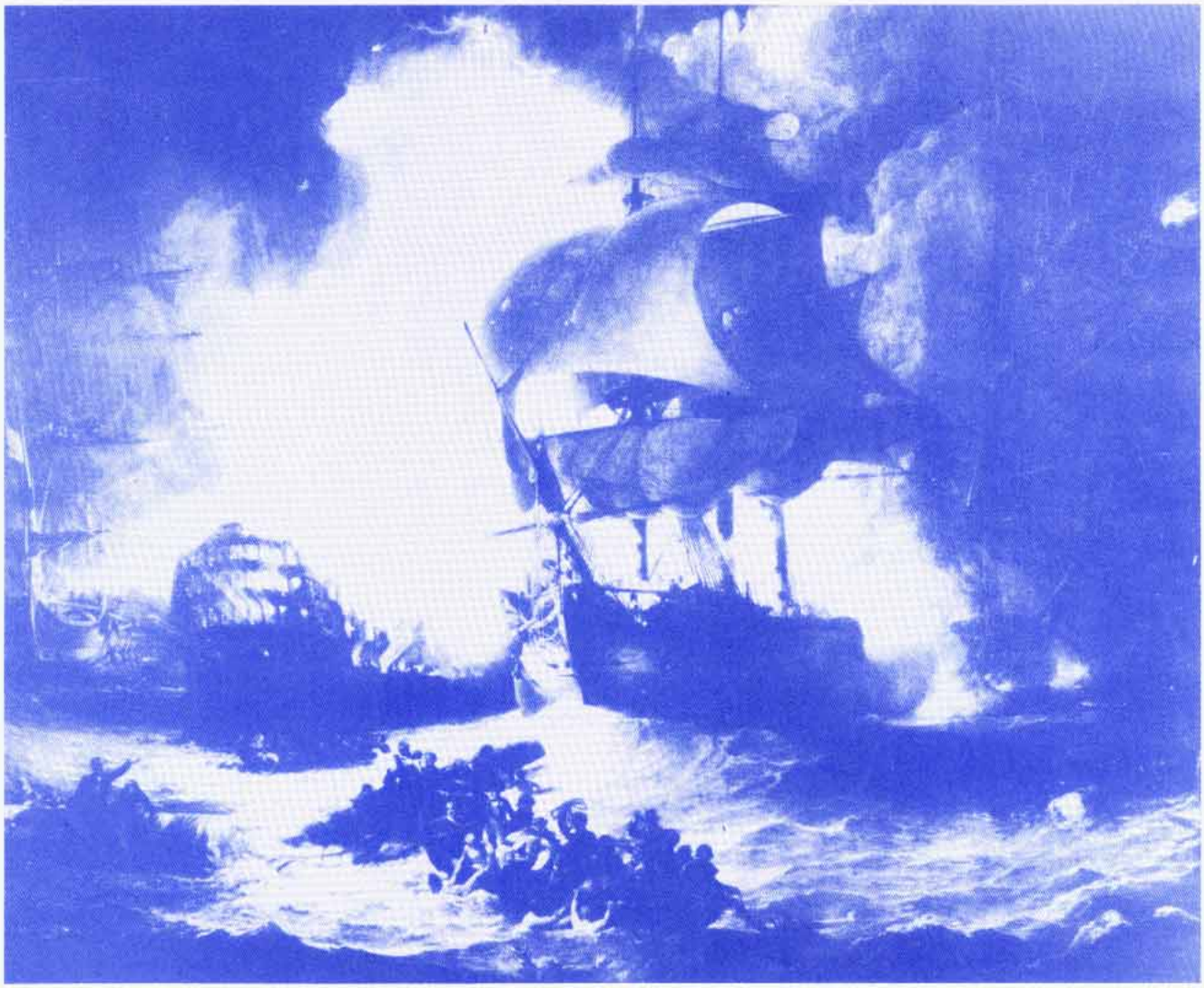
Heart of Oak

Naval Miniatures Rules for the Age of Fighting Sail



From the World of Privateers and Gentlemen™

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FANTASY GAMES UNLIMITED

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Heart of Oak

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Dedicated to the Memory of:
Commodore David Porter, USN
(1780–1843)
Founder of Naval Wargaming

Jon Williams

INTRODUCTION

When **HEART OF OAK** was first published in 1978, the first few chapters of what was to become the **PRIVATEERS AND GENTLEMEN** series had already been written. In the following four years, while **HEART OF OAK** leaped, by a series of tentative short rushes, into the consciousness of the wargaming community, **PRIVATEERS AND GENTLEMEN** had been sold to Dell, the first three novels had appeared in print, and two more had been written and sold. Due to these activities, I was not able to devote as much time to the promotion, selling, and marketing of my games as I wished, despite the fact that informed response to HEART OF OAK and its companion games was positive.

But now, thanks to the folks at Fantasy Games Unlimited, the Second Edition has at least seen print. Those who are familiar with the First Edition will find that, although the basic game system is unchanged, certain ambiguities have been clarified, much additional information has been added, and a number of additional advanced rules have been offered. Those who are coming to HEART OF OAK for the first time will, I hope, have their path into an unfamiliar game system soothed by my four years' experience at answering the questions of puzzled first-time players.

Designing a game with such a detailed historical background, much of which was either unknown or misunderstood by the gaming public, necessitated the amassing of considerable amounts of raw data, the reduction of that data into game terms, and the presentation of the processed dates to the reader. It is to be hoped that the process has resulted in the creation of a game that any intelligent, reasonably experienced gamer, knowing little about the period, may read, study, and play with a minimum of confusion.

Because the period is so unfamiliar, the rules to HEART OF OAK are arranged differently from other wargame rules with which the reader may be familiar. The first part of the rules is composed of a series of brief essays, informing the reader in an informal fashion of basic background necessary to play, such as how to sail a ship, basic sailing tactics, gunnery, how to set up a game, and so on. The second half of the book is actually composed of the rules themselves, arranged in the order in which players will need to consult them as they play the game.

It is recommended that beginning players start with a modest battle, say one frigate versus another, a sloop vs. corvette action, or a pair of sail of the line. This will enable players to learn the art of sailing on a small scale before attempting to apply their knowledge in a large-scale fight.

The question of play-balance should also be addressed. There are rules for randomly assigning crew quality on the basis of nationality, and these will provide a good and balanced game nine times out of ten. The tenth time, however, may result through exceptionally good or abysmal die-rolling by the players in a flagrantly unbalanced game. It is always helpful to have an impartial third party or referee balance the combat ahead of time.

Over the years, it has been particularly gratifying to observe a very historical evolution of sailing tactics among beginning players. At first the players were often lost, and their games degenerated into a free-for-all slugging match, all fleet tactics and order lost. Then, as the players became more experienced, mid-18th Century linear tactics began to evolve, the ships forming in disciplined, unbreakable lines. This has usually been followed by the Nelsonian attack aimed at breaking an enemy line - - - and the Nelsonian attack (historically the epitome of sail tactics) has, in turn, often been supplanted by a more sophisticated brand of linear tactics aimed at countering the Nelsonian full-bore assault, tactics that may historically have evolved if steam had not supplanted the age of sail.

I would like to thank those who wrote me concerning the First Edition rules, and who offered suggestions, questions, or criticisms, many of which resulted in clarifications and improvements in the present edition.

Jon Williams
June, 1982.

GAME SCALE:
1 minute = 1 turn
1 millimeter = 1 meter (1:1000)

CONTENTS

HEART OF OAK

THE COMPASS ROSE

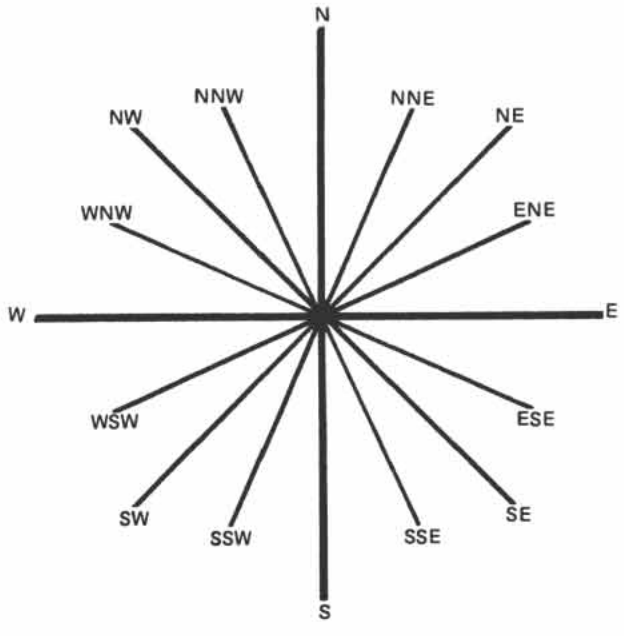
The standard compass in regular use the world over has 32 compass 'points', obtained by subdividing the cardinal directions (North, South, East, West) into 28 other subdivisions (North Northeast, West by North, West North West, etc.).

HEART OF OAK also uses a compass. It is a 16-point, simplified version of the standard nautical compass. Players will have to construct one or more of these compasses, or copy them from the rules. The directions indicated on the compass are N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW. These compasses will be placed on the playing surface.

The compass will be very important in determining movement. The wind will always be coming out of one of these 16 directions. The ship's heading will always be pointing in one of these 16 directions. Therefore, by cross-indexing the heading of the ship with the wind direction, an easy interrelationship between the wind and ship will be produced, in order to determine movement.

These 16 compass directions are often referred to in the rules as 'points'. NW is one compass point; so is NNW and ESE. Ships are forbidden, in the game, to sail any closer to the wind than a certain number of points, usually two: such a ship, with the wind coming from N, cannot sail any closer to N than NW or NE. Changes of course are also expressed in points: a ship heading E and altering course two points to starboard will be heading SE.

Most of these subjects will be further developed later in the rules.



HOW TO SAIL

The sailing of a ship during the 18th Century was a complicated business that hinged upon literally hundreds of factors, among them being direction and strength of wind, angle of the ship to the wind, type of hull, ballast, peculiarities of the ship's personality and rigging, and the abilities of the men who sailed her.

Most of these factors are impossible to recreate realistically and fully in a game- - - or at least any game that would be playable: keep in mind that a real ship's captain had hundreds of officers and men to handle the ship for him, would be intimately acquainted with every stay, line, and yard of his vessel, and might have served on the ship for years; whereas a participant in a naval game will probably not have a single subordinate, and might well command more than one ship.

Nevertheless, most of the above factors have been accounted for in the game: ballast, hull, rigging, and a ship's personal quirks are accounted for by the introduction of the roll for Ship Quality. Other rules will account for the quality of the crew; and the movement rules account for the actual, mechanical sailing of the vessel.

In **HEART OF OAK**, ships derive their movement abilities from their sail setting, the strength of the wind, and the ship's angle to the wind. The sailing ability of the ship's commanders will be the single most critical factor in the playing of **HEART OF OAK**- - - in general, a good sailor will win his engagements, a poor sailor, one that depends solely on luck, or good dice, or battering-ram tactics more suitable to the 5th Century B.C., will most likely lose. An understanding of the mechanics of sailing is the prime requisite for an understanding of naval tactics.

The first determinant of sailing ability is the type of sail a ship can set. The more sail, the more speed- - - but the more speed, the less maneuverable a ship becomes. At the higher sail settings, a ship may zip past its opponents and have to spend many turns trying to work its way back into position. The Sail Settings are as follows:

0. **No Sail.** Ship will drift unless anchored.

1. **Minimum sail.** Generally headsails and driver. Barely enough sail to give the ship headway, allow the rudder to bite, and allow for fine maneuvering.

2. **Fighting sail.** Generally reefed topsails. A good setting for battle, as it provides a stable gunnery platform and allows for fine maneuvering.

3. **All plain sail.** Generally mainsails and topsails. Easy to manage.

4. **Full sail.** Topgallants and royals. Fast, difficult to manage, lacks easy maneuverability.

5. **Extra sail.** Courses, studding sails, gaffsails, staysails, and other weird creations of the sailmaker's art. Hard to handle, very fast, with very little maneuverability.

During the course of the game, a ship may alter its Sail Setting by 1, in either direction, each turn: from 3 to 2 or 4, but NOT to 1 or 5.

The second determinant of sailing ability is the strength of the wind: the stronger the wind, the faster the vessel will move; but a very strong wind can destroy a ship if it sets too much sail. Possible Wind Strengths are as follows:

1. **Calm.** Ships will not move unless they move under oars, or are being towed by boats.

2. **Light gusts.** Some ships may 'catch a wind' and move, others will have to row, or be towed by boats.

3. **Light wind.**

4. **Normal breeze.**

5. **Heavy breeze.** Ships may not use Sail Setting 5 without losing masts.

6. **Gale.** Ships may not use Sail Setting 4. Lower gunports may be awash.

7. **Storm.** May not use Sail Setting 3. Lower gunports may be awash.

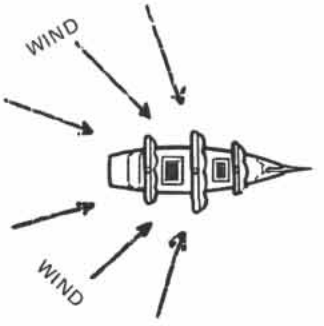
8. **Hurricane.** May not use Sail Setting 2. No combat allowed.

The third, and probably the most important, determinant of the sailing ability of a vessel was its angle to the wind. This was complicated by the fact that no sailing vessel could sail directly into the wind. The angles to the wind are measured by the number of compass points the stern is from the wind. (See COMPASS ROSE, above). The possibilities are as follows:

1. **Wind Astern.** The wind is DIRECTLY astern. This is NOT the fastest possible position, as the mizzen- and mainmasts will keep the foremast from drawing its full amount of wind.

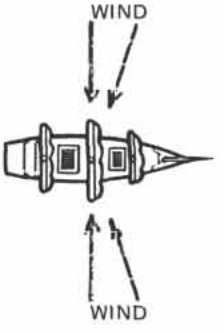
Wind Astern

2. **Quarter Reach.** The wind is from 1 to 3 points from the stern. This is the fastest possible position, since all sails are in a position to catch the wind.



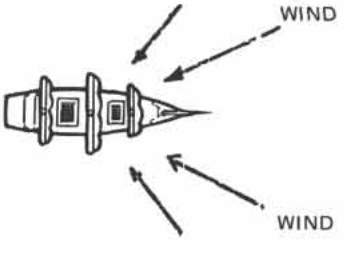
3. **Broad Reach.** The Wind is 4 or 5 points from the stern. Fairly slow, since not all the sails will draw, and the wind is working directly against the action of the keel against the water.

Broad Reach



4. **Beating.** The stern is 6 or 7 points from the wind. (Note that most ships can not sail with their sterns 7 points from the wind). The slowest possible position. At this position, the sails cease to act as a kite and begin to act as an airfoil. The passage of the wind over the sails creates a vacuum (actually a low pressure area) in front of the ship that 'sucks' the vessel forward. At this angle to the wind, a ship may tack (pass its bow across the wind in order to change direction), wear (change direction by passing its stern across the wind), heave-to (stop and drift without taking off all sails), and back sails (spill wind from the sails and slow the ship, giving very exact control of movement).

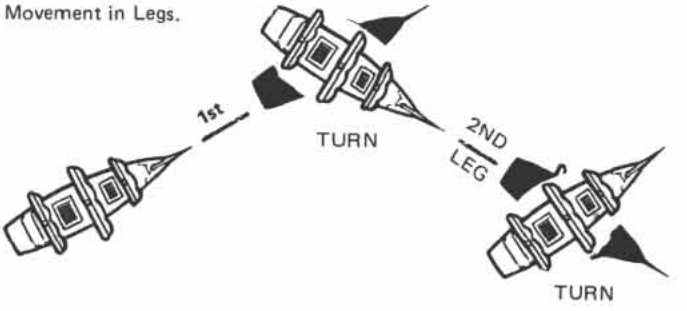
Beating



The fourth consideration in sailing a ship is the sailing qualities of the ship itself. These include ballasting, the age of the ship, the skill of the ship designers, hull construction, the qualities of the rigging, the amount of weed and barnacles on the hull, and so forth. This is determined by a roll of the percentage dice, resulting in a ship that is either 'smart', 'average', or 'A Hooker'. 'Smart' sailers increase their speed by 25% over 'average' sailers; 'Hookers' decrease their speed by 25% over 'average' sailers.

In **HEART OF OAK**, the ships move in 'legs' of movement; there are two legs per turn. At the end of any leg of movement, a ship may change its course.

Movement in Legs.



When sailing a ship, first find the appropriate Sailing Chart for the ship. 1st Rate Ships of the Line, for example, use the 1st Rate Chart, whereas a 4th Rate 44-gun frigate would use the chart for 4th Rates.

Once the proper chart has been located, find the chart for the appropriate angle to the wind: Wind Astern, Quarter Reach, etc. Then cross-index the Sail Setting with the Wind Strength to produce a movement speed in millimeters. This number is the movement factor of the ship, and will be moved straight forward, IN A STRAIGHT LINE, for one leg of movement. After the first leg, the ship may alter course, tack, wear, or change the Sail Setting; it will then find a NEW movement factor on the Sailing Chart, and move THAT number of millimeters straight forward IN A STRAIGHT LINE.

Much simplified, the movement sequence is as follows: Move 1st leg, change course, change Sail Setting, move 2nd leg, change course.

EXAMPLE ONE:

The wind is from N, and the CONSTITUTION, a 4th Rate ship, is heading E. This is a Broach Reach. CONSTITUTION is at Sail Condition 2 (Fighting Sail), at a Wind Strength of 3. The movement for its 1st leg is 32 millimeters. CONSTITUTION moves 32 millimeters straight forward. CONSTITUTION then increases its Sail Setting to 3 while turning to ESE. It is now at Quarter Reach with a new sail setting, and moves 72 forward in a straight line. It then turns to point E once more, and will begin the next turn in a Broad Reach.

EXAMPLE TWO:

CONSTITUTION, above, continues its move. Wind is from N at Strength 3, CONSTITUTION is Broad Reaching at Sail Setting 3. During its 1st leg, CONSTITUTION moves 56 forward in a straight line, then alters course to NE. It is now Beating, and moves 28 straight forward for its 2nd leg.

A ship MUST move its full movement allowance, with two possible exceptions: (1) it might collide with another ship, and (2) it might be backing sail (see Backing Sail, below).

A Ship May Not Move Less Or More Than The Combination Of Sail Setting, Wind, Angle To The Wind, And Sailing Qualities Of The Ship Permit.

When a ship is Beating, although it is moving at the slowest possible angle to the wind, the ship is allowed certain maneuvers that other sail settings will not allow. These are Tacking, Wearing, Backing Sails, and Heaving To.

TACKING:

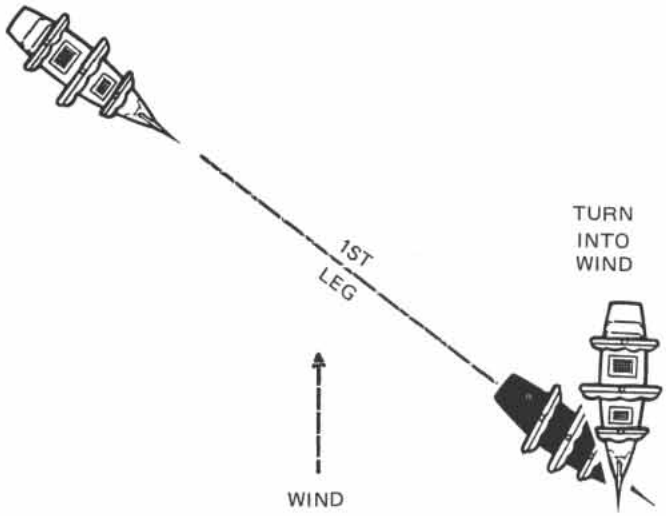
Tacking is a method of crossing the wind by passing the bow across the wind. It requires a disciplined crew and good timing. At the command 'Helm's Alee', the helm is put down, pointing the ship directly into the wind, while the yards are quickly braced around to catch the wind from the other direction.

In the game, tacking is performed as follows: A ship moves its 1st leg while Beating. Instead of moving a 2nd leg, the ship is turned directly into the wind. Die rolls are made to see whether the ship succeeds in tacking, or whether it is 'taken aback' and 'goes in irons'- - - a ship in irons will drift slowly backwards, helpless, and may lose masts- - - this is bad at any time, but in battle it can be disastrous, which explains why ships rarely tacked in battle.

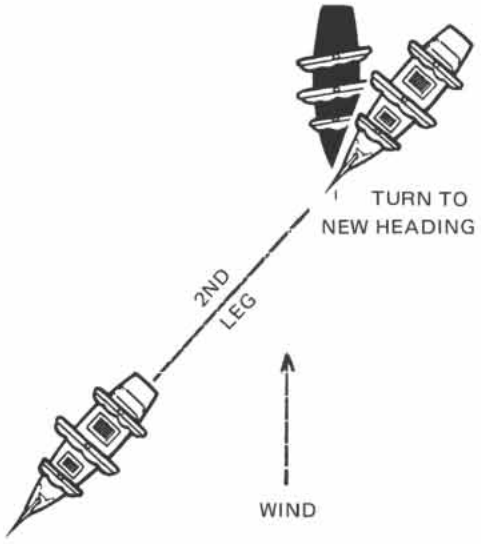
If the tack is successful, it will continue into the next movement turn. Instead of moving a 1st leg, the ship is turned onto the opposite tack. It then moves its 2nd leg, Beating on the new course heading.

TACKING:
TURNS ONE AND TWO

TURN ONE



TURN TWO



WEARING:

Wearing is another method of crossing the wind, this time by passing the stern across the wind. It is a slower method than tacking, and the ship will end up far downwind from where it started; but it is somewhat safer since there is no chance of the ship being taken aback.

Since wearing was a maneuver that the ship's crews practiced constantly, during the performance of which they developed split-second timing, wearing is also a method of making a turn faster than is normally allowed.

In the game, wearing is done as follows: Move 1st leg while Beating. At the end of the 1st leg, turn the ship its FULL TURN ALLOWANCE downwind. Move 2nd leg at the new course and speed. At the end of the 2nd leg, turn the ship ANOTHER TWO POINTS in the direction of the wear. These two points are a bonus that can only be gained while wearing.

In subsequent turns, continue moving the 1st leg, turning the full allowance, moving second leg at new course and speed, and turning an additional two points, until the ship is now Beating at the opposite tack. At that point, the Wearing maneuver is complete.

After a ship has worn for a time, it may abandon the maneuver without completing it, sailing off in whatever direction the wear has pointed him. In this case, wearing can be used to make a tighter turn than is otherwise allowed by the rules.

BACKING SAIL:

Backing Sail can only be done effectively while the ship is Beating. There is no hope of Backing sail at ANY OTHER ATTITUDE to the wind; movement must be controlled by altering the Sail Setting. While Backing Sail, a ship may move its full Movement Allowance, OR it may move ANY NUMBER LESS than its movement allowance, to zero. If it moves zero, it will drift.

For example: USS CONSTITUTION is Beating to the NE. Wind is from N at Strength 3. The Sail Setting is 3. CONSTITUTION's movement allowance for its 1st leg is its full allowance of 28. But on the 2nd leg, CONSTITUTION elects to only move 10. Its move for the entire turn is thus 38, instead of the normal move of 56.

HEAVING TO:

Actually, a ship that heaves to is referred to as 'hove to', not 'heaved to', but the more regular English forms are observed throughout these rules for those who do not have the benefit of a nautical education. 'Hove' as the past tense of 'heave' is a word that would make Miss Prunella Mossmoon, your 7th Grade English teacher, quake with righteous fury.

A ship that heaves to must start the turn while Beating. It then simply Backs Sail, reducing its movement allowance to zero. It then falls off from the wind, presenting its broadside to the wind, without moving. Heaving To is the only way of stopping without reducing sail.

When a ship that has heaved to desires to move, it simply Broad Reaches away at whatever Sail Setting it has set.

HEAVING TO

TURN BROADSIDE TO WIND

HOW TO FIRE

Ship's gunnery, as an art, was fairly static during the period covered by **HEART OF OAK**: guns had been standardized, as had ammunition; the sole changes were the introduction of carronades in the 1780's and the change, on British ships, to flintlock firing mechanisms about the same time.

Many legends have evolved about the difference in gunnery practice between British ships and their Continental opponents. British tactics were to fire at the hull, it is said; French preferred to fire at the rigging. Like most legends, it is only partly true.

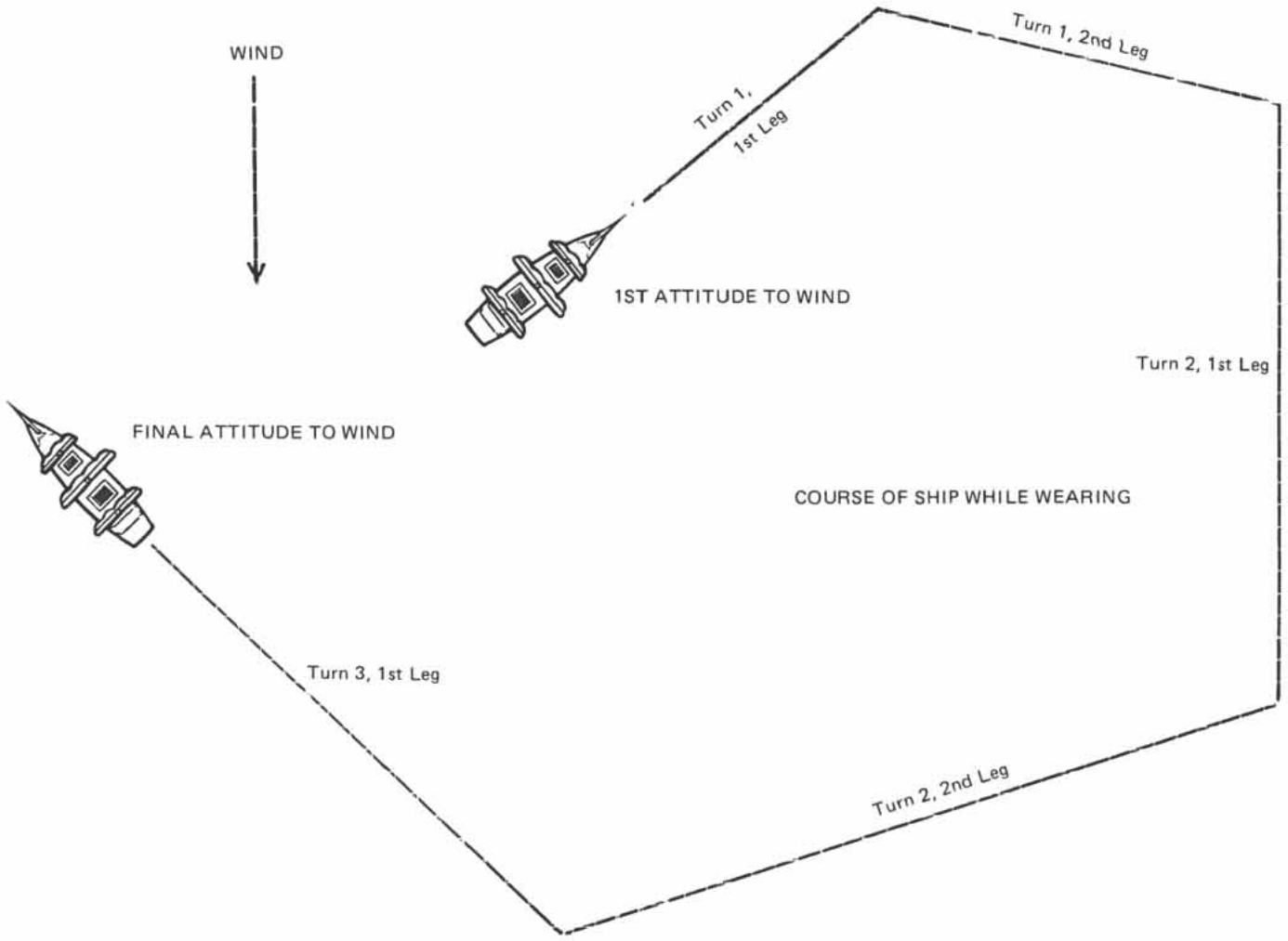
French naval theory and practice involved the use of fleets as STRATEGIC weapons; they were sent out for specific purposes, to support a landing, raid commerce, escort a convoy, or whatever. Anything that would get in the way of such a purpose, such as a battle, was to be avoided. Therefore French STRATEGIC doctrine permitted French ships to avoid combat, and the easiest way to do this was to cripple an opponent's rigging. And so, in order to avoid combat, they frequently fired 'on the up roll', and used dismantling shot, in hopes of crippling an opponent and allowing themselves to escape.

But once a battle was inevitable, French gunnery practice differed little from that of their opponents. The French were not stupid; they realized that once committed to a fight, it was better to smash the enemy before the enemy smashed them. Firing shot at the hull, at close range, was a better way to cripple an opponent than any other- - - the shot could eat away at the masts below decks, causing much more havoc than plinking away at topmast spars; and besides, it had the advantage of killing crew and smashing guns.

In fact, once the range had shortened, the French had no choice but to aim at the hull; except in unusual circumstances, such as when the ship was heeling far over, they could not elevate their guns enough to fire at the masts. Long-range fire tended to hit the masts, if it hit anything, since the shot would be dropping and likely to hit the rigging before it hit anything else. This has been reflected in the Long Range and Extreme Range Critical Hit Tables. At Medium Range, the players have a choice whether to fire High or Low; at Close Range, they MUST fire low.

Anyone desiring to use historical French tactics will open fire at Long Range, and do his utmost to keep the range Long- - - or, at worst, Medium.

WEARING



We have allowed for the use of dismantling shot (chain shot, langridge, grapple shot, etc.) in the rules, but its use reflects a sort of optimism on the part of a player that one would frankly LIKE to see in opponents; it's much easier to beat them if they're not paying attention to the percentages. Historically speaking, the use of dismantling shot was almost completely ineffective; there were a LOT of braces and shrouds holding up the masts and the odds of cutting ALL of them were very large. In many battles, the British ships were well cut-up aloft, but they didn't notice it until long after they'd boarded and captured their enemies.

The quality of gunnery in **HEART OF OAK** is a reflection of the quality of the crew. The better a crew was drilled in gunnery, the faster they could reload, run out, and fire; and their fire was likely to be more effective.

British experimenters invented the carronade in the late 1770's. It was a short, light, large-bored cannon capable of heaving a huge projectile for a very short distance. In **HEART OF OAK**, carronades are limited to firing at Point Blank and Close ranges.

The first broadside fired by a ship is by far the most effective: afterwards, the noise, smoke, confusion, and the fact that the enemy is firing back effects reloading speed and accuracy. It is recommended that players hold their first broadsides until the enemy is within close enough range to be effective. Afterwards, players may choose to fire either a Continuous Broadside, or a Reloaded Broadside.

A Continuous Broadside is a percentage of the original broadside fired in any consecutive turn; the percentage increase with the quality of the crew. A Continuous Broadside may fire every turn.

A Reloaded Broadside is also effected by Crew Quality. In firing a Reloaded Broadside, a commander will wait until EVERY GUN ON THE SHIP is reloaded before firing again. This takes time, again a reflection of Crew Quality in that each gun must be sponged out, reloaded, and run out- - - a well-drilled crew will do this faster.

Sail conditions also effect accuracy. If the firing ship is travelling at Sail Setting 4 or 5, he moves too fast for his gunners to take proper aim. Likewise, if a ship is anchored, its gunnery will be better since it will make a more stable gun platform.

Raking broadsides are VERY effective. A raking broadside, simply, is one that is fired directly into the bow or stern of a ship at close range- - - the shot can travel the length of a ship, and the target will not be able to return the fire. A rake into the stern of a ship- - - fired straight into the stern windows- - - DOUBLES the effect of the shot; a rake into the bow only increases the broadside effectiveness by 150% since the bluff bows of the ship, and the forward bulkhead, protected the ship from a percentage of the cannonfire.

In short, to have good gunnery, first of all get a good crew. In **HEART OF OAK**, this is determined by a throw of the percentage dice or The Wishes of the Scenario Designer; in the role-playing game, it's different.

But once the crew quality is determined, the players can do much to effect the worth of their gunnery. By far the most important factor in the game will be sailing tactics; a good sailor will maneuver his fleet so as to bring maximum effectiveness of his gunnery. A good commander will save his opening broadside for an effective range, and will take instant advantage of any Critical Hits he may inflict on his enemy; he will also take advantage of any mistakes made by his opponent.

But, all these things failing, a good commander will remember these words from Horatio Nelson: 'No captain can do very wrong if he places his ship alongside that of the enemy'.

SAILING TACTICS

The following are helpful hints, and as such may be ignored:

18th Century sailors found that the most convenient formation for ships in the age of sail was 'line ahead', or 'line of battle'. A ship's most vulnerable points were its bow and stern; an enemy firing into the bow

or stern would not receive any return fire, while its shot could travel the length of the ship. In order to protect the bow and stern, ships would form into lines, one behind the other, the so-called line of battle. During the Dutch Wars of the 17th Century, the British line of battle consistently proved superior to the Dutch squadron formations- - - an unbroken line of battle could protect the ships in it far better than any other formation. The line had its drawbacks: it was unsuitable for pursuit, and unweildy if a large number of ships were involved- - - under a series of unimaginative admirals, tactics became stereotyped and most engagements indecisive, a situation that changed considerably under imaginative naval leaders such as Hawke, Hood, Howe, and Nelson.

The line of battle almost always contained large ships, since the Dutch Wars showed that small ships in the line were easily demolished by their larger opponents. During the 7 Years' War, a 50-gun ship was the smallest thought suitable for the line, but experience showed that even 50 guns was too few, and the smallest ship allowed in the line escalated throughout the century, to 54, 60, 64, and eventually to the 74-gun ship, the most widely-used throughout the latter half of the 18th Century. Ships fit to stand in the line of battle were referred to as 'Sail of the Line', 'Line of Battle Ships', or- - - briefly, 'Battleships'.

Tactical manuals, particularly those written in the 20th Century, after the art of managing sailing fleets had become extinct, frequently recommend taking the 'weather gage', that is, being upwind of your opponent. This has its advantages, to be sure: one can deny combat, and with luck choose when and where to strike. When attacking, however, formations will become disordered rapidly. The weather gage is a strategic advantage, therefore; its tactical advantages are strictly nil. In actual combat, it is to your advantage to be leeward, that is downwind, of your opponent. This is because crippled ships cannot sail upwind, and will almost certainly be captured if there are enemy ships downwind of them, to intercept them as they try to limp away.

Ships sailing in formation are much easier to manage if they are Beating. This is because smart-sailing ships can Back Sail in order to keep station with their Hooker brethren. Otherwise formations will become disordered rapidly, since all will be sailing at different rates of speed. (NOTE: this is completely historical, Nelsonian legend to the contrary).

It is highly recommended, when entering combat, to reduce sail considerably; otherwise ships will sail past one another very rapidly, exchange one or two broadsides, and then spend the next eight or ten turns trying to get into position to fight again. Slow speed allows for maneuverability, cohesion of firepower, and the practice of good naval tactics.

HOW TO MAKE OUT A SHIP CARD

For every ship sailing in an engagement, players must make out a Ship Card. Players may copy the sample given, or may invent one of their own. Most of the information on the top of a Ship Card will come from the appropriate Ship Chart. Each combatant nation has a Ship Chart, giving typical ships and their characteristics. These characteristics must be entered on a Ship Card. They are as follows.

RATE

Ships were 'rated' on size and the number of guns carried. 1st through 3rd rates were considered 'Sail of the Line', represented by 'sol' on the Ship Charts. Smaller frigates are given as 'fr '. Yet smaller ships, sloops, brigs, cutters, etc., were not rated; on the Ship Chart their rating is given by their vessel type. This information is for historical purposes only and has no effect on play.

GUNS

The number of long guns carried by a ship, the chief identifying characteristic of a warship. This number is distinct from the Long Gun Factor, used in playing the game; the Gun rating is for historical purposes only and is not used in the game.

NAME

The name given in the Ship Chart is a typical name for a ship of that class; players may give their ships any name they choose, historical or fanciful.

DECKS

The number of gun decks in a given ship, used in boarding procedure and for purposes of historical identification. Ships with decks given as (1), in parentheses, have a single gun deck, but for the purposes of the boarding rules (See Rules, Section X.) are considered to have zero decks.

CREW

The number of Crew Factors a ship may normally carry. A Crew Factor is ten men. This number may be varied at will by scenario designers. On the Ship Card, a running total of Crew Factors is kept as the number of Crew Factors is reduced by enemy action.

HULL

The number of 'Hull Factors' possessed by a given ship. Generally this is equal to the Gun rating, a handy measure for the ship's size and strength. Gunnery hits are subtracted from the total of Hull Factors; when a ship begins to run out of Hull Factors it may surrender or sink. This number may be varied by scenario designers if they wish, to reflect fragile or massive ship construction.

LONG GUNS

Given in 'Broadside Factors', this number is used in the game to determine a ship's weight of broadside, reflecting the relative firepower of the ship. The number given is used for both broadsides; i.e., VICTORY has a larboard broadside of 21 and a starboard broadside of 21. If the number is given before or after a slash ('1/0') the first number represents the Broadside Factor before the introduction of Carronades; the second number is the Broadside Factor after the introduction of carronades.

CARRONADES

The British navy began to use carronades in their broadsides about 1780, and was imitated at a later date by the French, Americans, and sometimes the Spanish. Carronades are given in 'Broadside Factors', They were a short, light gun of large bore capable of firing only at Short or Point-Blank ranges.

NUMBER OF MASTS

This is found by looking up the type of vessel ('ship', 'brig', 'xebec' or whatever) in APPENDIX ONE: DEFINITIONS at the end of the rulebook. 'Ships', a type that included frigates, all had 3 masts.

DRAFT

The amount of water (in feet) required for a ship to float. If a ship requires 22 feet, it will go aground in 21 feet of water or less.

WIND

The number of compass points a vessel must sail from the wind. If a vessel has a wind factor of 2, it may not sail any closer to the wind than 2 points.

SAIL

The Sailing Chart used by the ship to calculate movement.

TURN

The Turn Allowance of the ship, expressed in terms of compass points. If the turn allowance is 2, the ship may not alter its course by more than 2 compass points per turn. (Exception: see Wearing, Rules Section VIII.F).

When filling out a Ship Card, players must also include the following information not available on the Ship Chart:

SHIP QUALITY

This is assigned by the scenario designer or obtained by rolling percentage dice on the Ship Quality Chart. A 'Smart' ship increases its movement factor by 24%; a 'Hooker' decreases its movement factor by a like amount.

CREW QUALITY

This is either assigned by the scenario designer or obtained by rolling dice on the Crew Quality Chart. Find the appropriate nationality and date, then roll percentage dice.

RELOAD NUMBER

This is obtained from the Reloading Table. Cross-index the Crew Quality with the Rate of the ship; this will result in a percentage. For example, a 1st Rate ship with a Good Crew has a Reload Factor of 4.

CONTINUOUS BROADSIDE FACTOR

This is obtained from the Reloading Table. Cross index the Rate of the ship with the Crew Quality; this will result in a percentage. For the effect of this and the Reload Number, see the rules for Gunnery and the preceding essay, How to Fire.

SHIP'S LOG

During the course of a game, each ship's captain will want to keep track of his ship's actions through the use of the Log portion of the Ship Card. The following is an explanation of the various headings on the Log:

TURN NO.

The number of the current turn.

WEATHER

Current barometer, wind strength, and wind direction.

RUNNING TOTAL OF CURRENT CREW FACTORS

The current number of Crew Factors available to assign to duties on the ship. As the Crew Factors are reduced by enemy action, the running total should reflect that fact.

CREW ASSIGNMENTS

The current number of Crew Factors assigned to various tasks aboard the ship.

MOVEMENT

While writing orders for a turn, players should write the heading of their ships (the compass direction to which the bow will point, NNE, SW, etc.) for the 1st and 2nd Leg of movement. In those cases in which a ship changes its course at the end of its turn, write in the 1st Leg heading for NEXT turn: for example, if a ship turned to ESE at the very end of turn 21, its course would be ESE for the 1st Leg of Turn 22. Players may also want to use this space to record the ship's speed in millimeters for each leg of movement, to avoid having to look it up more than once.

Also included in Movement is current Sail Setting. Since Sail Setting is changed between the 1st and 2nd Leg, the Sail Setting number is recorded here.

BATTLE DAMAGE

A running total of damage repaired and inflicted is recorded here. Also the Strike and Sink Percentage the ship has successfully passed is recorded to aid the memory.

BROADSIDE POINTS FIRED THIS TURN

The number of Broadside Points manned and fired this turn is recorded here, for ease in computing Reloaded Broadsides on future turns.

MISCELLANEOUS

Any unusual crew assignments, a record of critical hits, a record of signals, the number of turns a ship is afire or the number of turns till it sinks, may all be recorded here.

SHIP VARIATIONS

Ships in this period were far from standardized, particularly the smaller craft. The number of guns, 'hull factors', and crew were all variable; and these rules try to show only average ships of that type. If any change in the information on the Ship Charts seems reasonable or interesting to the players, they should feel free to introduce it.

Players interested in such variations should consult rules for Advanced Ship Design in the Tournament Rules.

HOW TO SET UP AN ENGAGEMENT

Setting up an engagement is best done by an impartial referee. Lacking a referee, the players may join in setting up a scenario, or the scenario may be designed by a single player. If only one player sets up the game, the other players have their choice of which side to play.

Balancing the game is a critical question- - - probably the critical question. Due to the overwhelming advantage in crew quality possessed by the British and Americans, any balanced game will result in the British or Americans being outnumbered. Fortunately for game designers, this was often the situation in real life.

The Americans generally fought the British, but they also fought an undeclared naval war with the French around 1800, mounted an extraordinary campaign against Algerian corsairs, and from time to time also fought pirates. England almost always was fighting America or the French- - - often America AND the French. Spain was generally allied with France, but also fought against France on the side of the English at one time; Denmark, Sweden, Russia, and the Netherlands tried their best to stay neutral, but were sometimes dragged in on the side of the French. EVERYBODY fought pirates, when they could spare the time.

Given the above, the usual scenario will be English versus somebody else. Count up the total number of Broadside Factors on each ship, Long Guns and Carronades, if any. Figure one English gun is worth one American, 1½ French, Danish, or Dutch gun, and 2 Spanish guns. To balance the scenario, either give the French, Spanish, etc. more ships, or larger ships, or some combination of more and larger ships. Two British 74-gun ships might be balanced against 3 French 74's, or two 110's and one 44, or four Spanish 80-gunners.

Once the ships have been assigned, lay them out in their starting positions- - - as far away as the playing surface (or Weather Conditions, below) will allow. Make out a ship card for each ship, rolling for Crew Quality and Ship Quality. The latter qualities will sensibly be kept secret for at least the early part of the action; or at least the players will try to keep them secret if they have any sense, since the fact that your opponent doesn't quite know how each of your ships will fight is one of your enduring advantages.

Lay out the Compass Rose, and wind marker, and decide what the starting Wind Strength and Wind Direction will be- - - or, roll on the Wind Tables given, rolling on the appropriate prevailing wind columns, Westerlies, Northeast Trades, etc. Europe is in the Westerlies, as is most of North America; the West Indies are in the Northeast Trades; the Mediterranean is Mediterranean; the East Indies and India are in the Monsoons. Any good atlas will provide a map of world wind patterns if questions should arise.

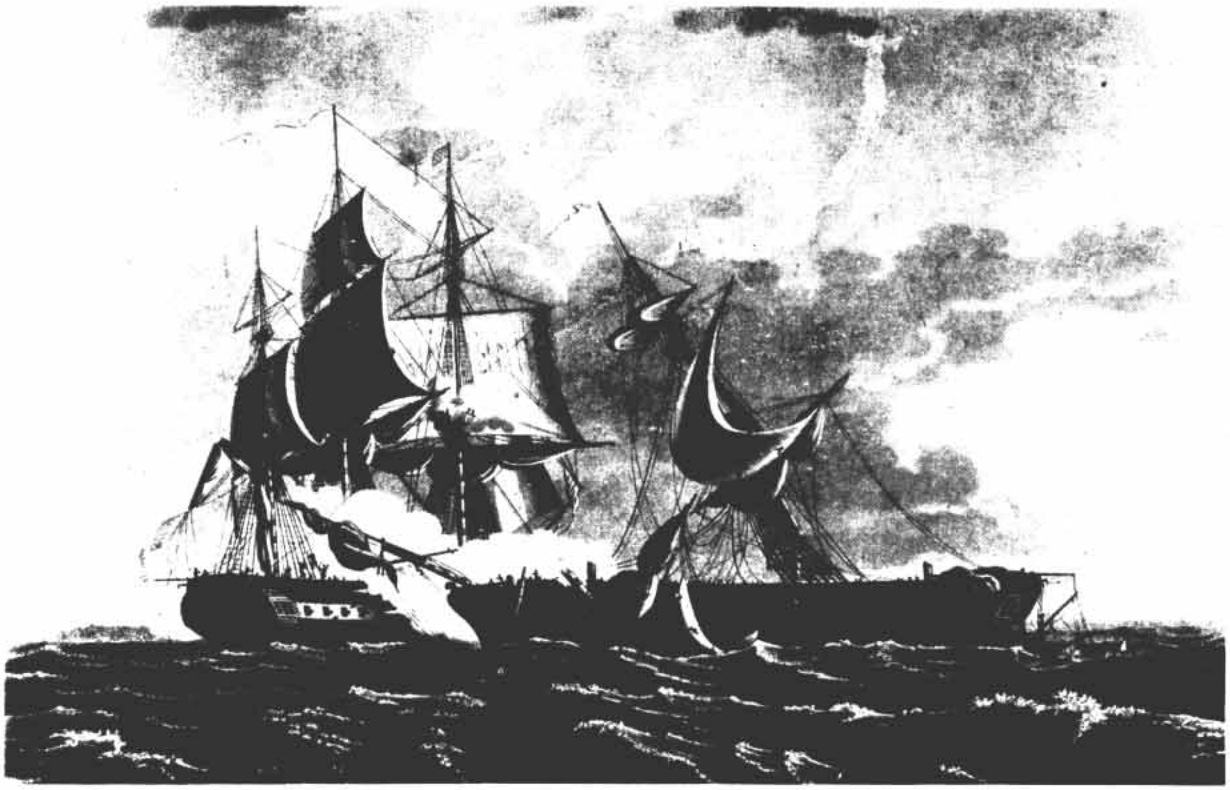
Once the Wind Strength and Direction have been decided, roll for an initial Barometer reading. If it has been decided to play with weather and visibility rules, roll on the Visibility and Sighting Range table for the starting Visibility.

Once all that is done, start writing orders, making signals, and shooting at each other- - - only in the game context, or course. It is suggested that beginning players adhere strictly to the Turn Sequence; run down the Turn Sequence item by item, even if it gets tedious. It's SUPPOSED to get boring and repetitious; repetition is a good, if not exactly stimulating, way to learn- - - you will soon find that you have all memorized the Turn Sequence Chart, and can play with only occasional reference to it.

Victory conditions are based solely on the number of enemy ships captured, on the basis of their official Gun rating (74, 110, 44, etc). At the end of the action, each side counts the number of ships they have CAPTURED from the enemy and sailed away with (not just those that have struck without being captured). Add the total Gun rating, and the highest number wins. Usually the victory will be quite clear cut.

RULES OF PLAY

The following rules are given in the order of Turn Sequence, for easier understanding and ease of play. If a rule question should ever arise, find the appropriate rule heading on the Turn Sequence Chart. On the Turn Sequence Chart will be given a number relating to the section and paragraph of the rules; that section and paragraph contains the section of the rules in which the instructions for performing that act are written. For example: instructions on how to fire a broadside are given under section IX.F. The Firing Chart is also numbered IX.F., as it relates to that section of the rules. In most cases, charts and tables will bear the same number as the section of the rules in which they are explained.



I. TURN SEQUENCE AND RULES

A. Log-Keeping

Roll every turn for changes in the weather.

At the beginning of a scenario, Wind Strength, Wind Direction, and Barometer will have been rolled, or determined by the scenario designer. Every turn there is a chance one or more of these factors will change.

Due to last turn's Barometer reading, players are given a certain chance to anticipate changes in wind strength: a Falling barometer on the previous turn may mean an increase in wind strength; a Rising barometer may mean the opposite. A Stable barometer gives an even chance of the wind falling or rising, though not very drastically.

Roll every turn on the Weather Change Chart (I.1). This will give a percentage chance, every turn, of one or more of the weather elements changing.

If the Wind Strength changes, roll on the Wind Strength Chart (I.2), taking into account Last Turn's barometer setting, whether falling, stable, or rising. Effects are immediate.

If a change in the Barometer setting is called for, roll on I.3. This new reading will be the setting at which Wind Strength changes will be rolled On The Following Turns. If the last Barometer was falling, subtract 20 from the roll; if the last reading was Rising, add 20 to the number rolled.

If called for, roll for changes in Wind Direction (I.4). This table is specially constructed to reflect conditions in the Northern Hemisphere, where wind tends to shift in a clockwise direction. If a scenario is being set in the Southern Hemisphere, simply reverse the direction of wind change; if the table reads 'clockwise' change to 'anticlockwise' and vice versa.

B. IF THE WIND STRENGTH RISES.

If the Wind Strength rises past 8, treat as 8.

The Wind Strength may rise past the point at which the current Sail Setting of a ship is safe. If the cross-indexing of Sail Setting and Wind Strength results in an asterisked number on the Sail Chart; immediately roll on the Mast Falling Chart I (I.B.), for a basic 10% chance of a mast falling. This chart must be rolled on the first turn the asterisked sail setting is set, and every turn a ship with that sail setting is fired upon.

If a mast falls, roll on Mast Falling Chart II to see if another topples. A very unlucky ship may find all its masts toppling like dominoes.

If the Wind Strength rises to a point at which a ship's current sail setting is forbidden, 1 mast automatically falls. Roll on Mast Falling Chart II to see if others fall; otherwise, all surviving masts are assumed to be set at the highest safe setting.

C. IF THE WIND STRENGTH FALLS

If the Wind Strength falls to 1, there is no wind. Ships do not move at all, unless under oars, or towed by boats, or by kedging. See appropriate sections of the rules for instructions.

If the Wind Strength falls to 2, this means that there are intermittent gusty winds which may benefit some ships, but fail to benefit others. For every friendly ship, throw a percentage die: 1-20, the ship manages to catch a wind. The wind is coming from the normal Wind Direction.

If a ship catches a wind, roll on the following table:

GUSTS

1-40	Wind lasts 1 turn.
41-80	Wind lasts 2 turns.
81-100	Wind lasts 3 turns.

In other words, a ship may get up to 3 turns' movement, while other ships get none at all. This is, like real life, unjust. A ship that has currently caught a gust may not roll for another gust until its current gust has expired.

A ship so catching a gust will move the first turn at its lowest sail setting, no matter what its real sail setting may be. It will move the second turn at Sail Setting 2 (unless its real Sail Setting is lower), its third turn at Sail Setting 3 (unless its real Sail Setting is lower), after which it is again becalmed.

The Wind Strength of a gust is assumed to be 3.

If a ship has not caught a gust, it may only move under oars, towed by boats, or by kedging. It may not sail under a gust, and move under oars, by towing, or by kedging simultaneously.

D. IF TAKEN ABACK

If, due to a shift in the wind, a ship finds itself heading directly into the wind, or into the wind at an attitude at which it may not sail, it then rolls on Mast Falling Chart II to see if the sudden wind change has brought disaster. If no mast falls, it is turned until its original attitude to the wind is regained; in other words, if the ship was Beating with the wind over its starboard quarter, it is placed in that position again, with the wind coming from the same relative direction. This change of heading is 'free', and does not effect the ship's turn allowance.

If a mast falls, the ship is in irons. Resolve using rule VIII. E.

II. FLY SIGNALS (Optional)

The rules for Signalling are optional, and are intended to heighten realism during multi-player actions.

Each side should designate an Admiral, Commodore, or Senior Captain, depending on the size of the scenario, and the personal preferences of the players. Each Admiral should command only one ship. Subordinates should command all the rest, even if one subordinate has to command more than one.

Each player should have a copy of the Signal Chart. The Signal Chart is composed of a list of orders and signals, plus vertical row 1-18 and horizontal row A-G. Each Admiral should construct a Signal Code for his fleet by filling in the blanks. Codes may be as elaborate as the admirals wish; a good and simple code, however, might be to assign each blank a simple letter or number, starting randomly in the alphabet. For example, if Column B is coded 'V', and Line 3 is coded '81', then the signal 'V-81' would mean 'Decrease Sail', cross-indexing Column B with Line 3.

Once the scenario has started, players may not communicate with one another except through signals. Admirals may use the blank spaces on Lines 13-18 to add any signals they wish, or to assign each ship in their squadrons a code for use in signalling to that particular ship.

Example:

1. An Admiral shows the signal IV-DD, LX-V. Decoded, this means 'Rear Squadron' (IV-DD) 'Tack' (LX-V).

2. An Admiral shows the signal B-66, 81-LIV, G-14, N-21. Decoded, this means 'All Ships' (B-66) 'Wear Simultaneously' (81-LIV) 'Engage' (G-14) 'Enemy Rear'. The Admiral had flown 81-LIV before, 'Wear Simultaneously', and his opponent had made note of it. Therefore, his opponent knew that he was going to wear all his ships; his opponent corrected his own dispositions, anticipating the wear, and caught the Admiral's ships in a raking fire, thus winning the battle.

B. LIMITED SIGNALLING

Before Keppel and Howe perfected English signalling procedure in the early 1780's, the possible signals were very limited. Accordingly, in any scenario assumed to take place before 1780, only those signals actually on the signal chart may be used; Admirals may not add signals of their own. This will restrict tactics, but also leave more to subordinates' initiative.

NOTE: Subordinates may, of course, feel free to disobey their admiral's instructions. They will do well to remember, however, that real-life captains could be shot for it.

III. A. WRITE ORDERS

Players now write orders for the current turn, having received their signals. Orders should always include the following things: the course heading the ship will be on at the end of the 1st and 2nd leg of movement, the sail setting, and any other orders the ship is expected to perform. See Permitted Orders Sheet for all possible orders.

B. ALLOCATE CREW

While writing orders, players must also allocate crew on every ship. Crew may be allocated as follows:

To Repair:

Sail of the Line may allocate 2 crew factors to repair; all other ships may allocate 1. Each crew factor will repair 1 point of damage at the beginning of every turn.

To Sails:

At Sail Setting 1-3, allocate 1 Crew Factor per mast.

At Sail Setting 4, allocate 2 Crew Factors per mast.

At Sail Setting 5, allocate 3 Crew Factors per mast.

If insufficient Crew are allocated to managing the Sails, the ship will move normally, but every turn the situation continues, players must roll on Mast Falling Table II for every mast inadequately manned.

To Capstan:

If the ship is raising anchor or kedging, crew must be assigned to the Capstan. See VIII. A. for details.

To Boats:

Crew factors may be put in boats. See VIII. J. for details.

To Fight Fires:

1 Crew Factor must be allocated to fight each fire on the ship. No more, and no less crew may be allocated. If there is a fire aboard, the Crew Factor must be assigned; it is not optional. See VI, Fight Fires, for details.

To Cut Free:

1 Crew Factor may be allocated to cut a ship free from a friendly or enemy ship.

To Cut Grapples:

1 Crew Factor may be allocated to cut grapples holding the ship to an enemy.

To Cut Wreckage:

1 Crew Factor may be assigned for every Mast fallen over the side, in order to cut it free.

To Take Possession:

Crew Factors may be allocated to go aboard a surrendered enemy ship, and take possession.

To Fire Guns:

For every broadside factor of long guns to be fired, 3 Crew Factors must be allocated to fire it. For every broadside factor of carronades to be fired, 1 crew factor must be allocated.

IV. ATTEMPT TO CUT FREE, CUT WRECKAGE, AND CUT GRAPPLES

A. CUT FREE

A ship fouled to another ship (see Section VIII. C., Collisions), which has allocated 1 crew factor for the purpose, throws percentage dice to see if they can unfoul. 1-50, they cut free. Every ship involved in the collision may roll; if one succeeds, both are cut free. If both fail, neither ship may move.

B. CUT WRECKAGE

Ships with masts fallen over the side throw percentage dice to see if they succeed in cutting free. 1-50, they succeed. See IX. G., Critical Hits, for details of the effects of a mast over the side.

C. CUT GRAPPLES

Any ship grappled to an enemy may attempt to cut free with a roll of 1-30. If any one ship succeeds, both are free. Ships may not attempt to regrapple until VIII. D., Grappling.

If one of the ships has been captured and taken in possession, or if both grappled ships are friendly to one another, the grapples are cut automatically, assuming one of the ships allocates a crew factor for the purpose.

V. REPAIR

See III, B, Repair, for effects.

VI. FIGHT FIRES

A. FIRES

Fires may be started by friendly or enemy gunnery, or by being adjacent to a ship whose fires have gone out of control.

In order to put out a fire on the first turn, players must roll 1-70 on a percentage dice. This 70% chance is modified as below:

Green Crew	−20%
Poor Crew	−10%
Good Crew	+10%
Crack Crew	+20%

If a fire is not put out, it can still be extinguished on the next turn, but the chance of putting it out decreases by 10% for every turn the fire is not put out until it reaches zero.

In other words, a Green crew will have five chances to put out the fire during four turns: the first chance at 50%, the second at 40%, the third at 30%, the fourth at 20%, the fifth at 10%. An average crew will have 7 tries over 7 turns; a Crack crew 9 tries in 9 turns, and so on.

If the chances of putting out a fire reach zero, the fire is assumed to be out of control; it may then set fire to adjacent ships and begin to take hull damage.

For every turn a fire blazes out of control, the ship's Hull Points are reduced by 10% of its original total. In other words, an 80-gunner will lose 8 hull points each turn. Players must roll on the Strike or Sink table (IX. I) for this damage, treating it as if it's damage from gunnery. A burning ship that strikes will abandon ship.

For every turn another ship is adjacent to a ship with its fires out of control (adjacent means within 5mm), 1-10 fires will be started aboard the other ship. These fires may be fought normally. Roll a 10-sided die.

If a ship's Hull Points reach zero as a result of fire, the ship blows up. The ship is sunk, and all aboard are killed. Other results of the explosion are as follows:

All ships, whether friendly or enemy, within Point-Blank range, receive the following damage: 1-20 Hull Points (roll a 20-sided die), 1-10 fires started, and a Critical Hit from the Point-Blank Critical Hit table (IX. G.).

All ships, whether friendly or enemy, within Short Range, have 1-10 fires started aboard.

B. FIRE SHIPS

Navies sometimes used fire-ships to destroy enemy formations, or to burn enemy ships at harbor. An Admiral may designate one of his ships as a fire-ship simply by saying so. A fire may be set on a fire-ship at any time: it will automatically burn out of control on the first turn, and need not be fought by the crew. Fires other than those deliberately set must be fought like normal fires.

Before a fire ship is set alight by its crew, all crew must abandon ship save those required to work the sails. The rest must abandon ship when hull damage from fire reaches 50%. After the last crew has abandoned, the ship will drift downwind unless it has been grappled to an enemy.

VII. ROLL INITIATIVE

Each player rolls a ten-sided die. If there is a tie, roll again. The highest-rolling player has the Initiative; he may move and fire first, or decline and allow his opponent to move or fire first.

VIII. MOVE

Movement is performed first by the player who has the initiative; if he declines, the other must move first. The moving player moves one ship its full movement, interrupting his move at any time to fire or to receive fire. Then the other player moves one ship, interrupting his movement as necessary to fire and be fired upon. The two players alternate moving one ship until one player has run out of ships; his opponent will then move and fire his remaining ships until there are none left.

At any time in the movement phase, either player may order any of his ships, whether moving or not, to fire. At this point, the moving player marks the point in the movement sequence at which he fires or is fired upon, the firing is resolved, and then the moving player continues movement. No ship may fire a broadside more than once in a given turn, even if given opportunity. (Exception: if a broadside is fired outside of carronade range, and later an opportunity for the carronades to fire is given, the player may fire his carronades separately from the rest of the broadside). If both players want to fire a ship simultaneously, the player with the initiative fires first; they then alternate, as with movement.

Movement is performed in the following sequence:

A. RAISE ANCHOR

Ships wishing to raise anchor throw a six-sided die, adding 5 to the result, to determine the number of turns necessary to weigh, that is, to raise the anchor from the bottom. Depending on the ship, different numbers of Crew Factors must be assigned to the capstan or windlass in order to raise the anchor. These are as follows:

1st, 2nd Rate Ships:	.8 Crew Factors
3rd, 4th Rate S. O. L.:	.6 Crew Factors
4th Rate Frigates:	.5 Crew Factors
5th, 6th Rate Frigates:	.4 Crew Factors
Unrated vessels:	.3 Crew Factors

Once the anchor has been weighed, the ship may set its sails at Sail Setting 1 for another 5 plus D6 turns, representing the number of turns required to raise the anchor all the way to the ship and cat it home.

When a ship begins movement, it will be Beating at whichever angle to the wind it prefers.

A ship may be held by more than one anchor, or by an anchor and a spring cable. Each additional anchor is dealt with as above, while the ship remains stationary. The ship will have only one capstan, and cannot deal with more than one anchor at a time. All other anchors must be catted home, and its last anchor weighed, before the ship may move.

To unfix a spring cable, a boat must be put in the water, after which it will take from 1-10 turns to take the cable in.

If a vessel wished to cut its cables, it may do so simply by stating that it has; it may then move immediately, but it is considered to have lost its anchor and cable.

B. MOVE 1ST LEG

Each player checks heading, sail setting, and wind strength. Find the appropriate Sailing Chart for the ship in question. Determine the number to be moved in millimeters by cross-indexing Angle to the Wind, Sail Setting, and Wind Strength. Increase the number by 25% if the ship is a Smart sailer; decrease the number by 25% if the ship is a Hooker.

Move the ship the required number of millimeters in a straight line.

If the ship is Beating, it may Back Sail and move less than its required number of millimeters; this number, however, must be written in the ship's orders.

C. RESOLVE COLLISIONS

If ships have hit one another while moving their first leg, roll a percentage die. 1-50, the ships have collided.

If a moving ship strikes a stationary (anchored, drifting, heaved to) vessel, collision is automatic, and no dice need be rolled.

If the ships have not collided, move normally, even if this would result in vessels passing through one another.

If the ships have collided, then stop movement. Neither ship may move for the rest of the turn.

If the ships have collided, roll percentage dice. 1-50, the ships are afoul. Neither ship may move until one or both of them cut free (see IV.A., Cut Free).

If the ships have collided, roll on Mast Falling Chart II for the moving ship only. If a mast falls, roll again; if a second mast falls, roll again, and so on.

For each mast that falls, roll a percentage die: 1-50, the mast falls overboard in the direction towards which the wind is blowing; otherwise, it falls straight down. If it falls overboard, the ship may not turn in the opposite direction to the side over which the mast has fallen, and must turn at least 1 compass point in that direction. In other words, if a mast has fallen over the right side, the ship may not turn left, and must turn at least one point to the right. This situation continues until the wreckage is cut away (see IV.B., Cut Wreckage).

If the wind is directly from astern, the mast will not fall overboard, but will fall straight down.

If any mast falls, the Crew Factors working that mast are lost.

If vessels which pass through one another wish to fire on one another, use the following procedure to determine rakes:

If the Non-Moving Vessel has not moved in the turn, his opponent is considered to be able to bow-rake him.

If the Non-Moving Vessel has already moved this turn, his opponent may stern-rake him.

If the Moving Vessel passes completely through his opponent such that his stern is vulnerable to raking fire, he may be stern-raked at his opponent's option. If he has only passed partway through his opponent's vessel, he may not be stern-raked on that turn (although if he moves first on the next turn, exposing his stern, he might be stern-raked on the following turn).

D. GRAPPLING

If ships have collided, or if at any time during the movement of the leg have moved to within 5mm of one another, they may attempt to grapple. Throw percentage dice: 1-50, they have grappled. They may not move until one or both cut grapples (See IV.C., Cut Grapples). There is no chance for masts falling if ships have grappled one another.

E. TACKING

Tacking is a two-turn procedure.

On the first turn of tacking, point the ship directly into the wind. It will not move a second leg. Roll on the Tacking Chart (VIII.E.1.) to see if the vessel is taken aback; there is a basic 5% chance, modified by Crew Quality, Wind Strength, and battle conditions.

If a ship has been taken aback, it immediately goes in irons and drifts straight back 1-10mm out of control for every leg of movement. For every turn the ship remains in irons, roll Mast Falling Chart II to see if masts have fallen.

If a ship starts the Tacking Phase (VIII.E.) in irons, roll on the Taken Aback Chart (VIII.E.2.) every turn. The ship may continue in irons, or fall off to the left or right, then move normally.

If the die roll indicated success during the second turn of tacking, the ship will not move a 1st leg. During this phase, it will complete the tack, turning 1 or 2 points downwind in the direction of the tack. It may then move its 2nd leg normally.

F. WEARING

If any ships are wearing, turn the bow of the ship its maximum turning factor in the direction of the wear. It may turn less, if its commander has written such in his orders. It may never wear so far as to face directly into the wind, or any attitude to the wind not normally allowed.

G. ALTER COURSE

If a ship wishes to turn, point its bow to the new heading, within the limits of a given ship's Turn Allowance. It may not face closer to the wind than normally allowed; such movement is covered under rules for Tacking (VIII.E.).

H. HEAVE TO

If a ship is Beating, it may heave to. Turn its broadside to the wind. It will not move a second leg, but it will drift.

I. INCREASE OR DECREASE SAIL

In accordance with the orders of its commander, a ship may Increase or Decrease Sail by one Sail Setting; a ship at Sail Setting Three may change its Sail Setting to Four or Two, but not to One or Five.

A ship may not, under any circumstances, increase sail to a Sail Setting forbidden under current Wind Strength.

If a vessel increases sail to an area on the sail chart that has been asterisked, there is a chance a mast may fall. Roll on Mast Falling Chart I to see if a mast falls; if any mast falls, roll on Mast Falling Chart II for any further disasters.

If a mast falls as a result of setting an asterisked Sail Setting, the new Sail Setting is not considered to be set.

Sail Settings 4 and 5 are both asterisked at Wind Strength 5. If a ship increases sail from 3 to 4, it must roll; it must roll again if it increases sail from 4 to 5. If the ship decreases sail from 5 to 4, it need not roll.

A ship moving in the asterisked zones of its Sail Chart will roll on Mast Falling Chart I only in the following instances:

1. The first time sail is increased to a new asterisked zone.
2. Every time the ship takes damage from enemy action. This is to simulate the difficulty a ship's crew had in managing extra sail while fighting the ship and being fired on.

J. DROP ANCHOR

If a ship has heaved to, decreased its Sail Setting to zero, or been dismasted; and if the sea is designated as shallow enough to drop anchor, a vessel may drop anchor.

If it drops a bow anchor, it will turn until its bow faces directly into the wind. It will turn 1 compass point per turn. If a vessel drops a stern anchor, it will similarly turn its stern into the wind. If a vessel drops more than one anchor, the vessel will stay at its current attitude to the wind.

A vessel, once anchored, may fix a spring cable to the anchor cable, thereby allowing it to pivot at its mooring. In order to do this, a boat must be lowered. After the boat is in the water for 20 turns, the spring cable is assumed to be fixed.

A vessel with a spring cable fixed may pivot off its bow or stern two compass points per turn, up to a maximum of 4 compass points in either direction. This will allow it to present its broadside in any direction.

A vessel using an anchor spring must man its capstan with the appropriate number of crew. See Rule VIII.A.

K. LOWER BOATS

A vessel must be heaved to, anchored, or at Sail Setting 1 to lower boats. Boats may not be lowered in Wind Strength 7 or 8. At Wind Strength 6, there is a basic 10% chance of a boat being capsized as it's lowered. Up to two boats may be swung out and lowered per turn.

Lowering a boat will take 5 turns. One Crew Factor must be assigned to lower the boat. Afterwards, the boat may be manned by crew, or it may simply assumed to be towed astern of the launching vessel.

Every vessel will have one jolly boat, with a maximum crew of 1 Crew Factor (or ten men), and one long boat, with a maximum crew of 2 Crew Factors (or twenty men). In addition, vessels will have one or more cutters, with a maximum crew of 4 Crew Factors (or forty men). Cutters are distributed as follows:

Sail of the Line: . . . . . 6 cutters.
4th, 5th Rate Frigates: . . . . . 2 cutters.
6th Rate, 14-28 guns: . . . . . .1 cutter.
1-12 gunners: . . . . . None.

L. LIGHTEN SHIP

A commander may attempt to lighten ship, increasing its speed at a detriment to its fighting ability. A ship may not fire while lightening, as all crew are assumed to be busily engaged in throwing its guns over the side. For every four turns the order Lighten Ship is given, 25% of any one broadside will be thrown overboard for an overall increase in speed of 10%.

M. MOVE SECOND LEG

Check new heading, Sail Setting, and Wind Strength. Move the 2nd Leg at new course and speed, in a straight line.

N. RESOLVE COLLISIONS

As VIII.C.

O. GRAPPLE

As VIII.D.

P. ALTER COURSE

A vessel may turn to a new heading, using any remaining turning allowances. No ship may exceed its turn allowance during a movement turn, unless it is Wearing and gains a Wear Bonus.

In other words, if the ship's Turning Allowance was 2, and it altered course two points during Segment VIII.G., it may not turn during VIII.P. If a ship's Turning Allowance was 3; and it moved 1 point to starboard during VIII.G., it may move 2 points either to starboard or larboard during VIII.P.

Q. HEAVE TO

As VIII.H.

R. DROP ANCHOR

As VIII.J.

S. DRIFT

Vessels who have been dismasted, collided, grappled, or who have reduced their Sail Setting to zero during one or more of the movement legs, will drift. For each leg in which they failed to move, they will drift straight downwind the following number of millimeters, depending on the size of the ship, and the strength of the wind.

Wind	Ship Rating			
Strength	1, 2, 3	4	5, 6	Unrated
1.	0	0	0	0
3-5.	1-10	1-20	1-20	1-20
6-7	1-20	1-20	2-40	2-40
8	2-40	2-40	3-60	4-80

The Drift movement is done during VIII.S., not during either leg of the movement phase. If any vessel drifts aboard another, resolve collisions as normal. No mast will fall if the ships have collided, nor will the ships foul. They may attempt to grapple normally, following Rule VIII.D.

A ship drifting will gradually turn broadside to the wind, 1 compass point per turn.

T. LOWER BOATS, RECOVER BOATS

As VIII.K., exept that boats may also be recovered. In order to recover boats, the vessel must be heaved-to, at Sail Setting zero, or anchored. The crew of the boat may immediately go aboard the ship. If the boat is to be hoisted inboard, one Crew Factor must be assigned to it; otherwise, the boat will be towed astern or cast adrift. After 1 turn, the boat is assumed to be out of the water, and the ship may proceed normally; it will then take another 4 turns for the Crew Factor to heave the boat inboard.

U. END MOVE SEQUENCE

The movement sequence is now over. Complicated multi-turn tasks, such as Kedging, Towing, rigging Jury Masts, and other actions which may be performed, have not been covered here. See the Advanced and Tournament rules for the performance of these and other actions.

At any time during any of the above sequences, any player might have fired any broadside from any ship, provided that the broadside had not been fired before at any time during the VIII. sequence.

Whenever a player decides to fire, the movement sequence is suspended and the firing sequence (IX, below) is commenced. Once the firing sequence is completed, the movement sequence (VIII.) is resumed from where it was interrupted.

If both players wish to fire simultaneously, the player with the initiative has the choice of who shall fire first.

IX. FIRING SEQUENCE

A. Decide whether or not to fire

At any time during your or your opponent's movement sequence, you may fire provided that the given broadside has not been fired before during the same movement sequence.

If both players wish to fire simultaneously, the player with the initiative has the choice of who will fire first.

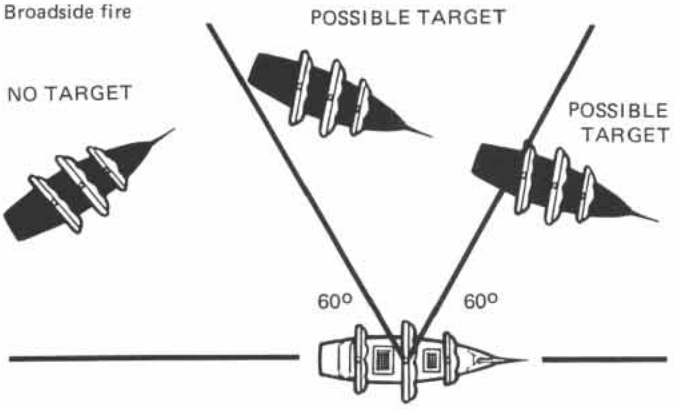
In deciding whether or not to fire, you may **not** measure the range or calculate angles; you must measure it 'by eye' just like the real skippers did.

B. Measure the Range, Determine Eligibility and Raking Fire

Range is measured from Mainmast to Mainmast, in millimeters. After measuring the range, determine whether a ship can possibly hit its opponent.

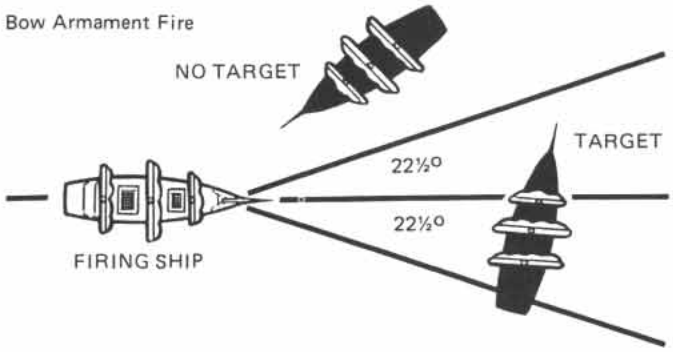
Broadsides are fired out at an angle of 60 degrees from a ship's mainline measured from the mainmast. If a ship is outside this angle, it may not be fired upon, and if a player had decided to fire on it, he will have automatically wasted a broadside.

Broadside fire



Certain ships have only bow armament; these include Galleys and Gunboats. Bow armament may only be fired within 22½ degrees from the mainline, forward.

Bow Armament Fire



One Broadside, or bow armament factors, may not be split between two or more targets. Any given broadside must fire at a single ship.

Lay a straightedge from mainmast to mainmast. If the target is obscured by a friendly or enemy ship, or by intervening terrain such as islands, peninsulas, or so on, the target ship may not be fired upon.

Raking fire was a type of fire that was particularly devastating, in that a broadside fired into the bow or stern of a ship could travel the length of the vessel, without the target being able to reply.

A rake must be delivered at Short or Point-Blank range: a Medium-range rake, or a rake at any further distance, is not counted as such.

A rake must be delivered with any point of the friendly broadside being within 22½ degrees of the enemy ship's mainline. Of course, the target must be within the friendly ship's broadside arc.

Hits from stern rakes will be doubled; hits from bow rakes will be multiplied by 1.5.

C. Resolve Whether Gunports are Open

Weather can affect whether the lower row of gunports can be opened or not.

In Wind Strength 6 (Gale), small vessels (gunboats, cutters, xebecs, schooners, schuyts, luggers, etc.) may not fire. Brigs and sloops may fire.

In Wind Strength 6, all Ships of the Line may not open their lower gunports without fear of sinking. 3rd and 4th Rate Sail of the Line (not 4th Rate Frigates) lose 75% of their broadside factor, exclusive of carronades which were carried on the upper deck. 1st and 2nd Rate ships, with three decks, only lose 50%. The reason for the heavy penalty is that the heaviest guns were carried on the lower gundeck.

A vessel so affected may attempt to open its lower gunports on the weather side (i.e., the side of the ship facing the wind), because the ship is assumed to be heeling in the opposite direction, bringing the broadside further from the water. For every turn the weather lower gunports are open, throw percentage dice. 1-25, the ship floods and sinks immediately, no survivors.

In Wind Strength 7, no single-decked vessels (frigates, brigs, sloops, all unrated vessels) may fire. Sail of the Line are effected as above.

In Wind Strength 8 (Hurricane), no combat whatever is possible, be it fire combat or boarding.

D. Resolve Setting Ship Afire

Ships were made of wood and caulked with pitch; they carried large quantities of canvas, spars, paint, gunpowder, and other inflammable substances. Cannonfire tended to produce chunks of flaming wad, bits of burning cartridge, and pieces of caked gunpowder that were blown randomly by the wind, and which, if lucky, could set the ship alight.

Every time any gun is fired aboard a vessel, it must throw percentage dice to see whether it sets itself alight.

There is a basic 5% chance; roll percentage dice, 1-5, the broadside has started a fire. Subtract 20 from the die roll if there is wreckage over the side that the broadside is fired from. In other words, if the ship fires the starboard broadside while there is an uncleared mast hanging overboard to starboard, there is a 25% chance of starting a fire due to burning wads being in immediate proximity to canvas and cordage.

Once a blaze is started, it is fought normally. See Section VI.

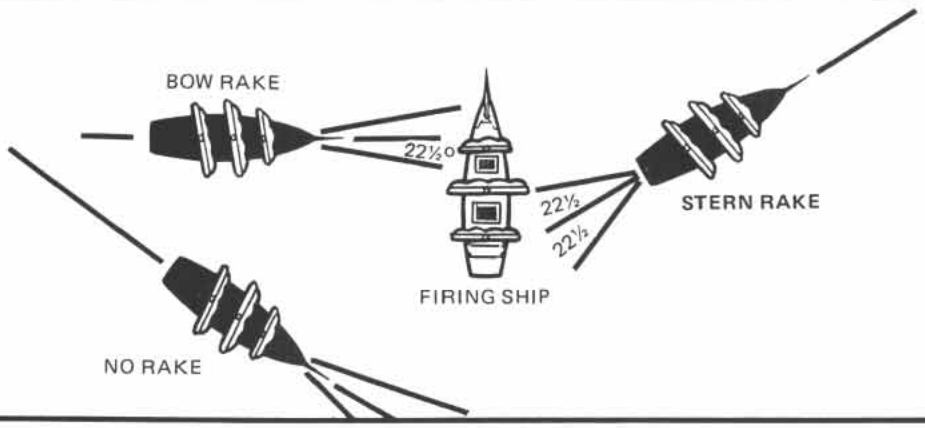
E. Resolve Continuous Broadside, Reloaded Broadside, and Crewed Broadside

While creating a Ship Status Chart, you should have consulted the Reloading Chart to discover the Reloading Time and Continuous Broadside Percentage.

All broadsides are either Reloaded or Continuous. The Reloading Time is the number of turns necessary to reload a full broadside. If the Reloading Time is 5, it will take 5 turns before a ship can fire a full broadside once more. This number depends on the type of ship, and on Crew Quality.

If a ship cannot fire a Reloaded Broadside, it may fire a Continuous

Raking Fire



Broadside. The Continuous Broadside factor is expressed as a Percentage. This percentage is the percentage of the original broadside that may be fired. For example, if the broadside factor is 20, and the Continuous Broadside Factor is 50%, the ship may fire a broadside of 10; if the Continuous Broadside Factor is 60%, the ship will fire a broadside of 12.

The first broadside of any ship is always fully loaded.

In order to fire, a gun must be crewed. For every factor of long guns being fired, three Crew Factors are necessary to man it; otherwise the long gun cannot be fired. For every factor of Carronades, one Crew Factor must be present.

F. Fire Broadside

To fire a broadside, roll percentage dice and consult the following table:

Firing Table (IX.F.)

Extreme Range (1001-1400mm) Long Guns only.

Natural 100: . . . . . Critical Hit.
Modified 1-95: . . . . . Miss.
Modified 96-100: 10%

Long Range (701-1000mm): Long Guns only.

Natural 98-100: . . . . . Critical Hit.
Modified 1-35: . . . . . Miss.
Modified 36-60: 10%
Modified 61-85: 25%
Modified 86-100: 50%

Medium Range (201-700mm): (State whether firing High or Low). Long Guns only.

Natural 95-100: . . . . . Critical Hit.
Modified 1-20: . . . . . Miss
Modified 21-60: 25%
Modified 61-90: 50%
Modified 91-100: 100%

Short Range (101-200mm): Long Guns or Carronades.

Natural 86-100: . . . . . Critical Hit.
Modified 1-25: 25%
Modified 26-75: 50%
Modified 76-100: 100%

Point Blank Range (1-100mm) Long Guns or Carronades.

Natural 71-100: . . . . . Critical Hit.
Modified 1-15: 25%
Modified 16-35: 50%
Modified 36-85: 100%
Modified 86-100: 150%

Die Roll Modifiers:

Green Crew: . . . . . −20
Poor Crew: . . . . . −10
Good Crew: . . . . . +10
Crack Crew: . . . . . +20
Firing Ship Anchored: . . . . . +15
Target Ship Stationary: . . . . . +10
Firing Ship Sail Condition 4: . . . . . −10
Firing Ship Sail Condition 5: . . . . . −20
Firing Dismantling shot: . . . . . −20

Outcome Modifiers (Short and Point-Blank Ranges only)

Bow Rake: . . . . . Hits x 1.5
Stern Rake: . . . . . Hits x 2.0

Optional, advanced firing modifiers:

Ship with 25 or less hull points firing to windward, wind strength 4 or greater: −15, and must fire High at Medium Range.

Continuous Broadside to windward, wind strength 1 through 5: −10.

PROCEDURE:

Roll percentage dice and cross-index with the appropriate Range. Note that results are given in terms of 'natural' and 'Modified' dice. If the die roll, unmodified by any firing modifier whatever, is the number required for a Critical Hit, then a Critical Hit has been achieved (See Critical Hits, below, Section IX.G.).

After determination of Critical Hits, apply the Die Roll Modifiers to the roll as given in the chart: subtract 20 for a Green Crew, add 10 for a Good Crew, and so forth. Note that a target vessel does not have to be anchored to receive the bonus of 10; it must merely be stationary - - - heaved to, grappled, aground, anchored, fouled to another ship, or a land target.

After adding or subtracting all appropriate die roll results, read the results from the table. This is expressed either in terms of a Miss, in which case the broadside has done no damage to the enemy, or as a percentage. Multiply the modified broadside factor by the percentage to obtain the number of hits.

If, due to die roll modifiers, the die roll is modified to zero or below, there has been no damage. If die roll modifiers bring the die roll to above 100, treat it as a roll of 100. If a modified roll is 0 or less, treat as a miss.

Once the number of hits has been obtained, multiply it by applicable Outcome Modifiers: if the broadside is a bow rake, multiply it by 1.5; if a stern rake, multiply by 2.0. This will obtain the final result.

The result having been obtained, subtract the final number (rounding .5 and above up) from the opponent's Hull Factor. For every three points of hull damage inflicted, remove 1 Crew Factor. This is cumulative; Hull Damage for purposes of crew casualties is carried over from turn to turn.

EXAMPLE ONE:

The French ship Tornade (80 guns) is firing upon the HMS Bellerophon (74) at medium range. The French commander throws the dice to see if he sets himself afire, and throws a 66: he is not afire.

He decides to fire low. His broadside factor is 20, all in long guns (his carronades are out of range). He has a Poor Crew, and has fired this broadside once before, and so must fire a continuous broadside. He checks the Reloading Chart, and finds his continuous broadside factor is 30%. He multiplies his 20 broadside points by 30% and obtains 6.

The French captain then throws the dice, and rolls a natural 97. He checks the Firing Chart and finds that he has obtained a Critical Hit. He then modifies his die roll by 10 for his poor crew, and has a modified 87, which results in 100% damage. He multiplies his modified broadside factor of 6 by 100%, and the Bellerophon's captain marks that his ship has lost 6 hull factors. Bellerophon also loses 2 Crew Factors for the 6 damage points to the Hull, and a third Crew Factor as a result of the roll on the Critical Hit Chart.

EXAMPLE TWO:

Bellerophon, above, moves in his turn, and crosses Tornade's stern at Pointblank Range. He chooses to fire during his movement phase and immediately instigates Fire Procedure. On his first throw, he fails to set himself on fire.

Bellerophon has a Crack crew and a broadside factor of 20, counting carronades. It is his second broadside, and so he multiplies his 20 points by 60% to obtain his modified broadside result of 12.

He throws the die and obtains a 67. There is no Critical Hit. He adds 20 to his die roll for his Crack crew and obtains a 87. He has inflicted 150% damage, or 18. This number is doubled because of a stern rake, to 36. Tornade loses 36 Hull Factors, and 12 Crew Factors, one Crew Factor for every 3 hull hits.

G. CRITICAL HIT PROCEDURE

If a Critical Hit has been obtained, find the Critical Hit Chart. If the fire is at Medium Range, determine whether the broadside has been fired High or Low; if the player fails to state, it is fired low. (At Long and Extreme Range, the player has no choice but to fire high; at Short and Point Blank range, the player has no choice but to fire low).

When firing High at Medium range, the broadside has less chance to inflict a Critical Hit, but an increased chance of doing damage to masts; when firing Low at Medium Range, the player has a greater chance of inflicting a Critical Hit, but a smaller chance of doing damage to masts.

If firing High, discover whether the player is firing Dismantling Shot. If so, he may add 5 to his Critical Hit die roll, but subtracts 20 from his firing table dice.

Roll the percentage dice, consulting the appropriate Critical Hit Table on the Critical Hit Chart (IX.G.). Add Dismantling Shot Modifier, if any. Critical Hits are applied immediately. If a player cannot carry out his orders as a result of critical hits, then the vessel will attempt to carry out its orders insofar as it is possible. If this leads to arguments, simply move it in a straight line.

CRITICAL HITS (IX.G)

Extreme and Long Ranges

1-85	Miss
86	Ship's Officer hit
87	Anchor cable parts
88	Wheel or tiller smashed
89-90	Fire on target ship
91-95	Lose 1 crew section
96-100	Lose 1 mast

Medium Range

Firing High

+5% if firing dismantling shot

1-50	Miss
51-52	Ship's officer hit
53-65	Lose 1 crew section
66-70	Lose 2 crew sections
71-72	Anchor cable parts
73-80	Fire on target ship
81-83	Wheel or tiller smashed
84-85	Rudder smashed
86-100	Lose 1 mast

Firing Low

1-35	Miss
36-38	Ship's officer hit
39-50	Lose 1 crew section
51-60	Lose 2 crew section
61-75	Wheel or tiller smashed
76-80	Rudder smashed
81-88	Fire on target ship
89-90	Anchor cable parts
91-100	Lose 1 mast

Short Range

1-10	Miss
11-20	Target ship afire
21-25	Ship's officer hit
26-30	Lose 1 crew section
31-35	Lose 2 crew sections
36-40	Lose 3 crew sections
41-45	Rudder smashed
46-50	Wheel or tiller smashed
51-60	Lose 25% broadside
61-65	Anchor cable parts
66-70	Double hull hits
71-80	Waterline damage
81-100	Lose 1 mast

Point-Blank Range

1-10	Anchor cable parts
11-20	Target ship afire
21-25	Ship's officer hit
26-35	Lose 2 crew sections
36-40	Lose 3 crew sections
41-50	Double hull damage
51-57	Wheel or tiller smashed
58-60	Rudder smashed
61-70	Lose 25% of one broadside
71-75	Waterline damage
76-100	Lose 1 mast

H. CRITICAL HIT RESULTS

The following are explanations of the possible Critical Hits, and their consequences:

Fire on Target Ship

Target ship follows Fire Procedure (VI.) one fire only.

Wheel or Tiller Smashed

If the ship's head is to the wind, the ship will not move. It will turn downwind one point each turn until it lies broadside to the wind, at which point it may move off at Sail Setting 1, Broad Reaching at right angles to the wind. Its Turn Allowance is reduced to 1. It may turn downwind, but never put its head into the wind. It may increase sail after the first turn.

If Quarter Reaching or with the Wind Astern when the damage is inflicted, ship may move normally, save that its substitute turn allowance is reduced to 1, and it may not put its head into the wind.

Sail of the Line (2-deckers and above) have a tiller on their lower gundeck. If 2 crew factors are supplied to man the tiller, the vessel may move normally, except the vessel's Turn Allowance is reduced to 1.

One Crew Factor may be assigned to repair the wheel or tiller (This Crew Factor is separate from others assigned to repair), and will repair the damage in 1-100 turns (roll percentage dice).

Rudder Smashed

The effects are the same as the Wheel or Tiller being smashed, except as follows: the damage may not be repaired while the ship is still in battle; and Sail of the Line may not use their lower gundeck tiller. The Rudder may not be smashed during a bow rake; if this happens, roll again for another critical hit.

Ship's Officer Hit

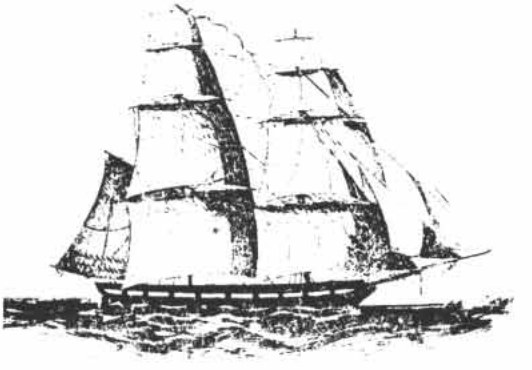
This is for the role-playing game only; otherwise roll again. Number each officer, warrant officer, and midshipman. Roll to see which is hit, then follow Hit Procedure in the Role Playing Game.

Waterline Damage

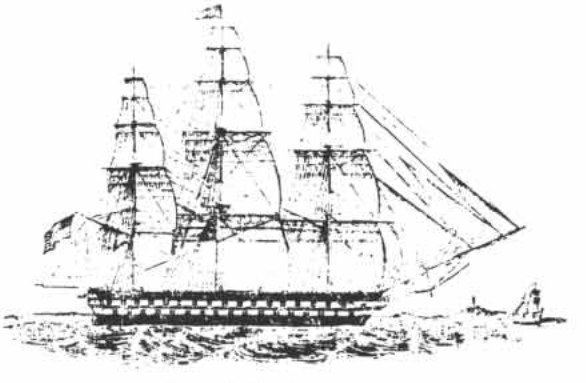
2 Crew Sections removed from fight to affect repairs in from 1-100 turns.

Lose Mast

Roll for each mast lost. If a vessel has already lost that mast, roll again:



Brig-of-war under sail.



Ship-of-the-line.

3-masted Ships		2-masted Vessels		Single-masted Vessels	
1-30	Foremost	1-40	Mainmast	1-75	Mainmast
31-60	Mainmast	41-80	Foremost	76-100	Bowsprit
61-90	Mizzenmast	81-100	Bowsprit		
91-100	Bowsprit				

For each mast lost, an increment of speed is lost, as follows:

3-masted Ships		2-masted Vessels		Single-masted Vessels	
Foremast:	Lose 25% movement	Mainmast:	Lose 50%	Mainmast:	Lose 100%
Mainmast:	Lose 50% movement	Foremost:	Lose 50%	Sprit:	Lose 50%
Mizzenmast:	Lose 25% movement				

Certain masts lost may cost the ship dearly in other ways, too, as follows:

Loss of foremast or bowsprit

Loss of headsails means the ship may have difficulty when heading into the wind. For every turn the ship lies any closer to the wind than 90 degrees, roll dice during the Tacking Phase (VIII.E.). 1-30, the ship will point directly into the wind and go in irons. See VIII.E. for going in irons.

The ship may not tack or wear.

Loss of Mizzenmast, or Mainmast on a 2-masted vessel

Loss of driver means the ship may no longer head into the wind. The ship may move no closer to the wind than 90 degrees. If already headed into the wind, the ship is dead in the water, and will turn 1 point each turn until broadside to the wind, at which point it may move normally.

Loss of Any Mast

If a mast has been lost, roll Mast Falling Table II to see if it drags any other masts with it.

When a mast falls, there is a 50% chance the mast may fall overboard to leeward, pushed by the wind. Otherwise the mast will fall straight down. If the wind is from directly astern, the mast will fall straight down.

With a mast over the side, the ship may not turn in the opposite direction; and must turn at least 1 point in the direction of the mast during each turn of movement. This is due to the drag of the wreckage of the ship's masts. For example, if there are one or more masts over the starboard side, the ship may not turn to larboard, and must turn at least one point to starboard. This situation will continue until the wreckage is cut away (See IV.B.).

If, by a weird twist of fate, there is wreckage over both sides, the ship does not have to turn; on the other hand, its Turn Allowance is reduced by 1.

If there is wreckage over the side, the ship must turn, even if this would result in the ship's heading into the wind and going in irons (See VIII.E.).

COMBAT EXPLANATIONS

The following are things to keep in mind when conducting combat; they are further explanations of items already existent in the rules:

Crew Casualties are cumulative; for every three hull hits inflicted upon a vessel in a single or subsequent turns, remove one Crew Factor. Crew losses cannot be repaired as Hull Hits can; once a Crew Factor is lost, it is lost forever. If three hull hits are inflicted on separate turns, a Crew Factor must still be lost.

All losses, casualties, and damage are taken immediately; they are inflicted at the instant of fire. The owner of the vessel may determine which Crew Factors are to be lost, taking them from either those on the rigging, guns, or any other employments.

Critical Hits may only be inflicted with the appropriate natural die roll; no modifiers are ever applied to Critical Hits.

Guns must be manned in order to fire, but they are loaded automatically, without any crew needed to be assigned. A ship firing Reloaded Broadsides only has to man the guns on the turn of firing.

I. STRIKING AND SINKING

If hull damage goes over 50% of the original hull value, the ship may strike (surrender) or sink. See the Striking and Sinking Table (IX.I.).

Find the appropriate percentage of hull loss. Roll a ten-sided die, making the appropriate modifiers for crew quality. If the result is an 'S', the ship has struck. If the result is an 'X', the ship is sinking.

Roll for each table applicable. By this, I mean to say that if the hull loss, in a given turn, has gone from 40% to 85%, the player rolls on four tables, the 50% table, the 60% table, the 70% table, and the 80% table.

If a player has already rolled on one table for a given ship, he does not have to do it again. In the above example, if the player had already rolled on the 50% table, he does not have to roll again, even though he must roll on the other three tables. This rule applies even if the player has repaired damage so the hull is now above the limit. For example, a player may have reached 62% damage, and rolled on the 60% table. He then repaired his losses to 55%, was shot at again, and reached 65% losses. He need not roll on the 60% table again, having succeeded once.

If a ship is found to be sinking, roll the percentage dice. The ship will inevitably sink that many turns in the future. If it has not struck, it may continue to fight until the turn it sinks.

If the damage given to a ship reached above 120%, for every 10 percentage points past 110%, roll on the 110% table. In other words, if in one turn a ship receives damage from 104% to 140%, roll on the 110% table four times.

If a ship strikes, it immediately ceases firing; even if ordered to fire in that turn. If it is fighting a boarding action at the time, the boarders immediately take possession.

If a ship strikes, it will reduce sail to Sail Setting 2 (if at Sail Setting zero or one, it will remain there), turn one point downwind each turn, and sail merrily off with the wind astern.

A struck ship will not resist capture. That does not mean it must simply wait to be boarded, or cooperate with the enemy, or obey an enemy's instructions. It is the responsibility of the victorious ship to take possession of a ship that has struck; it must maneuver to come aboard, lower boats with a prize crew, or let the ship get away.

If a struck ship cannot sail downwind due to reefs, shoals, or land, it will heave to.

If a struck ship finds itself in a position where there are no longer any (unstruck) enemy ships within 1000mm, it will hoist its flag and sail away. It is considered to have made a successful escape, and may increase sail to make certain of its lead. Under no circumstances may it return to the battle, or fire its guns.

A ship without any crew remaining will strike automatically.

Any ship may strike voluntarily, simply by writing the order to 'Strike' in its orders.

X. BOARDING

Ah, those boarding actions. Readers of a nautical fiction will remember a lot of them - - - the brave captain, outgunned and outnumbered, his ship pounded into a mastless hulk, decides on one last desperate tactic. He steers aboard his enemy ship and calls for a boarding party. A swarm of desperate men, armed with cutlasses and boarding pikes, battles its way to the enemy quarterdeck, hacks down the skipper, and haul down the enemy colors. Victory is ours!

Actually, it didn't happen that way.

It was quite difficult to board. There were those troublesome boarding nets, for one thing, strung up all over the enemy ship to catch boarders like flies in a spider's web, to be killed at liesure by the defenders. The defenders were armed, too, and there were probably more of them. Plus, when the defenders began to mass on the gunwale prior to scrambling over the rail, they were easy targets for enemy gunners; packed together, one cannonball could kill a score.

It was even more difficult with large ships. Ships of the line, and to a lesser extent other rated ships, were constructed with a 'tumblehome', which is to say that the ship's sides fell inward as they rose from the waterline. Two ships of the line whose flanks might be touching below the water might have a gap of twenty feet between their upper decks- - - a difficult gap to bridge, unless the boarders are practiced at performing the standing long jump while carrying cutlasses and pistols.

There were very few successful boarding operations involving capital ships. In fact, at the battles of Minorca, Quiberon Bay, Ushant, the Chesapeake, Dogger Bank, the Saintes, the Glorious First, Camperdown, the Nile, and Trafalgar - - - in short, all the major battles of the epoch but one (St. Vincent)- - - not a single ship was taken by boarding.

For those who find that the rules below lack color, if not realism, rules for heroic-style boarding actions will be given in the optional rules, below. Also, a more detailed, realistic, but extremely complex set of boarding rules will be given with the Tournament Rules.

A. BOARDING RULES

Ships that have come aboard one another, grappled, or are fouled may call for boarders. Each side rolls percentage dice, with the following modifiers:

Attacker's dice

+50	enemy not cleared for action.
+50	Navy vs. Merchant crew (not Indiaman)

Defender's dice

+20	For being a defender.
+15	For each Sail of the Line involved, friendly or enemy.
+30	Ships broadside to broadside. (easier to board through bow or stern).
+10	For each difference in decks; i.e., a 3-decker trying to board a 1-decker adds 20 to the defender's dice.

The terms 'Attacker' and 'Defender' are arbitrary and may be assigned to any player.

Subtract the attacker's die roll from the defender's. If result is zero or less, resolve the boarding action immediately. If the number is 1 or greater, it will take that many turns to resolve the boarding action. During that time, the ships can fire, cut free, fight fires, repair, and do anything else that comes to mind. If the ships cut free, the boarding action is over - - - without ever having begun, as it were.

If another ship enters the boarding action, it is that player's option to roll the dice again, or let them stand.

Unless another ship enters the boarding action, under no circumstances can the ships involve reroll their boarding dice.

If a ship, due to fire combat, strikes while fighting a boarding action, the boarding action is concluded in favor of his opponent.

B. RESOLVING BOARDING

When the turn arrives to resolve a boarding action, multiply all crew factors involved by the following numbers:

Green Crew	x1
Poor Crew	x2
Average Crew	x3
Good Crew.	x3.5
Crack Crew	x4

Privateers, Merchants, and any Ship without a body of Marines aboard, are considered to have 1 step worse crew; Good become Avg, Avg. become Poor, and so on. Green Crews become no worse.

After multiplying the crew factors by the numbers in the above chart, the one with the highest resultant number wins the boarding action. If it's a tie, start again. From the top.

XI. TAKING POSSESSION

Ships that strike, through gunfire or boarding, must be taken into possession in order for them to be counted as part of the Victory conditions. The victor must place enough crew on board to work the sails, after which the ship is said to be his. He may not fire the ship's guns. He may, if crazy enough, attempt to board another ship; Nelson got away with it, you probably won't.

A ship taken into possession is said to be a prize; the crew aboard is the prize crew. An enemy may fire at a prize, hoping to recapture it; the prize crew must throw on the Striking and Sinking table to see if they in turn strike or sink; if they strike, the enemy must place yet another prize crew aboard to take possession, after which the original crew is assumed to be liberated, and may reman the ship. In no case may a ship, once it's struck, fire its guns, even if the original crew has been liberated.

If a ship wishes to take possession of a vessel that has struck, he may give the order 'Lay Alongside', written on the Ship Chart along with the turn number. If the capturing ship can legitimately maneuver alongside without violating any of the movement rules, he is assumed to have automatically grappled and put a prize crew aboard. Even if the ships collide, neither will lose any masts.

The capturing ship may elect to destroy a prize; if it does so, it must take off all surving members of the original crew before setting it afire, or sinking it by gunfire.

XII. TRANSFERRING CREW

The order 'Lay Alongside' may be given in order to lay alongside a friendly ship. In no case may 'Lay Alongside' be given in an attempt to come aboard an unstruck enemy ship; you'll have to work for that one and risk ramming or fouling.

Friendly ships laying alongside one another may exchange crew factors, even if this means completely abandoning one of the ships. A ship may take off crew from a friendly surrendered ship in this manner. Neither ship involved in a crew transfer may ever fire while it is exchanging crew.

XIII. END OF TURN

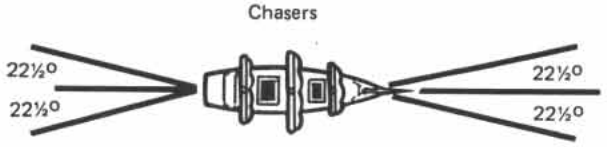
If all ships that can move have moved, and all that wished to fire and were able to do so have fired, then the game turn is at an end.

ADVANCED RULES

The following are rules designed to add 'color' and realism. Some of them detract from playability. Any one, or none, may be added at the wish of the players.

BOW AND STERN GUNS:

All rated ships have bow and stern 'chasers', guns able to fire directly ahead or astern. They may fire at targets within 22½ degrees of the bow and stern.



Bow and stern chasers may not fire Continuous Broadside; they must take the time to reload fully. They do not do any hull damage; they roll for Critical Hits only.

Small ships, such as brigs or sloops, if armed with long guns, may haul a couple around to act as chasers if the player so designates at the start of the scenario.

Carronades may never be used as chasers.

GUN DAMAGE:

In the Basic Game, the actual broadsides may not be damaged in battle; the only way to reduce a broadside is by de-crewing it. This is not at all realistic. This rule will add some more math to the game, and if players do not have calculators handy they may wish to fudge the realism a bit.

For every 25% damage to the hull, lose 25% from any one broadside. Damage will be taken from the broadside currently being fired at; or, if the ship is being raked, throw a die to decide which broadside is affected. Gun damage is repaired normally, as the hull damage causing it is repaired.

TOWING:

Ships may be towed by boats or by other ships. Ship's boats will tow at the speed given them in the 'Under Oars' movement chart; they must rest 5 turns out of every 60 in order to recrew the boats and refresh parched throats. A ship must be towed by its cutters.

It will take 5 turns to rig a cable to the boats, in addition to the time required to put the boats into the water.

A ship towed by another ship must take a cable passed to it by one of the towing vessel's boats. This will take 5 turns. Afterwards, the vessels will move at 75% of the speed of the towed vessel, up to the limit of the towing vessel's maximum movement. The towing vessel must start the tow at Sail Setting 1, and may not tow at Sail Setting 4 or 5.

CAMEL:

A ship whose draft will not allow it to pass over shallow water may attempt to use 'camels' to get it over. This is a very lengthy procedure, involving lashing two heavily-ballasted barges or other small craft adjacent to the ship, then removing the ballast so that all three vessels float higher in the water. This entire operation will take 180 turns to perfrom, during which the wind must not rise above 5; otherwise the mission will abort. No ship involved in the operation may fire. The ship may be raised up to 10 feet above its normal draft.

FORTIFICATIONS:

Players may wish to add land fortifications to recreate certain historical battles, or merely to add a new element to play.

Assign Hull, Crew Quality, and Broadside factors, just like a ship. Assign the number of Crew Factors manning the fort. A large fort, for example, might have 200 Hull Factors and 25 factors of long guns. A small battery might have 50 Hull Factors and a broadside of 10.

Forts, just like ships, have morale and may strike to an enemy. They do no sink, but strike instead. For Reload and Continuous Broadside purposes, a fort is considered as if it were Sail of the Line.

The range of the guns in a fort is doubled, as they are sighted higher and do not roll or pitch. A fort on a high elevation may have the ranges of its guns tripled.

RED-HOT SHOT:

Red-hot shot was a particularly unpleasant invention of the period, designed to set ships afire. It can only be used by fortifications and land batteries, as it was extremely dangerous to light a furnace aboard a wooden ship. (A particularly sadistic referee might want to recreate the French experiments with red-hot shot aboard their fleet, all of which resulted in their own ships going down in flames).

It will take 60 turns to get the furnace hot enough to use red-hot shot. Every time red-hot shot is fired, there is a 50% chance of each Hull hit inflicted on a ship starting a fire. Throw dice for each hull hit. Once fires are started, they are fought normally by the crew.

Red-hot shot cannot be fired as a Continuous Broadside; this would result in red-hot shot rolling around at the same time the powder cartridges were being carried from the magazine, resulting in a magazine explosion that would kill everybody.

Red-hot shot must be fired as a Reloaded Broadside, taking an extra turn to reload due to the complexity of the operation. In other words, a Green crew, which normally takes 7 turns to reload, would take 8 if using red-hot shot.

KEDGING:

Kedging was a method of moving the ship by using the ship's boats to drop an anchor at some distance from the vessel, and then hauling in on the cables until the ship was moved over the anchor. It can be used to move ships in a calm, to move ships upwind, or to help move ships off an obstacle once it has gone aground.

Once a boat has been lowered, it will take 5 turns to drop an anchor in it. This may not be attempted in a Wind Strength of 7 or 8, and in a Wind Strength of 6 there is a 20% chance of the boat's swamping.

Once the anchor is dropped into the boat, it will then move in any direction up to 500mm away from the vessel, then drop the anchor. The capstan must then be manned (See Section VIII.A.), and the ship will move 40mm per turn, during the Drift Phase (VIII.S.), until it rests over the anchor, at which point it may weigh normally, drop another anchor, or kedge again.

For details of how to kedge off an obstacle, see below, TIDE.

SHOALS, SHALLOWS, AND CASTING THE LEAD:

Shoals and shallows are a particularly difficult problem for a game in this period, the more so because shoals were of critical importance in many battles; Quebec, Quiberon Bay, the Nile, and Copenhagen, to name a few. Shoals and shallows are best used with a referee, who can impartially inform a player when he is in danger of running aground.

If there is no referee, it is best to allow one player (presumably the 'defender', in whose home waters the action is being fought) to have an accurate chart, showing depth in feet or fathoms. The attacker would have a less accurate chart, showing major terrain features, the better-known shallows, reefs visible at low tide, and so forth. Most charts of the day showed a 'five fathom line', five fathoms marking the thirty-foot mark inside of which it was dangerous for a ship of the line to venture.

A ship may avoid grounding on shallows by ordering a leadsmen into the fore part of the vessel to 'cast the lead'. The ship must be moving at Sail Setting 1 or 2, and may not fire as the leadsmen could not be heard. Any ship casting the lead will be informed of the depth of the water over which it is sailing; the ship will also be told whether it is sailing over Mud, Sand, or rock (Reefs).

Any ship entering water too shallow for its depth will go aground. If the type of shallow has not already been determined, roll on the following table:

01-50	Mud
51-70	Reefs
71-00	Sandbar

Roll on the following table for damage to the ships:

Ship has struck on:

Mud

01-50	No damage
51-80	1-10 points damage
81-00	1-20 points damage

Reefs

01-20	No damage
21-50	1-10 pts damage
51-80	2-20 pts damage
81-90	1-100 pts damage
91-00	bottom ripped out

Sandbar

01-30	No damage
31-60	1-10 pts damage
61-90	1-20 pts damage
91-00	bottom ripped out

If the ship has struck, it may take damage to masts. Roll percentage dice, and add the following modifiers. 1-20, a mast has fallen. Roll on Mast Falling Chart II to see if another mast joins the first.

Modifiers:

–20	Wind Speed 6
–40	Wind Speed 7
–70	Wind Speed 8
–20	Sail Setting 4
–40	Sail Setting 5
+40	Ship being towed
+20	Ship drifting
+10	Sail Setting 1

Damage from shoals is considered waterline damage, and may not be repaired until a ship can be careened in a friendly port. For every 10 points of waterline damage, 1 Crew Factor must be assigned to the pumps to keep the ship afloat.

If the shoal is upwind of the ship when the latter runs aground, there is a 50% chance the vessel will drift off the next turn; otherwise it's stuck fast.

In bad weather, a ship may continue to receive damage. Every turn the ship is aground in Wind Strength 6, 7, or 8, roll again for damage. Usually this will result in a ship's eventual disintegration.

For getting a ship off the shoals, see TIDE and KEDGING.

TIDE:

Keep in mind, please, that the tide shifts every 6 hours, not every 12.

If the players ever need tide information, throw a twelve-sided die: 1 and 12 are high tide; 6 and 7 are low tide; 1-5 are ebb tides; 8-11 are rising tides.

If a ship is aground, a rising tide may float it off. If a ship has struck at high tide, there is a 10% chance the next high tide will float it off; the vessel must wait 12 hours, or 720 turns.

If the ship has struck on an ebb tide, it must wait for the tide to rise past the point at which the ship struck. Use the following table to help visualize this:

	high	
	1 12	
	2 11	
ebb	3 10	
	4 9	rise
	5 8	
	6 7	
	low	

If the die roll indicated that the ship struck at 3 (third hour of the ebb tide), it must wait until 10 (7 hours, or 420 turns) to roll for its attempt to float off. It may roll at 10, 11, 12, 1, 2, and 3, and then must wait another 420 turns. If the ship struck at 5, it must wait until 8, and then may roll at 8, 9, 10, 11, 12, 1, 2, 3, 4 to see if it gets off the shoal.

If the ship struck on a rising tide, it may roll right away: if it struck at 8, it can roll at 8, 9, 10, 11, 12, 1, 2, 3, 4, 5, and then must wait till 8 again.

Roll every hour. There is a basic 10% chance the ship will float off. Add 10% for every hour the tide rises past the point at which the ship struck. Add 10% if the ship's boats have taken it in tow. Add 20% if the ship is trying to kedge off (see KEDGING, above). Add 20% if another ship is towing. The ship's boats may not be used to tow, if a kedge or another ship tow is being used. Kedging and a ship tow may be used simultaneously. Add another 10% if the wind is pushing the ship off the shoal.

Example:

INDEFATIGABLE, has run aground on mud shoals while trying to make Truro in the fog. Captain Sir Edward Pellew rolls the 12-sided die and rolls a 4; it is an ebb tide and the ship must wait. At low tide, two hours later, local women walk out from a neighboring village and sell Cornish pasties to the crew. Five hours after the ship ran aground, the water has risen to the normal waterline; the captain rigs kedge anchors, giving himself a 30% chance of pulling the ship off. He fails. He waits an hour for the tide to rise, giving himself a 40% chance. He fails again. Yet another hour later, he has a 50% chance, and finally slides off. Relieved, he decides not to court-martial the ship's Sailing Master.

REPAIR TO MASTS:

Mast damage, in the context of the game, refers to damage to topmasts as well as lower masts. There is a 60% chance for each mast hit that only the topmast will be damaged, and that there are enough spare topmasts and yards aboard to attempt repair. Repair will take 90 turns, during which time the ship must drift, be heaved to, anchored, or sailing at Sail Setting 1. Wind may not be at 6, 7, or 8. Sail Settings 4 and 5 may not be set on the new mast until repairs are completed in port.

FIRING TO WINDWARD:

There were certain disadvantages in firing to windward. Small vessels could be heeled far over by wind pressure, which would result in their shot going high, where it would not do much damage. Ships firing continuously would find their gunsmoke blowing back into the gunports, blinding the gunners.

Accordingly, use the Advanced firing modifiers given on the Firing Table (IX.F.). Ships with 25 or less hull points, at Wind Strength 4 or greater, subtract 15 from their gunnery roll. Ships firing a Continuous Broadside (only) to windward, at a Wind Strength of 1 through 5, subtract 10.

ADVANCING NEW WEATHER:

Weather does not, of course, instantly change everywhere in the world at once. This especially applies at sea: in a spread-out battle, some ships might receive the new wind before others.

When a new wind condition is called for by the Weather Change Chart, discover first of all the direction from which the weather is coming, i.e., the wind direction.

Decide which of the ships on the board is nearest that compass point from which the new weather will be coming. This ship will be the first affected. Place a meter stick or dowel just downwind from the ship, at right angles to the approaching wind. This dowel will represent the advancing weather condition.

After signals have been flown and orders written, advance the dowel downwind at four times the speed, for a single leg, that would be travelled by a 5th Rate Average Frigate, at the highest possible sail setting. If the Wind Strength is 5 or greater, treat as a Wind Strength of 4. In other words, the wind will move four legs at the fastest possible speed on Sailing Chart III.

After the dowel has been moved, any ships that start their movement to windward of the dowel spend their entire turn moving under the new weather condition, whether their movement takes them to leeward of the dowel or not. Any ships starting their movement to leeward of the dowel move their entire turn under the previous weather condition, whether or not their movement takes them to windward of the dowel.

No players may measure the dowel's movement ahead of time in order to determine which of their ships will be affected.

JURY MASTS:

If a mast is unrepairable, boat's masts, spare topmasts, spare mainyards, and other assorted bits of lumber may be assembled by the ship's Sailing Master, Carpenter, and other specialists into a jury mast.

Wind may not be at 6, 7, or 8. If the wind rises to these strengths, there is a 50% chance the jury mast will fall.

Rigging a jury mast will take 30 turns. It will only perform at 50% of the normal capacity of the mast it is intended to replace. The jury mast will take 2 Crew Factors to rig. The jury mast may be rigged even during a battle, although it may be shot away, like any masts, even before it's fully rigged.

WETTING SAILS:

Wet sails hold more wind than otherwise. Captains, in order to coax the last knot of speed from their vessels, would send bucket brigades aloft to dampen the sails.

This tactic may not be used during Fog or Rain. Commanders must assign one extra crew factor per mast. The increase in speed will be 10%. This tactic must not be used in Wind Strengths 5-8.

BOMB VESSELS:

Some vessels, usually ketch-rigged, were equipped with large mortars where their foremasts would normally be; they were difficult sailers, but usable for special missions.

Mortars have a maximum range of 2000mm, and a minimum range of 200mm. Anything inside this 200mm minimum range may not be fired at by the mortars, but it may be fired upon by the bomb vessel's broadside, if it has one.

A bomb vessel will not have bow chasers.

Each mortar takes 20 turns to reload, regardless of crew quality.

If the bomb vessel is not anchored when it fires its mortar, only a score of 100 on the decimal dice is considered a hit. Anything else is a miss. Unanchored, there can be no consecutive shots.

If a bomb vessel is anchored facing its target, with a spring on the cable to assist in aiming, throw on the following table for each shot:

01-10	Right 150mm
11-20	Left 150mm
21-30	Left 50, overshot 100
31-40	Right 50, overshot 100
41-50	Left 50, undershot 100
51-60	Right 50, undershot 100
61-70	Overshot 150mm
71-80	Undershot 100mm
81-95	Misfire, dud, or shell hit the water before going off
91-00	Hit. If ship was target, also Point-Blank Critical Hit.

If a miss happens, by chance, to put a shell directly over a possible target, then it is hit.

If the bomb vessel can see its target, or if signals are being relayed from another ship or observation point that can see the shot, add 10 to each die roll for each consecutive shot from the same bomb vessel, up

to a maximum limit of 50.

If a hit has been scored on the vessel, either deliberately or by the random fall of a shot (hit is defined as within 5mm), a Point-Blank Critical Hit has automatically been scored. The ship also receives 1-10 Hull Hits, and 1-10 fires will be started aboard.

If the ship is firing on a land target such as a building or fort, 1-10 points of damage will also be done. 1-10 fires will be started, if there are structures that can burn. Fires on land are fought just like fires at sea. If a powder magazine is set on fire, it will explode the turn the fire goes out of control.

If the bomb vessel is firing on a fort, every time a hit is scored roll a die: on a natural roll of 100 the powder magazine is hit, and the fort and everyone in it are destroyed.

Damage from mortars to forts cannot be repaired while the fort is undergoing bombardment.

SHIPS' BOATS:

In the basic rules, ships' boats cannot be shot at: this might conceivably result in the peculiar situation of a vessel being boarded from small boats without a chance to use gunnery in reply.

Ships' boats were small targets, but they were also lightly built: they were hard to hit, but easy to destroy.

During any turn, a ship may use all or part of its broadside to fire at boats. This is the only exception to the rule that a broadside cannot split its fire between one or more targets.

Each broadside point is fired individually. At each range, players must score the number below, or better. Normal firing modifiers (See Chart IX.F.) apply, including Crew Quality.

Extreme Range	--
Long Range	--
Medium Range	95
Short Range	80
Point-Blank	60

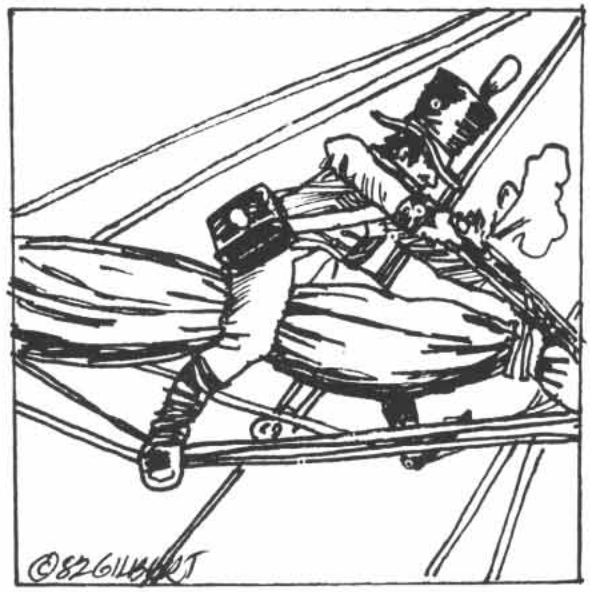
Each broadside point is aimed at a particular boat. If hit, the boat and all in her are destroyed.

RIFLES:

British captains were prone to credit American captains with rather unsportingly arming their Marines with rifles, rather than muskets. Whether the Americans actually did so is debateable; Captain Pearson of the SERAPIS claimed that American riflemen were responsible for clearing the upper decks of his frigate, but John Paul Jones' marines on that occasion were mostly French, and armed with muskets! Those few American Marines that he did have were also armed with muskets.

Be that as it may, the American Marine and his long rifle have become a naval legend, and I shall not gainsay it. American records are sketchy on this matter, but presumably rich American captains could arm their Marines with rifles if they wanted to, and at least some American marines had rifles in the War of 1812.

Any ship designated as having rifle-armed Marines will inflict one Crew casualty for every two Hull Hits, instead of one for three, but only at short range or less.



SMALL ACTIONS:

HEART OF OAK is principally designed for fighting ship of the line engagements, or frigate actions. When fighting with small ships, brigs, schooners, xebecs, cutters, and the like, players may find it difficult to get any hits.

When using this rule, Multiply by 10 the Crew, Hull, Long Gun, and Carronade factors. A hit that would be regarded as .3, and therefore rounded down and counted as 0, would now become 3.

Players may still have a hard time resolving small battles, as crews could repair faster than damage might be inflicted. This is actually fairly accurate; small ship battles could go on for hours. But in the interests of playability, refuse to allow unrated ships to repair until the battle is over, or allow them to repair only half the normal amount of damage.

FLINTLOCK FIRING:

The British and Americans began introducing flintlock firing mechanisms on their ordnance in the 1780's; no other navy used flintlock ignition systems during the period of the game. Flintlock mechanisms were more efficient than the old system of applying a match to a touchhole; there was a greater chance of the gun's going off when it was supposed to, as opposed to a few seconds later.

Many conservative British gunners opposed the introduction of such newfamgled equipment, and lack of finances prevented the entire U. S. Navy being so equipped. To discover if a ship has been equipped with flintlock firing mechanisms, roll on the following table:

1780-1805			1806-1815		
British		U.S.	British		U.S.
30%	Unrated	10%	75%	Unrated	50%
50%	Frigates	25%	75%	Frigates	65%
40%	Sol	5%	65%	Sol	40%

Any British or American vessel who roll the above percentage or lower are equipped with flintlock mechanisms, and may add 10 to their firing dice when rolling for broadside fire; this is a modifier cumulative with other firing modifiers and is not added to rolls for critical hits.

SHEET-LEAD CARTRIDGES:

One of the innovations introduced by the U.S. Navy during the War of 1812 was the use of sheet-lead cartridges, replacing the old-fashioned flannel sort. The new cartridges more or less eliminated the necessity of worming and sponging the gun after each shot, in order to remove smouldering bits of flannel that might ignite the next cartridge prematurely. The new cartridges created a radical increase in the speed with which a gun could be loaded and fired.

Any U.S. vessel in 1810 or afterwards may increase its Continuous Broadside Factor by 20%. In other words, a Crack may fire its Continuous Broadside at 80% instead of 60%, and so on.

British vessels in 1815 may be armed with sheet-lead cartridges if 20 or less is rolled on percentage dice.

CLEARING FOR ACTION:

Before commencing a battle, a ship had to perform certain tasks necessary to turn it from a place to live into a place in which to fight: mess tables were hoisted to the beams, hammocks rolled, boarding nets rigged, chains slung on the yards, the magazines manned, guns loaded and run out.

Clearing for action takes five turns plus the roll of a ten-sided die; from 6-15 turns, in other words. During that time a ship may not engage in any combat, neither firing nor boarding. A ship being boarded before it clears for action is considered 'surprised'.

INITIAL BROADSIDES:

It took many men to work a gun efficiently, but only a few to train and fire it once it had already been loaded.

Accordingly, any Gun Factor being fired for the first time, or any gun factor that has been fully reloaded, may be fired by a single Crew Factor, rather than three.

MANNING THE MASTS:

Assuming wind conditions and course setting remained stable, the masts did not have to be constantly manned in order for the ship to proceed, as they do in the game.

Therefore, if the ship does not turn so as to change its attitude to the wind (Wind Astern to Quarter Reach, Quarter Reach to Broad Reach, etc.), and if the Sail Setting remains constant, the crew normally sent aloft to man the masts are not required. Masts must be remanned in any of the following eventualities:

1. If the ship turns during the course of its move to place it in a new attitude to the wind, the masts must be manned at the beginning of the turn.

2. If the wind shifts so as to place the ship at a new angle to the wind, the masts must be manned in that turn.

3. If a mast falls or is shot away, the masts remaining must be manned during the following turn.

4. If the Sail Setting is changed, the masts must be manned during that turn.

5. If the ship Tacks or Wears, the masts must be fully manned for the duration of the maneuver.

For each mast not manned, or manned inadequately, roll on Mast Falling Table II for every turn the situation continues.

'HEROIC' BOARDING:

For those wargamers who simply cannot play a naval game unless it provides plenty of mental images of men with kerchiefs wrapped around their ears swinging from ship to ship with cutlasses in their teeth, desperate, exquisitely-choreographed swordfights by Hessian-booted men leaping and stomping on the ends of yardarms, and of devil-may-care buccaneers with pencil-thin mustaches grinning as they slash Basil Rathbone to ribbons on his own quarterdeck, I provide the following rules. So long as we all understand that they're not meant to be historical, and are just for fun. . .

When ships are grappled or fouled, either side may call for boarders. Both sides allocate any crew members they wish to the task of fighting the boarding battle. Multiply the crew factors by the following numbers:

Green: x1
Poor: x2
Avg.: x3
Good: x3.5
Crack: x4

The result will be known as Boarding Points. The one with the most Boarding Points will be known, arbitrarily, as the 'Attacker;' the one with the least will be known as the 'Defender'. Ratio the Boarding Points of the Attacker versus those of the Defender. Round off the odds ratio in favor of the Defender to conform to one of the simplified odds categories on the Boarding Results Table, below. Roll the die and cross-index the die-roll number under the proper odds column.

Losses are in Crew Factors, not in Boarding Points. Unless a CE is rolled, there may be up to 6 rolls on the Boarding Results Table. Boarding may be terminated by the surrender of one ship, or by mutual agreement among the players. As long as ONE player wishes to continue the boarding battle, it must continue, even if that player has fewer Boarding Points and will technically be considered the 'Defender'.

If one side has, at the end of any single boarding round, a superiority of 4-1 or greater in Boarding Points over his opponent, then his opponent has struck, and he may take possession of the enemy ship.

If six boarding rounds have been fought, or both players agree to end the boarding contest, any Crew Factors that have been used in the boarding battle may not be used next turn for anything except renewing the boarding battle.

'HEROIC'
BOARDING RESULTS TABLE

Die	Odds Ratio: Attacker/Defender			
result	**1-1**	**3-2**	**2-1**	**3=1**
1	A4	A4	A2	A2
2	A4	A2	A2	A2/D2
3	A2	A2/D1	A2/D2	A2/D2
4	A2/D1	CE	A2/D2	A2/D4
5	CE	A2/D2	A2/D4	D2
6	A2/D2	A2/D2	D2	D2
7	A2/D2	D2	D2	D4
8	D2	D2	D4	D4
9	D4	D4	D4	D6
10	D4	D4	D6	D8

KEY:

A2, A4 etc: Attacker loses the appropriate number of Crew Factors.
D2, D4 etc: Defender loses the appropriate number of Crew Factors.
CE: Combat Ends for that turn. No more Boarding Combat until the next turn.

SPACED BROADSIDES:

As the rules stand, a ship may fire at the very end of its movement on Turn 1, then fire again at the very beginning of Turn 2, without either the firing ship nor the target moving in the meantime. The following rule is meant to help eliminate such instant broadsides. I do not recommend it for very large engagements; too much bookkeeping will be necessary, and too much of a strain placed on the memory.

Before firing a subsequent broadside, either the firing ship or the target ship must move at least 1 leg of movement. If a ship fires during the second leg of movement on Turn 2, it may not fire during the first leg of movement on Turn 3, unless the target ship has moved at least one leg.

Ships that are anchored, drifting, or which have heaved to, and thus which are not moving legs, may fire whenever they wish, so long as other rules for firing are obeyed.

BALANCING UNBALANCED ACTIONS:

Some historical battles- - - possibly most of them- - - just weren't fair. HM JAVA was simply not going to beat USS CONSTITUTION no matter how well its captain conducted the action; Quiberon Bay was going to be a victory for the British even if a less talented admiral than Hawke was in command.

Yet some of these battles would make interesting games. JAVA vs. CONSTITUTION was a classic frigate action, with both ships being handled brilliantly, and Quiberon Bay is worth a simulation. Attempts at play balance can be made by deciding the victory not on which ship surrenders or sinks, but rather on the amount of punishment each ship inflicts with respect to the limitations on its armament, and the quality of its crew. Use the following formula:

$$\frac{\text{Percentage of Enemy Hull Points Damaged}}{\text{Own Long Gun Factors + Carronade Factors}} \times \text{Opponent's crew quality factor.}$$

The crew quality factor is the same number used in **HEART OF OAK** to resolve boarding engagements.

In other words, set up a simple ratio of damage done to the enemy over the size of your broadside armament, then multiply by the enemy's crew quality to compensate for differences in crew. If the resulting number is higher than your opponent's, then you've won.

TOURNAMENT RULES

All of the following rules increase the complexity of the game at the expense of playability.

ADVANCED SHIP DESIGN

French, Spanish, and American builders preferred to design their ships using scientific principles ('King Log'), whereas British shipwrights were a hereditary caste who built their ships on antique and often irrational principles that had been handed down from generation to generation (('King Thumb'). French and American ships were generally larger than British ships of the same class, and frequently sailed better and faster. The superior French design was often sabotaged by inept construction at the shipyards, however; they often overused green timber, and their ships fell apart a few years after their initial construction.

When rolling for Ship Sailing Ability, subtract 10 from the die roll for Sailing Quality for any ship built in French, Spanish, or American yards, including any ships captured by the British and used by them. Thus, they have a better chance of being 'Smart' sailers.

Some time in the latter part of the 18th Century, the French began extending the planking around their bows instead of ending it at the bulkhead. This protected the ship against bow rakes by stouter construction. For any ship such constructed, a bow rake will do 1.25 times the normal amount of damage, instead of 1.5.

Since French ships were larger, their gunports were farther from the water than their British counterparts. If such a ship opens its lower gunports in a Wind Strength of 6 or 7, the ship will sink on a roll of 1-15, rather than 1-25.

American sail of the line have the same advantages as French ships, with some additions. After 1824, beginning with the BRANDYWINE 44-gun frigate, U.S. ship designers began adding rounded sterns to their ships, thus making them more resistant to stern rakes. Any American ship after 1824 (this includes the PENNSYLVANIA) only multiplies stern rakes by 1.5 rather than 2, and multiplies bow rakes by 1.25.

COPPERING

The British began experimentally coppering the bottoms of their ships in 1769, and in 1780 ordered that their entire fleet be coppered. This coppering, despite the war and expense, was carried out in the next two or three years. The coppering of the ship's bottom was chiefly to protect it against the ravages of the Teredo worm, which would burrow into a ship's planks and could theoretically rot an entire ship's timbers in a few short months. But the coppering also had an effect on the ship's speed, since barnacles and other underwater obstacles (which, on a wooden vessel, would often cluster four deep) have an aversion to copper.

These rules chiefly envision wooden-bottomed ships fighting against wooden-bottomed ships, and copper-bottomed ships fighting copper-bottomed ships; but during the early 1780's, the British had a definite advantage. When rolling for Ship Quality, subtract 20 from the die roll of any British ship 1781-1783.

BOXHAULING

Boxhauling is a maneuver used in crowded channels, rivers, and other obstructed areas where there is not enough room ahead to tack, and where the loss of ground in wearing is not acceptable. The evolution combines a tack and a wear and is more difficult than either.

On turn 1, proceed as per tacking: move 1st leg, then head directly into the wind instead of making a 2nd leg.

On turn 2, roll on the Tacking Table (VIII.E.1), subtracting 20 from the die roll due to the complexity of the maneuver. If the roll is unsuccessful, the ship will drift backward (see VIII.S., Drift), and a roll must be taken on Mast Falling Chart II. The ship is considered in irons (See VIII.E.) and it may not continue the maneuver.

If the maneuver is successful, turn the ship 180 degrees around, pivoting from the stern, until it points directly downwind. This concludes turn 2.

Starting on Turn 3, proceed as per Wearing, VIII.F. The ship receives a wear bonus until it abandons the maneuver or ends up on its new tack.

Ships who fail to tack may try to Boxhaul instead. If a ship is in irons, and if no masts have fallen as a result, throw percentage dice. Crack crews have an 60% chance of succeeding, Good crews 50%, Average 40%, Poor 20%, Green not at all. If they succeed, proceed from Step 2 above. If not, the ship remains in irons. This die roll need only be taken by ships who have failed in a tacking maneuver; ships who wish to boxhaul without attempting a tack do not need to make this die roll.

ADVANCED HEAVING TO

In the basic rules, a ship that has heaved to, when it desires to move, simply sails off at whatever Sail Setting it has set. A ship changing from a dead stop to, say, full speed in an instant is not realistic, but I thought it would be simpler than the alternative, which is given below:

A ship that has finished Heaving To may move off at a speed equivalent to that speed it makes at Sail Setting 1. This speed will increase to Sail Setting 2 at the next leg, and 3 at the leg after that, until the normal speed is achieved. (The ship is allowed to achieve speed more quickly than normal because the ship does not actually have to send men aloft to set more sail).

RAZEES

The French generally led the field in building large frigates. When the class of 'frigate' was standardized in 1750, and the first laid down in British yards, they ran in size from 28 to 36 guns. The French and Spanish built the first 38's, and the British began building copies after capturing a few. The French than began building the 40-gun frigate, which had no English equivalent.

But when the French laid down the 44-gun POMONE in 1794, panic set in at the Admiralty. POMONE carried 24-pound guns instead of 18-pound armament, and it could demolish anything it couldn't run from.

The British then made use of an old trick; they took three 64-gun sail of the line, cut off the top deck, and equipped them as 44-gun frigate 'razees'. One of them was Sir Edward Pellew's famous INDEFATIGABLE.

INDEFATIGABLE aside, razee frigates were not, as a class, particularly successful: the compromises necessary to create a frigate out of an old two-decker did not always work to the ship's advantage, particularly insofar as speed and handling was concerned.

When rolling for Ship Quality, add 10 to any frigate designated as a 'razee'.

XEBEC-FRIGATES

Another unusual class of ships was the Xebec-frigate; so far as I can determine, they were used only by the Spanish. They carried two entire sets of yards, square-rigged for use in the Atlantic, and lateen-rigged for use in the Mediterranean. In order to handle all that rigging, the xebec-frigate needed very large crews: increase the crew factory by 50%.

It will take 40 turns to change from one rigging pattern to another; during that time, the ship must have heaved to, or must be anchored. This may not be attempted during Wind Strengths 6, 7, or 8.

When lateen-rigged, the xebec-frigate may Beat 1 point from the wind, and will use rules for fore-and-aft vessels.

CREW

Ships were not always able to maintain their complete establishment of crew, particularly before an understanding had been reached concerning the origins of scurvy, and before vaccination for smallpox became common practice. When setting forth on long voyages, captains tried to overcrew their vessels as much as possible, expecting to lose a large percentage from disease. Roll on the following table for each ship, and multiply the standard crew factor by the resulting percentage.

Before 1790

01-10	50%
11-20	60%
21-30	70%
31-40	80%
41-50	90%
51-85	100%
86-95	120%
96-00	140%

1790 and after

01-20	70%
21-30	80%
31-40	90%
41-90	100%
91-95	110%
96-00	120%

Subtract 20 from the die roll if the ship is serving in the tropics. El Vomito Negro (Yellow Fever) was a disease that was not understood until the 20th Century.

CLUB-HAULING

'A method of tacking the ship by letting go the lee-anchor as soon as the wind is out of the sails, which bring her head to wind, and as soon as she pays off, the cable is cut and the sails trimmed; this is never had recourse to but in perilous situations, and when it is expected that the ship would otherwise miss stays'. - - - A SAILOR'S WORD-BOOK, Amiral William Smyth.

Club-hauling was such a rare nautical maneuver that it was never mentioned in nautical manuals until 1781, and even then was practiced very rarely: when Captain Williams successfully club-hauled DICTATOR (74) in February 1811, when caught on a lee shore near Inchkeith, it immediately became an event that has gone down in nautical history.

Club-hauling is not an occurrence that would normally be of use in a war-game, but the situation might arise by accident during the course of an engagement, or by design of the referee. Club-hauling would only be used when it is necessary to tack in avoidance of being driven ashore by a storm, and when the wind is so high as to make a regular tacking maneuver very unlikely with regards to success.

In the game, it is performed just like a tack, but without recourse to the tacking table. Roll a percentage die: Crack Crews have a 50% chance of performing it successfully, Good Crews 30%, Average Crews 10%, and other crews not at all. Failure to meet this die roll means the ship is in irons; see Section VIII.E. for the results of going in irons.

STORM TACTICS

Storm tactics will normally be unnecessary in an engagement, but in the campaign or role-playing game they often arise. When Wind Strength 8 occurs, players will have to close one of the following four tactics for each of their ships.

SCUDDING

The ship reduces its Sail Setting to 1 and runs before the wind. Must be Quarter Reaching or with the Wind Astern. This is by far the safest possible tactic, though a fleet will probably be scattered over many miles of ocean. The ship is still moving quite quickly, with the weather coming from astern. Should any rogue waves or unusually dangerous weather conditions arise, the ship can see them coming and have enough speed to maneuver to avoid them.

BEATING

If there is land to leeward a ship cannot Scud downwind; instead the ship must reduce Sail Setting to 1 and Beat or Broad Reach into the wind. This is still a fairly safe maneuver, though in the event of a rogue wave or other dangerous condition, reaction time will be lessened. Beating through a storm will also put unusual strain on the hull, mast, and rigging, increasing the chance of mast failure.

HEAVE TO

The ship simply heaves to and drifts, waiting for the end of the storm. Under most conditions this is quite safe, though since the ship is not under way it has no way to react to a rogue wave or other dangerous situation. The crew will most likely get very seasick from the ship rolling through the waves.

SEA ANCHOR

This is the only option for a ship that has lost masts as a result of the storm. It's a variation of Scudding, except it's done at a Sail Setting of Zero. The ship tows a sea anchor (otherwise known as a drogue) astern. A sea anchor can be a specially-constructed parachute of canvas, or it can simply be a long loop of anchor cable. Towing a sea anchor will turn the stern into the wind and slow a ship so it won't pitch down the face of a wave. The ship is also moving fast enough so that it can react to any rogue wave or unforseen disaster, though it won't be able to react as quickly as if it were scudding.

A ship will take 5 turns to deploy a sea anchor, using 2 crew factors for the purpose. Once the sea anchor is deployed, the stern will turn into the wind 1 point each turn until the ship is drifting Wind Astern. The ship will drift at HALF its normal drift rate.

DISMASTING

If a ship loses masts as a result of the storm, it will have to put out a sea anchor. During the turns in which the anchor is being deployed, the ship will turn 1 point each move until it is broadside to the wind. Once the ship is broadside to the wind, it will have to roll on the Disaster Chart, below, on the Heave To line, for EVERY TURN the ship remains broadside to the wind. If the ship succeeds in putting out a sea anchor, then proceed normally.

ROGUE WAVES

A 'rogue wave', for the purposes of this game, is considered to be a large wave moving at near-right angles to the line of waves, an unusually mixed or choppy sea, a wave moving in line with other waves but much larger, or any other unusual or dangerous weather condition. Rogue waves were very dangerous, first because they were impossible to anticipate, and second because they forced the helmsman into immediate action in order to avoid or prepare for them.

For every Game-Hour the wind remains at Wind Strength 8, roll percentage dice: 1-5, a rogue wave has occurred. For each ship in the area, roll on the Disaster Chart, below:

Ship's	Ship's No. of Hull Points				
Strategy	**1-4**	**5-13**	**14-27**	**28-69**	**70+**
Scudding	55%	80%	85%	90%	95%
Beating	45%	75%	80%	85%	90%
Heave To	45%	65%	75%	80%	85%
Sea Anchor	50%	70%	80%	85%	85%

Die roll Modifiers:

Green Crew . . . . . +20%
Poor Crew . . . . . +10%
Good Crew. . . . . −10%
Crack Crew . . . . . −20%
Ship Knocked Down . . . . . +20%

The ship must roll the given percentage or less to avoid disaster. A roll of 100, no matter the strategy used or the crew quality, is always a disaster.

If a ship has encountered a disaster, roll on the following table, applying the same modifiers as before:

01-40 . . . . . .Ship knocked broadside to wind
41-60 . . . . . .Ship knocked down
61-00 . . . . . .Ship capsized

The results are as follows:

Ship knocked broadside to wind: Ship must roll on the Disaster Chart for every turn the ship remains broadside to the wind. For this turn the ship must roll to see if it was damaged, on the Mud section of the SHOALS, SHALLOWS, AND CASTING THE LEAD section of these rules, above, adding 10 from the die roll if the ship was Beating. (In other words, the ship has taken damage from its knocking such that it was the equivalent of running aground on mud).

Ship knocked down: The ship is 'on her beam ends', in other words riding on her side with her masts in the water. It is perfectly possible to survive in this position, although it will be very uncomfortable for all concerned, and if the guns begin to break loose the ship will be holed and sink.

First, roll to see if the ship has sustained damage on the Reefs section of the SHOALS, SHALLOWS, AND CASTING THE LEAD section of the rules. Apply any damage points necessary. If the ship sustains more hull damage than it has hull points, the ship disintegrates and all are killed.

Second, roll for mast damage on Mast Falling Chart II, adding 10 if the ship had been Beating. If the ship is completely dismasted there is a 50% chance it will turn upright, and will then be broadside to the wind until such time as a Sea Anchor is deployed. Treat as if it had been Knocked Broadside to the Wind, above.

If the ship is not dismasted or destroyed, it will continue to float in its knocked-down position. If struck by another Rogue Wave, it will roll on the Heave To section of the chart, with the modifier for being Knocked Down.

If the wind moderates to 5 or less, the Knocked-Down vessel may try to right itself.

If the vessel has been dismasted, the job is a difficult one. There is a 5% chance every game-day that it may right itself sufficient to get jury masts up and set Sail Setting 1 (no more) to get itself to port.

If the vessel has not been dismasted, it may try to sail out of its difficulty. As Sail Setting 1, roll percentage dice for every game turn the sail is set: 1-10, ship rights; 96-100, must roll on Mud table for damage.

Ship capsized: ship destroyed with all in her.

FORE-AND-AFT VESSELS

HEART OF OAK is chiefly concerned with simulating battles between square-rigged ships of war: sail of the line, frigates, and the like. But there were other ways of rigging vessels, and vessels so rigged behave fundamentally differently from square-rigged vessels. All different

rigs, for the purpose of simplicity, are lumped together here under the designation fore-and-aft rigs.

Fore-and-aft rigged ships had their sails deployed in such a way as to take advantage of the aerodynamic possibilities of the sail, using the sail more as an airfoil than as a kite. Because of this, they could sail nearer to the wind.

For the purposes of these rules fore-and-aft rigs are divided into two types:

Type I: schooners, sloops, cutters, ships' boats, Atlantic and American gunboats.

Type II: xebecs, galleys, Mediterranean gunboats, luggers, lateen-sailed vessels, Chinese junks.

Rules for Type I boats:

Due to the more efficient deployment of sails, vessels use the Quarter Reach Sailing Chart when Broad Reaching. They use the Broad Reaching chart when Beating.

Because the most inefficient angle to the wind for these vessels was to have the wind directly astern, the Beating table is used with the wind astern.

Because Type I vessels have no trouble tacking, they do not need to roll on the Tacking Table when tacking across the wind. The tack is performed normally, and always succeeds.

Because Type I boats have trouble gybing- - - moving their stern across the wind- - - they may have mast damage in so doing. There was a distinct chance that the wind shift might come earlier than anticipated, and swing the sail, gaff, and boom across to the other side of the ship, with quite dangerous results.

When moving its stern across the wind, or when moving to the Wind Astern position for the first time, throw on the Tacking Table (VIII.E.1.), using the same modifiers as per Tacking. If the result is 0 (zero) or less, then the vessel has suffered an uncontrolled gybe. Roll on Mast Falling II for possible damage.

Type I boats may not heave to in the standard fashion, nor may they back sail.

Type I boats, with a Sail Setting of 2 or less, may heave to by pointing their bow directly into the wind. They will drift backwards until anchored or until they decide to set sail again, simply by turning to Beat on one tack or the other.

Rules for Type II boats:

Type II boats have little trouble gybing, but when tacking must conduct a unique procedure: they have to haul their yards clear around the masts in order to redeploy the sail. This is a cumbersome procedure, but the fact that Type II boats can sail closer to the wind than square-rigged ships makes it easier to cross the wind.

Type II boats throw on the Tacking Table (VIII.E.1.) when tacking, but add 5 to the die roll, making it easier to succeed.

Type II boats use the Quarter Reach Sailing Chart when Broad Reaching, and use the Broad Reaching chart when Beating. When sailing with the Wind Astern they use the Wind Astern Chart.

Type II boats may not Back Sail, nor may they Heave to.

Topsail Schooners:

Topsail Schooners were fore-and-aft rigged on the lower masts, and had square topsails on their topmasts. Therefore they are a combination of the standard square-rigger and the Type I boat.

When at Sail Setting 3 or less, the topsail schooner acts just as a Type I boat, except that it can back sail and heave to normally.

Topsail schooners gybe as do Type I boats. They must also roll for tacking, but add 5 to the roll.

At Sail Setting 4 or 5, the square sails are assumed to be fully deployed. The vessel may sail no closer to the wind than 2 points.

A topsail schooner uses the Wind Astern chart when sailing with the Wind Astern.

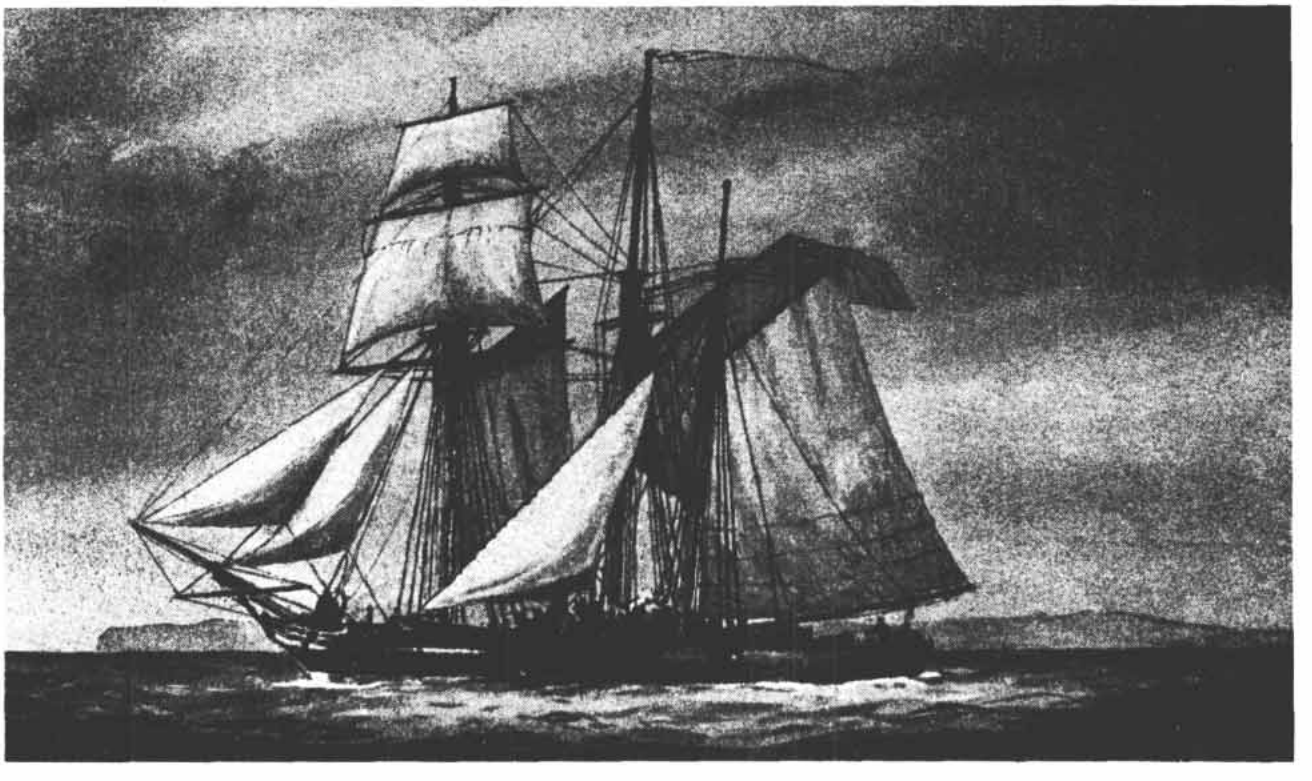
This class of vessel includes the Clipper.

SLOOPS, BRIGS, AND SO FORTH, (or, problems in 18th Century Semantics)

18th Century sailors tended to be sloppy in their naval terminology. Terms like Brigantine, Brig, and Barquentine tended to get confused, and used for the same ships. A Schooner could be identical to a Brig or Snow. This was made worse by Royal Navy terminology; they called a Brig a Sloop, Naval Sloops were generally not sloop-rigged; Snows were called Brigs, Naval Brigs often had three masts, like the 'Bounty', and therefore were not technically brigs at all. Cutters were generally sloop-rigged.

A Brig, nowadays, is a two-masted vessel with a fore-and-aft mainsail, square-rigged topsails, and a square-rigged foremast. A Schooner can have two or three masts, fore-and-aft rigged; a topsail schooner has square-rigged topmasts.

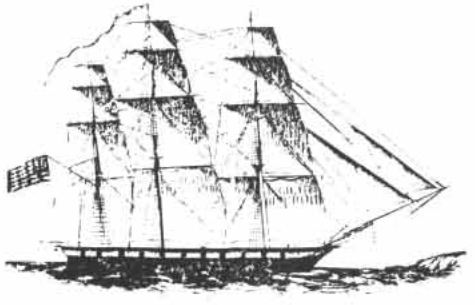
The Navies of the 19th Century changed their system for rating ships almost continually, but a few rules remained fairly steady. A Ship was square-rigged and had three masts; anything else was not a 'ship', but a 'vessel'. Sloops of War generally had an open gundeck, whereas Brigs of War generally had an enclosed gundeck- - - even this rule was violated with a fair frequency.



I have inadvertently made this situation more confusing by creating Sailing Chart IV, for Brigs, Sloops, and Two-Masted Vessels. This chart is the slowest-moving one of the book, and leaves Brigs and Sloops in dire trouble if faced with fast-moving enemies like frigates- - - even ships of the line sail faster. This is generally historical: there were many cases of fast sail-of-the-line capturing enemy brigs and sloops, who couldn't get enough canvas aloft to make their getaway.

But there were brigs and sloops that were as fast as a frigate, particularly those specifically built for war, as opposed to converted merchantmen. To help solve this difficulty, roll on the table below:

Sloops	
1,2	Ship-rigged, Table III.
3	Ship-rigged, Table II.
4	Ship-rigged, Table I
5	Ship-rigged, Table IV
6	Two-masted, Table III
7	Snow-rigged, Table II
8,9,10	Two-masted, Table IV
Brigs	
1	Ship-rigged, Table III
2	Two-masted, Table III
3	Snow-rigged, Table III
4	Ship-rigged, Table IV
5,6	Snow-rigged, Table IV
7,8,9,10	Two-masted, Table IV
Schooners	
1,2	3 masts, f-&-a, Table III
3,4	2 masts, f-&-a, Table III
5,6	2 masts, topsail schooner, Table III
7,8	2 masts, f-&-a, Table IV
9,10	2 masts, topsail schooner, Table IV



Sloop-of-War.

Ship-rigged ships have 3 masts, square-rigged.

Snow-rigged vessels technically have 3 masts, but since the mizzen is so short the commander will only have to man 2 masts.

Vessels marked f-&-a are purely fore-and-aft rigged, and may sail 1 point from the wind.

RAMMING

In the basic game, when one ship runs into another, only the moving ship has a chance of getting hurt. This is not quite realistic, but I wanted to penalize clumsy sailors who kept running into other people's ships. A ram was capable of doing damage to the ship being hit, of course, particularly if the rammed ship was smaller.

If a ramming ship's Hull Points (beginning hull points, not after reduction by gunfire) exceed the rammed ship's Hull Points by a ratio of three to one (3/1) or greater, roll on the Sandbar Table for damage, and also roll on Mast Falling Table II. In other words, being rammed by a larger ship is the equivalent of running aground on a sandbar.

LEEWAY

Ships were constantly making leeway; that is, they were always moving slightly downwind, even when ostensibly moving in the opposite direction. The amount of leeway made depends chiefly on the strength of the wind, and the depth of the ship's keel. In most cases, it would behoove the players to ignore this rule, but in order to play certain historical scenarios, particularly those in which a ship is in danger of being driven onto a lee shore during a storm, add the following:

Ships will make leeway during the Drift phase of their movement. If a ship is drifting, both the drift and the amount of leeway will be added together. Cross-index the depth of the ship's keel (DRAFT on the ship chart) with the strength of the wind, and move the ship directly downwind the appropriate number of millimeters.

	Wind Strength					
Draft	**3**	**4**	**5**	**6**	**7**	**8**
1-5	8	12	16	20	40	60
6-10	4	6	8	16	20	32
11-15	—	4	6	8	12	20
16-20	—	—	4	6	8	16
21-25	—	—	—	4	8	12
26-30	—	—	—	4	6	8

STARTING WATER

When being pursued by an enemy force, one of the tricks a crafty captain might use would be to start his water casks and man the pumps; in other words, he would send men below with axes to smash the water casks, allowing his water to run out into the bilges; he would then pump the water out, lightening his ship and allowing it to travel faster through the water.

The drawback to this trick was that sometimes smashing the water casks would ruin the ship's trim, slowing it down and allowing it to be captured: this happened to Captain Manley, the famous American commodore, when his HANCOCK, said to be the fastest ship in the world at the time, was captured by the British during the American Revolution.

Any captain wishing to start his water must detail one crew factor to smash his water casks. This will take 10 turns. Following this, two crew factors must man the pumps for the following 5 turns. After this, percentage dice are rolled:

01-50 . . . . . Successful, speed increased by 10%
51-60 . . . . . Unsuccessful, speed decreased by 25%
61-00 . . . . . .No effect.

REVERSING COURSE

During her action with the British CYANE and LEVANT, the USS CONSTITUTION was in danger of being stern-raked. Her captain, Charles Stewart, ordered CONSTITUTION's yards laid aback and actually sailed her rudder-first through the water until the danger was averted.

In the Battle of Malaga, in 1704, Admiral Sir Clowdisley Shovell ordered his entire squadron, 'All ships back astern', and sailed the squadron backwards into battle to relieve Admiral Rooke, who was hard-pressed.

Anyone wishing to reverse course must be Beating. No fore-and-aft rigged ship may reverse course. The Sail Setting must be 3 or less.

The order 'Reverse Course' (or RC) must be written into the Ship Card, together with the turn number. Crack crews have an 80% chance of performing the maneuver successfully; Good crews 60%, Average Crews 50%, Poor crews 30%, and Green crews not at all.

Throw percentage dice during the first turn in which the ship attempts to reverse course; if unsuccessful, the ship will Heave To, turning broadside to the wind without moving, and must throw on Mast Falling Table I (I.B.).

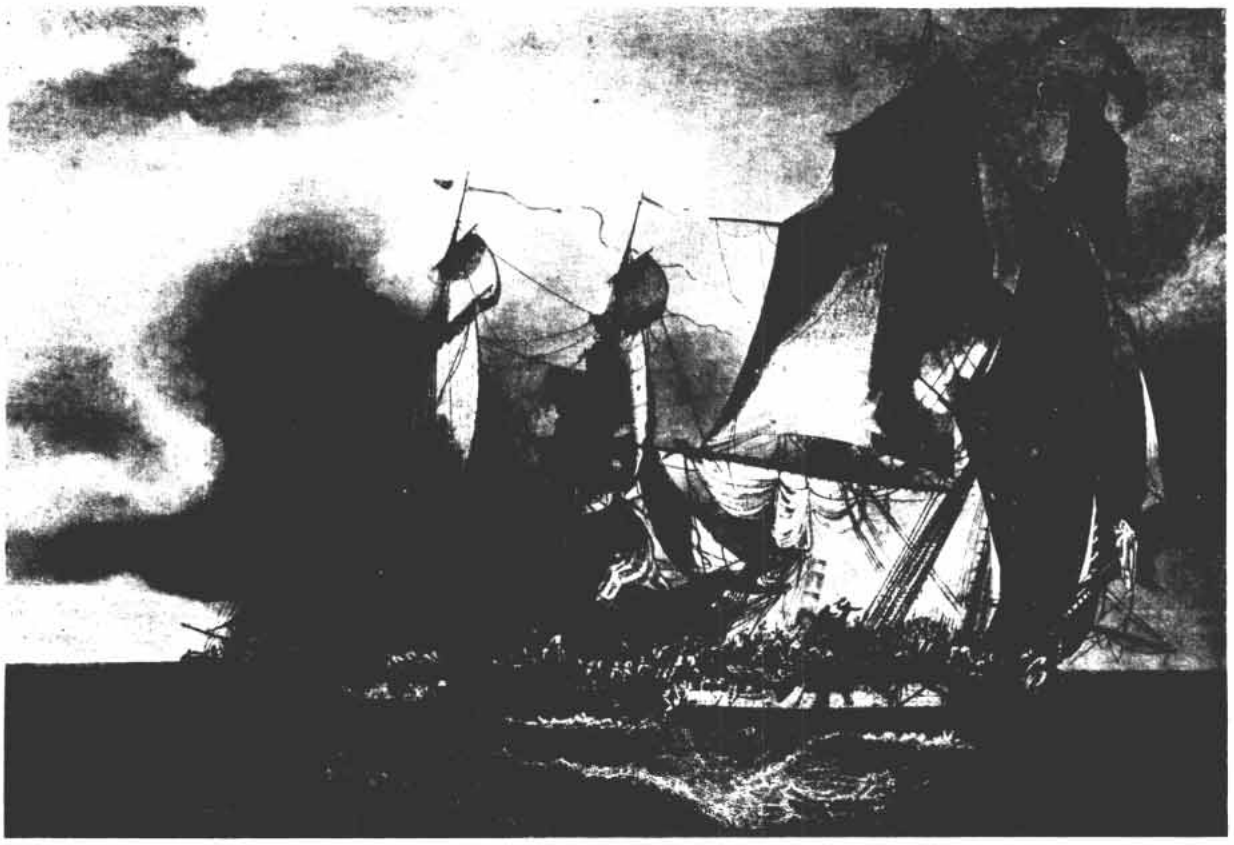
During the turns in which a ship is sailing rudder-first, it will move normally in the Second Leg, but will not have a First Leg; in other words, its movement speed will be cut in half. Its Turn Allowance is reduced to 1. It may never sail at an angle that would normally place it in irons, nor may it turn its stern to the wind at an angle that would normally be considered Quarter Reach or Wind Astern: it must remain Beating or at Broad Reach.

When the ship desires to end the maneuver, it must Heave To and be turned broadside to the wind, without moving; on the turn following, it may move normally.

ADVANCED BOARDING

The following is very complex, and is not recommended at all except for very small engagements- - - four ships at most- - - for fighting boarding actions in the role-playing game, or for masochists.

For any except the above, I recommend the basic boarding system given in the basic game. It is an abstract of all the concrete factors below. The following is very realistic: captains will face all the horrible decisions facing real-life captains. They will try to achieve some kind of balance among their crew by taking boarders from the men at the guns, increasing the strength of the boarding parties at the expense of firepower, and will probably fail. Orders to form boarding parties will go astray, or boarding parties will fail to assemble themselves, or will ar-



rive too late. Boarding parties may be assembled and ready to launch themselves at the foe, only to find that a never-to-be-sufficiently-damned 10-foot gap has opened between the two ships. Boarding parties may gain a lodgement on enemy decks only to find that the ships have drifted apart, and that they are cut off.

If this kind of abuse seems for you, then read on.

Preparation:

Players must fill out a Boarding Schematic (below) for each ship engaged in boarding. To be eligible for boarding, ships must be grappled or fouled to one another.

The Schematic is a representation of a ship's gundecks. Ships with 1 deck use only the 1st deck representation; 2-deckers use the 1st and 2nd deck only; 3-deckers use the 1st, 2nd, and the 3rd.

First, take 10% of the surviving crew to represent the ship's Marines, and put the resulting number in the Marines blank indicated. Privateers, merchant ships, and Indiamen will not have Marines. Marines are very valuable in boarding actions.

The Boarding Schematics of each deck are divided into Fore, Midships, and Aft sections. The armament of each ship must be divided into these areas in order to discover the number of crew who are manning the guns.

All crew not manning guns on the turn boarding is declared are put into the Tasks section. This includes those manning sails, fighting fires, cutting wreckage free, and so on- - - all who are not either Marines or actually fighting guns. Those in the Tasks section may never fight a boarding action. Those from the Guns sections may be moved into the Tasks section, and vice versa; boarders may be moved into the Tasks section, but never the reverse.

Divide the total number of Starboard and Larboard carronades by 3, and place them in the CAR sections on the 1st Deck Boarding Schematic. All fractions are added together and added to the MID section.

If the ship is a single-decked vessel, follow the same procedure for the ships' long gun factor, and place them in the L.Gun boxes.

If the ship has 2 or 3 decks, then the situation gets a good deal more complicated. Long Guns must be divided between all possible decks.

If the ship has 2 decks, then 75% of the Long Gun Factors will go on the 2nd Deck, and 25% on the 1st Deck.

Total all fractions and assign them to the lowest deck.

Once the Long Gun armament is divided up between the decks, divided each deck's armament into thirds, as above, assigning accumulated fractions to the MID section.

Now the guns must be crewed. Any crew factors not in the TASKS Section, or set aside as Marines, must be used to crew guns.

First, the captain of the ship assigns any men he wishes to the Starboard and/or Larboard carronades.

Then, he assigns crew factors to the Starboard and/or Larboard long guns. The long guns on the lowest deck (2nd in a 2-decked ship, 3rd in a 3-decked ship) must be given crews first. If any are left over, they may be put on the upper decks, taking care to fill the lowest decks first.

All of this calculation having been completed, the boarding captain, if he has not torn his Boarding Schematic to shreds in frustration, may proceed to try to board his enemy.

Mobilization:

Only Mobilized crew factors may fight in a boarding melee. Mobilizing crew involves taking them from whatever tasks they may be doing, organizing them into boarding parties, giving them weapons, placing them under officers, and moving them to that part of the ship where it will be possible for them to fight the enemy.

At first, only the ship's Marines (if any) are considered mobilized.

A captain, when declaring a boarding action or any turn thereafter, may attempt to mobilize any of the crew factors that are manning any given deck section- - - 1st Deck Fore Section, for example, or 2nd Deck Mid Section. To mobilize, he rolls percentage dice on the table below:

	Crew Mobilization	
	Normal	**Enemy on Board**
1st Deck	1-40	Automatic
Lower Decks	1-20	1-40

Any crew factors mobilized by the die roll are moved from the Gun sections of the Schematic to the Boarders sections. Once in the Boarders sections, they may not fire guns or engage in any other task except boarding. They may, however, be moved either to the Gun sections again, at will, or moved to the Tasks section. If moved into the Gun sections once more, they must be mobilized with another die roll.

If the enemy have succeeded in gaining a lodgement on the decks, then the crew factors on the 1st Deck are mobilized automatically.

If the enemy succeed in gaining a lodgement on the 2nd or 3rd decks, then any crew factors on those specific decks are considered mobilized automatically.

Once mobilized, any crew factors on the 1st deck may be used to fight boarding battles. Any crew factors on the 2nd or 3rd decks must be moved to the 1st deck before boarding, unless the enemy is actually invading the 2nd or 3rd deck.

Crew factors may be moved 1 deck per turn.

BOARDING SCHEMATIC

TASKS: _____ MARINES: _____

		FORE	MID	AFT
1st Deck	starb'd	G. Crew _____ L. Guns _____ Carr. _____	G. Crew _____ L. Guns _____ Carr. _____	G. Crew _____ L. Guns _____ Carr. _____
		boarders mobilized:		
	larb'd	G. Crew _____ L. Guns _____ Carr. _____	G. Crew _____ L. Guns _____ Carr. _____	G. Crew _____ L. Guns _____ Carr. _____
2nd Deck	starb'd	G. Crew _____ L. Guns _____	G. Crew _____ L. Guns _____	G. Crew _____ L. Guns _____
		boarders mobilized:		
	larb'd	G. Crew _____ L. Guns _____	G. Crew _____ L. Guns _____	G. Crew _____ L. Guns _____
3rd Deck	starb'd	G. Crew _____ L. Guns _____	G. Crew _____ L. Guns _____	G. Crew _____ L. Guns _____
		boarders mobilized:		
	larb'd	G. Crew _____ L. Guns _____	G. Crew _____ L. Guns _____	G. Crew _____ L. Guns _____

Boarding Opportunity:

Once the boarding parties have assembled, the captain will have to await a boarding opportunity. This may mean a piece of wreckage bridging the gap between the two ships, a moment when the ships are actually touching, a moment when the enemy marines are distracted, or when enemy boarding nets have fallen.

Roll, once per turn per boarding action, on the following table:

Boarding Opportunity

Ships Flank-to-Flank	Boarding over Bow	Boarding over Stern
1-20	1-50	1-50

Modifiers

Each difference in decks . . . . . +5
Mast falls on that turn . . . . . –20
Opportunity on previous turn . . . . . –10

If the ships are flank-to-flank boarding opportunities are hard to come by, due to the tumblehome keeping the upper decks apart.

Boarding opportunities are much easier to come by boarding over the bow or stern, but the number of crew factors that can be committed to such a fight are limited, due to the narrowing of the field of battle as the boarders try to squeeze over the bowsprit or through the stern windows.

Incidentally, if anyone thinks it's easier to board if your decks are higher than those of the enemy, he is invited to arm himself with a cutlass and charge down a 75-degree slope onto pikes held by myself and a half-dozen friends, and see how confident he feels about gaining a lodgement.

Once a Boarding Opportunity has been rolled, each captain must decide whether or not to commit his available force to a boarding battle or not. He must write down secretly 'Attack' or 'Defend'. If both players write 'Defend', then neither is making any moves to board his opponent, and no boarding action takes place on that turn. If either or both captains write 'Attack', then proceed to Boarding Battle, below.

Boarding Battle:

If the ships are lying flank-to-flank, the captains may commit to the boarding battle all available mobilized crew factors on the 1st deck, regardless of which section they are in.

If the boarding is over a ship's bow, each captain may commit only 4 crew factors to the initial fight.

If the boarding is over a ship's stern, each captain may commit only 8 crew factors.

Any committed crew factors are multiplied by the following:

Green: x1
Poor: x2
Avg.: x3
Good: x3.5
Crack: x4
Marines: . . . . . bonus x2

Round any fractions upward. Results are in Boarding Factors.

Marines, being most useful in this kind of fighting, are doubled.

Roll on the Advanced Boarding Table, below, cross-indexing the number of Boarding Factors with the roll of a 10-sided die. The result is the number of enemy casualties, in Crew Factors. Both sides roll. If

the total number of Boarding Factors is over 100, players roll once on the 91-100 table and again on any other charts, until the appropriate number of Boarding Factors are all rolled for.

Every odd-numbered casualty (the 1st, the 3rd, etc.) is taken from the Marines, as the Marines will be prominent in the fighting.

After casualties are taken, either side, at its option, may try to roll for Lodgement on Enemy Decks. Roll below:

Lodgement

ships flank-to-flank	boarding over bow	boarding over stern
1-40	1-30	1-50

Apply the following modifiers:

vs. merchant crew . . . . . –25
ship with marines vs. ship with no remaining marines . . . . . –20
3-1 or better advantage in Boarding Factors . . . . . –25

If **both** captains succeed in obtaining Lodgement, then the two Lodgements cancel each other and no one has gained Lodgement.

ADVANCED BOARDING TABLE
number of Boarding Factors

die Roll:	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
1-2	1	1	2	2	2	3	3	3	4	4
3-4	1	1	1	1	2	2	3	3	3	4
5-6	0	1	1	1	1	2	2	2	3	3
7-8	0	0	0	1	1	1	1	2	2	2
9-10	0	0	0	0	0	1	1	1	2	2

No.: Number of enemy crew factors eliminated.

If neither vessel succeeds in gaining lodgement, then the boarding battle for this turn is over. Continue to next turn, and if players are willing the whole procedure is gone through once again.

If one player succeeds in gaining Lodgement, then proceed to melee, below.

If it is not obvious which part of the enemy 1st Deck the lodgement is gained upon (Fore, Mid, or Aft), then roll the following table. Of course, if the enemy is boarded through the stern then the lodgement is in the Aft section, and if over the bow is in the Fore.

01-30 . . . . . Fore
31-70 . . . . . Mid
71-00 . . . . . Aft

The successful force is assumed to be in possession of whichever section (Fore, Mid, Aft) he has gained his lodgement in. Any unmobilized forces in that section, and any boarders in that section, will move to the adjacent section. Any unmobilized crew factors are considered mobilized if they have been dislodged.

Melee:

Now things will happen swiftly. The captain who has been boarded will fling every man available to drive the enemy from his decks, and his opponent will hurl as many of his own men as possible over the bridge in order to take advantage of his lodgement. The fight will be with pistols and cold steel, and will probably not last long. It takes a steadfast man indeed to stand up to the prospect of mutilation and dismemberment for more than a few seconds before breaking. The side managing to avoid having its men stampede for safety for the longest time will succeed.

Once a lodgement has been reached, Boarding Melees will be fought. There are six Boarding Melees in any one turn.

First, each captain gets a free Crew Mobilization roll for any of his crew he may wish to mobilize. The captain who has been boarded will mobilize any 1st Deck crew automatically, and will have the Enemy on Board modifiers for any others.

The captain who has been boarded may throw any and all 1st Deck forces into the Boarding Melees. The captain doing the boarding may throw any of his own 1st Deck forces, including any recently mobilized, over his lodgement.

There are no limitations to the number of crew factors that may be used in a melee once a Lodgement has been achieved.

Multiply all meleeing Crew Factors by the multipliers given above, under Boarding Battle. Then roll on the Advanced Boarding Table for any enemy casualties, taken in Crew Factors. Then each side roll on the Lodgement Table, on the flank-to-flank chart. If both succeed, the further lodgements cancel each other out.

If the defending captain succeeds in his Lodgement roll, then he has driven the enemy from his decks. The enemy crew factors are returned to their ship, and the boarding battle is over for this turn.

If the attacking captain, the captain who initially gained the lodgement, succeeds in gaining another lodgement, then he is considered to have driven the enemy back and may capture another enemy deck section (Fore, Mid, Aft). If the initial lodgement was in Fore or Aft, the captured section will be Mid. If the initial lodgement was in Mid, the capturing player may have his choice.

Unless the invader was driven off, continue fighting Boarding Melees until one of the following occurs:

1. The defender drives the enemy from his decks.
2. A total of six Boarding Melees have been fought.
3. The attacker succeeds in capturing the entire 1st Deck.

In cases 1 and 2 the boarding battle is over for that turn, but will be continued on the next turn.

In Case 3, which may be brought about either by the invader gaining successive lodgements, or by wiping out his opponent, the defender must make an immediate 80% Strike and Sink roll to see if his remaining crew give up (if there are any remaining crew - - - if not, the ship has struck). Read any 'Sink' results as 'Struck'.

If the ship strikes, then the boarder has taken possession.

If the ship doesn't, the boarding battle continues. Any survivors from the 1st Deck action are considered to have run below to the 2nd Deck, if there is one. If not, the ship surrenders.

The invader now has a choice to make: he can attempt to charge below and seize the 2nd deck, or not. If he does not, he may not roll on the Lodgement Table. If he does, he automatically mobilizes any unmobilized Second Deck enemy crewmen.

The defending player has little choice. He can strike voluntarily or he can attempt to capture the 1st Deck.

Unless the defender strikes, both sides roll once more on the Advanced Boarding Table for enemy casualties. Any side wishing to rolls for Lodgement, rolling on the Lodgement through Bow table.

If either side succeeds in gaining a Lodgement, then fight normally until one of the three conditions above is reached.

If the defending player does not succeed in regaining a section of the 1st Deck, then he rolls again on the 80% Strike and Sink table. If he does not strike, and none of the three above conditions have been met, then the Boarding Melees will continue.

After every Boarding Melee (not Game Turn) in which the captain owning a ship fails to regain control of a portion of his own 1st Deck, he must roll on the 80% Strike or Sink table.

If six Boarding Melees have been fought, then the Boarding Battle is over until the Boarding Phase of next turn.

Note:

These rules are complex. Players who commit to boarding battles using these rules will rapidly find the situation sliding out of their control, which, as I read the histories, is more or less what happened historically.

If a boarding battle lasts more than one Game Turn, other ships, and the ships involved in boarding, may cut free, maneuver, fire their guns inflicting normal casualties, and so on.

If a boarding battle lasts more than one turn, and the attacking player fails to make his Boarding Opportunity roll for any subsequent turn, then he may not reinforce his boarders on the enemy decks for that turn; the ships are considered to have drifted too far apart, but may come together again on subsequent turns.

BOARDING FROM BOATS

Boats attempting to board an enemy vessel board normally, except: They may choose which section they wish to board, and; if the defender succeeds in gaining a Lodgement onto a boat, they are considered not to have actually put men aboard, but are considered to have sunk the boat and all aboard her.

RULES FOR CAMPAIGNS

With an imaginative and vigorous referee, it should be possible to assemble an entire naval campaign, from fitting-out, to scouting, to combined-arms operations, to the final concluding broadsides of a naval action.

In designing a campaign, some thought could be paid to the sort of strategic thinking the French were often doing. As has been pointed out elsewhere, French strategic thought emphasized the notion of naval units being sent out on specific missions: landing operations, convoying merchantmen or troopships, and so forth. In setting victory conditions, points might be given to the French for successfully convoying a merchant flotilla to home ports (as they did during the Glorious First of June Campaign; although Lord Howe beat the French fleet and captured a few prizes, the grain flotilla from the Americas safely made it to France, where it fed the starving French population and saved the Revolution.), or landing troops on an enemy shore (Newport, Bantry Bay, Yorktown). The British could gain points by preventing such a landing, or by bringing the French to battle and capturing their vessels.

Players need not feel too constrained by reality; mythical kingdoms can be created to battle one another on the high seas, or the French might succeed in getting a squadron to New York, where it is manned by superb American crews - - - this last is not far-fetched; it was a legitimate worry of the British during the War of 1812.

The requirements for a good wargame referee, particularly where campaigns are concerned, are imagination, obstinacy, and intelligence in about equal proportions. The campaign has to be very strictly defined in order that the enemy fleets won't simply sail off into the open sea and never encounter one another; contending players will have to be managed; realistic and balanced victory conditions will have to be set. Running a campaign is far more challenging than participating in one, and if luck can be transferred by good wishes turned into print, any referees using the following system have my best wishes for their campaign.

GAME SCALES

A campaign will be fought in three scales, the Tactical, the Grand Tactical, and the Strategic. These are explained below.

Tactical

1 meter = 1mm, the scale of HEART OF OAK and the scale at which tactical battles will be fought on the table-top. Turns equal one minute.

Grand Tactical

The Grand Tactical scale is used when opposing vessels have actually sighted one another, but have not closed to the point where they can be put on the tabletop. Scale: 1 turn = ½ hour. Movements are made on graph paper ruled in millimeters, each 10 millimeters representing 1 kilometer.

Strategic

The Strategic scale is used when fleets are attempting to locate one another on the open sea. The scale is 1 turn = 1 day, and 1cm = 50 kilometers.

Referees will wish, first of all, to construct a strategic map. The map should be constructed on the scale of 1cm = 50 kilometers, and should include a compass rose. It may be on graph paper, depending on referee's preference, but at any rate should have some grid or border which can be matched with duplicates of the map. A sample map, of some mythical Caribbean islands, is given here.

The referee should then photocopy the map. He will need lots of copies.

Opposing players are put in different rooms, where their opponents cannot overhear them, and are provided with their ships, objectives, and a copy of the map. The players will give orders to their ships, and move them on the map with pencil and paper. The referee will coordinate the moves of the opposing players, and any random factors he controls such as neutral forces, privateers, merchant flotillas, and so on. The best way to do this is simply to hold the maps up to the light, matching them, to see if the opponents are within sighting range.

Before any movement, the referee must determine wind direction, barometer, and weather. Rather than roll for every minute of the day, the referee will roll for the average weather for the entire day, assuming minor variations.

The players may move their forces as follows:

Sail of the Line	**Downwind**	**Upwind**
Hookers	28mm	16mm
Average	35mm	21mm
Smart	42mm	26mm
Frigates	**Downwind**	**Upwind**
Hookers	43mm	22mm
Average	58mm	30mm
Smart	72mm	37mm
Convoys	17mm	10mm

Fleets wishing to keep together must move at the speed of the slowest ship. Fleets escorting convoys must move at the speed of the convoy.

Ships not given on the charts, such as brigs, should be assigned one of the above categories. A brig, for instance, may be assumed to travel at the speed of a hooker sail of the line.

Ships moving within 45-90 degrees of the wind use the 'upwind' column; ships moving greater than 90 degrees use the 'downwind' column. No ship may sail closer than 45 degrees to the wind. If necessary admirals may plot a zigzag course (assuming a tack or wear) into the wind.

At wind strength 2 ships may move 1/3 normal; at wind strength 1 ships may not move at all.

Each turn on the strategic map is 24 hours. The speed given is an average speed for that 24-hour period, assuming cracking on sail in the day and shortening sail, for safety's sake, at night. Players may attempt to increase speed by 10% with moderate risk, or by 20% with increased risk. If increasing speed by 10%, each ship has a 10% chance of having to roll on Mast Falling Chart II to see if spars were damaged. If increasing speed by 20%, there is a 20% per ship of having to roll on Mast Falling II.

Sighting range, in normal weather, is as follows:

ship to ship 6mm
ship to island 16mm

Details of enemy fleets will not be available at extreme sighting range. Extreme range for observing signals is 2mm.

Turns are assumed to be local dawn to local dawn. The last 10% or thereabouts of each turn will be in total darkness.

Visibility will also be reduced by weather, at referee's determination.

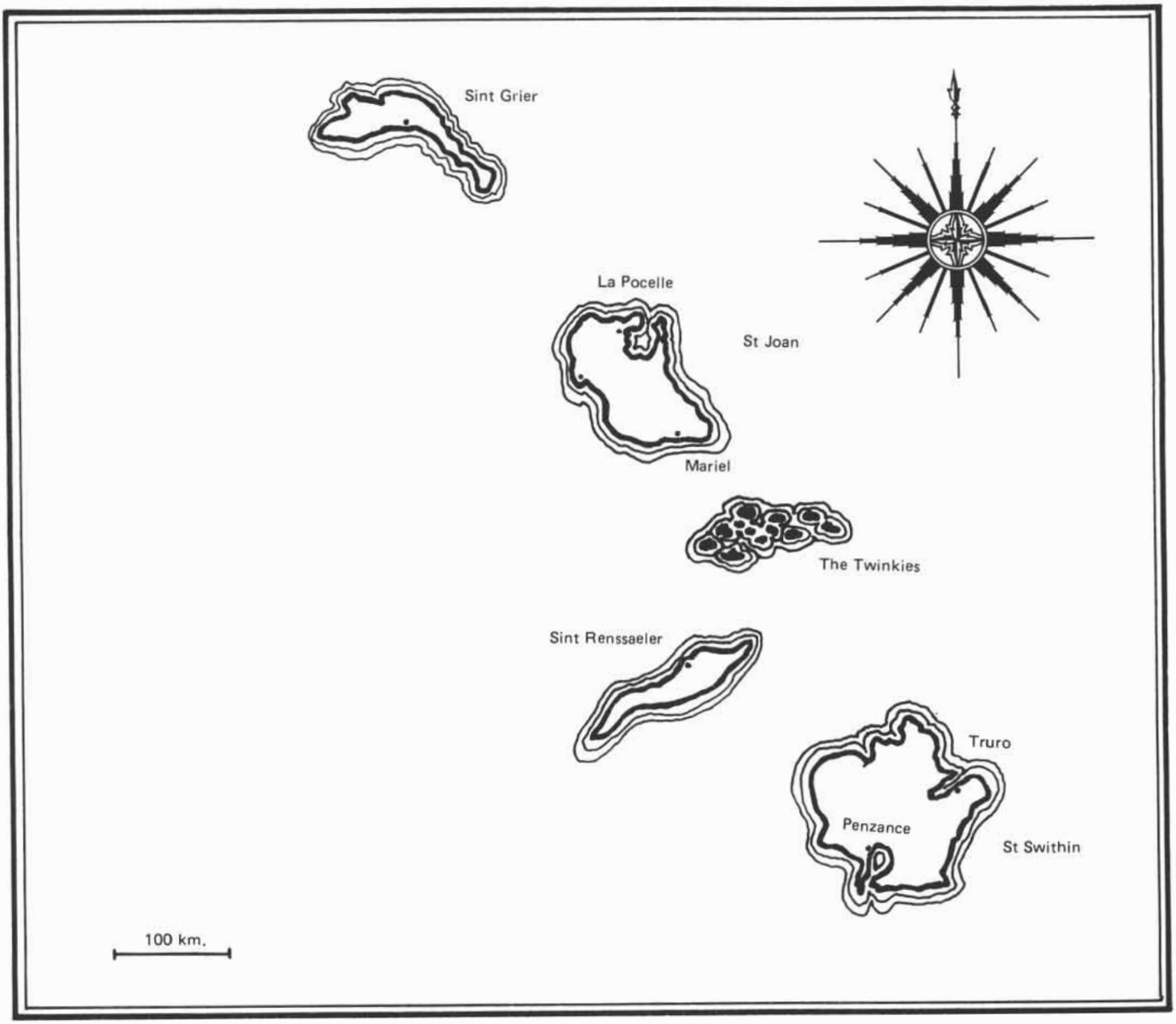
When opposing fleets have sighted one another, and commence moving to an engagement, the referee will have the players move to the Grand Tactical Scale.

Rules for the Grand Tactical Scale:

Referees who do not have the time or inclination to stage an entire campaign, but who still desire a more involved engagement than that provided by the tactical rules, may wish to use a Grand Tactical game to provide the maneuvering before an actual engagement. For instance, the tactical maneuvering leading up to the Glorious First of June, in which the fleets were actually in sight of one another for several days before engaging, could easily be recreated with the Grand Tactical System.

Maps for a Grand Tactical engagement will have to be improvised by the refereee on the spot, unless he can somehow anticipate which areas of the Strategic Map the opponents will decide to fight their battles in. Map should include (if relevant) coastal formations, visible reefs, towns, harbors, forts, and so forth.

The scale is 1 turn = ½ hour, and 1mm on the map = 1 kilometer.



The referee will place the fleets on the map, using a pencil, at maximum sighting range (30mm or 30 kilometers in good weather). Each player will give the referee his orders in secret, and the referee will move the fleets as indicated. When they get close enough, tactical play will commence on the tabletop. Exactly when 'close enough' might be will depend on the size of the table.

Ships move at the following rates:

TYPE OF SHIP	DOWNWIND	UPWIND
Sail of the Line:		
Hookers	14mm	8mm
Average	18mm	11mm
Crack	22mm	13mm
Frigates:		
Hookers	23mm	12mm
Average	30mm	18mm
Crack	37mm	24mm
Convoy:	9mm	6mm

Movement will be exactly as in Strategic Movement, again with the possibility of increasing sail by 10% or 20%, rolling every turn (things are happening more quickly and are more tense) for possible damage.

Roll for weather changes every half-hour turn.

Note:

Referees using this system will have to define campaign objectives very well, and provide some central focus, such as a landing, or capturing a port or island, otherwise he will find the opposing fleets sailing continually out of sight of one another, groping about in the open sea for an opponent.

Referees will also have to limit the number of detachments a given fleet can make, because keeping track of two dozen separate ships will drive him mad. The referee will also have to decide what to do about ships that depart from the main body and cannot consult with the admiral. It is suggested that the admirals provide a set of standing orders for detached vessels, and that the referee move these on a separate map. If the standing orders allow a ship to sail off on a separate mission and not return, then the referee can save himself some trouble by allowing it to do so, and removing it from the campaign entirely. (Sea captains, it will be remembered, loved to operate on initiative).

Although sea-land interlinkage is really beyond the scope of this game, a sea campaign could be fought, of course, with a land campaign, using both naval and land miniatures, and any of the many sets of 18th Century or Napoleonic miniature rules on the market.

For those who want to stage a combined-arms operation, but have no wish to set up an entire land miniatures campaign to go with it, I might report that I have had some success with fighting land battles with Avalon Hill's **1776**, a board game, which has an excellent tactical matrix for resolving period land combat, which is fast, entertaining, suspenseful, and within its limits realistic.

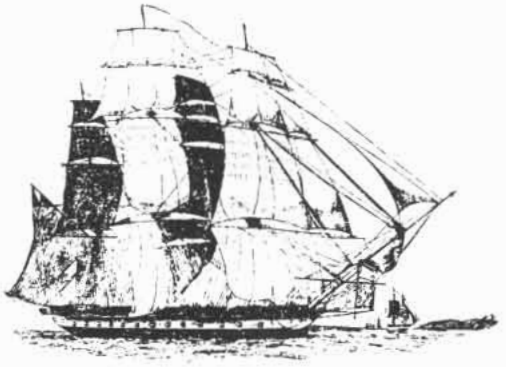
Appendix 1

DEFINITIONS

SHIP
Any vessel with three masts, square-rigged. All rated vessels (sail of the line or frigates) are ships. Anything not a ship is a 'vessel'. In these rules, 'ship' and 'vessel' are used, for the most part, interchangeably.

SHIP OF THE LINE
A ship large enough to stand in the line of battle, with two or more gundecks. Also known as sail of the line, line of battle-ships, or battle-ships.

FRIGATE
A rated man of war, almost always with a single gundeck, used for pursuit, convoy escort, commerce raiding, and so forth, with between 22 and 44 guns.



Square-rigged frigate.

SLOOP
1. A 'sloop-rigged' vessel has a single mast, rigged fore-and-aft.
2. A 'sloop of war', in the British and American navies, is a single decked man of war with two or three masts, square-rigged, and usually with an open gundeck.

CORVETTE
The French and Spanish equivalents of a sloop of war, or small frigate.

BRIG
1. A two-masted vessel with a fore-and-aft mainsail and a square-rigged foremast.
2. A 'brig of war', in all navies, is a single-decked man of war with two or three masts, usually with a closed gundeck, usually with its aftermost mast fore-and-aft rigged.

SCHOONER
A fore-and-aft rigged vessel with two or three masts. A 'topsail schooner' has square-rigged topmasts.

SNOW
A brig with a short mizzenmast just aft of the mainmast, the mizzenmast holding the trysail or driver so that both the driver and a square maincourse may be set. In the game, treat as a two-masted vessel for purposes of crew allocation.

LUGGER
A three-masted vessel with lugsails; a very fast, narrow vessel.

PINK
A three-masted vessel with lateen sails, generally a Mediterranean rig.

CUTTER
A small vessel with a single mast and a running bowsprit, with a fore-and-aft mainmast and square-rigged topsails; a very fast vessel.

XEBEC
Also spelled 'Chebec'. A Mediterranean vessel with a prominent beak and a pronounced overhang aft resembling an 'aftersprit', rigged with three lateen masts, and also propelled by oars. The favored vessel of Algerian corsairs.

RAZEE
A frigate created by cutting away the top gundeck of a two-decked man of war.

UDEMA
A shallow-draft, three-masted vessel built for coastal defense.

GALLEY
A chiefly Mediterranean vessel propelled by oars and lateen sails, often used by French and Spanish as prison vessels, and used by Maltese and Algerian corsairs as pirate and raiding vessels.

BOMB
A two-masted, ketch-rigged vessel, carrying, in place of a foremast, one or more large mortars. Also called a 'bomb ketch'.

GUNBOAT
A small, one-masted vessel, with various rigs, capable of moving under oars or sail, with one or more large guns mounted to fire directly forward, used for harbor defense, and for commerce raiding on windless days.

CLIPPER
A very fast topsail schooner with a narrow hull and tall masts, used by Americans during the War of 1812. Also called 'Baltimore Clipper'.

SCHUYT
A fast, shallow-draft Dutch boat, used chiefly for commerce raiding and smuggling, usually fitted with lugsails.

PRAM
A floating battery, often fitted with sails and used as a troopship.

STARBOARD
From loading board, the side of a ship through which it discharged cargo. The left, as opposed to right, side of a ship, facing forward. The forward.

LARBOARD
From 'steer-board', the side of a ship through which it discharged cargo. The left, as opposed to right, side of a ship, facing forward. The term 'port', meaning left, was not used until the middle of the 19th Century.

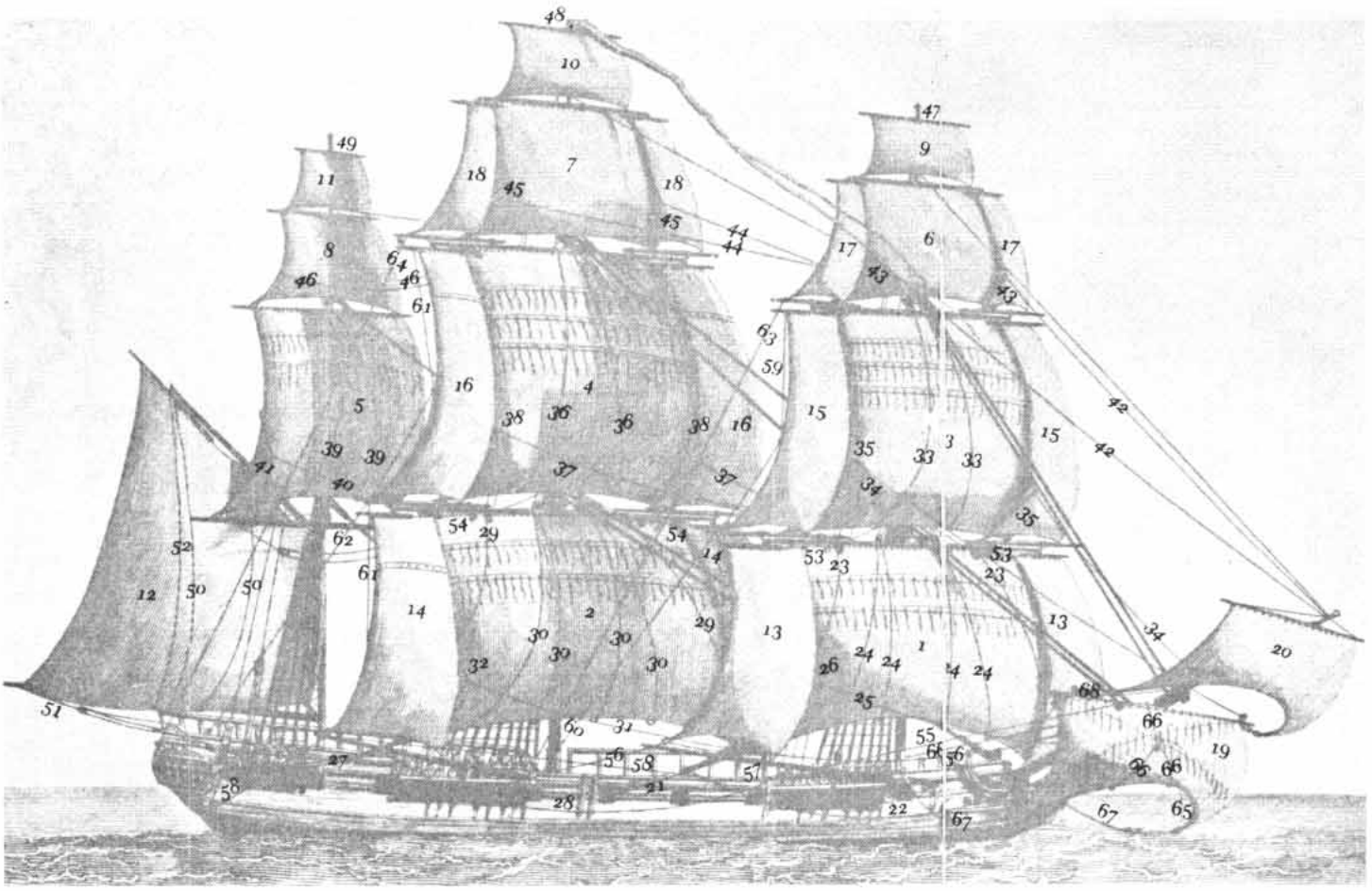
LEEWARD
The direction towards which the wind is blowing.

WINDWARD
The direction from which the wind is blowing.

HOOKER
A contemptuous term for a slow, unweildly ship. A corruption of the Dutch 'howker', a round-bowed, curved-sterned, ketch-rigged vessel renowned for its clumsiness.

SQUARE–RIGGED
The arrangement of sails in a vessel where the majority of sails are fixed to yards that lie square to the mast; during the 18th century the most common rig, used on sail of the line, frigates, sloops of war, and brigs.

GUNDECK
A deck, usually running from the bow to stern, on which a row of guns was fixed. Ships with 3 gun decks were referred to as '3-deckers;' those with 2 were '2-deckers,' and so on. An open gundeck was one in which the guns were placed on the uppermost deck, and were thus open to the weather; a closed gun-deck was roofed by the deck overhead.



EXPLANATION OF THE REFERENCES ON THE PLATE DELINEATING THE SQUARE SAILS OF A TWENTY GUN SHIP.

1 Fore courſe.
2 Main courſe.
3 Fore topſail.
4 Main topſail.
5 Mizen topſail.
6 Fore topgallant ſail.
7 Main topgallant ſail.
8 Mizen topgallant ſail.
9 Fore royal.
10 Main royal.
11 Mizen royal.
12 Driver.
13 Fore ſtudding ſails.
14 Main ſtudding ſails.
15 Fore topmaſt ſtudding ſails.
16 Main topmaſt ſtudding ſails.
17 Fore topgallant ſtudding ſails.
18 Main topgallant ſtudding ſails.
19 Spritſail courſe.
20 Spritſail topſail.
21 Fore ſail ſheets.
22 —— tacks.
23 —— leech lines.
24 —— buntlines.
25 —— bowlines.
26 —— bowline bridles.
27 Main ſheets.
28 —— tack.
29 Mail ſail leech lines.
30 —— buntlines.
31 —— bowlines.
32 —— bowline bridles.
33 Fore topſail buntlines.
34 —— bowlines.
35 Fore topſail bowline bridles.
36 Main topſail buntlines.
37 —— bowlines.
38 —— bowline bridles.
39 Mizen topſail buntlines.
40 —— bowline.
41 —— bowline bridles.
42 Fore topgallant bowlines.
43 —— bowline bridles.
44 Main topgallant bowlines.
45 —— bowline bridles.
46 Mizen topgallant bowline.
47 Fore royal haliards.
48 Main royal haliards.
49 Mizen royal haliards.
50 Driver haliards.
51 —— ſheet.
52 —— down hauler.
53 Fore ſtudding ſail inner haliards.
54 Main ſtudding ſail inner haliards.
55 Fore ſtudding ſail boom guy.
56 —— tacks.
57 —— ſheets.
58 Main ſtudding ſail tacks.
59 Fore topmaſt ſtudding ſail down hauler.
60 —— tack.
61 Main topmaſt ſtudding ſail downhauler.
62 —— tack.
63 Fore topgallant ſtudding ſail tack.
64 Main topgallant ſtudding ſail tack.
65 Spritſail clue line.
66 —— buntline.
67 —— ſheets.
68 —— topſail ſheets.

FORE–AND–AFT

The arrangement of sails on a vessel so that the sails are attached to gaffs or stays in the midship line of the vessel.

LATEEN SAIL

A triangular sail attached to a long curving gaff set forward on a mast, a very successful combination of the square rig and the fore-and-aft rig much favored in Arab and Mediterranean countries.

LUGSAIL

A four-sided sail set on a fore-and-aft yard that extends forward of the mast, used chiefly on small fast vessels (many smugglers and privateers) in northern Europe.

BOWSPRIT

Originalls 'Boltsprit'. A large spar projecting over the bow of large sailing vessels, used for staying the masts and for setting the headsails. A 'running bowsprit' is one that can be run in the vessel by sliding it inboard.

FOREMAST

On a ship with more than one mast, the foremost mast.

MAINMAST

On a vessel with one mast, the mast.
On a vessel with two masts, the aftermost and largest mast.
On a vessel with three masts, the middle and largest mast.

MIZZENMAST

On a vessel with three masts, the aftermost and smallest mast, usually carrying the driver.

BEAK

An overhang on the bow of a vessel, often used to support the bowsprit.

HEADSAILS
Any sails placed forward of the foremost mast, to help balance the ship's rig and assist the ship in working upwind. In our period, chiefly jibs and spritsails.

DRIVER
A large fore-and-aft sail placed on the lower part of the aftermost mast. In the beginning of our period these were probably lateen sails, which were gradually replaced by a loose-footed (boomless) driver, which in turn were replaced by the more efficient spanker, which had both gaff and boom.

REEF
The operation of shortening sail in a vessel by reducing the area exposed to the wind, performed usually when the strength of the wind rises to the point where it might either tear the sail apart or do serious damage to the masts. A sail upon which this operation has been performed is referred to as reefed. During our period, only topsails and the larger fore-and-aft sails were capable of being reefed.

BALLAST
Additional weight (in our period, usually in the form of roundshot) carried in a ship to help trim her fore and aft, or to provide stability.

Appendix 2

PERMISSIBLE ORDERS

Simple Orders: Any number of simple orders may be performed in one turn.

MOVE
Ship will move in a straight line at the appropriate heading and speed.

ALTER COURSE
Ship may turn up to the limit of its movement allowance.

TACK
Ship attempts to tack across the wind. A two-turn maneuver. The ship must start the turn Beating.

WEAR
Ship moves from one tack to another by passing its stern across the wind. It must start while Beating.

CUT CABLES
Ship cuts its anchor cables in order to get under way in a hurry. The ship will lose all anchors that have been let go.

BACK SAIL
Ship must be Beating. It may move less than its alotted speed.

HEAVE TO
Ship must be Beating. It backs sail to zero, turns broadside to the wind, and does not move until its commander wishes. Ship will drift.

INCREASE/DECREASE SAIL
Ship may increase or decrease sail by one Sail Setting.

FIGHT FIRES
Ship alots crew factors to fight fires.

LOWER BOATS/RAISE BOATS
Ship must be heaved to, drifting, or at Sail Setting 1.

FIRE
The ship may fire at the enemy during its own or opponent's movement.

DROP ANCHOR
Ship will drop one or more anchors.

CUT FREE
Ship attempts to cut free from another ship to which it has become fouled.

CUT WRECKAGE
Ship attempts to clear wreckage that has fallen over the side.

CUT GRAPPLES
Ship attempts to cut grapples holding it to another ship.

DRIFT
Ships without masts or without sail set drift broadside to the wind.

Complex and conditional orders: The following orders take more-than one turn to perform, or have conditions attached to them that make them impossible to perform alongside other orders.

RAISE ANCHOR
Requires the crew to man the capstan. May take 2-20 turns per anchor.

CAST LEAD
Ship is casting the lead to determine depth of water. Ship may not fire, as no one could hear the leadsman.

STRIKE
A ship may strike (surrender) as a result of an unfavorable die roll on the Strike and Sink table, or it may strike voluntarily.

BOARD
A vessel's crew attempts to seize another ship by boarding.

KEDGE
A ship's boats drop an anchor in the direction the ship wishes to move, and the anchor is hauled in. The capstan must be manned.

TOW
A ship's boats, or another ship, tow a vessel that is either dismasted or without wind.

CAMEL
Ship attempts to use 'camels' to drag it over shallow water. Very Complicated. Ship may not fire.

LIGHTEN SHIP
Ship attempts to increase speed by dropping armament over the side. May not fire.

CLEAR FOR ACTION
Until a ship is cleared, it may not fight. Clearing takes from 6-15 turns.

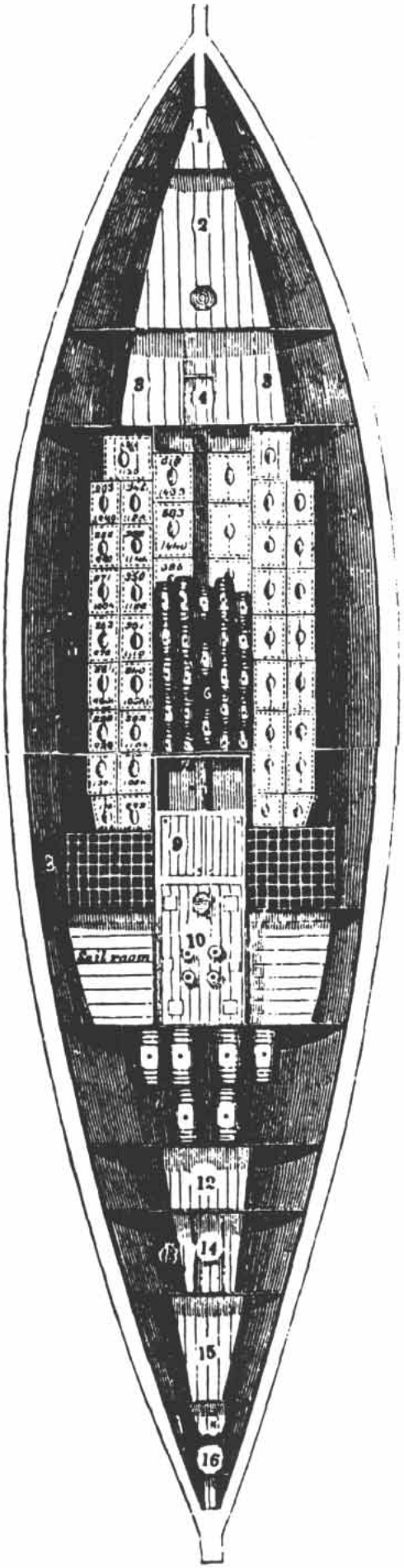
REPAIR MASTS
If a mast is repairable, crew may be assigned to repair it.

JURY RIG
Crew attempt to rig a jury mast to replace one lost in action.

SEA ANCHOR
A vessel that has lost masts in a storm or gale may attempt to set out a sea anchor to keep from getting swamped.

WET SAILS
Bucket brigades may be sent aloft to wet the sails, increasing speed.

CLUB-HAUL
A ship being driven onto a lee shore attempts to club-haul in order to increase its chance of tacking successfully.



LAY ALONGSIDE

A special order given to take possession of a ship that has surrendered, or to come aboard a friendly ship.

START WATER

Ship will smash its water casks and pump the water from the bilges, hopefully lightening and increasing speed.

REVERSE COURSE

Ship turns its yards around to sail rudder-first, a complicated maneuver, and a slow one.

BOX HAUL

Orders the ship to perform a maneuver similar to a combined tack and wear, to bring it across the wind in a small space.

DIAGRAM KEY

This diagram shows the plan of the hull of an American sloop-of-war. Some of the areas identified include:

3. A bread locker.
4. A coal locker.
6. Water casks.
11. Casks of rum.
9. A shot locker.
10. A shell room.
15. Powder magazine.

Remaining areas were used for storage of gear and tackle.

PRIDE AND PREJUDICE

an afterward

HEART OF OAK reflects a good many of the author's prejudices and biases, and the author admits it. But he would also like to point out that they are informed prejudices, and are thus worth at least a little more than common, garden-variety partisan opinion.

The game also reflects the author's bias towards gaming, and what he thinks a game should be. Where I have inhibited realism a bit, it was usually to produce a better game, one that can be played without the use of a battery of Apple computers.

For instance, the decision not to include simultaneous movement for all ships was prompted by the realization that, in a fleet action with a lot of ships crowding into a small area, simultaneous movement would be so complicated as to drive most of the players temporarily insane. The decision was to use a movement system that gave the illusion of simultaneity, but an illusion it remains.

Because ships are still moved one at a time, and thus collide with their fellows less often than would be the case if the same tactics were used alongside simultaneous movement, the game tends to reward bolder tactics than was true in real life. This minor divergence from realism was accepted on the grounds that bold tactics tend to make more interesting games anyway.

Another area in which realism was bent slightly awry was in regard to the combat system. Most of the criticism of HEART OF OAK's first edition tended to mention the fact that the combat system seemed perfunctory. Where, they wondered, were all the nitty-gritty details about gunnery, in which the worried captain gets to decide whether to continue firing roundshot, switch to chainshot in the hopes of bringing down enemy masts, or load with doubleshot in the hopes of closing with the enemy on the next turn?

The combat system in particular represents a good many of the author's prejudices all rolled up into one. I personally feel that once you've seen a 24-pounder being wormed, sponged, loaded, aimed, and fired, you've pretty much seen them all. Although, as a writer of fiction, I find combat interesting insofar as it reflects on human nature, I frankly don't find the weaponry itself, craftsmanlike though it may be, to be worth of all that much attention.

I designed a sailing game, and most of my attention went into the movement system. I was fascinated by the sailing tactics of the period, and I wished to create a game in which the player who uses the most intelligent and imaginative sailing tactics would most often win.

I also decided not to bother with all those gunnery details about types of ammunition and whatnot, instead abstracting it into the game. I assume that the ships' gunners knew better than present-day naval scholars what to fire, and will load the appropriate rounds at the appropriate range.

My decisions, I think, resulted in a fast, clear system that also provides realistic play and exciting action.

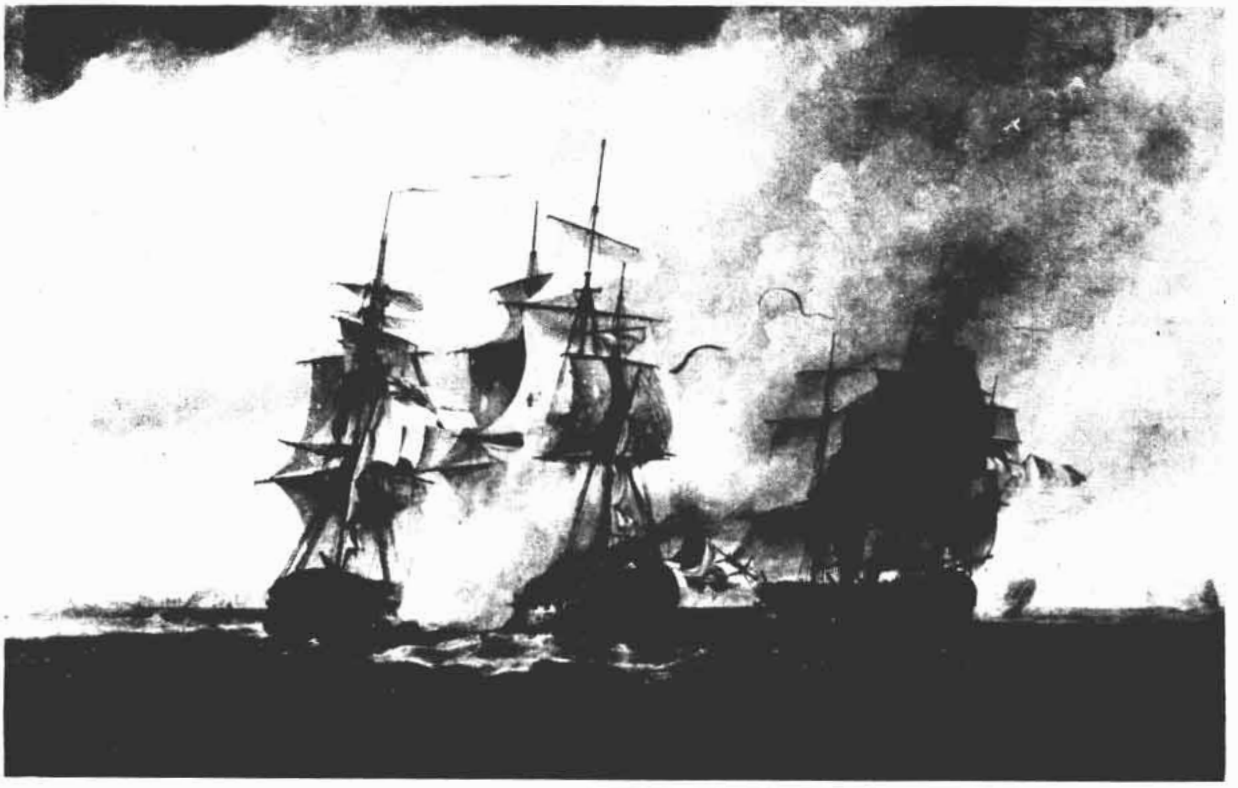
Players who want an absolutely realistic game of HEART OF OAK should make two changes. Introduce simultaneous movement, firstly, and secondly divide all gun and carronade factors by 6. This will result in an uncommonly long and tedious game, and probably a good many arguments between players as to how and when various ships came crashing into one another, but the survivors may congratulate themselves on having achieved the ultimate in realism.

As for me, I think I'll go sailing. And a very good day to you all. . .

LEST WE FORGET:

The following passage was written by a 14-year-old boy after surviving his first battle:

'The whole scene grew indescribably confused and horrible. I was busily supplying my gun with powder, when I saw blood suddenly fly from the arm of a man stationed at our gun. I saw nothing strike him; the effect alone was visible. . . the third lieutenant tide his handkerchief around the wounded arm, and sent the groaning wretch below to the surgeon. The cries of the wounded range through all parts of the ship... those more fortunate men who were killed outright were immediately thrown overboard. . . Two of the boys stationed on the quarter-deck were killed. A man, who saw one of them killed, afterwards told me that his powder caught fire and burnt the flesh almost off his face. In this pitiable situation, the agonished boy lifted up both hands, as if imploring relief, when a passing shot instantly cut him in two. . . A man named Aldrich had one of his hands cut off by a shot, and almost at the same moment he received another shot, which tore open his bowels in a terrible manner. As he fell, two or three men caught him in their arms and, as he could not live, threw him overboard. . . Our men kept cheering with all their might. I cheered with them, though I confess I scarcely knew for what. Certainly there was nothing very inspiriting in the aspect of things where I was stationed. Not only had we several boys and men killed and wounded, but several of the guns were disabled. The one I belonged to had a piece of the muzzle knocked out. . . The brave boatswain, who came from the sick-day to the din of battle, was, fastening a stopper on a backstay, which had been shot away, when his head was smashed to pieces by a cannon-ball; another man, going to complete the unfinished task, was also struck down. . .A fellow named John, who for some petty offense had been sent on board as a punishment, was carried past me wounded. I distinctly heard the large drops fall pat, pat, pat on the deck. Even a poor goat kept by the officers for her milk did not escape the general carnage; her hind legs were shot off, and poor Nan was thrown overboard. Such was the terrible scene, amid which we kept our shouting and firing. I felt pretty much as I suppose everyone does at such a time. We all appeared cheerful, but I knew that many a serious thought ran through my mind. . . I thought a great deal of the other world. . . but being without any particular knowledge of religious truth I satisfied myself by repeating again and again the Lord's Prayer'.



Appendix 3

CHART 5: BRITISH SHIPS

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Carronades*	Draft	Wind	Sail	Turn
1sol	120	Caledonia	3	90	120	25	4	24	2	I	2
1sol	100	Victory	3	85	100	21	2	23	2	I	2
2sol	98	Impregnable	3	82	98	19	2	22	2	I	2
3sol	80	Caesar	2	67	80	16	7	21	2	I	2
3sol	74	Venerable	2	60	74	15	6	21	2	I	2
3sol	74	Bellerophon	2	63	74	18	2	20	2	I	2
3sol	64	Ardent	2	55	64	12	1	19	2	I	2
4sol	54	Cumberland	2	34	54	9/5	8	19	2	I	2
4sol	50	Isis	2	35	50	8	2	18	2	I	2
4fr	44	Indefatigable	1	35	44	8	2	17	2	II	3
5fr	38	Active	1	27	38	5	5	17	2	III	3
5fr	36	Amazon	1	25	36	5	4	16	2	III	3
5fr	32	Ambuscade	1	23	32	4	2	15	2	III	3
6fr	28	Hussar	1	21	28	2	1	14	2	III	3
Sloop[1]	18	Cherub	(1)	12	18	2/1	6	8	2	IV	3
Brig[1]	16	Reindeer	(1)	10	16	2/1	4	8	2	IV	3
Schooner	12	St. Lawrence	(1)	6	12	1/0	2	6	2	IV	3
Bomb[1]	10	Hecla	(1)	7	10	1/C[2]	1	6	2	IV	1
Cutter[1]	8	Speedy	(1)	4	8	1/0	2	4	2	III	3

* No carronades before 1780.

1 Ship may move under oars.

2 Plus 2 Mortars.

1/0, 2/0 The number to the left of the slash indicates the number of long guns before the introduction of carronades; the number to the right of the slash indicates the number of long guns after the introduction of carronades.

CHART 6: CONTINENTAL & STATE NAVIES (AMERICAN REVOLUTION)

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Draft	Wind	Sail	Turn
4sol	42	Bonhomme Richard	2	30	42	6	19	2	I	2
4frig	40	South Carolina	1	40	40	7	18	2	III	3
5frig	32	Alliance	1	30	32	4	15	2	III	3
sloop[1]	18	Ranger	(1)	12	18	2	8	2	IV	3
sloop[1]	16	Hyder Ally	(1)	11	16	2	7	2	IV	3
brig[1]	6	Macaroni	(1)	5	8	1	4	2	IV	3
schooner[1]	12	Hannah	(1)	6	12	1	5	1	IV	3

1 Vessel may move under oars.

CHART 7: U. S. SHIPS (1795 - 1820)

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Carronades*	Draft	Wind	Sail	Turn
1sol	120	Pennsylvania	4	110	120	33	11	26	2	I	2
3sol	74	Independence	2	78	74	13	19	23	2	I	2
4fr	44	United States	1	44	44	10/7	8	19	2	II	3
4fr	44	Constitution	1	44	44	10/7	7	19	2	II	3
5fr[4]	36	Chesapeake	1	38	36	8/5	5	16	2	III	3
6fr	28	Adams	1	22	28	2	–	12	2	III	3
corvet[1]	24	Portsmouth	1	22	24	4	–	9	2	III	3
ship	24	Ganges	1	22	24	2	–	9	2	IV	3
5fr	32	Essex	1	26	32	5/1	14	16	2	III	3
ship[1]	22	Peacock	(1)	17	22	1	6	8	2	III	3
ship[1]	18	Wasp	(1)	14	18	1	5	8	2	III	3
brig[1]	18	Argus	(1)	10	18	1	2	7	2	IV	3
brig[1]	14	Enterprise	(1)	10	14	1	3	6	2	IV	3
schooner[1]	12	Experiment	(1)	9	12	1	–	5	1	III	3
gunboat[1]	6	no. 12	(1)	9	6	2[2]	–	4	1	IV	3
gunboat[1]	3	no. 163	(1)	8	4	1[2]	–	4	1	IV	3
bomb[1]		Spitfire	(1)	3	4	3	–	6	1	IV	3

* No carronades before 1800.

1 Ship may proceed under oars.

2 Fires only forward.

3 Plus 1 mortar.

4 When fighting without carronades, Chesapeake reloads on the 1st-4th Rate Chart due to extra-heavy armament.

NOTE: Brigs of the ENTERPRISE class are actually EXPERIMENT-type schooners converted, around 1809, to brigs, given heavier armament, and much strengthened. Before 1809 consider the class as schooners; afterwards brigs.

MERCHANT VESSELS

Type	Decks	Crew	Hull	L. Guns	Carronades*	Draft	Wind	Sail	Turn
Large Indiaman	2	24	40	6	4	19	2	II	2
Small Indiaman	1	18	32	4	2	16	2	II	2
Ship, barque	1	6	26	1	—	16	2	II	2
Brig, Snow	(1)	4	16	—	—	8	2	IV	3
Schooner	(1)	4	12	—	—	6	1	IV	3
Sloop	(1)	2	4	—	—	6	1	IV	3
Lugger	(1)	4	12	—	—	6	1	III	3

• No carronades prior to 1785.

CHART 8: RUSSIAN SHIPS

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Draft	Wind	Sail	Turn
1sol	110	Poltava	3	85	110	32	24	2	I	2
1sol	100	Saratov	3	80	100	28	23	2	I	2
3sol	80	Kir Ionn	2	75	80	21	21	2	I	2
3sol	74	Vseslav	2	70	74	19	20	2	I	2
3sol	66	Tver	2	60	66	18	19	2	I	2
4frig	44	Berislav	1	35	44	8	17	2	II	3
5frig	40	Skoryi	1	30	40	7	17	2	III	3
5frig	38	Sv. Nikolai	1	30	38	5	17	2	III	3
5frig	36	Aleksandr	1	28	36	5	16	2	III	3
5frig	32	Sv. Feodor	1	25	32	3	15	2	III	3
6frig	28	Malyi	1	20	28	3	14	2	III	3
6frig[1]	24	Boristen	1	18	24	3	13	2	III	3
Brig[1]	20	Potemkin	(1)	16	20	1	8	2	IV	3
Brig[1]	14	Letutchii	(1)	10	14	1	6	2	IV	3
Bomb[1]	12	Grom	(1)	8	12	1[2]	5	2	IV	1
G'boat[1]	2		(1)	6	6	1[3]	3	2	IV	3

The Russians never used carronades.

1 Ship may move under oars.

2 Plus 2 mortars.

3 Forward firing only.

CHART 9: TURKISH SHIPS

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Draft	Wind	Sail	Turn
1sol	110	Masudiya	3	126	110	25	25	2	I	2
3sol	84	Sadd al-bahr	2	97	84	21	22	2	I	2
3sol	74	Jebel-andaz	2	80	74	19	20	2	I	2
4sol	50	Nessim	2	58	50	8	18	2	I	2
4sol	44	Inkenderiya	2	54	44	9	18	2	I	2
5sol	40	Rahbar-i alam	2	54	40	7	17	2	I	2
5fr	32	Metelin	1	31	32	4	15	2	III	3
Sloop[1]	16	Alimat i Nusrat	(1)	20	16	1	7	2	IV	3
Galley[1]			(1)	16	8	1[2]	6	1	IV	4
Gunboat[1]			(1)	8	6	1[2]	4	1	IV	3

The Turks carried no carronades.

1 Ship may move under oars.

2 Guns bear directly forward.

CHART 10: DUTCH SHIPS

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Carronades*	Draft	Wind	Sail	Turn
3sol	74	Staten-Generaal	2	55	74	17	—	16	2	I	2
3sol	64	Haarlem	2	45	64	14	—	15	2	I	2
4thsol	50	Batavier	2	25	50	8	—	14	2	I	2
4fr	44	Monnikendam	1	30	44	12	—	14	2	II	3
5fr	36	Argo	1	25	36	5	—	13	2	III	3
5fr	32	Heldin	1	22	32	5	1	13	2	III	3
6fr	28	Sirene	1	18	26	5	1	12	2	III	3
Brig[1]			(1)	10	16	1	—	7	2	IV	3
Schuyt[1]			(1)	4	3	1	2	5	1	IV	3

• No carronades prior to 1800.

1 Ship may also proceed under oars.

2 Floating battery.

CHART 11: DANISH SHIPS

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Carronades*	Draft	Wind	Sail	Turn
3sol	80	Christian VII	2	67	80	27	–	23	2	I	2
3sol	74	Trekroner	2	60	74	11	–	21	2	I	2
3sol	74	Saelland	2	55	74	14	–	21	2	I	2
3sol	60	Dennabrog	2	50	64	10	–	19	2	I	2
blockship		Jylland	2	37	60	12	–	19	–	–	–
5fr	32	Frederikscorn	1	23	32	6/3[2]	6	14	2	III	3
6fr	22	Hiaelperen[1]	1	27	22	6[2,5]	–	11	2	III	3
brig	20	Nyborg[1]	(1)	26	20	5[2]	–	10	2	IV	3
Pram	20	Aagershuus	(1)	20	20	5[2]	–	10	2	IV	3
Floating battery	22	Cromberg	(1)	22	20	4	–	10	–	–	–
Schooner[1]			(1)	6	8	7[2]	–	8	2	IV	3
Gunsloop		Aalborg[1]	(1)	6	8	7[2]	–	8	2	IV	3
Gunyawl		Odense[1]	(1)	4	3	4[2]	–	4	2	IV	3
Gunboat		Stege[1]	(1)	4	4	1[3,4]	–	4	2	IV	3

• No carronades before 1800.

1 Ship may proceed under oars.

2 Due to extra-heavy armament, use the 1-4th rate Reloading Table.

3 Guns bear forward only.

4 Due to incompetent construction, 10% chance of shooting off own bowsprit every time gun is fired; 15% chance of setting boat afire rather than 5%.

5 Plus 2 mortars firing on each broadside.

CHART 12: FRENCH SHIPS

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Carronades*	Draft	Wind	Sail	Turn
1sol	120	Cote d'Or	3	110	120	25	2	24	2	I	2
1sol	110	Bretagne	3	100	110	24	1	23	2	I	2
3sol	80	Juste	2	83	80	20	2	23	2	I	2
3sol	74	Formidable	2	70	74	20	2	21	2	I	2
3sol	74	Genereaux	2	70	74	16	3	21	2	I	2
3sol	64	Fantasque	2	65	64	12	–	19	2	I	2
3sol	50	Oriflamme	2	45	50	8	–	18	2	I	2
4sol	44	Otarde	2	40	44	8	–	18	2	I	2
4fr	44	Forte	1	40	44	8	3	19	2	II	3
4fr	44	Pomone	1	37	44	6	3	19	2	II	3
5fr	40	Sibylle	1	32	40	6	1	18	2	III	3
5fr	36	Themis	1	35	36	4	2	17	2	III	3
5fr	34	Ronommee	1	30	34	4	1	17	2	III	3
5fr	32	Alceste	1	26	32	4	1	16	2	III	3
6 corv[1]	24	Tactique	(1)	16	20	4	1	14	2	III	3
Corvette[1]		Furet	(1)	16	18	2	4	14	2	III	3
Brig[1]		Lodi	(1)	16	18	2	–	8	2	IV	3
Lugger[1]		Oiseau	(1)	7	18	1	1	6	1	III	3
Xebec[1]			(1)	7	8	1	–	6	2	IV	3
Gunboat[1]			(1)	4	4	1[2]	–	4	2	IV	2

• No carronades on any French vessels before 1790.

1 Ship may also move under oars.

2 Forward gun only; no broadside.

CHART 13: NORTH AFRICAN CORSAIRS*

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Draft	Wind	Sail	Turn
4fr	44	Crescent	1	44	44	10	19	2	II	3
pink[1]	14	Tripoli	(1)	8	14	1	4	1	III	3
xebec			(1)	8	12	2	4	1	III	3
gunboat[1]	2		(1)	6	4	1[2]	4	1	IV	3

1 Vessel may proceed under oars.

2 Fires directly forward only.

• European and American vessels, paid as tribute, can also be found in the service of the Barbary Corsairs. No carronades.

CHART 14: SPANISH SHIPS

Rate	Guns	Name	Decks	Crew	Hull	L. Guns	Carronades*	Draft	Wind	Sail	Turn
1sol	130	Santissima-Trimidad	3	110	130	23	–	25	2	I	2
1sol	112	Principe de Asturias	3	90	112	22	–	24	2	I	2
3sol	80	Argonauta	2	66	80	18	–	22	2	I	2
3sol	80	Neptuno	2	66	80	19	5	22	2	I	2
3sol	74	S. Ildefonso	2	62	74	13	5	21	2	I	2
3sol	74	Montanex	2	60	74	13	–	21	2	I	2
5fr	40	Media	1	28	40	5	5	18	2	III	3
6fr	34	Mahonesa	1	27	34	4	–	14	2	III	3
Corvette[1]	14		(1)	7	14	2	–	12	2	III	3
Brig[1]			(1)	8	12	1/0[4]	2	8	2	IV	3
Xebec[1]			(1)	7	12	2	–	6	1	III	3
Galley[1]			(1)	5/20[2]	4	5[3]	–	6	1	IV	3

• No carronades before 1790.

1 Ship may also move under oars.

2 4/20 First number is crew; second number is captive rowers.

3 Forward-firing guns only.

4 First number is before introduction of carronades; second number is after carronades.

CHART 15: SWEDISH SHIPS

Type	Guns	Name	Decks	Crew	Hull	L. Guns	Draft	Wind	Sail	Turn
1sol	110	*	3	85	110	35	24	2	I	2
2sol	94	•	3	80	94	26	22	2	I	2
3sol	80	Gustaf IV	2	75	80	20	21	2	I	2
3sol	74	Gustaf III	2	68	74	19	20	2	I	2
3sol	66	Tapperhet	2	60	64	18	19	2	I	2
4fr	44	Euredice	1	35	44	10	16	2	II	3
5fr	40	Froja	1	30	40	9	16	2	III	3
5fr	36	Jarramas	1	28	36	5	15	2	III	3
5fr	32	Illerim	1	25	32	3	14	2	III	3
6fr[1]	26	Hector	1	20	26	3	13	2	III	3
udema[1]	14		(1)	16	14	2	6	2	IV	3
gunsloop[1]			(1)	6	8	2	6	2	IV	3
gunyawl[1]			(1)	4	4	2	5	2	IV	3

* Vessels of this type are listed in the Swedish Establishment but were apparently never built.

1 Ship may travel under oars.

CHART 16: SOME TYPICAL (AND UNTYPICAL) PRIVATEERS

Type	Guns	Decks	Crew	Hull	L. Guns	Carronades	Draft	Wind	Sail	Turn
Ship	24	1	13	40	3	–	15	2	IV	3
Ship	16	(1)	10	16	1	–	8	2	III	3
Ship	14	(1)	8	14	1	–	6	2	IV	3
Ship	14	(1)	6	14	1	–	6	2	III	3
Ship	16	(1)	10	16	1/0	2	8	2	III	3
Brig	14	(1)	8	14	2	–	6	2	III	3
Brig	14	(1)	10	14	1	–	6	2	III	3
Topsl Schooner	12	(1)	10	12	1	–	4	1	III	3
Schooner	8	(1)	8	8	1	–	5	1	III	3
Clipper*	12	(1)	10	12	1	1	6	1	III	3
Lugger	8	(1)	8	8	1	–	4	1	III	3
Schuyt	8	(1)	8	6	1	–	4	1	III	3

• Clippers are used by Americans exclusively.

Privateer crew and armament was subject to wide variation. Virtually all figures here given are subject to change at the option of the scenario designer.

Players will probably want to read the Privateers and Gentlemen novels by Jon Williams which are published by Dell Books. This is an ongoing series with three books already in print at the time of game publication.

The series follows the naval and privateering careers of a New England family during the Revolutionary War and the War of 1812. Future volumes will continue to focus on the adventures of some of the characters already introduced in the series as well as those of later generations.

For those who are unable to obtain copies of the books in the Privateers and Gentlemen series from local book shops the following ordering information is presented to enable you to order directly from Dell Books:

All orders should be sent to Dell Books, P.O.Box 1000, Pine Brook, N.J. 07058. Each order should specify the book ordered by title and stock number and must include a check or money order to cover the price of the book plus 75 cents postage and handling for the first book ordered and 25 cents for each additional book ordered.

The titles and stock numbers of the currently available books in the series are listed below (and are highly recommended).

	Title	**Stock No.**	**Price**
Vol. I	The Privateer	0-440-16811-2	$2.75
Vol. II	The Yankee	0-440-19779-1	$2.95
Vol. III	The Raider	0-440-17357-4	$2.95

We feel certain the gamers will enjoy these novels as much as do the editorial staff at FGU. Please join us in encouraging Dell to publish more books in the series as quickly as possible. From our experience with publishing schedules it is probable that adjustments can be made to make more books in this series available to us in shorter periods of time.

Heart of Oak

Complete naval miniatures rules for the age of sail covering the years 1755 to 1815. Also included are cut-apart ship counters for those who do not wish to use detailed naval miniatures.

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Here, complete in one volume, is all you need to understand and enter this exciting area of miniatures simulation. The workings of the ships and crews are fully explained. Rules cover crews, crew quality, weather, ship classifications, handling characteristics, etc. Sample ship classes for all major powers in the age of sail are included to assist players to easily set up scenarios. Campaign and tournament rules are also included.

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CHART 19: WIND

WESTERLIES

direction		strength summer		strength winter	
01-10	NW	01-10	1	01-10	3
11-20	WNW	11-20	2	11-40	4
21-30	W	21-50	3	41-80	5
31-40	WSW	51-80	4	81-93	6
41-50	SW	81-90	5	94-96	7
51-60	NNW	91-95	6	97-00	8
61-70	SSW	96-00	7		
71-80	E				
81-85	ENE				
86-90	ESE				
91-95	NE				
96-00	S				

SOUTHEAST TRADES

direction		strength summer		strength winter	
01-20	SE	01-05	1	01-20	3
21-35	SSE	06-15	2	21-50	4
36-50	ESE	16-30	3	51-80	5
51-70	S	31-65	4	81-89	6
71-90	E	66-85	5	90-96	7
91-95	NW	86-94	6	97-00	8
96-00	SW	95-98	7		
		99-00	8		

HORSE LATITUDES, DOLDRUMS

direction		strength doldrums, summer horse lat.		winter horse lat.	
01-10	NE	01-15	1	01-05	1
11-20	SE	16-30	2	06-15	2
21-30	E	31-50	3	16-50	3
31-40	ESE	51-86	4	51-70	4
41-50	ENE	87-95	5	71-80	5
51-60	NNE	96-98	6	81-90	6
61-79	SSE	99-00	7	91-95	7
80-85	NW			96-00	8
86-90	SW				
91-95	W				
96-00	N				

ROARING FORTIES

direction		strength summer		strength winter	
01-60	W	01-10	3	01-10	4
61-80	WNW	11-30	4	11-30	5
81-00	WSW	31-60	5	31-60	6
		61-70	6	61-80	7
		71-90	7	81-00	8
		91-00	8		

NORTHEAST TRADES

direction		strength summer		strength winter	
01-20	NE	01-08	1	01-05	1
21-35	NNE	09-15	2	06-15	2
36-50	ENE	16-35	3	16-30	3
51-70	N	36-55	4	31-55	4
71-90	E	56-85	5	56-85	5
91-95	SW	86-90	6	86-95	6
96-00	NW	91-95	7	96-99	7
		96-00	8	100	8

MEDITERRANEAN

winter

direction		strength
01-20	NNE	01-10	1
21-30	N	11-20	2
31-40	NE	21-40	3
41-50	ENE	41-60	4
51-60	E	61-85	5
61-70	NW	86-92	6
71-80	WNW	93-97	7
81-90	SW	98-00	8
91-00	S		

summer

direction		strength
01-10	S	01-10	1
11-20	SE	11-20	2
21-30	E	21-40	3
31-40	NE	41-70	4
41-50	N	71-90	5
51-60	NW	91-95	6
61-70	W	96-98	7
71-80	NNW	99-00	8
81-90	NNE		
91-00	SW		

MONSOONS

winter

direction		strength
01-20	NE	01-05	1
21-30	NNE	06-10	2
31-40	ENE	11-30	3
41-50	E	31-70	4
51-60	N	71-90	5
61-70	NE	91-96	6
71-80	NNE	97-00	7
81-90	ENE		
91-00	NE		

summer

direction		strength
01-40	SW	01-10	3
41-60	SSW	11-50	4
61-80	WSW	51-80	5
81-90	W	81-87	6
91-00	S	88-96	7
		97-00	8

Chart 17 **MOVEMENT UNDER OARS (per Leg)**

Type Vessel	Movement	Turn	Minimum Crew Required to Man Sweeps or Man Towing Boats
Brig, Sloop, Corvette	12	1	3
Schooner, Bomb	12	2	2
Cutter, Lugger	16	2	2
Xebec, Gunboat	24	3	4
Galley	36	4	20
Ship's Boat	20	4	1
1st, 2nd Rate (towed)	4	1	10
3rd Rate (towed)	6	1	8
4th Rate (towed)	12	1	6
5th, 6th Rate (towed)	16	2	6

SAILING CHART I

1st, 2nd, 3rd, 4th Rate Sail of the Line
hooker/average/smart

Sail Setting	Wind Strength 3	4	5	6	7	8
Wind Astern						
1	12/16/20	18/24/30	27/36/45	57/76/95	63/84/105	69/92/115•
2	18/24/30	27/36/45	48/64/80	69/92/115	75/100/125*	–
3	27/36/45	45/60/75	75/100/125	108/144/180*	–	–
4	36/48/60	60/80/100	102/136/170*	–	–	–
5	56/72/90	69/92/115	120/160/200*	–	–	–
Quarter Reach						
1	15/20/25	24/32/40	39/52/65	63/84/105	69/92/115	69/92/115*
2	27/36/45	33/44/55	56/72/90	83/112/140	117/156/195*	–
3	36/48/60	56/72/90	81/108/136	117/156/195*	–	–
4	51/68/85	69/92/115	111/148/185*	–	–	–
5	66/88/110	90/120/150	123/164/205*	–	–	–
Broad Reach						
1	8/12/16	15/20/25	30/40/50	42/56/70	45/60/75	45/60/75*
2	18/24/30	27/36/45	42/56/70	60/80/100	66/88/110*	–
3	24/36/45	33/44/55	72/96/120	102/136/170*	–	–
4	30/40/50	39/52/65	90/120/150*	–	–	–
5	48/64/80	57/76/95	117/156/195*	–	–	–
Beating						
1	3/4/5	6/8/10	8/12/16	18/24/30	21/28/35	24/32/40*
2	8/12/16	15/20/25	24/32/40	33/44/55	36/48/60*	–
3	15/20/25	24/32/40	36/48/60	45/60/75*	–	–
4	21/28/35	30/40/50	42/56/70*	–	–	–
5	27/36/45	36/48/60	51/68/85*	–	–	–

SAILING CHART II

4th Rate Frigates
hooker/average/smart

Sail Setting	Wind Strength 3	4	5	6	7	8
Wind Astern						
1	18/24/30	27/36/45	33/44/55	51/68/85	63/84/105	69/92/115*
2	27/36/45	36/48/60	48/64/80	60/80/100	75/100/125*	–
3	51/68/85	66/88/110	83/112/140	99/132/165*	–	–
4	69/92/115	87/116/145	108/144/180*	–	–	–
5	90/120/150	108/144/180	120/160/200*	–	–	–
Quarter Reach						
1	24/32/40	33/44/55	51/68/85	36/48/60	42/56/70	66/88/110*
2	33/44/55	48/64/80	60/80/100	83/112/140	117/156/195*	–
3	56/72/90	69/92/115	87/116/145	117/156/195*	–	–
4	75/100/125	90/120/150	105/140/175*	–	–	–
5	99/132/165	117/156/195	129/172/215*	–	–	–
Broad Reach						
1	15/20/25	24/32/40	30/40/50	36/48/60	42/56/70	45/60/75*
2	24/32/40	33/44/55	42/56/70	56/72/90	60/80/100*	–
3	42/56/70	60/80/100	72/96/120	90/120/150*	–	–
4	57/76/95	75/100/125	90/120/150*	–	–	–
5	75/100/125	99/132/165	117/156/195*	–	–	–
Beating						
1	6/8/10	8/12/16	12/16/20	18/24/30	18/24/30	18/24/30*
2	15/20/25	21/28/35	27/36/45	33/44/55	33/44/55*	–
3	21/28/35	30/40/50	36/48/60	45/60/75*	–	–
4	27/36/45	36/48/60	42/56/70*	–	–	–
5	30/40/50	45/60/75	51/68/85*	–	–	–

SAILING CHART III

5th, 6th Rate Frigates, luggers, xebecs, cutters, corvettes
hooker/average/smart

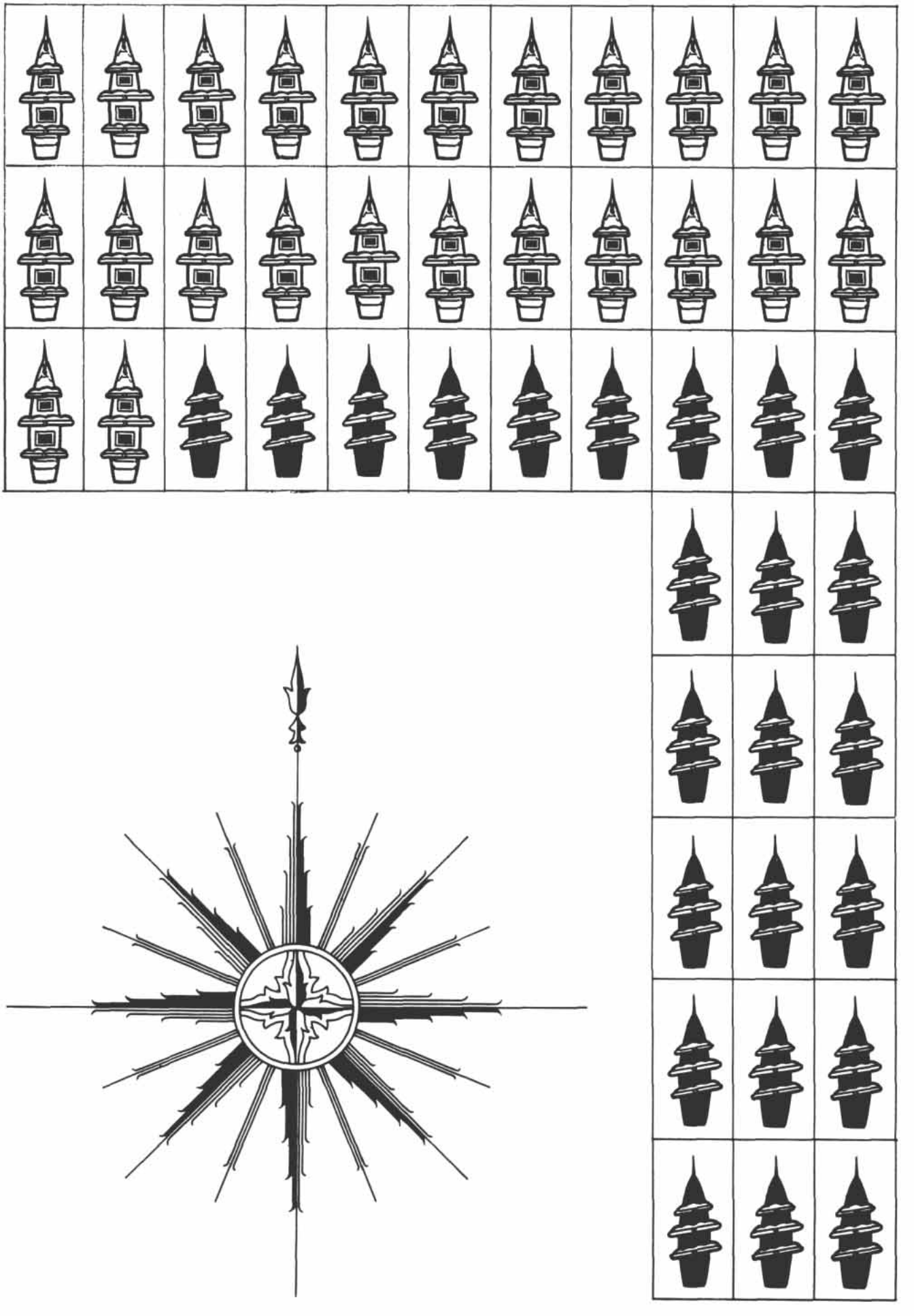
Sail Setting	Wind Strength 3	4	5	6	7	8
Wind Astern						
1	24/32/40	33/44/55	51/68/85	57/76/95	51/68/85	57/76/95*
2	33/44/55	42/56/70	56/72/90	69/92/115	57/76/95*	–
3	60/80/100	75/100/125	93/124/155	108/144/180*	–	–
4	75/100/125	99/132/165	120/160/200*	–	–	–
5	102/136/170	120/160/200	135/180/225*	–	–	–
Quarter Reach						
1	33/44/55	51/68/85	57/76/95	57/76/95	63/84/105	66/88/110*
2	42/56/70	57/76/95	69/92/115	75/100/125	102/136/170*	–
3	66/88/110	87/116/145	102/136/170	102/136/170*	–	–
4	83/112/140	108/144/180	123/164/205*	–	–	–
5	117/156/195	135/180/225	147/196/245*	–	–	–
Broad Reach						
1	21/28/35	30/40/50	36/48/60	36/48/60	39/52/65	39/52/65*
2	30/40/50	39/52/65	51/68/85	56/72/90	56/72/90*	–
3	48/64/80	66/88/110	78/104/130	90/120/150*	–	–
4	66/88/110	90/120/150	102/136/170*	–	–	–
5	81/108/135	108/144/180	126/168/210*	–	–	–
Beating						
1	8/12/16	12/16/20	15/20/25	18/24/30	18/24/30	18/24/30*
2	18/24/30	24/32/40	30/40/50	33/44/55	30/40/50*	–
3	24/32/40	33/44/55	39/52/65	45/60/75*	–	–
4	30/40/50	39/52/65	48/64/80*	–	–	–
5	36/48/60	51/68/85	57/76/95*	–	–	–

SAILING CHART IV

brigs, sloops, bombs, ships' boats*
hooker/average/smart

Sail Setting	Wind Strength 3	4	5	6	7	8
Wind Astern						
1	8/12/16	15/20/25	21/28/35	27/36/45	33/44/55	51/68/85*
2	12/16/20	21/28/35	27/36/45	33/44/55	51/68/85•	–
3	18/24/30	30/40/50	36/48/60	45/60/75*	–	–
4	27/36/45	45/60/75	60/80/100*	–	–	–
5	51/68/85	69/92/115	87/116/145*	–	–	–
Quarter Reach						
1	8/12/16	18/24/30	24/32/40	33/44/55	51/68/85	51/68/85*
2	15/20/25	24/32/40	33/44/55	51/68/85	57/76/95*	–
3	27/36/45	33/44/55	45/60/75	63/84/105*	–	–
4	36/48/60	56/72/90	72/96/120*	–	–	–
5	51/68/85	72/96/120	102/136/170*	–	–	–
Broad Reach						
1	6/8/10	8/12/16	15/20/25	21/28/35	24/32/40	24/32/40*
2	12/16/20	18/24/30	27/36/45	30/40/50	39/52/65*	–
3	15/20/25	24/32/40	33/44/55	39/52/65*	–	–
4	24/32/40	33/44/55	42/56/70*	–	–	–
5	30/40/50	39/52/65	51/68/85*	–	–	–
Beating						
1	3/4/5	6/8/10	8/12/16	8/12/16	8/12/16	8/12/16*
2	6/8/10	12/16/20	16/20/24	18/24/30	18/24/30*	–
3	8/12/16	21/28/35	27/36/45	30/40/50*	–	–
4	15/20/25	27/36/45	30/40/50*	–	–	–
5	21/28/35	30/40/50	36/48/60*	–	–	–

* ships' boats only use Sail Settings 1 and 2.



		A	B	C	D	E	F	G
1		All Ships	Van Squadron	Center Squadron	Rear Squadron	Form Line	In Regular Order	Lower Boats
2		Tack	Wear	In Succession	Simultaneously	Attack	Withdraw	Abandon
3		Increase Sail	Decrease Sail	Tow	Astern	Forward	Grapple	Board
4		Alter Course	N	NNE	NE	ENE	E	ESE
5		SE	SSE	S	SSW	SW	WSW	W
6		WNW	NW	NNW	Close Up	Follow Leader	Fire	Long Range
7		Medium Range	Short Range	Fire High	Fire Low	Out of Formation	Cut Free	Heave To
8		As Convenient	Close Action	To Windward	To Leeward	Drop Anchor	Raise Anchor	Cut Cables
9		To Larboard	To Starboard	To Starboard	To Larboard	Query	Rejoin	Use Spring Cables
10		General Chase	Cast Lead	Buoy	Enemy in Sight	Convoy	Escort	Aground
11		Flagship	Follow	Prepare Kedges	Kedge	Execute	Cover Landing	Fireships Ignite
12		Rendezvous	Weather Enemy	Enemy Van	Enemy Center	Enemy Rear	Abandon	Impossible to Comply
13								
14								
15								
16								
17								
18								

INSTRUCTIONS: Place codes where indicated on lines A—G and 1—18. Cross-index lines A-G with lines 1-18 to find the message. Additional messages may be written in the blank spaces provided.

It is suggested to assign each ship a code for use in signalling to that ship.

signal chart

HEART OF OAK Ship Card

Name _____ Rate _____ Guns _____

Ship Quality _____ Sailing Chart _____ Turn Limit _____ Points into Wind _____ No. of Masts _____

Crew Quality _____ No. of Gun Factors: Continuous Broadside Factor _____

No. of Crew Factors _____ Port Long Guns _____ Starboard Long Guns _____ Turns to Reload _____

Port Carronades _____ Starboard Carronades _____ No. of Hull Points _____

Turn	Wind		Crew Assignments									Course			Broadside		Combat Damage					Special
	Strength	Direction	Available	Masts	Port Guns	Starb'd Guns	Repair	Cut Free	Cut Wrk.	Cut Grapples	Other	1st Leg	Sail Setting	2nd Leg	Port	Starboard	Damage taken	Damage repaired	Hull Points Remaining	Crew lost	Crew remaining	

OTHER

TACKING/VII.E.1

Basic 5% chance of being taken aback, modified below:

−10	Green Crew
−5	Poor Crew
+5	Good Crew
+10	Crack Crew
−10	Ship fired upon during move, or has been fired upon since last moved.
−20	Wind 6
−40	Wind 7
−80	Wind 8
−10	Wind 3
−20	Boxhauling

TAKEN ABACK/VIII.E.2

If a ship has been taken aback and is in irons, roll on the following table before moving second leg:

01-33	Ship falls off to the right.
33-67	Ship drifts straight back, remaining in irons.
68-00	Ship falls off to the left.

Every turn that a ship remains in irons, roll on the Mast Falling Table II.

MAST FALLING I/I.B

If a ship is moving at the asterisked rate on its Sail Chart, roll on the following table the first turn sail is raised; and subsequently on every turn the ship is fired upon.

There is a 10% chance of a mast falling with the following modifiers

−10	Green Crew
−5	Poor Crew
+5	Good Crew
+10	Crack Crew

MAST FALLING II

If a ship has collided, ran aground, fallen in irons, or if another mast has fallen on the same ship for any reason, roll on the following table.

There is a base 20% chance of a mast falling with the below listed modifications to the die roll:

+10	Wind 3
−20	Wind 6
−40	Wind 7
−60	Wind 8
−30	Sail Setting 4
−60	Sail Setting 5

CHART 18.2: SEQUENCE OF PLAY

I. Log-keeping. Check wind direction and speed, check barometer.
II. Fly signals.
III. Write orders. Allocate Crew.
IV. Cut free, clear wreckage, cut grapples.
V. Repair.
VI. Fight fires.
VII. Roll initiative.
VIII. Move.
- A. Raise Anchor.
- B. Move First Leg.
- C. Resolve Collisions.
- D. Grappling.
- E. Tacking.
- F. Wearing.
- G. Alter Course.
- H. Heave To.
- I. Increase or Decrease Sail.
- J. Drop Anchor.
- K. Lower Boats.
- L. Lighten Ship.
- M. Move Second Leg.
- N. Resolve Collisions.
- O. Grappling.
- P. Alter Course.
- Q. Heave to.
- R. Drop Anchor.
- S. Drift.
- T. Lower Boats. Recover Boats.
- U. End move sequence.

IX. Firing Sequence.
- A. Decide whether or not to fire.
- B. Measure Range, Determine Eligibility and Raking Fire.
- C. Resolve Whether Gunport are Open.
- D. Resolve Setting Ship Afire.
- E. Resolve Continuous Broadside, Reloaded Broadside, and Crewed Broadside.
- F. Fire Broadside.
- G. Critical Hit Procedure.
- H. Apply Critical Hit Results.
- I. Roll for Striking or Sinking.

X. Boarding.
XI. Taking Possession.
XII. Transfer Crew.
XIII. End of Turn.

CHART 2: CREW QUALITY

British, Americans after 1794

01-10	Poor
11-40	Average
41-70	Good
71-00	Crack

Americans 1775 - 1794, French to 1795, Dutch, Swedes, Privateers, Indiamen

01-20	Green
21-40	Poor
41-60	Average
61-80	Good
81-00	Crack

French from 1796, merchantmen, Russians

01-25	Green
26-50	Poor
51-75	Average
76-94	Good
95-00	Crack

Spanish, Turks, pirates, corsairs

01-30	Green
31-60	Poor
61-90	Average
91-95	Good
96-00	Crack

SHIP QUALITY

01-33	Smart
34-67	Average
68-00	Hooker

Modifiers to Ship Quality:

−20	privateers or pirates
+20	merchantmen or Indiamen

CHART 4: WEATHER CHANGE

Weather Change Chart I.1

Roll every turn. If Chart I.1a indicates a weather change, roll on Chart I.1b to determine which sort of change, then proceed to further tables as necessary.

I.1a

01-97	No change
98-00	Weather change

I.1b

01-40	Possible change in barometer. Roll I.3
41-59	Change in wind direction. Roll I.4
60-79	Chane in wind strength and barometer. Roll I.2 and I.3
80-00	Change in wind strength, barometer, and wind direction. Roll on I.2, I.3, and I.4

Wind Strength I.2

Barometer Falling:		Barometer Stable:		Barometer Rising:	
01-70	Wind up 1 pt.	01-50	Wind down 1.	01-70	Wind down 1 pt.
71-99	Wind up 2 pts.	51-00	Wind up 1.	71-99	Wind down 2 pts.
100	Wind up 3 pts.			100	Wind down 3 pts.

Barometer I.3

01-30	Falling
31-70	Stable
71-00	Rising

Subtract 20 if barometer was Falling after last roll. Add 20 if Barometer was Rising after last roll. This will produce a realistic tendency for a Falling barometer to continue falling, and vice versa.

Wind Direction I.4

01-45	Wind veers clockwise 1 pt.
46-65	Wind veers clockwise 2 pts.
66-75	Wind veers clockwise 3 pts.
76-89	Wind backs anticlockwise 1 pt.
90-00	Wind backs anticlockwise 2 pts.

CHART 18: VISIBILITY AND SIGHTING RANGE

Wind Strength:

1, 2, 3		4	
01-20	Fog	01-10	Fog
21-30	Rain	11-30	Rain
31-00	Clear	31-50	Haze
		51-00	Clear
5		6	
01-10	Mist	01-20	Mist
11-30	Rain	21-40	Rain
31-60	Haze	41-80	Haze
61-00	Clear	81-00	Clear
7		8	
01-10	Mist	01-10	Mist
11-50	Rain	11-80	Rain
51-00	Haze	81-00	Haze

Sighting Range during Conditions:

		Other effects
Clear	30,000mm	none
Haze	20,000mm	none
Rain	1600mm	may not fire open deck guns, carronades.
Fog	800mm	−10 from firing dice.
Mist	1000mm	
Night	3000mm	

Every 10 turns of condition Fog, roll dice: 1-5 on the percentage dice, Fog lifts and becomes Mist.

Every 10 turns during condition Rain, roll percentage dice: 1-10, rain becomes Haze, and all special Rain effects are lost. Continue to roll percentage dice every 10 turns: 1-10, it begins to rain again.

RELOADING TABLE

Crew	Continuous Broadside 1st-4th Rates	Continuous Broadside Others	Reloading Time 1st-4th Rates	Reloading Time Others
Crack	60%	60%	3	3
Good	50%	60%	4	3
Average	40%	50%	5	4
Poor	30%	40%	6	5
Green	20%	30%	7	6

CHART 18.1: STRIKE AND SINK TABLE IX.1

Modifiers:

−2	Crack
−1	Good
+1	Poor
+2	Green

Die Roll (10-sided)	Percentage Hull Damage 1-49%	50-59%	60-69%	70-79%	80-89%	90-99%	100-109%	110-120%
−1	–	–	–	–	–	–	–	–
0	–	–	–	–	–	–	–	s
1	–	–	–	–	–	–	s	s
2	–	–	–	–	–	–	s	s
3	–	–	–	–	–	s	s	s
4	–	–	–	–	–	s	s	s
5	–	–	–	–	s	s	s	s
6	–	–	–	–	s	s	s	x
7	–	–	–	–	s	s	x	x
8	–	–	–	s	s	s	x	x
9	–	–	–	s	s	x	x	x
10	–	–	s	s	s	x	x	x
11	–	s	s	s	x	x	x	x
12	–	s	s	x	x	x	x	x

Results:

s = Ship strikes immediately.

x = Ship is sinking (may sink and strike simultaneously). Roll percentage dice for the number of turns taken to sink. If a sinking ship has not struck, it may continue to fight.