has been attached parallel to the hull. The stability has increased to the point at which a sail can be carried. The Outrigger is sufficiently seaworthy to be able to make ocean voyages. Various styles of Outrigger exist, of which this variety is the simplest. Another variety has a second float on the opposite side, increasing stability but also increasing drag. Another type consisted of two dugout hulls connected together with a rectangular platform. Also known were trimarans or three hulls connected together. Some of these multihulled vessels may be over 80 feet long and are easily capable of transoceanic voyages.

Designer's Notes

This set of plans and book was prepared as an aid to individual encounter gaming. The plans were drawn to a scale of one inch equals five feet. This scale was picked because of the disparity between the different sizes of metal figures available. Some figures, such as Ral Partha's, are simply too large to be maneuvered on any smaller scale. The different deck levels were drawn separately to permit movement af figures between decks in action. The hex grid is superposed to facilitate movement. In this scale, it works out that a normal-sized man occupies one hex. Gamers may prefer to use this orientation in a hexagon to determine front, flanks, and rear spaces. The grain of the hex pattern runs lengthwise because on a ship fore and aft movement is more important than side to side movement. All those areas where a figure may stand are drawn with a woodgrain texture. Minor differences of the same level are depicted by running the pattern of the planking in different directions. The number identifying each drawing is printed at the bow or front of each ship plan. The dashed lines running between the ships are "cut lines". The sheet may be cut apart on these lines without cutting into ship plans on the opposite side. The individual ship plans may then be covered with clear adhesive sheets of vinyl plastic. This makes them more durable and permits quick notation with grease pencil of damage or alterations right on the plans themselves. The same effect can be achieved with plastic page protectors or a small sheet of plexiglass, though not as conveniently. While the use of miniature figures is esthetically most pleasing, it may be more convenient to portray nonplayer characters' location and orientation with numbered markers or coins. Each vessel has a technical description which gives enough basic data about the ship to permit its inclusion into any set of miniatures rules.

A lot of research time was spent in determining the precise appearance of the various vessels. Naval historians have had much new material to work on as the result of recent archaeological finds. The wide-spread use of underwater equipment has resulted in the uncovering of many wrecked ships of various eras. New techniques of chemical, atomic, and statistical analysis hav yielded fresh insights as to construction techniques and common use practices.

Several authors have made use of this new information to produce books on ships and seafaring. The most useful of these books to the gamer is The Ship by Björn Landström, Cr 1961 Bökforlaget Forum AB, Stockholm; Doubleday & Co., Inc., Garden City, N. Y. Mr. Landström is a noted marine archaeologist. What is more important to the gamer, though, is his fantastic ability as an artist. The book is in color and contains the most minutely detailed paintings and drawings of ships ever produced. It covers all ages and areas. In most instances he also includes a reproduction of the original source that the reconstructions were made from.

Another excellent source is Illustrated History of Ships & Boats by Lionel Casson, Cr 1964, Doubleday & Co., Inc. Garden City, N. Y. This book has extensive discussion of the evolution of vessels and techniques as well as drawings, photographs of models, and reproductions of original artwork.

Intended especially for the naval wargamer is Warfleets of Antiquity by R. B. Nelson, Cr 1973, Wargames Research Group, London, England. It has simplified line drawings of all major warship types from early Phoenician up to Viking. The treatment of the various aspects of warfleets and navies is comprehensive. All major naval campaigns and battles are also detailed.

One of the best sources of detailed accounts of ancient and medieval naval actions are the pair of books by Admiral W. L. Rodgers; Greek and Roman Naval Warfare and Naval Warfare Under Oars, 4th to 16th Centuries, Cr 1937 and 1940. Fortunately for the gamer, the United States Naval Institute has reprinted these two volumes. The historical treatment is excellent. Admiral Rodger's reconstructions suffer from the lack of physical evidence available in the 1930's. Most of his plans are based on the efforts of the French Admiral Serre, who published his work in the 1890's. Still, this pair of books is a most valuable resource to the gamer.

These drawings were provoked by several medieval and fantasy campaigns where local gamers needed the "right" kind of ship. Since none were available, the author was forced to turn to reference books and the drafting board. It is hoped that this product will fullfill the gamers' need for nautical material. It is also intended to bring out additional fleets of ships.

Happy Gaming!

Dave Sering

Judges Guild

Nautical Terms

Aft - the rearward direction or portion of a ship

Ballast - weight carried in the bottom of a ship to improve stability

Beam - the greatest width of a ship

Bow - the front of a ship

Bowsprit - a long pole sticking out from the bow of a ship

Capstan - a mechanical winch for handeling ropes

Draught - (also Draft) the depth of water necessary to float the ship

Flagship - that ship carrying the commander of a squadron or fleet

Fleet - an organized group of several squadrons

Freeboard - the height of a ship's side above the water

Hauling - sailing at less than an angle of 60^{o} to the wind

Heel - tilting over on a side

Keel - the long timber forming the backbone of a ship

Knots - nautical miles per hour

Lanteen Sail - a triangular sail suspended from a single yard

Mast - the large vertical pole which supports the sail yard

Nautical Mile - 6080 feet

Reaching - sailing at an angle between 60^{o} to 120^{o} to the wind

Rigging - the ropes which support and work the sail

Rudder - the movable flat surface used to steer the ship

Running - sailing with the wind

Squadron - two or more ships which operate together under a single commander

Square Sail - a rectangular sail suspended from a single yard

Stern - the rear of a ship

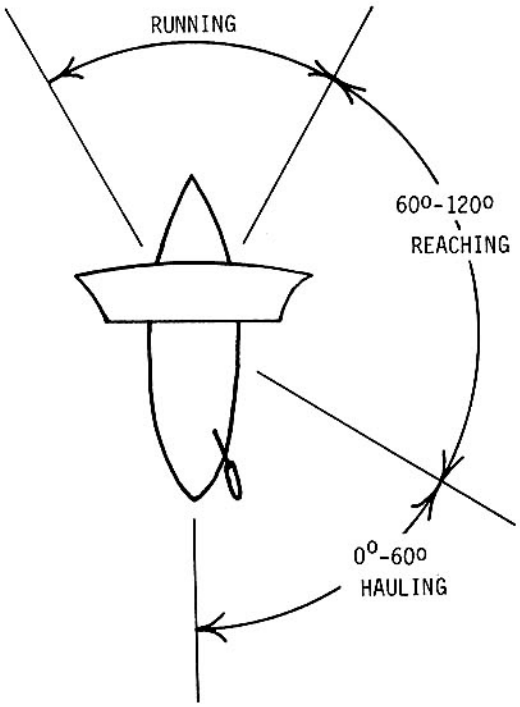
Sweeps - large oars worked by more than one man

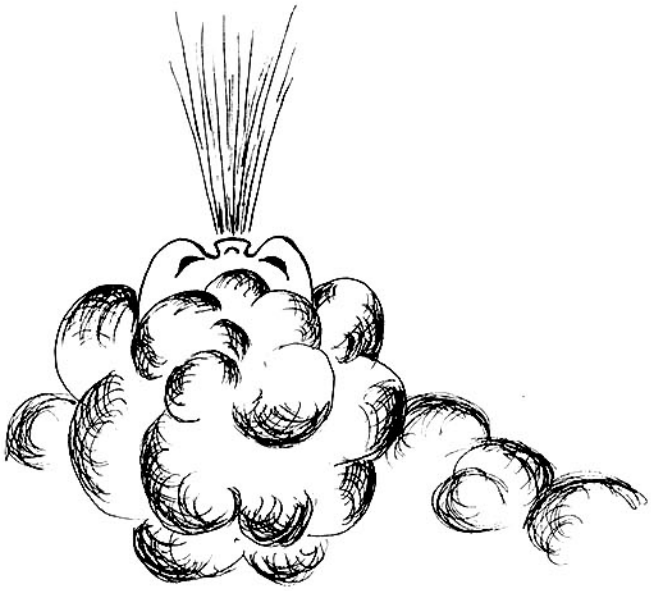
Tacking - zig-zagging from side to side to move against the wind

Wharf - a platform built over the water to load or unload a ship

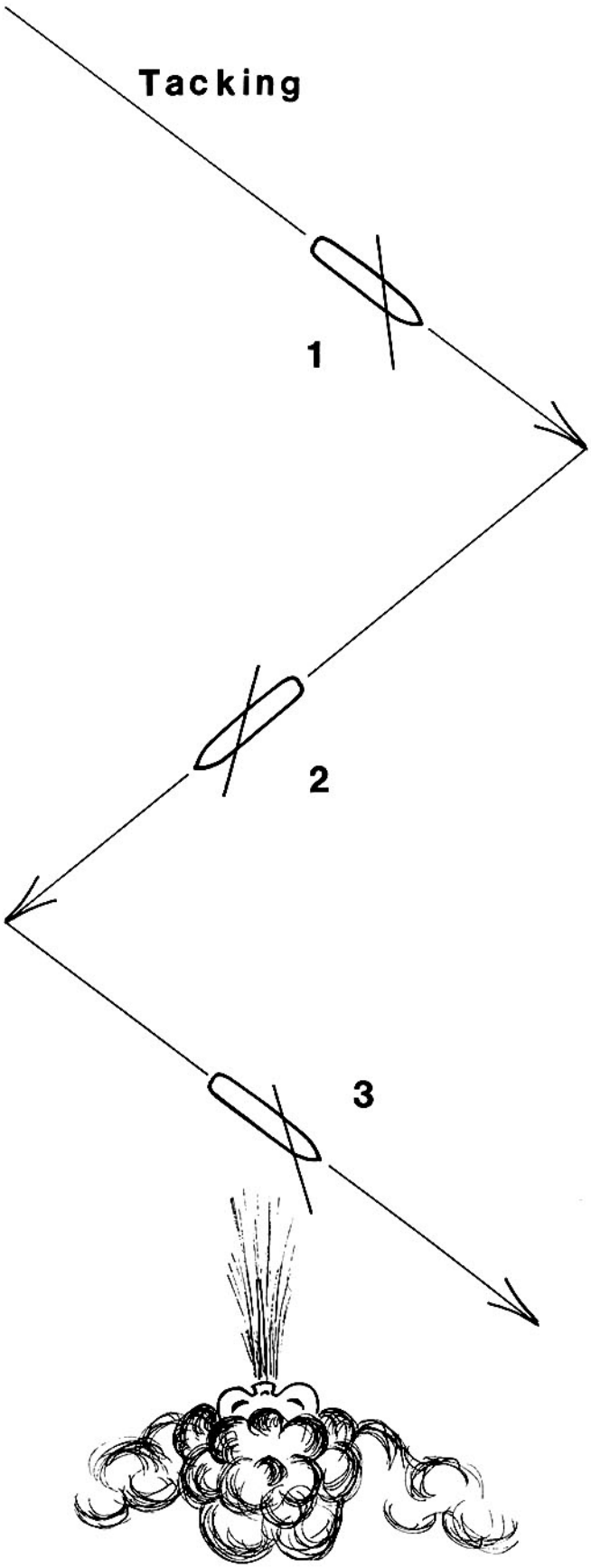
Yard - the horizontal pole from which the sail is suspended

Sailing

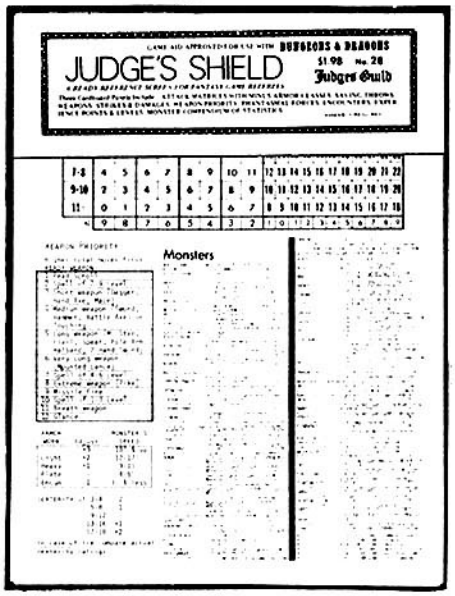




Tacking



Judges Shield



The 'Shield' is a screen used to hide the referee's secret maps during D&D gaming. It also has many useful combat charts printed on both sides for fast paced fantasy play.

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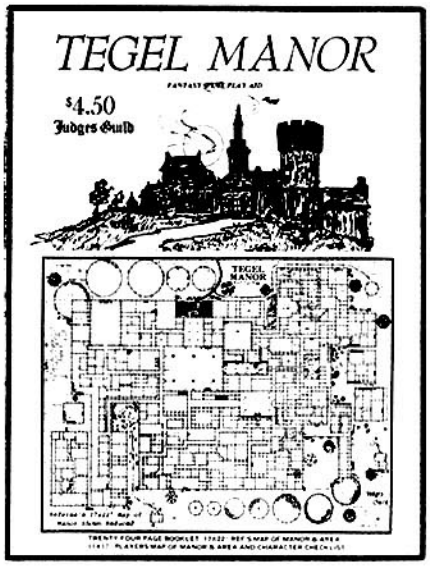

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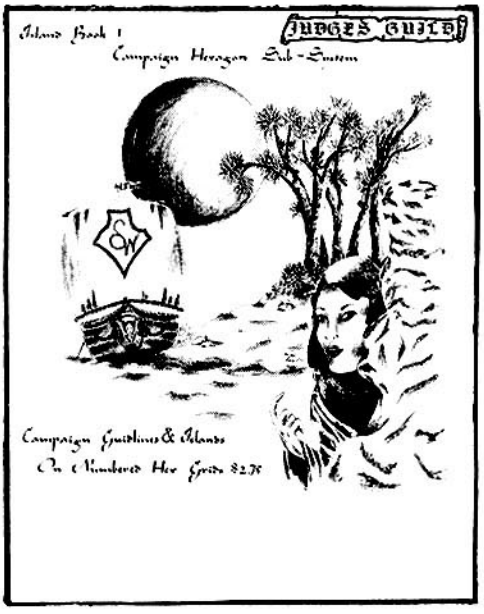

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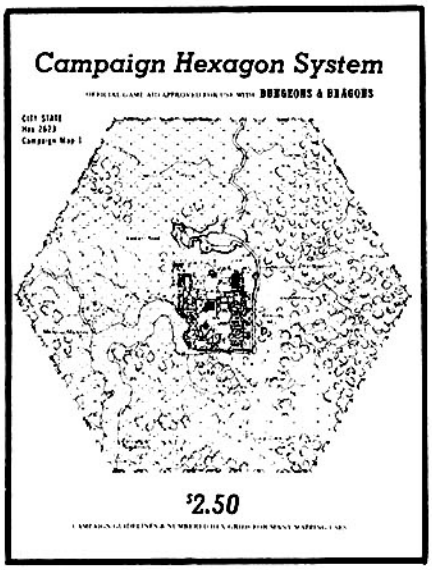

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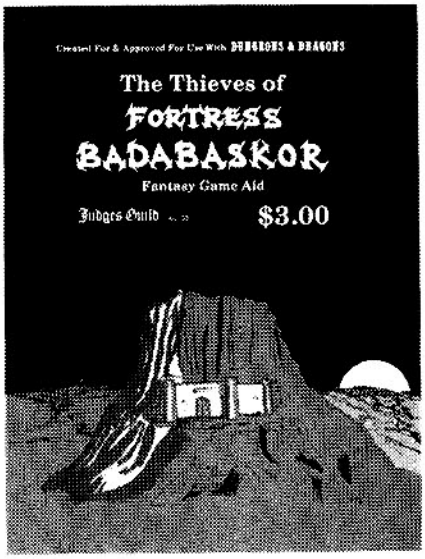

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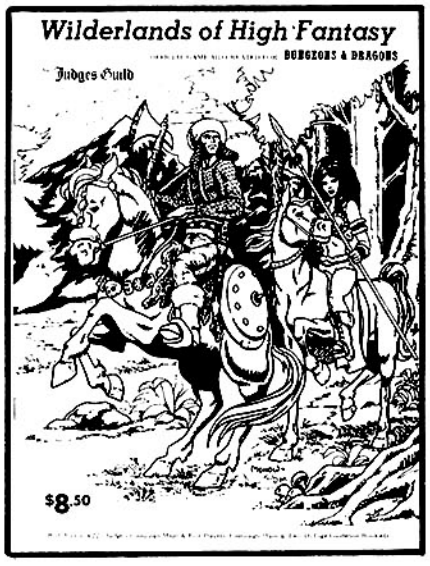

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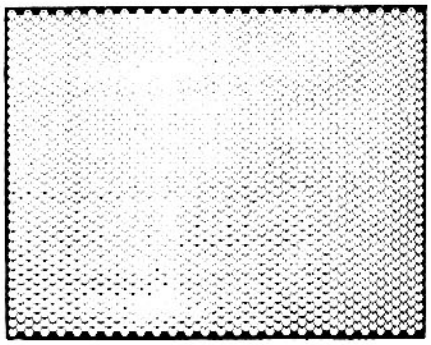

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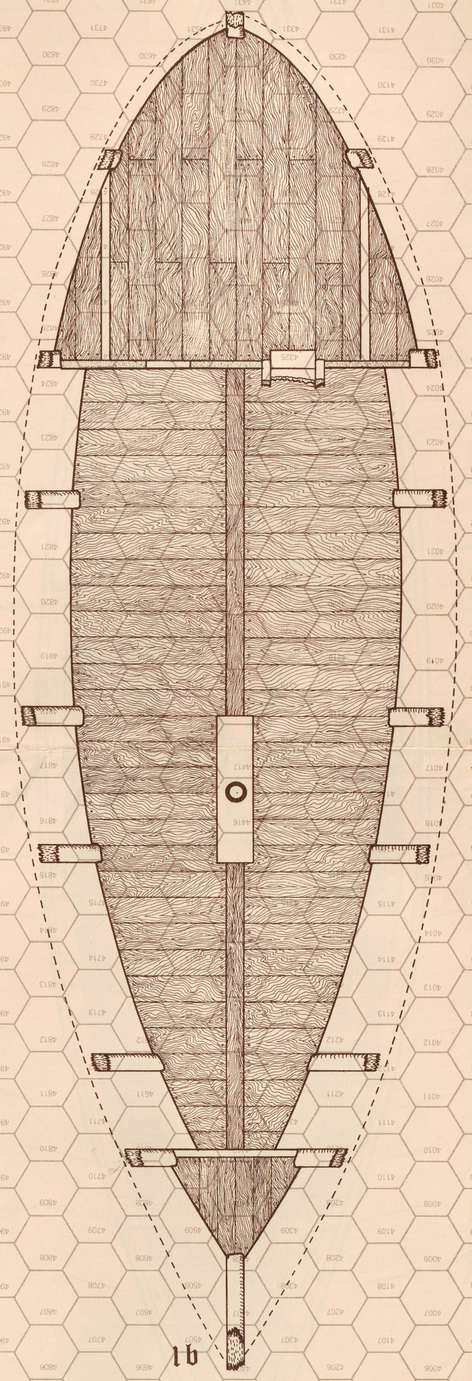

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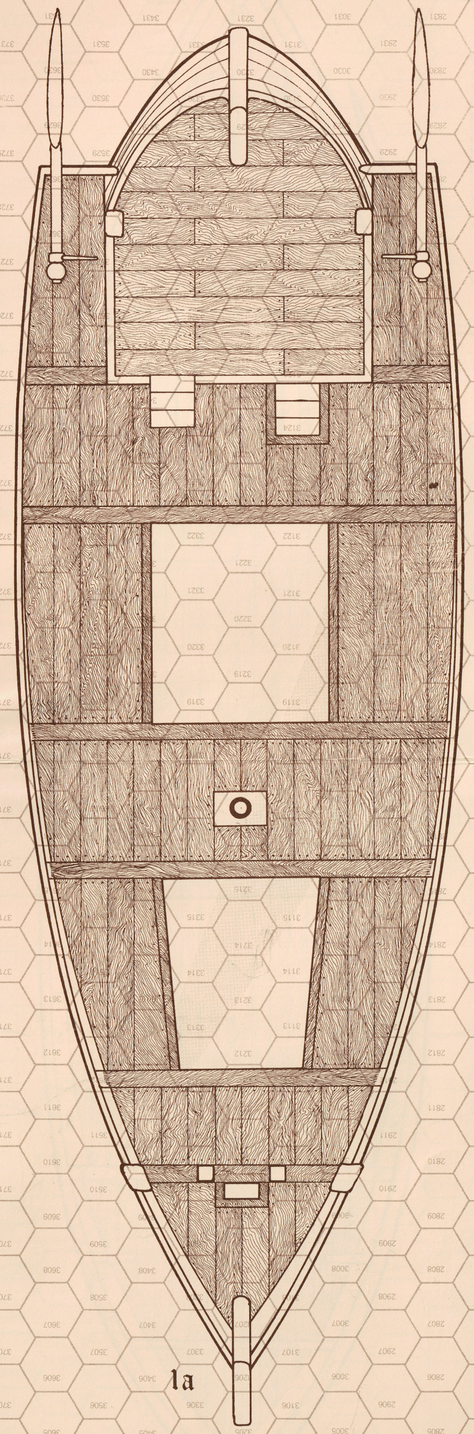

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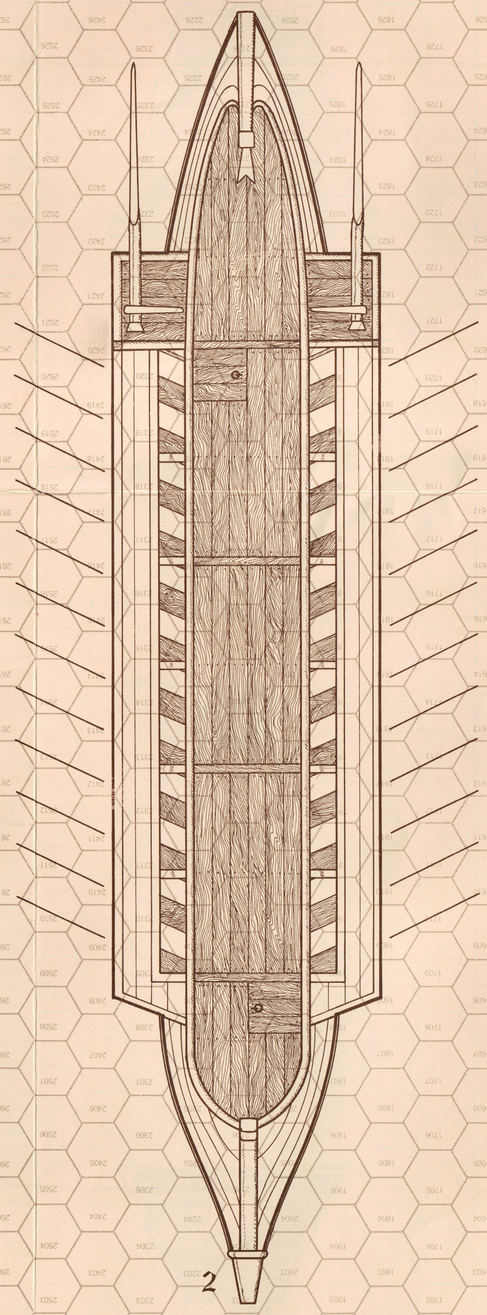

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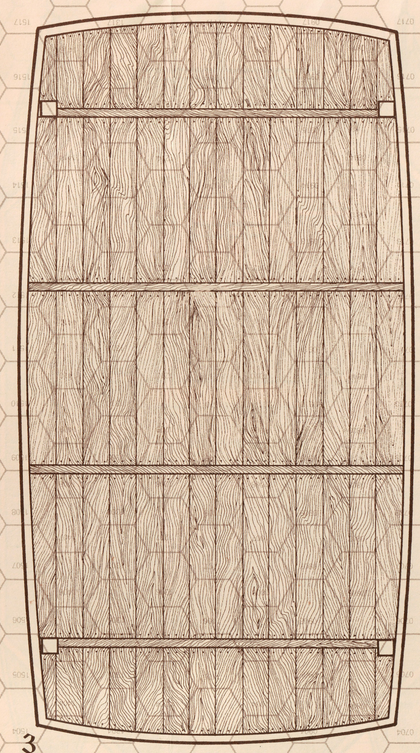

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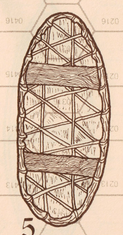

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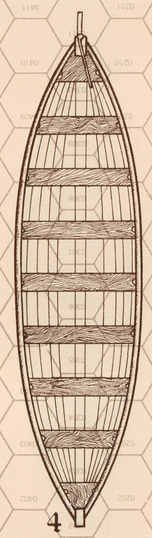

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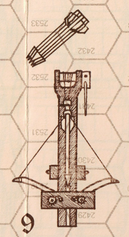

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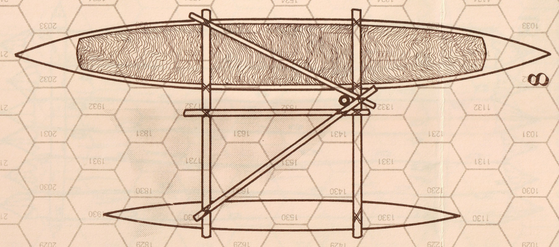

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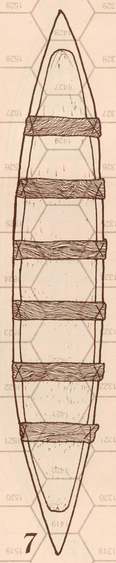

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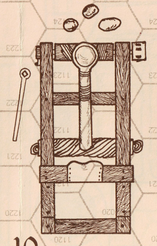

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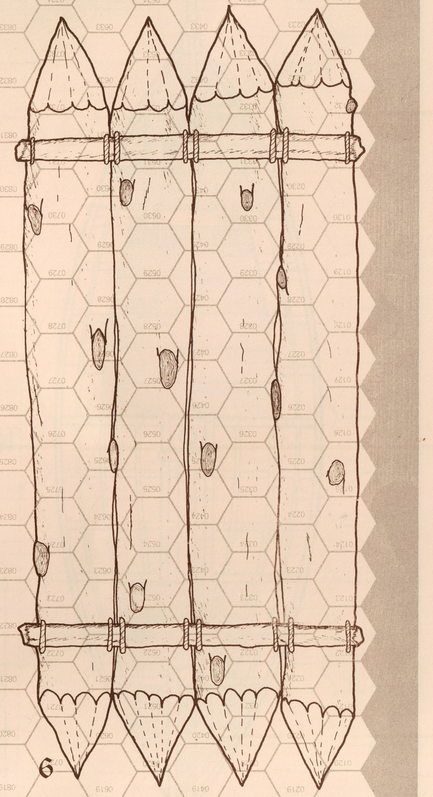

9

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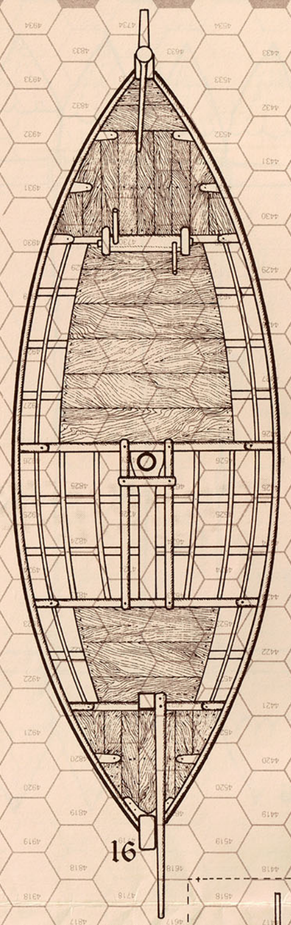

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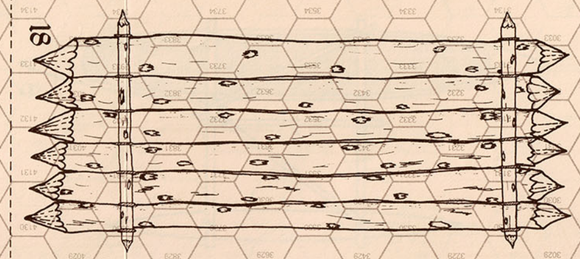

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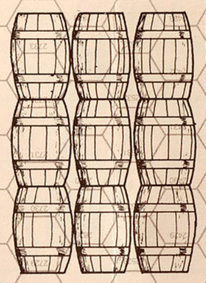

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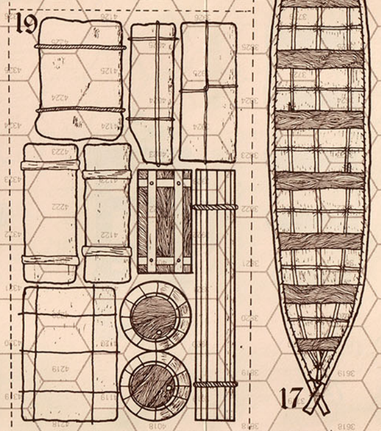

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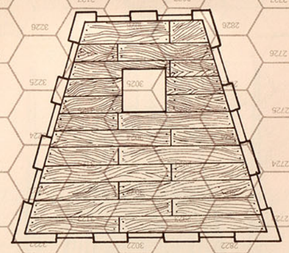

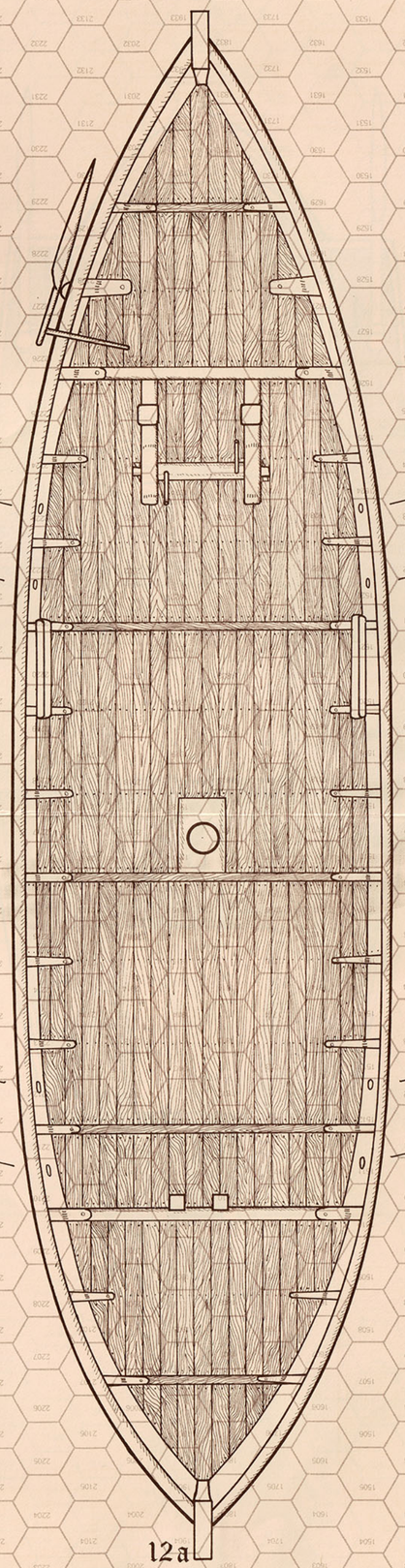

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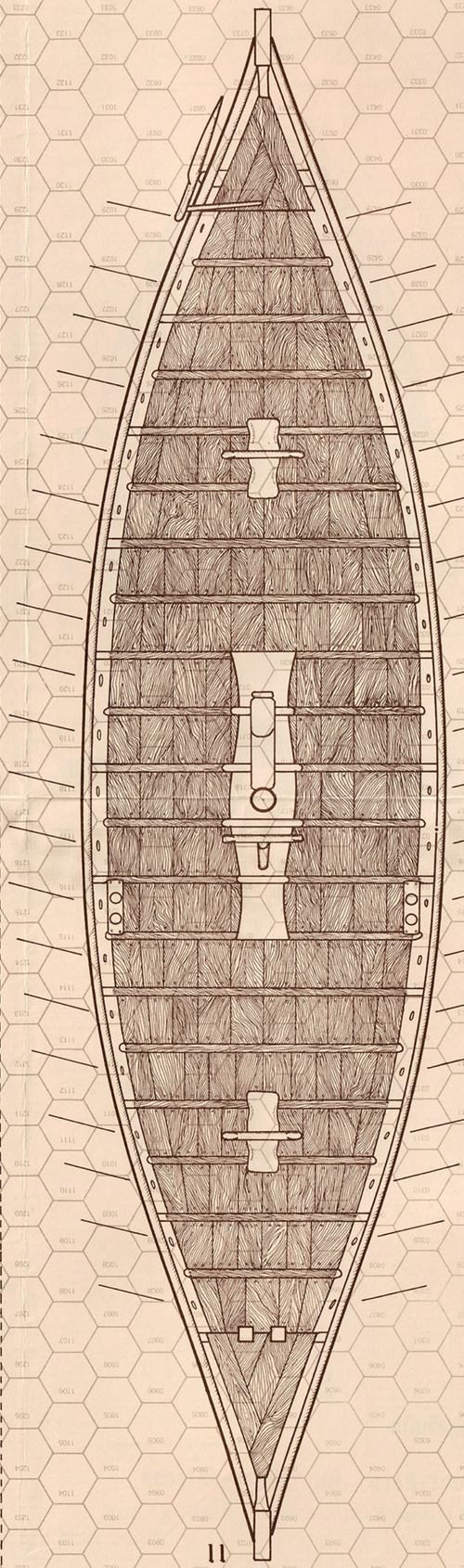

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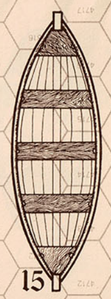

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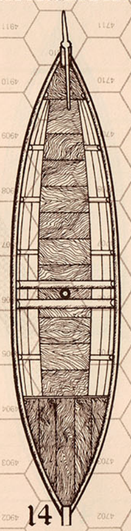

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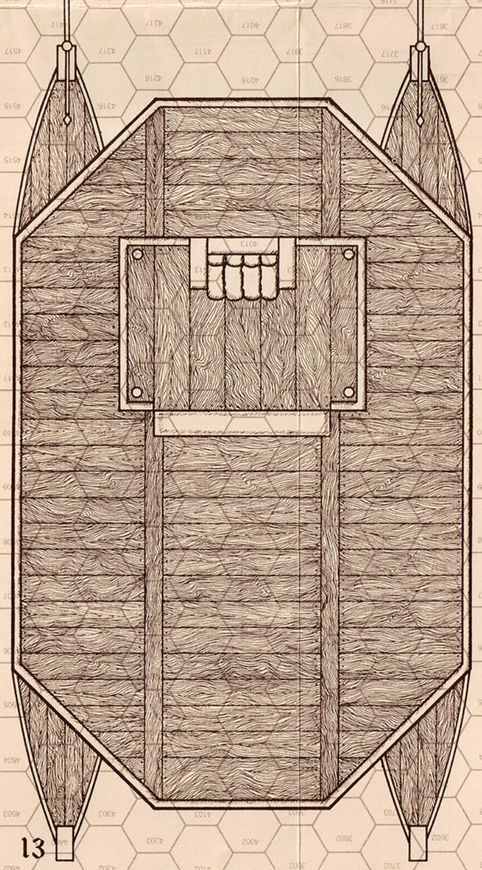

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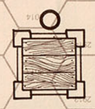

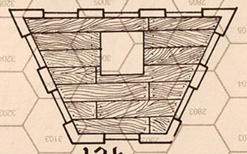

12b

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