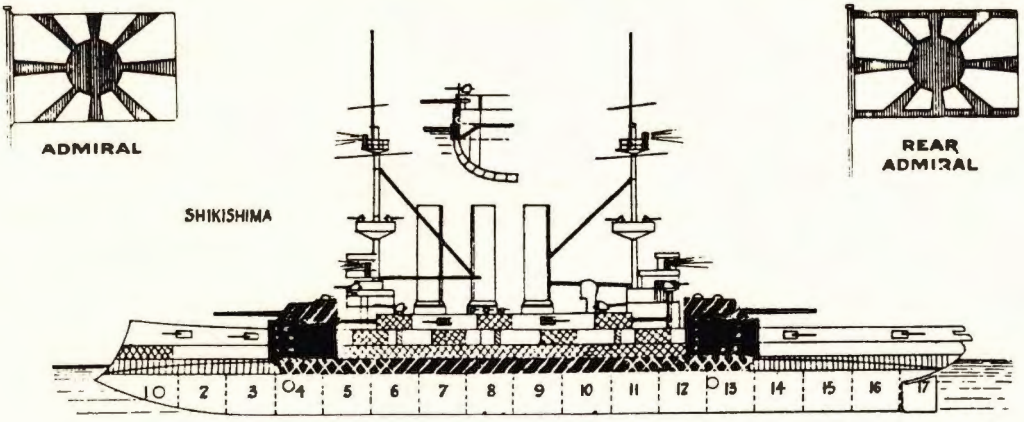
TSUSHIMA™



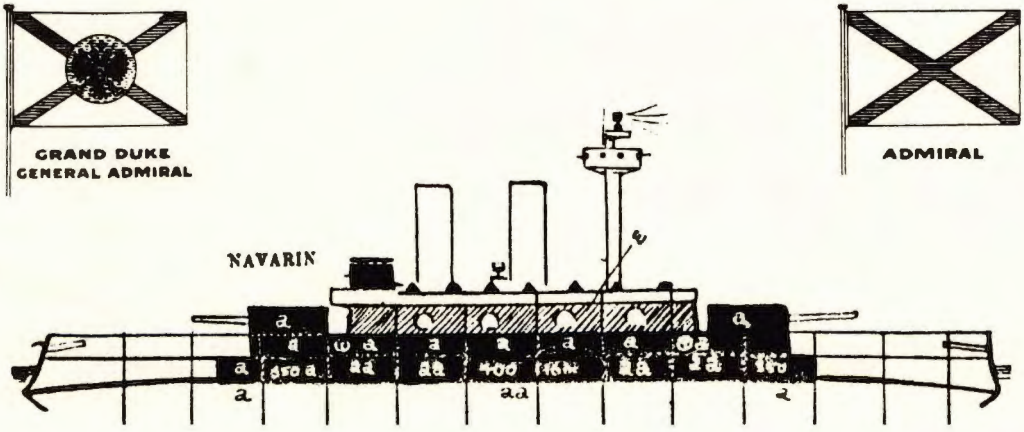


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ILLUSTRATION SOURCE: JANE'S FIGHTING SHIPS, 1906 ED.

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TSUSHIMA(TM)

TSUSHIMA IS THE AVALON HILL GAME COMPANY'S TRADEMARK FOR
ITS MICROCOMPUTER GAME OF NAVAL COMBAT IN THE RUSSO-JAPANESE WAR

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1. Loading The Program

To load *Tsushima*, type **LOAD"*",8,1**. The game will load and run automatically.

2. Introduction

On 27 May 1905, the Japanese Fleet met and defeated the Russian Baltic Fleet in the straits of Tsushima between Korea and Japan. More than the last great engagement of the Russo-Japanese War, it is the only full-scale and decisive gunnery battle seen in this century. The victory gave Japan a free hand in Korea and the Far East. For Russia, a revolution followed which resulted in a constitutional monarchy.

Tsushima recreates the strategic situation leading up to the battle. The Baltic Fleet has come halfway around the world after the Russian squadron was destroyed at Port Arthur in Manchuria. Their destination was the port of Vladivostok, where they could rest, refit, and make plans to assault the Japanese. But first, they must get past the Japanese squadrons awaiting them.

Although the battle was a decisive defeat for the Russians, it does not mean that the simulation is unbalanced. A more active Russian commander will be able to win, either by destroying the Japanese fleet, or by sailing into the port of Vladivostok. This was the last phase of the war; Japan had exhausted her resources, and the United States and Great Britain was pressuring both sides to negotiate. A naval victory or successful escape would give the Russians a strong bargaining chip.

Tsushima has two scenarios which can be played by one or two players. The strategic scenario allows the Russian player to choose the path his squadrons will take: the historical route past Korea, or through the Japanese home islands. Each side must search to find the other, and the Japanese are assisted by their defensive position and the sharp eyes of their coastal patrol and fishermen. When the fleets are within gunnery range, the tactical game will allow players to recreate ship-to-ship gunnery combat.

In addition to the Strategic scenario, *Tsushima* provides a Tactical scenario where players can select up to ten ships from each side and engage them in combat.

Scale: each square on the strategic map (showing Japan, China, Korea and the China Sea) represents 200 nautical miles. The scale of the strategic contact and tactical screens changes with the tactical situation. Each strategic turn represents one hour; each tactical turn 5 minutes.

3. Set Up

The title screen will present two choices. The Strategic scenario is the battle game playable with one or two players (with the solitaire player taking command of the Japanese fleet). All of the set-up commands are self-explanatory, some may require hitting the RETURN key after typing your choice.

Japanese Deployment
(Strategic Scenario)

The three Japanese squadrons may begin in any one of four ports: Masampo, Maizuru, Kure or Yokosha. A Japanese flag represents the location of each squadron. A coastal search patrol is then deployed anywhere along the coast, and its location can be changed each turn. It (and a squadron assigned to patrol duty) is represented by a circle that shows its range that turn. This can shrink at night or during bad weather.

As Commander-in-Chief of the Imperial Japanese Navy, your duty is to find and destroy the Russian fleet before they can enter zone E1 (Vladivostok).

Note: *any Japanese ships that move into zone E1 are automatically surrendered to the Russians.*

Russian Deployment

In the one-player scenario, the computer plays the Russian fleet and will deploy in row 7. In the two-player game, the fleet may deploy anywhere at sea in rows 6 and 7.

As Rear-Admiral of the Russian Baltic Fleet, you must get your ships into zone E1 (Vladivostok).

Victory Conditions
(All Scenarios)

Victory is determined by comparing victory point totals at the end of the game. There are 5 levels of victory: draw, Japanese/Russian victory, and Japanese/Russian total victory.

Both sides have a victory point total equal to 10 points per ship. Thus, in the strategic scenario, the Japanese Player has 160 victory points; the Russian Player 190 victory points.

Points are lost when ships are damaged or surrendered, and, for the Russian Player also, points are gained for each ship that reaches Vladivostok (zone E1).

The following table is used to determine victory point gains and losses.

Ship destroyed: −10 points.
Ship surrendered: −7 points.
Heavy damage: −4 points.
Medium damage: −2 points.
Light damage: −1 point.
For each Russian ship entering Vladivostok: +10 points.

Note: *some Commodore 64 disk drives have a tendency to overheat if left on for too long. Because there are two main programs to* Tsushima *— the strategic battle and tactical battle — the computer will prompt you when to turn your disk drive off and on.*

4. A Typical Ship Diagram

Each ship is described in the following manner:

Notes:

(1) The nationality and ship type.

(2) The number of inches of armor in each section of the ship. The sections of the ship that is armored (with their abbreviations in parentheses) are: belt, deck, (GUN) main gun turret, (CRWN) the crown, or top, of the turret, (SEC) secondary mount, (C.T.) conning tower, (PLOT) plotting room, (MFC) main fire control, and (RUD) rudder.

(3) The name of the ship.

(4a) An overview of the ship, showing the number, type and range of fire for each gun. A main gun turret is always shown as a block of white. When a turret receives enough damage, an "X" will appear. Jammed turrets will display a "J" instead of a number. Jammed turrets can become unjammed during battle due to the efforts of the ship's crew or further shell damage; this is automatically handled by the computer.

The main gun mounts are always identified

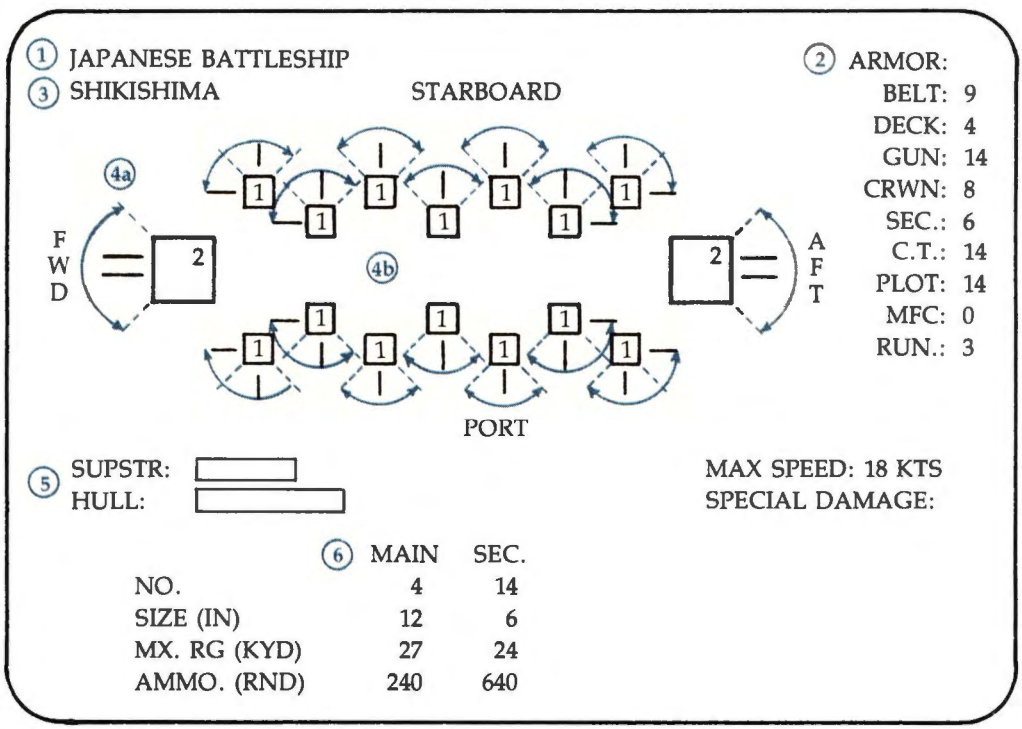
as a forward (abbreviated FWD) or aft turret. Thus, the *Shikishima's* two main gun turrets are called, from bow to stern, the forward turret and the aft turret.

(4b) The secondary gun mounts are drawn with lines protruding from them showing their field of fire. One gun line drawn on the port or starboard side of the square indicates that the mount can aim the gun up to 45 degrees to each side of that line. If it faces the bow or stern, however, the mount can only move 45 degrees towards the side of the ship the mount is on. Two lines facing the bow or stern means that the mount can move up to 45 degrees to each side of that line.

Secondary gun mounts are numbered beginning with the foremost starboard side of the ship, then down the port side.

(5) This is the amount of damage the superstructure and hull can take. All damage is calculated by the computer, and is reflected in part by the number of Xs appearing on the superstructure and hull lines. If a ship has no more superstructure, any future hits there will damage the hull. A complete list of damage results is found in section 6. **Note:** *damage is calculated on a formula that takes into account the size of the shell and the thickness of the armor. Some shells may strike the hull, but do no damage. Also, once the superstructure is destroyed, it may take up to four superstructure hits to make one hull hit.*

(6) This is the gun chart showing the number and size (or bore) of the main and secondary guns, its range, and number of rounds left.



Japanese Fleet Data

The following ships are at the Japanese player's command:

#	Name	TY	SP	MAIN		SEC		SQ	FS	DM
1	Mikasa	BB	18	4	12	14	6	1st	*	0
2	Shikishima	BB	18	4	12	14	6	1st		0
3	Fuji	BB	18	4	12	10	6	1st		0
4	Asahi	BB	18	4	12	14	6	1st		0
5	Kasuga	AC	20	4	8	14	6	1st		0
6	Nisshin	AC	20	4	8	14	6	1st		0
7	Idzumo	AC	21	4	8	14	6	2nd	*	0
8	Yakumo	AC	21	4	8	12	6	2nd		0
9	Asama	AC	22	4	8	14	6	2nd		0
10	Adzuma	AC	20	4	8	12	6	2nd		0
11	Tokiwa	AC	22	4	8	14	6	2nd		0
12	Iwate	AC	21	4	8	14	6	2nd		0
13	Kasagi	PC	23	2	8	10	4.7	3rd	*	0
14	Chitose	PC	23	2	8	10	4.7	3rd		0
15	Otowa	PC	21	2	6	6	4.7	3rd		0
16	Niitaka	PC	20	0	0	6	6	3rd		0

Russian Fleet Data

The following ships are at the Russian player's command:

#	Name	TY	SP	MAIN		SEC		SQ	FS	DM
1	Suvarov	BB	18	4	12	12	6	1st	*	0
2	Alexander 3	BB	18	4	12	12	6	1st		0
3	Borodino	BB	18	4	12	12	6	1st		0
4	Oryel	BB	18	4	12	12	6	1st		0
5	Oslyabya	BB	18	4	12	11	6	2nd	*	0
6	Veliki	BB	16	4	12	6	6	2nd		0
7	Navarin	TS	16	4	12	8	6	2nd		0
8	Nakhimov	AC	17	8	8	10	6	2nd		0
9	Nikolai I	TS	15	2	12	12	6	3nd	*	0
10	Apraksin	BB	16	4	10	4	4.7	3rd		0
11	Senyavin	BB	16	4	10	4	4.7	3rd		0
12	Ushakov	BB	16	4	10	4	4.7	3rd		0
13	Dzhemtchug	PC	24	0	0	6	4.7	3rd		0
14	Izumrud	PC	24	0	0	6	4.7	3rd		0
15	Oleg	PC	23	0	0	6	4.7	4th	*	0
16	Aurora	PC	19	0	0	8	6	4th		0
17	Svyetlana	PC	22	0	0	6	6	4th		0
18	Donskoi	AC	17	2	8	14	6	4th		0
19	Monomakh	AC	15	4	8	12	6	4th		0

5. Strategic Phase

There are two main phases in *Tsushima:* the strategic phase and the tactical phase. The strategic phase is subdivided into the search phase and the contact phase. When enemy squadrons are within visual range, the tactical phase will begin and continue until no enemy squadrons can be seen. Therefore, the game will be either in the strategic phase, or the tactical phase. For future reference, we shall break down the strategic phase into the search phase and the contact phase.

The Strategic Search Phase

During this phase, the two sides maneuver over the China Sea, Yellow Sea and the Sea of Japan. The sea is divided into zones and identified by a letter/number combination. When an enemy squadron has been spotted, they will enter the strategic contact phase.

Key To Fleet Data Charts

TY: there are four ship types: battleships (BB), armored cruisers (AC), turret ships (TS), and protected cruisers (PC).

SP: the ship's maximum speed in knots.

MAIN: the number of forward and aft guns and its size (also called the bore) in inches. They are also called Primary Guns. (**Example:** *a 4 12 rating for the* Mikasa *means that it has two main guns forward and two main guns aft, each with a bore of 12 inches.)*

SEC: the number of secondary guns on the port and starboard sides, and its size in inches. (**Example:** *a 14 6 rating for the* Mikasa *means that it has seven port guns and seven starboard guns, each with a bore of 6 inches.)*

SQ FS: The Japanese Navy is organized in three squadrons and the Russian Navy in four. The first ship in each squadron is the flagship, as denoted by an asterisk.

DM: This shows the percentage of hull boxes that has been destroyed. This column will be first seen once the game begins.

Exception: *a squadron on patrol duty spotting enemy ships will not enter the strategic contact phase.*

After orders have been given to all friendly squadrons, two questions will be asked:

SQDR FOR SEARCH?: also called patrol duty. Entering the number of a squadron will assign it to patrol duty. Only one squadron can be on patrol duty at a time.

Patrolling increases the range of that squadron and its chance of spotting the enemy. Note that when a squadron is searching, it can report on the enemy's presence, but cannot come in contact with it. See Range, below, for more information.

CRUISING HOURS(1-9)?: both sides enter the number of hours their squadrons will cruise. Movement orders will then be carried out automatically until one of the following happens:

a) a lowest number of cruising hours pass without any contact. If the Japanese player enters 6 cruising hours, and the Russian player enters 9, the computer will resolve 6 hours of movement before asking for further orders;

b) an enemy squadron has been spotted, either by a friendly squadron, or, for the Japanese player in the solitaire game, by a fisherman or coastal patrol. Coastal squadrons and fishermen will report every six hours (at 0600, 1200, 1800 and 2400 hours) on any enemy activity they see during that period. Thus, a Russian squadron spotted at 0200 hours will not be reported until 0600 hours;

c) a squadron sights land or the edge of the board. In either case, the turn ends, and the player must give a new course to the squadron responsible for the message.

During play, a message may be displayed that says "(Squadron) OUT OF CONTACT AREA." This means that the squadron has moved out of visual range of another squadron (either enemy or friendly).

Range

The distance at which a squadron can be

spotted varies with the weather, the time of day, and a squadron's duty:

Weather: on a clear day, a ship will search 36 NM (nautical miles) per hour. This is cut to 28 NM during rough weather, and 20 NM in fog.

Time of Day: daylight runs from 0500 to 1900 hours. At night (2000 to 0400), the above numbers are halved.

Search Duty: a squadron assigned to search duty can patrol up to 100 NM on a clear day, 75 NM on a rough day, and 50 NM on a foggy day. Again, these ranges are halved at night.

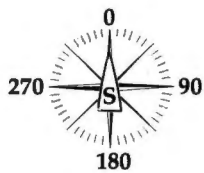
The Strategic Contact Phase

Contact occurs when one squadron has spotted the presence of another, either by seeing the ships, or the smoke from their coal-burning engines. In the strategic contact phase, both sides maneuver on a different map with a smaller scale. If they get within gunnery range, the tactical phase begins.

5.A COMMANDS

The following commands may be given in the strategic search and strategic contact phases. **Note:** *once an order is given, it cannot be changed.*

(**C**)ourse	Enter up to three digits, from 0 to 360, to assign the new course according to the diagram below (due south is 180 degrees):



(**F**)ormation	Takes you to another screen where you can change the formation of your ships. Your flagship is in the center of the screen, and you enter any number from 0 to 360. Your ships will then shift themselves into the new formation. The flagship will always remain in the center of the screen. Your squadron's formation can increase or decrease your search effectiveness.
(**J**)apanese Stats	Shows the statistics for all Japanese ships.
(**N**)ext	When you finish giving orders to one squadron, this will take you to the next squadron. If all squadrons have been given orders, this will end your turn.
(**Q**)uit	Ends the game, allowing you to save it either on the game disk or another formatted disk.
(**R**)ussian Stats	Shows the statistics for all Russian ships.
(**S**)peed	Changes the speed of the squadron. Ships can travel no faster than the maximum speed of its slowest member.

6. Tactical Phase

When the tactical program is used, it will show a screen divided into three parts: the map, the ship roster, and the ship status.

Map

The dots on the map indicate the center of each square. The distance between each square depends upon the scale, given at the bottom of the map. As the ships move together or apart, the scale will change. Visibility is shown in thousands of yards (KYDS). Ship collisions are impossible at any scale.

Enemy ships are tinted dark yellow; friendly ships are tinted white. The ship to which orders are being given to is tinted blue.

Ship Roster

This contains a listing of each active enemy ship in the scenario along with its code letter and present course. Ships in the tactical program travel on one of eight compass headings: N, NE, E, SE, S, SW, W and NW. The ship letter is used to issue main and secondary target commands.

Ship Status

The sequence of play in the tactical phase consists of issuing orders to each ship in play. The computer will go from ship to ship and ask the player to enter any number of commands.

The ship status section shows the following information:

Course: the direction the ship is travelling.

Speed: the maximum speed of the ship (in knots).

Max MF (movement factors): each ship uses movement factors in the tactical phase (MF for short) to express how far it can move in one turn. By using the (M)aneuver command, the player can order his ship to move up to its Maximum MF. *The Max MF number does not mean that the ship will travel that number of squares.*

MF: shows the latest maneuver command given to that ship. This is what the ship will do in the coming turn. Note that you can only change the maneuver command once during that ship's turn.

TARGETS: most ships have two types of guns: main and secondary guns. Use the damage display to see where they are on each ship. By using the (P)rimary and (S)econdary commands, the ship is ordered to fire those guns at another ship. The main and secondary guns may fire at the same ship, different ships, or no ships at all.

Note: *as you move from ship to ship, the map is redrawn with the phasing ship in the center, and you will see the positions of some ships move a square or two. Distances are measured in actual yards from the perspective of the phasing ship, and the scale between squares will change.*

6.A COMMANDS

These are the commands available to all ships in the tactical phase:

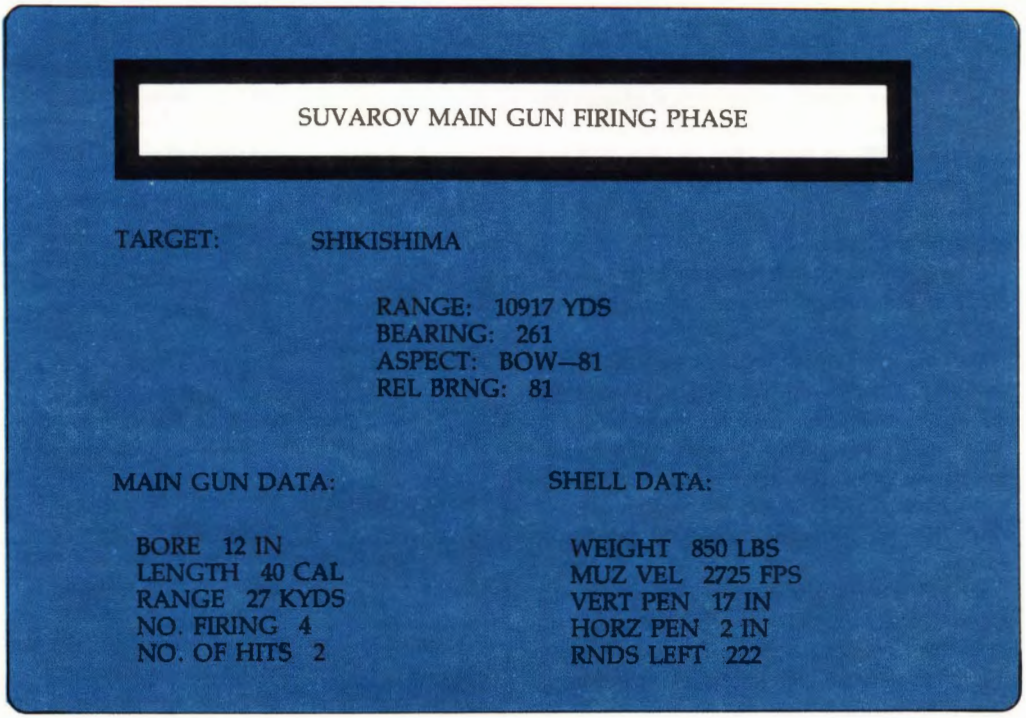
(M)aneuver	Each ship can move a certain number of movement points. Using these points requires entering a string of numbers, L, and/or R. The number tells the ship to move that many movement points forward, L will move the ship forward and 45 degrees to the left; R will move the ship forward and 45 degrees to the right. **Example:** *the maneuver command 2LL1R will move a ship two points ahead, turn to the left, turn left again, move one point ahead, then turn right.*
(P)rimary	Assigns a target to the main guns. Enter the letter of the enemy ship you wish these guns to fire at.
(S)econdary	Assigns a target to the secondary guns.
(D)amage/Status	Shows the damage and status of the phasing ship.
(J)apanese Stats	Displays the statistics for all Japanese ships.
(R)ussian Stats	Displays the statistics for all Russian ships.
(S)urrender	Orders the ship to surrender. A surrendering ship costs its side seven victory points (as opposed to ten for a destroyed ship). It cannot be fired upon, and is removed from the board.
(N)ext Ship	Finishes the movement/combat turn of one ship, and goes on to the next ship. You cannot go back and enter new orders for a ship once the (n)ext

	command is entered.
(any other key)	Displays the command menu.

6.B COMBAT

The computer calculates the effects of combat, and all results are applied at the end of the turn. Thus, a ship that may have been sunk earlier in the combat phase will still be able to fire. All you need to do is strike the RETURN key whenever the cursor flashes.

A typical combat screen looks like this:



Key:

Range: the distance in yards from the firing ship to the target ship.

Bearing: the compass direction that the target ship is in, with 0 degrees at the top of the screen.

Aspect: what part of the target the ship sees. The number is a bearing in degrees counted from the true position of the aspect. There are three aspects: bow, stern and broadside.

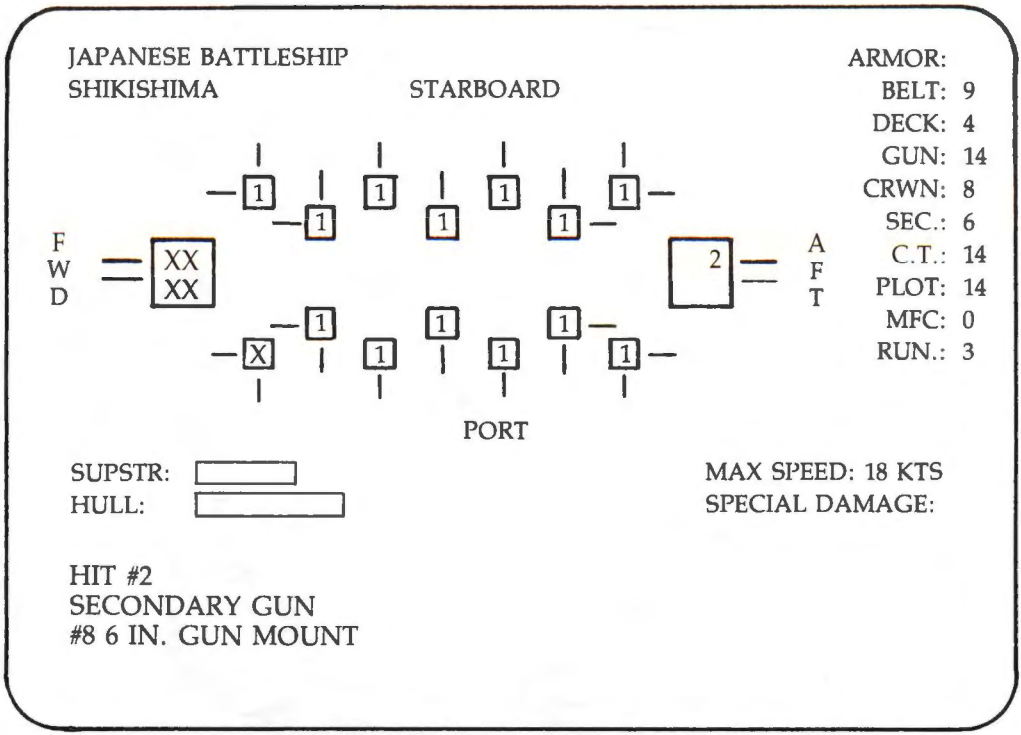
Rel Brng: the location of the target ship relative to the firing ship, counted by assuming that the direction to which the firing ship's bow is pointing is 0 degrees.

Muz Vel: muzzle velocity, or how fast down the barrel the shell travels (expressed in Feet Per Second (FPS)).

Vert Pen: verticle penetration, or how high the gun barrel had to be raised in order to fire on the target ship. A Vert Pen of 1-2 inches means that the gun barrel is almost level.

Horz Pen: horizontal penetration, or how far to the left or the right the gun barrel travels.

When a key is struck, the damage chart of the target ship will appear:



The first hit from the *Suvarov* had struck and penetrated the Gun Armor of the Forward Turret, completely destroying it. Secondary hits are scored on the secondary guns. In this case, it was on the #8 secondary gun mount, located on the port side of the *Shikishima*.

SPECIAL DAMAGE: In addition to damaging the armor and guns of a ship, there is a chance that specific, vital areas of the ship may be hit. Below is a list of possible damage results:

* Hull-Belt Armor
* Hull-Deck Armor
* Hull-Secondary Armor
* Hull
* Main Powder Room
* Engine Room
* Forward Engine Room
* Forward Main Magazine Room (also magazines Starboard, Port and Aft may be struck; with the possibility of explosions causing more damage)
* Aft Steering
* Shell Hoist
* Coal Room
* Main Gun
* Secondary Gun (with the possibility of a shell explosion causing hull damage)
* Main Gun
* Gun Armor
* Crown Armor
* Boiler Room
* Shell Handling Room
* Control Tower: a shell has destroyed the bridge. The ship will ignore certain movement commands.
* Forward Plotting Room/Aft Plotting Room: destroying either will reduce the chance of shells hitting.

Appendix

8 February 1904: Hostilities begin with a surprise attack on the Russian First Pacific Squadron at Port Arthur. Later that day, 3,000 men landed at the Korean port of Chemulpo (Inchon), 240 miles southeast of Port Arthur. Torpedoed were the cruiser *Palleda*, and the battleships *Retvizan* and the *Tsarevitch*.

9 February: Japanese ships run aground the cruiser *Varyag* and the gunboat *Koreetz* in Port Arthur harbor. The surviving Russian ships battle Togo's fleet to a standstill.

14-18 March: Japanese troops land at Chinampo, near modern Pyongyang. The Japanese First Army reached the Yalu River by April.

Mid-April: The Russian fleet at Port Arthur, under the new command of Admiral

Makarov, sails to meet the Japanese. While closing, the flagship *Petropavlovsk* is struck by a shell and sinks, killing Makarov. The demoralized Russian fleet retreats.

Late April: Russian cruisers operating out of Port Arthur sink several transports, including Krupp siege guns intended for the attack against the port.

1 May: Japanese forces cross the Yalu, outflanking the Russian army.

5 May: Japanese forces land near Port Arthur. Two battleships, the *Hatsuse* and *Yashima*, strike mines and sink.

25 May: The Japanese Army attack the peninsula leading to Port Arthur. In a preview of World War I, Russian trenches and machine guns cost 6,000 casualties. The position is overrun in two days.

7 August: After much preparation, Port Arthur is bombarded.

10 August: The Russian fleet sorties out of Port Arthur in an attempt to reach Vladivostock. The Battle of Yellow Sea is fought in which most of the ships were turned back.

19 August: Port Arthur is stormed. Three outposts are captured at the cost of 10,000 Japanese lives.

18 September: The second assault on Port Arthur bogs down with heavy losses.

26-31 October: A third attack on Port Arthur meets with failure.

16 October: Russian Baltic Fleet, renamed the Second Pacific Squadron, leaves St. Petersburg for the Far East.

3 November: The fleet arrives off Tangiers, Morocco. Some ships are sent through the Suez Canel, while the rest make the journey around the Cape of Good Hope.

November: In freezing weather, the Japanese assault and capture 203 Meter Hill, overlooking the harbor. Gun emplacements there will destroy the Russian fleet at anchor.

End of December: The fleet reunites at Madagascar.

1 January 1905: Russians surrender Port Arthur. Second Pacific Squadron reaches Madagascar later that month and hears about the loss.

22 January: Bloody Sunday. St. Petersburg police kill over a hundred demonstrators at a peaceful anti-war demonstration. A wave of indignation sweeps Russia.

February: Japanese advance into China, approaching Mukden.

27 February—9 March: The Battle of Mukden, in which three Russian armies number over 275,000 men are thrown against an equal number of Japanese. In what was to be the last land battle in Manchuria, the Russians retreat, but not without costing close to 100,000 killed, wounded and captured.

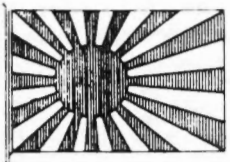
8 April: The fleet reaches Singapore.

9 May: Nebogatov's Third Squadron catches up with the Second Pacific Squadron off Indochina.

27 May: The Battle of Tsushima.

July: Russia's Sakhalin Island is invaded and captured by Japanese 13th Infantry Division.

5 September: The Treaty of Portsmouth is signed, ending the war. Japan is given a free hand in Korea, and acquires the ports of Port Arthur and Dalny. Sakhalin island is divided in two, and no indemnity is paid to Japan.



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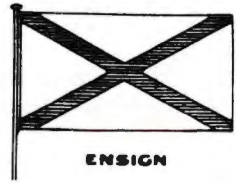
IMPERIAL STANDARD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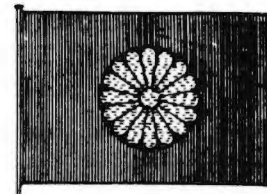

IMPERIAL STANDARD

"The whole art of war consists in getting at what is on the other side of the hill, or, in other words, in learning what we do not know from what we do."
The Duke of Wellington, *c. 1845*

On 16 October 1904, a naval officer hastily reassigned to the Russian Baltic Fleet was on board his ship when it steamed out of the Baltic. Captain Vladimir Semenov was not happy. Escaping death at the battle of Port Arthur (8 February 1904), he was now with a new Russian fleet intending to go back and defeat the Japanese. As part of a history-making journey that would take eight months and cross half the world, he knew what awaited them. "Ten thousand Russian men led not into battle but to the sacrificial altar," he wrote.

When the Russian squadron at Port Arthur was destroyed at the very start of the war, the possibility was raised to send the Baltic fleet to their aid. The trek was long, and most of the ships were not built to handle the distance. Not only that, there was not a single base along the route willing to supply them with the much-needed coal. Embroiled in a war with Japan, every neutral country was required by international law to bar fleets from either side and refuse all assistance to them.

The Russian commander, Rear-Admiral Zinovi Rozhdestvensky, was considered one of the best organizational minds in the navy. He had participated in the Russo-Turkish War of 1877, attacking the Turkish fleet in a torpedo boat attack. The masterful way he handled the naval review before the Kaiser brought him to Imperial attention. Yet, Rozhdestvensky had never commanded a fleet in combat before. But in his full beard, uniform and medals, he looked like a fighting admiral.

The Commander-in-Chief of the Imperial Japanese Navy, Admiral Heihachiro Togo, had served on ships since the 1870s. A member of the sea-going Satsuma Clan, he fought a British squadron attack in 1863. As one of the first cadets sent to England, he spent two years aboard the English sailing man-of-war *Worcester*, and studying mathematics at Cambridge, naval engineering at Greenwich, and gunnery at Portsmouth.

The way the commanders treated the men under them was radically different. Togo trained his troops constantly. He had served with many of them for the last eight years. After destroying the First Pacific Fleet at Port Arthur (in a surprise attack reminiscent of 7 December 1941), he led his fleet back to Japan and ordered target practice with new shells while the fleet was repaired.

Although he had a reputation as a disciplinarian, the strain of preparing the Baltic fleet for battle proved to be Rozhdestvensky's undoing. Along the 18,000 mile journey, Rozhdestvensky spent most of his time on the bridge, making sure that ships stayed in line and kept the prescribed distance from one another. If a ship fell out of position, his temper would snap and blank charges would be fired at the offending vessel, and once live ammunition was used across the bow of a ship that had three times ignored his order.

There was also the quality of the fleet to consider. The fifty ships of the Second Pacific Squadron contained four brand new battleships — the flagship *Kniaz Suvarov* plus the *Borodino, Alexander III* and *Oryel* — but there

were the slower cruisers like the *Dimitri Donskoi, Svyetlana* and *Nakhimov* that would be of little use in combat. Not only that, but engineers had to be drafted from the private sector to maintain the ship boilers, and the crews for the squadron were ill-trained. Rozhdestvensky hoped that the journey would give him time to improve the quality and morale of his sailors.

The experts believed that the two sides were equal. In anticipation of the battle, newspapers around the world published statistics about the two sides as if they were preparing for the Super Bowl. The poor Russian morale was countered with Japan's almost nonexistent naval history. A statistical comparison of the two fleet proved them to be equal. But in the last half of the nineteenth century, battleship designers had precious little battle experience to draw from. The theories of gun layout and armor placement were based upon the Crimean War and other small actions. In most of them, like the Spanish-American War, victory was achieved so easily that the reasons why were obscure. At Tsushima, all the theories that battleship designers been advocating would be put to the test. Riding on the outcome were reputations and lucrative government contracts worldwide.

The neutrality problem was solved when French and German firms agreed to provide coal: France from her colonial possessions and Germany from coastal railheads. Officially, all ports were closed to the Russians, and protests were lodged whenever their ships appeared. But with a variety of stalling tactics, they were able to refuel their ships. While the officials on shore were waiting for confirmation from home to order the Russians out, the sailors would be loading coal.

The journey had barely begun when an international incident arose off Dogger Bank over some English fishing boats the Russian fleet had blundered into at night. Believing them to be Japanese torpedo boats, the Russians opened fire and killed a number of Englishmen. The uproar that followed nearly drew Britain into the war, but blew over of its own accord.

At Morocco, the weaker ships were sent through the Suez Canal while the rest went on the longer route around Africa. Believing that Japanese torpedo boats were still a threat, Rozhdestvensky preferred to risk the storms off the Cape of Good Hope than the narrow confines of the canal.

But the biggest battle all along had been with the coal. With limited refueling stops, ships had to carry all they could. A ship like the *Suvarov*, with a maximum capacity of 1,250 tons, had to carry twice that. Orders were given that coal had to be stored anywhere and everywhere: "in any spare space on the upper deck," the order read, "lower deck, gun deck, poop, and in the cockpit, over closed watertight manhole covers, in the bathrooms, drying rooms, engine-room workshops, wing passages, fore and aft torpedo flats, twelve-inch gun turret passages, in bags between the 47-mm. guns, loose on the quarterdeck, with some means to prevent it falling overboard."

By the time the fleets rendezvoused at Madagascar in December, everyone was exhausted. Debilitating heat, sickness, harsh food and discipline and the task of transferring coal to the ships by hand (a total of 340,000 tons was required for the voyage) had taken its toll. Coal dust was everywhere, forced into the air by the vibrations from the ship's engines. It hung in dense grey clouds about the halls and the mess room, the passageways and cabins. Morale was down, and the fleet's poor performance at signaling, maneuvering in formation and gunnery served to drive it down further.

It was while refueling in Madagascar that the bad news came: Port Arthur had fallen. With the First Pacific Squadron destroyed, the Baltic Fleet had no choice but to go to Vladivostok, past the Japanese home islands. When word came to throw the Russians out, Rozhdestvensky led his fleet into the trackless ocean, and out of sight of the world.

The Russian arrival in Singapore on April 8 caused an international sensation. They had disappeared into the Indian Ocean and suddenly reappeared after three weeks of sailing more than thirty-five hundred miles without seeing another ship.

"It was a splendid spectacle," one correspondent wrote from Singapore. "All the ships were burning soft coal, and the smoke they made was visible for miles. The ships, magnificent but foul, were proceeding at about eight knots, and it took them fifty-five

minutes to pass a given point. All the vessels showed signs of their long voyage in tropical seas, about a foot of seaweed being visible along the waterline, and the decks were laden with coal."

Passing the neutral port, they paused in Camranh Bay, Indochina in early May for final preparations before meeting the Japanese fleet. It was here that the third squadron under Rear-Admiral Nabogatov arrived on May 9. Neither man liked the other, and the result was that they did not discuss the route they would take, or their battle plans. Rozhdestvensky decided on taking the most direct route to Vladivostok, through the Tsushima Straits between Japan and Korea. A decoy force was not even considered.

But the threatening weather shrouded the Russian fleet in mist when they entered the Tsushima Strait on 27 May 1905. "How can they find us in weather like this?" the commander of the *Suvarov* asked. "Look! You can't even see the rear of the fleet!"

But Togo was prepared. Scouts had been stationed along the route. Togo heard that Russian supply ships had been sent into Shanghai, and concluded that the Russians would go the most direct way without them. His main fleet was at Masampo, on the Korean coast. Thus, the stage was set for the final naval battle of the Russo-Japanese war.

On May 27, the Japanese auxiliary cruiser *Shinano Maru* sighted the fleet and relayed the information to Togo by wireless. When the Russians first spotted the Japanese fleet, they were within visual range. Togo hoisted a flag signal reminscent of Trafalgar 100 years before: "The fate of the Empire depends upon today's event. Let every man do his utmost!"

The Battle of Tsushima

The Russians had eight battleships, three coast-defense ships, three armored cruisers, six light cruisers and ten destroyers. The Japanese had four battleships, seven armored cruisers and seven light cruisers. The Russians steamed forward in two parallel but staggered columns. While still out of gunnery range, Togo ordered his ships to starboard and crossed the Russian's path to attack the port column, which the scouts had reported to be the weaker of the two.

Then, he led the fleet in a great U-turn, moving the ships so that they pivoted until they ended upon a parallel course on the Russians' port side. This was daring, because the Russians had the perfect chance to hit each ship as she was taking her turn in the maneuver. The order to fire did not come, but a few shots came from the Russians, one which struck the *Mikasa* and wounded Togo slightly. At 7,000 yards the two fleets were sailing broadside to broadside and trading shots.

Within the hour, the battle was decided. The four Russian battleships were put out of commission by the concentrated Japanese fire, and the breakdown in communications scattered the ships. The Russian ships scattered, and the battle quickly degenerated into a melee. The shelling continued until seven that evening, when Togo sent his torpedo boats to finish off the rest.

In half a day and a night, 20 Russian ships were sunk, including their four new battleships. Six escaped and found refuge in Shanghai and Manila where they were interned. Only two reached Vladivostock. Six thousand sailors were taken prisoner; more than 4,000 killed or drowned. On the Japanese side, only three torpedo boats were lost; 116 killed; 538 wounded.

Was the battle lost from the start? Not necessarily. The cause of the Russian defeat can be traced to the lack of a unified plan between the squadrons. Rozhdestvensky had no plan of battle, and had let the Japanese take the strategic initiative. At one point, if the Russian ships had been allowed to slip back and cross the rear of the Japanese line (thereby "crossing the T"), they could have severely damaged the enemy. Instead, Togo forced them to turn to starboard, until the Russian fleet was strung out, and the rear ships were unable to fire over the forward ships.

Strategically, the Japanese were exhausted physically and monetarily after the long war. Great Britain and the United States, bankrolling the Mikado, had been applying pressure on the two sides to come to the peace table. In that light, slipping through the Japanese cordon would have balanced their

losses on land and given them a bargaining chip in the negotiations.

The Lessons of Tsushima

What did the battleship designers and generals learn? Contemporary accounts pointed out that ship speed was an essential shipbuilding requirement. The swiftness of the Japanese fleet allowed them to pick the time and location for the fight. Second was the importance of the long-range 12-inch guns. A battle is not lost when the last unit has been routed, but much earlier. At Tsushima, it was when the Japanese were able to hit the Russian ships at 7,000 yards off. Previously, gunfire was exchanged at 3,500 yards. Although most of the critical hits were scored at the latter range, it gave the Japanese a tactical advantage. They could stay out of Russian gunfire range and could inflict damage.

The importance of crew training was stressed again. A major reason behind the Japanese success had been the sailors' ability to fire and reload rapidly. Technologically, the Japanese won hands down. While they fired their guns electronically, the Russians still pulled the lanyards, a slower method of fire.

At the time, Togo was hailed as the new Nelson for his daring tactics. But his success was due largely to the Russian's slow speed and inability to coordinate maneuvers. Also, the Russian ships, their decks and passageways piled high with as much coal as they can carry, proved to be fire hazards. The extra weight the ships carried also submerged their armor belt, reducing their protection against waterline shots. On the other hand, Togo had the wisdom to see the faults in the Russian fleet, and take advantage of them.

The results of the Tsushima battle had worldwide repercussions. Japan was recognized by the world as a major power in the Far East, supplanting the Russians. Their right to influence events in China and Korea was born with their demonstration of their armed might. Russia's loss sparked discontent throughout the country. After the 1905 Russian Revolution, Tsar Nicholas was forced to guarantee civil liberties and establish a parliament (the Duma) with the power to propose laws. Russia was entering an era of limited constitutional monarchy, an experiment that would eventually culminate in the 1917 Russian Revolution.

Appendix C: The Ships of Tsushima

The ships listed below are listed by squadron. That portion of their name not appearing in the program is enclosed within parentheses. Example: (Kniaz-)Suvarov. The gun listing shows a ship's primary and secondary guns. Some ships may have only secondary guns. The numbers in parentheses below the gun listing is the gun's range in thousands of yards (KYDS). The armor is in inches. The coal numbers indicate the normal and maximum amounts carried in tons.

A note about spellings: translating Japanese ideographs and the Russian Cyrillic language have resulted in several spellings for the same ship. While some consensus has been reached with the more well-known ships like the *Mikasa*, there remains differences with ships like the *Oslyabya* (or *Osliabia*). Likewise, there are differences regarding armor thicknesses, speed and crew complements. The data for *Tsushima* was drawn from a variety of sources, including two games published by Kiya Overseas Industry Co. of Japan.

ILLUSTRATION SOURCE: JANE'S FIGHTING SHIPS, 1906 ED.

Japanese Ships
First Squadron

MIKASA (FLAGSHIP)

The flagship of Admiral Nakagoro Togo, commander of the Japanese fleet. She survived the battle only to sink in six fathom of water in Saseho Harbor when her powder magazine exploded (10 September 1905). Raised and repaired, she was disarmed in 1922. She is a national monument today, revered as much as Nelson's H.M.S. *Victory*.

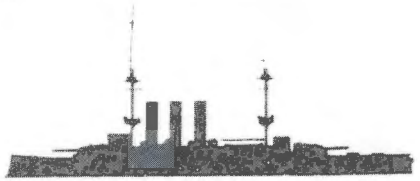
Battleship
Launched: 1900, Barrow
Tonnage: 15,140
Coal: 700/1500
Crew: 875
Guns: 4 12-inch (27 KYDS)
14 6-inch (24 KYDS)
Armor:

Belt: 9	Conning Tower: 14
Deck: 3	Plotting Room: 14
Gun: 14	Main Fire Control: 0
Crown: 6	Rudder: 3
Secondary: 6	

Engines and Speed: 15,000 h.p.; 18 knots

SHIKISHIMA

The *Shikishima* and the other ship in its class (the *Hatsuse*) participated in the bombarding of Port Arthur (9 February 1904), and fought at Yellow Sea and Tsushima. She was disarmed and immobilized under the terms of the Washington Treaty, and later scrapped in 1947.



Shikishima Class Battleship
Launched: 1898, Thames Iron Works
Tonnage: 14,850
Coal: 800/1592
Crew: 842
Guns: 4 12-inch (27 KYDS)
14 6-inch (24 KYDS)
Armor:

Belt: 9	Conning Tower: 14
Deck: 4	Plotting Room: 14
Gun: 14	Main Fire Control: 0
Crown: 8	Rudder: 3
Secondary: 6	

Engines and Speed: 14,500 h.p.; 18 knots

FUJI

The two ships in the *Fuji* class (*Fuji* and *Yashima*) were built in 1893 in response to two capital ships the Chinese were building. They were refitted with larger guns in 1901. The Fuji fired the last shell at Tsushima on 27 May 1905, sinking the *Borodino*. Disarmed under the Washington Treaty (1923) and used as a training ship, she capsized in 1945 and was scrapped.

Fuji Class Battleship
Launched: 1986, Thames Iron Works
Tonnage: 12,450
Coal: 700/1200
Crew: 736
Guns: 4 12-inch (27 KYDS)
14 6-inch (24 KYDS)
Armor:

Belt: 18	Conning Tower: 14
Deck: 3	Plotting Room: 14
Gun: 14	Main Fire Control: 0
Crown: 9	Rudder: 3
Secondary: 6	

Engines and Speed: 14,000 h.p.; 18 knots

ASAHI

Although built under the same program that launched the *Shikishima*, the *Asahi* has two funnels rather than three, putting it in a class by itself (despite the fact that there are no other differences). The *Asahi* was struck by a mine on 26 October 1904. She was repaired in time to fight at Tsushima, where she was damaged again. During World War

I, she became a gunnery training ship, eventually disarmed under the Washington Treaty of April 1923. During World War II, she saw service as a repair ship, and was sunk by an American submarine off French Indo-China on 25 May 1942.

Battleship
Launched: 1899, Clydebank
Tonnage: 15,200
Coal: 700/1690
Crew: 835
Guns: 4 12-inch (27 KYDS)
14 6-inch (24 KYDS)
Armor:

Belt: 9	Conning Tower: 14
Deck: 4	Plotting Room: 14
Gun: 14	Main Fire Control: 0
Crown: 4	Rudder: 3
Secondary: 6	

Engines and Speed: 15,000 h.p.; 18 knots

KASUGA

This armored cruiser was constructed on the other side of the world. Built for the Italian Navy as the *Mitra*, she was sold to the Argentines and renamed *Rivadavia* for use against Chile. While Rozhdestvensky was putting together the Second Pacific Squadron, efforts were made to purchase South American battleships. Four were sold, but they became the H.M.S. *Triumph* and *Swiftsure* of the Royal Navy, and the *Kasuga* and the *Nisshin* of the Japanese Navy. Partially disarmed during the 20s and used as a training ship, she was scrapped in 1948.

Kasuga Class Armored Cruiser
Launched: 1902, Genoa
Tonnage: 7,628
Coal: 584/1778
Crew: 438
Guns: 4 8-inch (22 KYDS)
14 6-inch (20 KYDS)
Armor:

Belt: 6	Conning Tower: 6
Deck: 2	Plotting Room: 6
Gun: 6	Main Fire Control: 0
Crown: 4	Rudder: 2
Secondary: 6	

Engines and Speed: 13,500 h.p.; 20 knots

NISSHIN

Built along with the *Kasuga* for the Italian Navy, she followed the same path: built as the *Roca*, she became the Argentine *Mariano Moreno* before being sold to Japan. Suffering considerable damage at Yellow Sea and Tsushima, she was used for target practice in 1936.

Kasuga Class Armored Cruiser
Launched: 1903, Genoa
Tonnage: 7,628
Coal: 584/1178
Crew: 609
Guns: 4 8-inch (22 KYDS)
14 6-inch (20 KYDS)
Armor:

Belt: 6	Conning Tower: 6
Deck: 2	Plotting Room: 6
Gun: 6	Main Fire Control: 0
Crown: 4	Rudder: 2
Secondary: 6	

Engines and Speed: 13,500 h.p.; 20 knots

SECOND SQUADRON

IDZUMO (FLAGSHIP)

Disarmed under the Washington Treaty, like all pre-First World War warships, she was used as training ship. Sunk in shallow water during an air raid (July 1945), she was scrapped in 1947.

Idzumo Class Armored Cruiser
Launched: 1900, Elswick
Tonnage: 9,750
Coal: 760/1550
Crew: 722
Guns: 4 8-inch (22 KYDS)
14 6-inch (20 KYDS)
Armor:

Belt: 7	Conning Tower: 14
Deck: 3	Plotting Room: 14
Gun: 6	Main Fire Control: 0
Crown: 4	Rudder: 2
Secondary: 6	

Engines and Speed: 14,500 h.p.; 21 knots

YAKUMO

Ordered under Second Naval Expansion Program of 1896-97, the *Yakumo* served throughout the Russo-Japanese War and played a major role in sinking the *Admiral Ushakov*. During the 20s, she was used as a training ship, finally scrapped in 1947.

Armored Cruiser
Launched: 1899
Tonnage: 9,600
Coal: ?/?
Crew: ?
Guns: 4 8-inch (22 KYDS)
12 6-inch (20 KYDS)
Armor:

Belt: 7	Conning Tower: 14
Deck: 3	Plotting Room: 14
Gun: 6	Main Fire Control: 0
Crown: 2	Rudder: 2
Secondary: 6	

Engines and Speed: 15,500 h.p.; 21 knots

ASAMA

Fought at Tsushima, where her steering gear was disabled by Russian shells. After WWI, she was relegated to training ship status, and scrapped in 1947.

Asama Class Armored Cruiser
Launched: 1890, Elswick
Tonnage: 9,750
Coal: 600/1200
Crew: 637
Guns: 4 8-inch (22 KYDS)
14 6-inch (20 KYDS)
Armor:

Belt: 7	Conning Tower: 14
Deck: 2	Plotting Room: 14
Gun: 6	Main Fire Control: 0
Crown: 2	Rudder: 2
Secondary: 6	

Engines and Speed: 18,000 h.p.; 22 knots

ADZUMA

This French-built cruiser saw action throughout the war, and after 1914 was turned into a training ship. Completely disarmed in 1941, she suffered severe damage in a 1945 air raid, and was scrapped after the war.

Adzuma Armored Cruiser
Launched: 1899, St. Nazaire
Tonnage: 9,037
Coal: 600/1200
Crew: 644
Guns: 4 8-inch (22 KYDS)
12 6-inch (20 KYDS)
Armor:

Belt: 7	Conning Tower: 14
Deck: 3	Plotting Room: 14
Gun: 6	Main Fire Control: 0
Crown: 2	Rudder: 2
Secondary: 6	

Engines and Speed: 17,000 h.p.; 20 knots

TOKIWA

Damaged at Tsushima, she was refitted as a minelayer after WWI. In August 1927, an accidental mine explosion damaged her severely. She was refitted for the 1937 Sino-Japanese war, and served throughout WWII. Suffering a mine attack in April 1945, she was repaired and finally sunk in air raid that August.

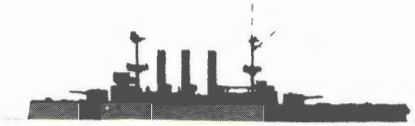
Asama Class Armored Cruiser
Launched: 1898, Elswick
Tonnage: 9,750
Coal: 600/1200
Crew: 642
Guns: 4 8-inch (22 KYDS)
14 6-inch (20 KYDS)
Armor:

Belt: 7	Conning Tower: 14
Deck: 2	Plotting Room: 14
Gun: 6	Main Fire Control: 0
Crown: 2	Rudder: 2
Secondary: 6	

Engines and Speed: 18,000 h.p.; 22 knots

IWATE

Partially disarmed under the Washington Treaty, she was sunk in the same air raid that sunk the *Idzumo*.



Idzumo Class Armored Cruiser
Launched: 1900, Elswick
Tonnage: 9,750
Coal: 600/1550
Crew: 688
Guns: 4 8-inch (22 KYDS)
14 6-inch (20 KYDS)
Armor:

Belt: 7	Conning Tower: 14
Deck: 3	Plotting Room: 14
Gun: 6	Main Fire Control: 0
Crown: 4	Rudder: 2
Secondary: 6	

Engines and Speed: 14,500 h.p.; 21 knots

THIRD SQUADRON

KASAGI (FLAGSHIP)

Present at Yellow Sea and Tsushima, she was reassigned as a training ship in 1910, and wrecked in Tsugaro Strait in 1916.

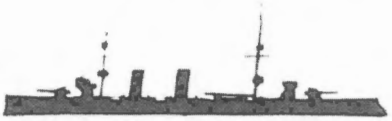
Chitose Class Protected Cruiser
Launched: 1898, Philadelphia
Tonnage: 4,862
Coal: 800/1000
Crew: 438
Guns: 2 8-inch (24 KYDS)
10 4.7-inch (17 KYDS)
Armor:

Belt: 4	Conning Tower: 5
Deck: 4	Plotting Room: 5
Gun: 5	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 3	

Engines and Speed: 15,000 h.p.; 23 knots

CHITOSE

Damaged at Yellow Sea and Tsushima, she was disarmed in 1922 and used for coastal defense. Used for target practice in July 1931.



Chitose Class Protected Cruiser
Launched: 1989, San Francisco
Tonnage: 4,760
Coal: 800/1000
Crew: 438
Guns: 4 8-inch (24 KYDS)
10 4.7-inch (17 KYDS)
Armor:

Belt: 4	Conning Tower: 5
Deck: 4	Plotting Room: 5
Gun: 5	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 3	

Engines and Speed: 15,000 h.p.; 23 knots

OTOWA

Ordered under the 1896-97 building program. Fought at Tsushima, she later ran aground on the Japanese coast in August 1917.

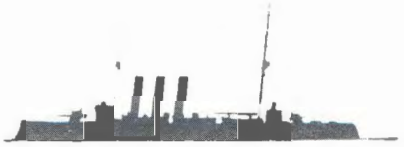
Protected Cruiser
Launched: 1903
Tonnage: 3,000
Coal: ?/?
Crew: ?
Guns: 2 6-inch (24 KYDS)
6 4.7-inch (17 KYDS)
Armor:

Belt: 3	Conning Tower: 4
Deck: 3	Plotting Room: 4
Gun: 2	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 1	

Engines and Speed: 10,000 h.p.; 21 knots

NIITAKA

Part of the second cruiser class built to a completely Japanese design, she saw action during the war, and was later lost in a typhoon off Kamchatka coast in August 1922.



Tsushima Class Protected Cruiser
Launched: 1902, Yokosuka
Tonnage: 3,366
Coal: ?/600
Crew: 320
Guns: (secondary) 6 6-inch (20 KYDS)
Armor:

Belt: 3	Conning Tower: 4
Deck: 3	Plotting Room: 4
Gun: 0	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 1	

Engines and Speed: 9,500 h.p.; 20 knots

RUSSIAN SHIPS

"Our wiseacres pretend that by multiplication of the guns, shells, personnel, the speed, a battle coefficient of the squadron is obtained which is not much lower than Togo's. But this is simply nothing but a fraud — an infamous fraud."

— Suvarov's *navigating officer*

FIRST SQUADRON

(KNIAZ-)SUVAROV (FLAGSHIP)

Named after the 18th century Russian fighter, her twin yellow smokestacks separating the black fire-control, rangefinders and searchlight platforms made her an impressive-looking ship. Her design, however, still retained a ram for the close action *coup de grace*.

Because of weight added after the ship was built, both to its armor and creature comforts for the officers, the ship was extremely overweight. The lower secondary armament could not be used in a serious weather, and all but two feet of the main belt was submerged when the ship was normally loaded. Sunk at Tsushima.

Borodino Class Battleship
Launched: 1902, St. Petersburg
Tonnage: 13,516
Coal: ?/1250
Crew: 830
Guns: 4 12-inch (27 KYDS)
12 6-inch (24 KYDS)
Armor:

Belt: 8	Conning Tower: 8
Deck: 2	Plotting Room: 8
Gun: 10	Main Fire Control: 0
Crown: 4	Rudder: 3
Secondary: 6	

Engines and Speed: 16,300 h.p.; 18 knots

(IMPERATOR) ALEXANDER III

Sunk at Tsushima along with the rest of the *Borodino* class.

Borodino Class Battleship
Launched: 1900, Barrow
Tonnage: 15,140
Coal: 700/1500
Crew: 875
Guns: 4 12-inch (27 KYDS)
14 6-inch (24 KYDS)

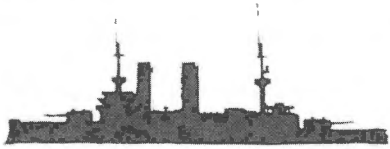
Armor:

Belt: 9	Conning Tower: 14
Deck: 3	Plotting Room: 14
Gun: 14	Main Fire Control: 0
Crown: 6	Rudder: 3
Secondary: 6	

Engines and Speed: 15,000 h.p.; 18 knots

BORODINO

Although one of the newest ships, her engines needed considerable alterations, and she was never put through her sea trials (a standard practice with all ships, to discover what worked and what didn't). Blew up from a magazine explosion caused by shell hits.



Borodino Class Battleship
Launched: 1901, St. Petersburg
Tonnage: 13,516
Coal: ?/1250
Crew: 830
Guns: 4 12-inch (27 KYDS)
12 6-inch (24 KYDS)
Armor:

Belt: 8	Conning Tower: 8
Deck: 2	Plotting Room: 8
Gun: 10	Main Fire Control: 0
Crown: 4	Rudder: 3
Secondary: 6	

Engines and Speed: 16,300 h.p.; 18 knots

ORYEL

Her service began with a serious fire, then a near sinking when her hawsers parted and the rivet holes opened. There were more delays during the preparation for the voyage when emery and brass filings were discovered in her propeller shaft. Her Senior Mechanic proved to be the culprit, sabotaging the ship to avoid fighting the Japanese.

Because of the low quality of the Baltic fleet (the best men were assigned to the Far East against the Japanese, and the Black Sea to watch the Turks), a substantial number of slackers, incompetents, and even worse, revolutionaries, were assigned to these ships. On the *Oryel*, the engineer officer Vasileff owned a large library of subversive literature, lent out freely to the sailors.

Escaping the battle despite large shell holes near her waterline, but damaged considerably elsewhere, she surrendered to the Japanese next day. She was partially reconstructed and served as the *Iwami*. She was scrapped in 1922.

Borodino Class Battleship
Launched: 1902, St. Petersburg
Tonnage: 13,516
Coal: ?/1250
Crew: 830
Guns: 4 12-inch (27 KYDS)
12 6-inch (24 KYDS)
Armor:

Belt: 8	Conning Tower: 8
Deck: 2	Plotting Room: 8
Gun: 10	Main Fire Control: 0
Crown: 4	Rudder: 3
Secondary: 6	

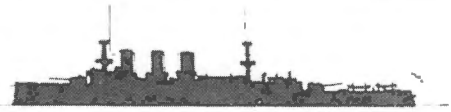
Engines and Speed: 16,300 h.p.; 18 knots

SECOND SQUADRON

OSLYABYA (FLAGSHIP)

Named after a monk who fought at the Battle of the Don in 1380, she was considered to be unsatisfactory design because of her slow speed and inadequate guns and armor.

Described as a "prison ship" by one of her seaman because of its tyrannical officers. Sunk by gunfire at Tsushima, mainly from the effect of shells near the forward waterline.



Peresviet Class Battleship
Launched: 1898, St. Petersburg
Tonnage: 12,674
Coal: 1060/2060
Crew: 769
Guns: 4 12-inch (27 KYDS)
11 6-inch (24 KYDS)

Armor:

Belt: 9	Conning Tower: 6
Deck: 3	Plotting Room: 6
Gun: 9	Main Fire Control: 0
Crown: 5	Rudder: 3
Secondary: 5	

Engines and Speed: 15,000 h.p.; 18 knots

(Sissoi) Veliki

Although called a battleship, she was really a slow ironclad. Damaged heavily at Tsushima by gunfire and torpedoes, she surrendered without firing a shot, but would have remained afloat if her flooding valves had not been opened.

Battleship

Launched: 1894, St. Petersburg
Tonnage: 10,400
Coal: 500/800
Crew: 586
Guns: 4 12-inch (27 KYDS)
6 6-inch (22 KYDS)

Armor:

Belt: 16	Conning Tower: 8
Deck: 3	Plotting Room: 8
Gun: 12	Main Fire Control: 0
Crown: 4	Rudder: 3
Secondary: 5	

Engines and Speed: 8,500 h.p.; 16 knots

Navarin

Looking very much like the *Monitor*, she was designed for coastal defense work. She withstood shell damage and a torpedo hit aft before being sunk by one of the 24 mines laid across her bow.

Turret Ship

Launched: 1891, St. Petersburg
Tonnage: 10,206
Coal: 400/700
Crew: 622
Guns: 4 12-inch (23 KYDS)
8 6-inch (18 KYDS)

Armor:

Belt: 16	Conning Tower: 10
Deck: 3	Plotting Room: 10
Gun: 12	Main Fire Control: 0
Crown: 4	Rudder: 3
Secondary: 5	

Engines and Speed: 9,140 h.p.; 16 knots

(Admiral) Nakhimov

This is a close copy of the British *Warspite*, of which the Russians had managed to obtain blueprints. Though included in the second battleship division, she was actually a recently refitted, elderly armored cruiser. En route, her crew mutinied over the lack of fresh bread. Quelled after the *Suvarov* trained her guns on them, 14 "ringleaders" selected at ramdom were shot, and more sentenced to detention. She escaped severe damage at Tsushima, but was torpedoed during the night and the crew opened her sea-valves upon surrendering to the Japanese.

Armored Cruiser

Launched: 1885, St. Petersburg
Tonnage: 8,524
Coal: ?/1300
Crew: 572
Guns: 8 8-inch (20 KYDS)
10 6-inch (18 KYDS)

Armor:

Belt: 10	Conning Tower: 6
Deck: 3	Plotting Room: 6
Gun: 8	Main Fire Control: 0
Crown: 3	Rudder: 2
Secondary: 3	

Engines and Speed: 9,000 h.p.; 17 knots

Third Squadron

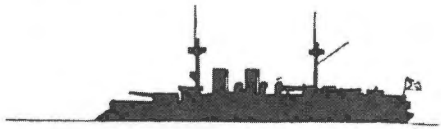
Commanded by Rear-Admiral Nabogatov, this was a collection of older ships originally rejected by Rozhdestvensky. Its crews consisted of the dregs from the streets, pardoned convicts and old reservists who had served on sailing ships. The night before they left, the *Senyavin's* officer of the watch was stabbed to death, and a bosun wounded. There was absolutely no time for refitting.

The journey had a mellowing effect on the squadron. Gunnery practice day and night kept the crew alert and disciplined, and Nabogatov's policy of maintaining good relations with neutral harbors resulted in a quieter cruise.

On the other hand, Nabogatov neither liked or respected Rozhdestvensky. Sailing after the main force had left, and given explicit instructions not to communicate with his superior, he cabled St. Petersburg to learn where to rendezvous, and learned that Rozhdestvensky had left Madagascar. His only signal: "I am on my way east." Of course, Rozhdestvensky had never wanted the third squadron, and was not even informed that they were following until his arrival in Singapore.

(Imperator) Nikolai I (Flagship)

A ship with old weapons, a slow rate of fire and short range, she surrendered during the second day. Renamed the *Iki*, she remained in service until 1918.



Imperator Alexander II Class
Barbette/Turret Ship
Launched: 1889, St. Petersburg
Tonnage: 9,672
Coal: ?/1200
Crew: ?
Guns: 2 12-inch (20 KYDS)
12 6-inch (18 KYDS)
Armor:

Belt: 14	Conning Tower: 8
Deck: 3	Plotting Room: 8
Gun: 10	Main Fire Control: 0
Crown: 3	Rudder: 3
Secondary: 6	

Engines and Speed: 8,500 h.p.; 15 knots

(General Admiral Graf) Apraksin

Along with the *Donskoi* and the *Senyavin*, the *Apraksin* was nicknamed "the galoshes" or "flatirons" because of their low freeboard and shallow draft. Designed to match Swedish ships and unsuited for the voyage halfway around the world, the *Apraksin* surrendered, becoming the Japanese *Okinoshima*. She was scrapped in 1926.

Admiral Ushakov Class
Coast Defense Battleship
Launched: 1896, St. Petersburg
Tonnage: 4,126
Coal: 260/400
Crew: ?
Guns: 4 10-inch (23 KYDS)
4 4.7-inch (17 KYDS)
Armor:

Belt: 10	Conning Tower: 8
Deck: 3	Plotting Room: 8
Gun: 8	Main Fire Control: 0
Crown: 3	Rudder: 3
Secondary: 5	

Engines and Speed: 5,700 h.p.; 16 knots

(Admiral) Senyavin

Surrendered at Tsushima, becoming the Japanese *Mishima*. Scrapped in 1928.

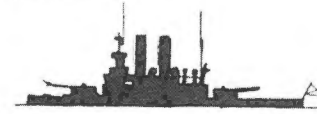
Admiral Ushakov Class
Coast Defense Battleship
Launched: 1894, St. Petersburg
Tonnage: 4,960
Coal: 260/400
Crew: 404
Guns: 4 10-inch (23 KYDS)
4 4.7-inch (17 KYDS)
Armor:

Belt: 10	Conning Tower: 8
Deck: 3	Plotting Room: 8
Gun: 8	Main Fire Control: 0
Crown: 3	Rudder: 3
Secondary: 5	

Engines and Speed: 5,700 h.p.; 16 knots

(Admiral) Ushakov

Sunk at Tsushima.



Admiral Ushakov Class
Coast Defense Battleship
Launched: 1893, St. Petersburg
Tonnage: 4,126
Coal: 260/400
Crew: 404
Guns: 4 10-inch (23 KYDS)
4 4.7-inch (17 KYDS)
Armor:

Belt: 10	Conning Tower: 8
Deck: 3	Plotting Room: 8
Gun: 8	Main Fire Control: 0
Crown: 3	Rudder: 3
Secondary: 5	

Engines and Speed: 5,700 h.p.; 16 knots

DZHEMTCHUG

One of two ships really equipped to fight a modern battle after a long voyage. Interned after the battle by the U.S. Navy, she was later sunk in battle.

Izumrud Class Protected Cruiser
Launched: 1903, St. Petersburg
Tonnage: 3,103
Coal: 400/510
Crew: 336
Guns: (secondary) 6 4.7-inch (17 KYDS)
Armor:

Belt: 7	Conning Tower: 2
Deck: 3	Plotting Room: 3
Gun: 0	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 2	

Engines and Speed: 17,000 h.p.; 24 knots

IZUMRUD

One of the few Russian ships only slightly damaged, she broke through the encircling Japanese ships and reached Vladivostock.

Izumrud Class Protected Cruiser
Launched: 1903, St. Petersburg
Tonnage: 3,103
Coal: 400/500
Crew: 336
Guns: (secondary) 6 4.7-inch (17 KYDS)
Armor:

Belt: 7	Conning Tower: 2
Deck: 3	Plotting Room: 3
Gun: 0	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 2	

Engines and Speed: 17,000 h.p.; 24 knots

FOURTH SQUADRON

OLEG (FLAGSHIP)

Among her many problems, she suffered from engine trouble from defective cylinders. Along the way, her captain had a penchant for finding submarines where none existed. Interned at a neutral port. Torpedoed in 1919.

Bogatyr Class Protected Cruiser
Launched: 1902, St. Petersburg
Tonnage: 6,645
Coal: 900/?
Crew: 580
Guns: (secondary) 6 4.7-inch (17 KYDS)
Armor:

Belt: 8	Conning Tower: 6
Deck: 3	Plotting Room: 6
Gun: 0	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 5	

Engines and Speed: 23,000 h.p.; 23 knots

AURORA

One of two ships really suited to both a long voyage and modern combat. She almost became an early casualty when, during one of the daily funeral services, the repair ship *Kamchatka* fired a saluting shell that turned out to be live; it ricocheted off the cruiser. Interned after the battle at a neutral port, she is preserved today as a relic of the Russian Revolution.

Pallada Class Protected Cruiser
Launched: 1900, St. Petersburg
Tonnage: 6,731
Coal: 900/?

Crew: 580
Guns: (secondary) 8 6-inch (24 KYDS)
Armor:

Belt: 8	Conning Tower: 6
Deck: 3	Plotting Room: 6
Gun: 0	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 3	

Engines and Speed: 12,500 h.p.; 19 knots

SVYETLANA

"Half cruiser, half yacht, a caprice of our luckless naval designers," wrote an officer serving on the *Veliki*. And yet, too damaged to retreat, she entered her final battle the next day against three cruisers, including the *Otowa* and the *Niitaka*. Three hours later, she went down with all hands.

Protected Cruiser
Launched: 1896, Havre
Tonnage: 3,727
Coal: 400/?
Crew: 402
Guns: (secondary) 6 6-inch (24 KYDS)
Armor:

Belt: 8	Conning Tower: 4
Deck: 3	Plotting Room: 4
Gun: 0	Main Fire Control: 0
Crown: 0	Rudder: 1
Secondary: 2	

Engines and Speed: 8,500 h.p.; 22 knots

(DMITRI) DONSKOI

Originally deemed too old to be included in a modern battle fleet. She started out as an armored frigate rigged for sail. Her design dates back to the 1870s. Refitted and refurbished, she survived both the first day and torpedo boat attacks that night. Finally scuttled in a nearby island cove the next morning, she managed to beat off four light cruisers, sinking two torpedo-boats and damaging a third.

Armored Cruiser
Launched: 1883, St. Petersburg
Tonnage: 6,200
Coal: 400/?
Crew: 503
Guns: 2 8-inch (24 KYDS)
4 6-inch (24 KYDS)
Armor:

Belt: 6	Conning Tower: 6
Deck: 2	Plotting Room: 6
Gun: 2	Main Fire Control: 0
Crown: 1	Rudder: 2
Secondary: 1	

Engines and Speed: 7,000 h.p.; 17 knots

(VLADIMIR) MONOMAKH

Sister ship to the *Dmitri Donskoi*, she was torpedoed during the night and surrendered the next day without firing a shot. Sank soon thereafter.

Armored Cruiser
Launched: 1882, St. Petersburg
Tonnage: 5,593
Coal: 400/?
Crew: ?
Guns: 4 8-inch (24 KYDS)
12 6-inch (24 KYDS)
Armor:

Belt: 6	Conning Tower: 6
Deck: 3	Plotting Room: 6
Gun: 4	Main Fire Control: 0
Crown: 3	Rudder: 2
Secondary: 2	

Engines and Speed: 7,000 h.p.; 15 knots

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Historical Supplement Bibliography

Hart, Sterling, "The Russo-Japanese War."
Hough, Richard, *The Fleet That Had To Die.* Viking Press, New York, 1958.
Jane's Fighting Ships
Ogasawara, Nagayo, *Life Of Admiral Togo.* Seito Shorin Press, Tokyo, 1934.
Preston, Antony, *Battleships.* Bison Books, New York, 1981.
Time-Life Books, *The Dreadnoughts.* Time-Life Books, New York, 1979.
Walder, David, *The Short Victorious War.* Harper and Row, New York, 1973.

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