DREADNOUGHTS ®

THE AVALON HILL GAME COMPANY'S TRADEMARK FOR ITS MICROCOMPUTER GAME OF WORLD WAR II NAVAL COMBAT IN THE NORTH ATLANTIC

FOR: Apple® Home Computers

DREADNOUGHTS

INSTRUCTION MANUAL

DREADNOUGHTS IS THE AVALON HILL GAME COMPANY'S TRADEMARK NAME
FOR ITS MICROCOMPUTER GAME OF TACTICAL WWII NAVAL COMBAT IN THE
NORTH ATLANTIC

Cover Photo: *H.M.S. Hood (1940)*

TABLE OF CONTENTS

1. LOADING THE PROGRAM

Dreadnoughts is an auto-boot diskette. Place the game disk in Drive 1 with the label side face up and power up the computer. The game will begin.

2. INTRODUCTION

Dreadnoughts recreates World War II naval combat in the North Atlantic. These were the last days of the great battleships, when Germany and Great Britain fought for control of the North Atlantic and the important supply convoy routes from America.

One of the more crucial naval actions of World War II involved Germany's greatest ship against the power of the Royal Navy. On 22 May 1941, the battleship *Bismarck* and the cruiser *Prinz Eugen* slipped quietly from their moorings in the early predawn hours. Their orders: break through the cordon of Royal Navy vessels and attack the North Atlantic convoys.

In addition to the *Bismarck* scenario, **Dreadnoughts** provides a battle game where players can build their fleet from a roster of 44 American, British, French and German ships, and engage them in tactical combat.

3. SET UP

The title screen will present two choices DREAD-NOUGHTS is the *Bismarck* scenario. The BATTLE PROGRAM is the two-player game in which players compose their fleets and engage in combat. (The *Battle Program* is also present within the *Bismarck* scenario. Whenever the *Bismarck* and *Prinz Eugen* come within visual range of British ships, the computer will load the Battle Program to resolve combat.)

These instructions begin with a discussion of the *Bismarck* scenario. Following that are the rules to the Battle Program, which is common to both the Bismarck and *Battle Program* scenarios.

If you select the *Bismarck* scenario, the computer will begin loading the information, and play will start immediately thereafter. If you select the *Battle Program* scenario, the computer will show the set-up screen. Both players compose their fleets, drawing from the list of Allied and German ships. Each side may contain from one to nine ships, with the maximum number in play being ten. Each side may have any mix of German and Allied ships.

Historical Note: The *Battle Program* will begin with both sides within sight of each other. At this range, aircraft carriers were unable to launch their planes. There are no rules in *the Battle Program* for air combat.

All of the set-up commands are self-explanatory. Once you exit from the set-up program, you will be asked for the formation of each side (if that side contains three or more ships), and for the visual range in nautical miles (one nautical mile: 2,000 yards). The game will determine sighting based on this number. You cannot fire on a ship that you cannot see.

4. TYPICAL SHIP DIAGRAM

Each ship is described in the following manner in all scenarios: both before the game begins, and as damage is taken:
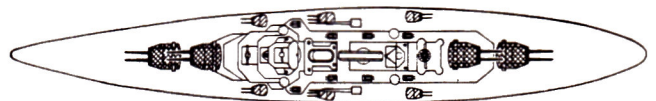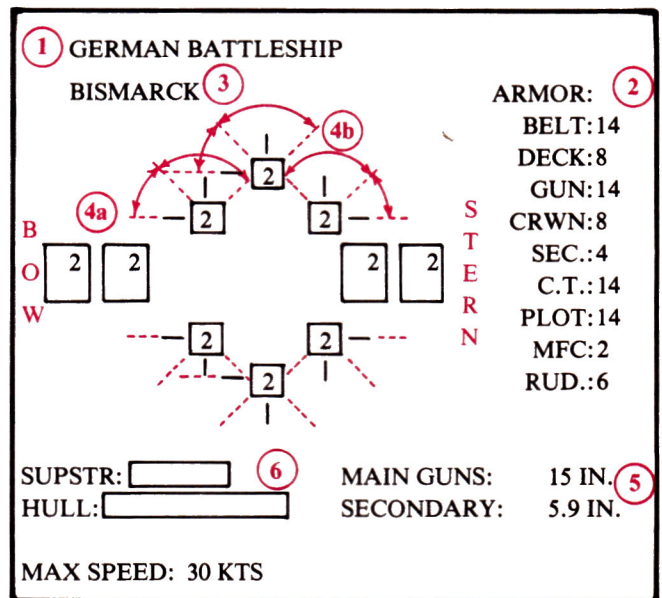
KEY:

1 The nationality and ship type.

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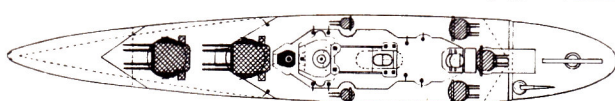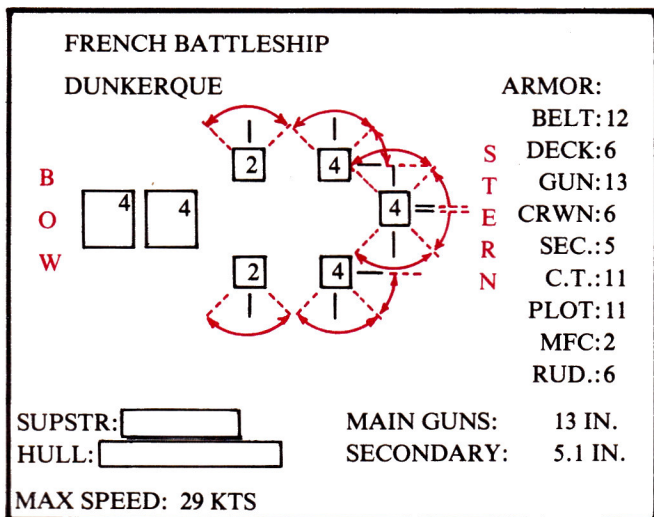
3 The name of the ship.

4a An overview of the ship, showing the number, type and range of fire for each gun. A primary 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; this is automatically handled by the computer.

The main gun mounts are always identified as "A", "B", "C", from the bow to the center of the ship; and "X", "Y", "Z" from the center of the ship to the stern. Thus, the *Bismarck's* four main gun turrets are called from bow to stern the "A" turret, "B" turret, "X" turret and "Y" 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. (See the **Dunkerque** diagram for an example.) 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 starboard gun closest to the bow. The next gun will be the port gun closest to the bow, and the sequence continues from starboard to port. This means that in most cases (because some designs have odd secondary gun turrets) odd-numbered secondary turrets will be along the starboard side; even-numbered turrets on the port side.

5 This is the size or bore of the main and secondary guns.

6 This is the amount of damage the superstructure and hull can take. All damage is calculated by the computer, taking into account the size of the shell and the thickness of the armor. Damage is reflected in the number of "X" that appear on the superstructure and hull lines. If a ship has no more superstructure, any future hits will damage the hull.

FRENCH BATTLESHIP

DUNKERQUE

ARMOR:
BELT: 12
DECK: 6
GUN: 13
CRWN: 6
SEC.: 5
C.T.: 11
PLOT: 11
MFC: 2
RUD.: 6

STERN

SUPSTR: [ ]
HULL: [ ]

MAIN GUNS: 13 IN.
SECONDARY: 5.1 IN.

MAX SPEED: 29 KTS

5. BISMARCK SCENARIO

The historical scenario is played between the computer (commanding the Royal Navy) and the player (commanding the *Bismarck* and the *Prinz Eugen*). The game begins with the German naval units in the Norwegian port of Bergen and ends when your ships are either sunk, or safe in a friendly port.

German Victory Conditions: The German player must enter the convoy routes, locate and sink as many ships as possible, then return to a friendly port. Victory points are calculated on the following basis: the length of the cruise, the amount of permanent damage (speed and hull hits) done to German and Allied ships, and the status of convoy WS.8. This convoy is vital to the British 8th Army in North Africa. The German player can lose points if it gets to North Africa undamaged.

There are 11 levels of victory: a draw and a British or German marginal, victory, decisive, major and total victories.

Identifying Convoys: Convoys can be spotted by the *Bismarck* on the Air Search and the Visual/radar displays. If the letter T appears, it is the troop transport *Britannic*. A cluster of dots represents supply convoys, with a cluster of five dots the important convoy WS.8. If a convoy is within visual range, the *Bismarck* can enter the battle program to attack it.

Note: The *Bismarck* and the *Prinz Eugen* will travel together at all times. Any commands you make during the Strategic Phase will automatically apply to both ships.

6. STRATEGIC PHASE

There are two phases to the *Bismarck* scenario: the strategic phase and the battle phase. The battle phase is exactly the same as in the *Battle Program*.

The *Bismarck* scenario begins in the strategic phase with the *Bismarck* and the *Prinz Eugen* in the Norwegian port of Bergen. The box on the left side of the screen will show the passage of time by turning black during night turns and white during day turns.

6.A STRATEGIC COMMANDS

1-9 Continue moving at the present course/heading for that many hours or until a key is pressed. The computer will also stop the move when the ships encounter enemy ships, aircraft, or land. Two beeps at any time means that you have detected Allied radar within 30 nautical miles. Allied radar range is 15 nautical miles.

(A)ir Search Launch Arado float planes to search surrounding area*.

(B)attle If within visual range of the enemy, you may decide to offer battle. The program will also begin automatically if certain conditions are met.

(C)ourse Enter up to three digits, from **0** to **360**, to indicate the new course according to the diagram below:
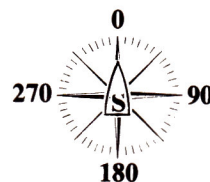
Note: Unlike the Battle Game, any number from **0** to **360** may be entered.

(E)ndurance This is a very important display because it shows how far your ship can travel in nautical miles if it maintains a certain speed. As your ships consume fuel, the distances will go down. The distances between two points being equal, a slow-moving ship will consume less fuel than a fast ship.

The second part of the display is the distance and course heading needed to travel to a friendly port. The heading does not take into account the presence of the Royal Navy, or of land masses like England.

To end the game, the *Bismarck* and *Prinz Eugen* must enter one of these four ports: Bergen, Brest, Naziere or Ferrol. (While Spain was not a member of the Axis, it was friendly to Germany. Being located next to Axis-occupied France, it was doubtful that Franco would not have allowed the battleship to stay.)

(F)orward Continue moving at the same speed and heading until a key is pressed, or the *Bismarck* encounters something.

(M)ap Print the strategic map, including the ships' previous course.

(P)atrol Patrol for enemy vessels. The ships will patrol the immediate area, increasing their effective search radius. They will continue to patrol for 1 to 9 hours, or until they find something (simply enter numbers 1 to 9, or F). Hitting any other key will end the patrol, and the ships will resume their course and speed.

If something is found, the screen will show the radar display with the locations of enemy ships.

(Q)uit Ends the game, allowing you to save the game. A DOS 3.3 formatted disk is needed.

(R)outes Shows the British convoy routes that the *Bismarck* has been sent to intercept.

(S)peed Changes the speed of both German units. The computer will accept any number, but the ships can travel no faster than the maximum speed of the *Bismarck*.

(V)isual Prints the *Bismarck's* visual/radar display. In the center is the *Bismarck* and the *Prinz Eugen*. The limit of visual contact is shown by the dotted line; of radar by the solid line. The limit of visual contact changes according to the time of day or night, and the prevailing weather conditions.

NOTES

* **(A)ir** search means that an Arado float plane will be launched. The ship will slow down to launch it, then resume speed. If the *Bismarck* is going too fast, or if visibility is poor, the seaplane may lose its way. It will be up to the player to decide if it is worth breaking radio silence to give the *Bismarck's* posi-tion to the plane. (The Royal Navy had primitive radio direction finders, so it is a risk to reveal your position.) Even then, the plane may be lost.

If something is found, the screen will show the radar display with the locations of enemy ships. There is a chance of pilot error in the number and type of ships reported. The *Bismarck* will automatically move at its present course and speed for one hour after this command is performed.

7. BATTLE PROGRAM

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

MAP: The dots in the Battle Program map indicates the center of each square. The distance between each square depends upon the scale, located at the bottom of the map. As the ships move together or apart, the scale will change from 3,500 yards per square to 500 yards per square. Below the scale is the visibility in yards. Ship collisions are impossible at any scale.

SHIP ROSTER: This contains a listing of each active ship in the scenario along with its number code and present course. Ships in the Battle Program travel in one of eight compass headings:

```
            360/0
    315               45

270                       90

    225               135
            180
```
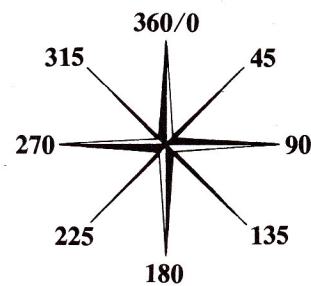
The ship number is used to issue main and secondary target commands.

SHIP STATUS: The sequence of play in the Battle Program consists of issuing orders to each ship in play. The computer will go down the roster from 0 to 9 (if that many ships are playing) and ask the player to enter any number of commands.

The ship status section shows the following information:

COURSE: The direction the ship is traveling.

SPEED: The maximum speed of the ship (in knots).

MAX MF (movement factors): Each ship uses movement factors (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.*

MANEUVER: Shows the latest command given to that ship. This is what the ship will do in the coming turn. Note that you can change the Maneuver Command at any time 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 primary and secondary guns may fire at the same ship, different ships, or no ships at all.

NOTE: As you give orders from ship to ship, you will see that the positions of some ships will change a square or two. Distances are measured in actual yards from the perspective of the phasing ship, and the scale between squares will change.

7.A TACTICAL COMMANDS

These are commands available to all ships in the *Battle Program:*

(M)aneuver — Each ship can move a certain number of movement points. To use 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 45 degrees forward and to the left; R will move the ship 45 degrees forward and 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 number 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 display and status of the phasing ship.

(N)ext — 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.

(Q)uit — *Battle Program* scenario only. The computer will show the hull damage for all the ships and ask if you wish to (q)uit the game or (c)ontinue to play.

any other key — Shows the command menu.

(E)nd — *Bismarck* scenario only. The computer will show the status screen of the *Bismarck* and return to the Strategic Phase. This will happen only if no ships are within visual range of each other.

7.B MOVEMENT AND COMBAT

After all ships have completed the command phase, movement and combat are handled by the computer.

MOVEMENT: The computer will redraw the map, placing the phasing ship in the center of the map. Its move will be calculated and carried out within the limitations of its movement allowance. The computer will automatically go to the next ship, redraw the map, calculate its movement, and so forth until all the ships have moved.

COMBAT: The computer calculates the effects of combat. All you need to do is strike any key whenever the cursor flashes.

A typical combat screen looks like this:

BISMARCK MAIN GUN FIRING PHASE

TARGET: HOOD
RANGE: 4899 YDS
REL BEARING: 201   ASPECT: BROADSIDE
MAIN GUN DATA: SHELL DATA:
   BORE 15 IN   VERT PEN 23 IN
   RANGE 39 KYDS (39,000 yds)   HORZ PEN 0 IN
   NO. FIRING 2   RNDS LEFT 600
   NO. OF HITS 2

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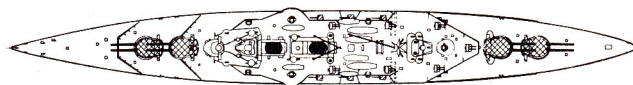

BRITISH BATTLECRUISER
HOOD

ARMOR:
BELT: 15
DECK: 4
GUN: 15
CRWN: 5
SEC.: 2
C.T.: 11
PLOT: 11
MFC: 2
RUD.: 4

SUPSTR:
HULL:

SPECIAL DAMAGE:

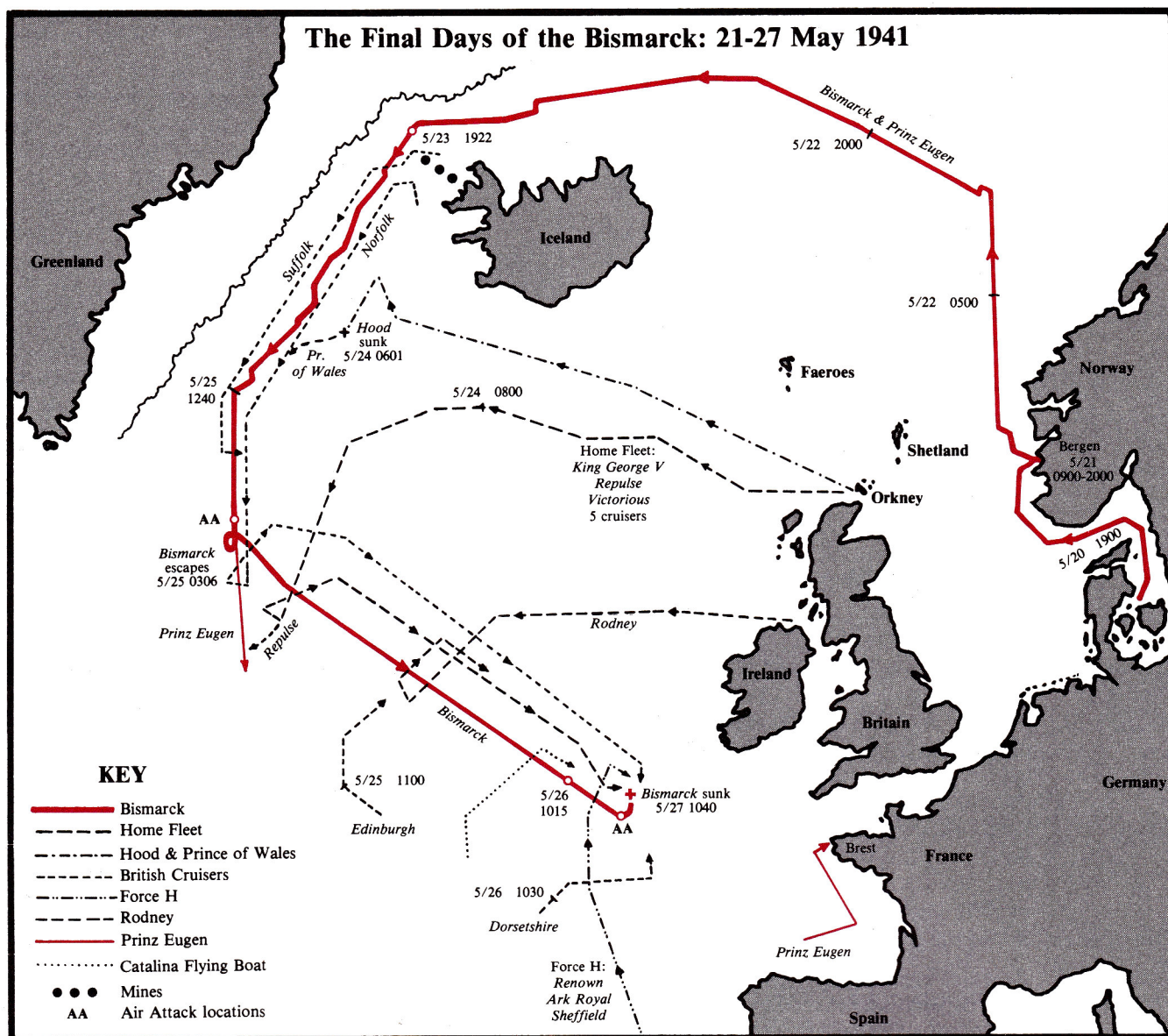MAX SPEED: 30 KTS
HIT #2
SECONDARY
#4 4 IN. GUN MOUNT

(The first hit from the *Bismarck* had struck and penetrated the Gun Armor of A Turret, completely destroying it, so instead of a clear block, a row of Xs denoted that fact. Secondary hits are scored on the Superstructure. In this case, the hit destroyed the #4 secondary gun mount, located in the center port side of the *Hood*. If the second shot had landed in the same place as the first hit (Gun Armor, A Turret), the shot would have had no effect since the turret cannot be destroyed any further.)

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. This special damage may cause additional harm to the armor, or deprive the ship of additional functions:

• **Control Tower:** a shell has destroyed the bridge. Until the second-in-command is able to assume command of the ship, the ship will ignore any maneuver commands.

• **Main Fire Control** (Forward, Foretop or Aft)

• **Plotting Room** (Forward or Aft)

• **Radar** (Search or Gunnery)

• **Powder Magazines** (Main Powder, Main Magazine, Forward Main Magazine, Aft Main Magazine)

• **Engine Room**

• **Shell Handling Room**

• **Boiler Room**

• **Forward Engine Room**

The Final Days of the Bismarck: 21-27 May 1941

Map labels: Greenland, Iceland, Faeroes, Shetland, Orkney, Norway, Ireland, Britain, Germany, France, Spain, Brest

Bismarck & Prinz Eugen
5/22 2000
5/22 0500
Bergen 5/21 0900-2000
5/20 1900 / 1900
5/23 1922
Suffolk
Norfolk
Hood sunk 5/24 0601
Pr. of Wales
5/24 0800
Home Fleet: King George V, Repulse, Victorious, 5 cruisers
5/25 1240
AA
Bismarck escapes 5/25 0306
Prinz Eugen
Repulse
Rodney
Bismarck
5/25 1100
Edinburgh
5/26 1015
AA
Bismarck sunk 5/27 1040
5/26 1030
Dorsetshire
Force H: Renown, Ark Royal, Sheffield
Prinz Eugen

KEY
- ▬▬▬ Bismarck
- – – – Home Fleet
- –·–·– Hood & Prince of Wales
- - - - British Cruisers
- –··–··– Force H
- – – – Rodney
- ——— Prinz Eugen
- ·········· Catalina Flying Boat
- ●●● Mines
- AA Air Attack locations

APPENDIX A
THE BISMARCK CHRONOLOGY

18 May 1941: The *Bismarck* and the *Prinz Eugen* leave their berth at Gotenhafen with orders to raid commerce in the Atlantic. Admiral Lutjens in command. They halt at Korsfjord, south of Bergen.

21 May: Spotted by British reconnaissance aircraft, cruisers are sent on patrol to watch for the ships. The *Hood* and the *Prince of Wales* leave Scapa Flow. Vice Admiral Holland in command. The search is concentrated north and south of Iceland.

22 May: The *King George V,* the *Repulse,* the *Victorious* and other ships go to sea. Commander of the Home Fleet, Admiral Tovey, is aboard the *King George V.*

23 May: The *Suffolk* sights the German ship in the Denmark Strait west of Iceland. The *Norfolk* makes visual contact soon thereafter. Using radar, they shadow the ships and broadcast their location to the rest of the fleet.

24 May: Vice Admiral Holland intercepts the German ships and attacks. The *Hood* blows up five minutes later, hit by shells from both German ships. Four shells slam into the *Prince of Wales,* forcing her to break off the fight. The *Bismarck* is hit twice, causing a fuel leak that

forces Lutjens to abandon his sortie and head for Brest. The German ships proceed south while the *Prince of Wales* and the other two cruisers shadow.

That evening, the *Prinz Eugen* is sent off to raid commerce. During the night, the *Bismarck* is attacked by aircraft from the *Victorious,* with little effect.

25-26 May: The British lose contact with *Bismarck,* last seen southeast of the southern tip of Greenland. Vice Admiral Sommerville leaves Gibraltar to intercept the ship on its return to France. This British Force H consists of the *Renown, Ark Royal* and two cruisers.

26 May: *Bismarck* sighted again by a Coastal Command flying-boat. That evening, planes from the *Ark Royal* score a hit on the starboard rudder. Further torpedo attacks take place during the night, with no effect.

27 May: Tovey arrives with the *King George V* and *Rodney* and two cruisers. The *Bismarck* is badly hit early on and, after 90 minutes, she is dead in the water. Several torpedoes hit, and the crew scuttles her.

1 June: The *Prinz Eugen* develops engine trouble and returns to Brest.
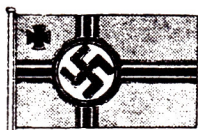
APPENDIX B:

THE SHIPS OF DREADNOUGHTS

The ships listed below are available for play. The gun listing on the first line is a ship's primary and secondary guns. Some ships may have only primary or secondary guns. The numbers in parentheses are gun ranges in thousands of yards (KYDS). The armor is listed in inches.
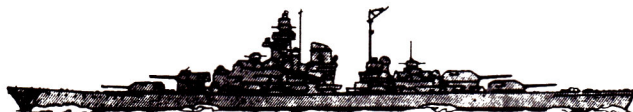
GERMAN SHIPS

Commodore   Ensign   Petty Officer (I) (Boatswain)

BISMARCK

Germany's enforced hiatus in battleship design forced it to rely upon the old *Baden* class ships when it designed and built the *Tirpitz* class. This meant, among other defects, that the rudder and steering gear were badly protected. This proved to be a fatal flaw.

On her 1941 commerce-raiding run code-named "Exercise Rhine," the *Bismarck* and the *Prinz Eugen* succeeded in destroying the *Hood* on 24 May and severely damaging the *Prince of Wales* (see "Appendix A: The Bismarck Chronology"). They escaped during the night, but were sighted on the 26th by a Coastal Command flying boat. That evening, torpedo-bombers from the *Ark Royal* scored two hits, one on her starboard rudder, making the *Bismarck* uncontrollable. The next day, the *King George V,* the *Rodney* and two destroyers attacked. Within 90 minutes, she was sent to the bottom, destroyed in the end by torpedoes from the *Dorsetshire* and her crews' scuttling charges.

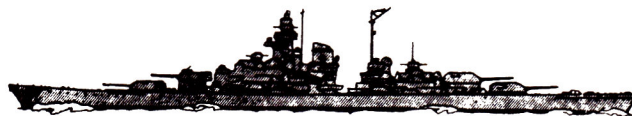Tirpitz Class Battleship
Commissioned: 1939
Tonnage: 41,676

Guns:	8 15-inch (39 KYDS)	12 5.9-inch (24 KYDS)
	16 4-inch A.A.	12 20mm A.A.

Armor:

Belt:	14	Conning Tower:	14
Deck:	8	Plotting Room:	14
Gun:	14	Main Fire Control:	2
Crown:	8	Rudder:	6
Secondary:	4		

Engines and Speed: 150,170 h.p.; 30 knots

TIRPITZ

Built along the same lines as the *Bismarck*, she had greater power and range, and more anti-aircraft guns. Along with the rest of the German North Sea Combat Group (consisting of the cruisers *Scheer, Lutzow* and *Hipper*), their presence forced the disbanding of convoy PQ17, which was bound for the Soviet Union. Although they did not participate in the action, the scattering of the convoy opened it to U-boat attacks, with the result that two-thirds of the convoy's cargo was sunk. While berthed in Norwegian waters, her crew camouflaged the ship from air observation by laying newly-cut trees across her decks. Nevertheless, British bombers attacked her at Tromso and caused her to capsize on 12 November 1944. As a result, the other German heavy surface units were transferred to the Baltic for the rest of 1944, leaving the U-boats and the Luftwaffe to attack the convoys.

Tirpitz Class Battleship
Commissioned: 1941
Tonnage: 41,676

Guns:	8 15-inch (39 KYDS)	12 5.9-inch (24 KYDS)
	16 4-inch A.A.	12 20mm A.A.
	Torpedoes: 8 21-inch	

Armor:

Belt:	14	Conning Tower:	14
Deck:	8	Plotting Room:	14
Gun:	14	Main Fire Control:	2
Crown:	8	Rudder:	6
Secondary:	4		

Engines and Speed: 150,170 h.p.; 30 knots

ADMIRAL SCHEER

Named for the 1916 German Commander-in-Chief Vice Admiral Reinhardt Scheer, this *Deutschland* class ship was among the first "pocket battleships" built within the limitations of the 1919 Versailles Treaty. For their role as commerce raiders, these ships emphasized armament and endurance. During the war, numerous modifications were made to the *Scheer,* including additional anti-aircraft guns.

During the war, she participated in the scattering of convoy PQ17, and was also a successful commerce raider. Late in the war, she was transferred to the Baltic Sea and with the *Lutzow* and *Hipper* to give off-shore support to the Germany army. She was sunk by the RAF in Kiel in April 1945.

Deutschland Class Pocket Battleship
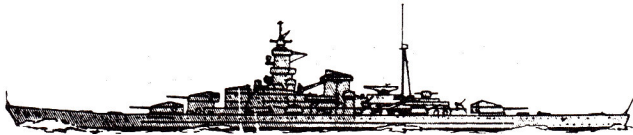Commissioned: 1933
Tonnage: 11,750

Guns:	6 11-inch (45 KYDS)	8 5.9-inch (24 KYDS)

Armor:

Belt:	4	Conning Tower:	6
Deck:	4	Plotting Room:	6
Gun:	6	Main Fire Control:	1
Crown:	4	Rudder:	2
Secondary:	1		

Engines and Speed: 50,000 h.p.; 26 knots

SCHARNHORST

Both the *Scharnhorst* and *Gneisenau* were intended to be the fourth and fifth ships in the Deutschland class, but the construction of the *Dunkerque* class ships called for a larger ship. It took serious wrangling between the Navy and Hitler for the ship to get its three triple 11-inch guns. The *Scharnhorst* made her appearance in Icelandic waters two months after Hitler invaded Poland, sinking the British auxiliary cruiser *Rawalpindi* with the assistance of the *Gneisenau*. She supported the Narvik landings in 1940, suffering a torpedo hit while attacking the British evacuation fleet. During that battle, she was attacked by 15 aircraft from the *Ark Royal*, which failed at the cost of 8 aircraft. Berthed in Brest, she executed (with *Gneisenau* and *Prinz Eugen*) the daring ''Channel dash'' from Brest to Wilhelmshaven under the eyes of British forces (11-13 February 1942). During October 1940 to March 1941, with the *Gneisenau* and *Hipper*, they caught 49 ships (271,000 tons) in the North Atlantic. It was not until the ''Battle of the North Cape'' (26 Dec. 1943) that the *Scharnhorst* was sunk by British ships.

Gneisenau Class Battlecruiser
Commissioned: 1936
Tonnage: 34,840

Guns: 9 11-inch (45 KYDS)   12 5.9-inch (24 KYDS)
     14 4-inch A.A.   16 37mm A.A.
     8 20mm A.A.

Armor:

Belt:	16	Conning Tower:	14
Deck:	6	Plotting Room:	14
Gun:	14	Main Fire Control:	2
Crown:	6	Rudder:	4
Secondary:	2		

Engines and Speed: 160,000 h.p.; 32 knots

GNEISENAU

Throughout the war, Gneisenau was under constant attack from the British forces. During a heavy air raid at Kiel, her bows were almost destroyed, requiring reconstruction. But the war deprived her of recovery, and she was towed to Gotenhafen and sunk as a blockship in March 1945.

See **Scharnhorst**

Gneisenau Class Battlecruiser
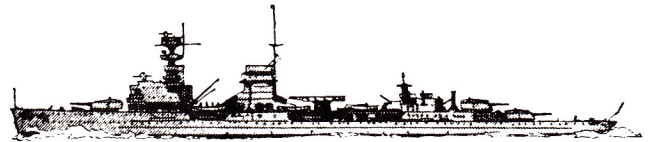Commissioned: 1936
Tonnage: 34,840

Guns: 9 11-inch (45 KYDS)   12 5.9-inch (24 KYDS)

Armor:

Belt:	16	Conning Tower:	14
Deck:	6	Plotting Room:	14
Gun:	14	Main Fire Control:	2
Crown:	6	Rudder:	4
Secondary:	2		

Engines and Speed: 160,000 h.p.; 32 knots

NÜRNBERG
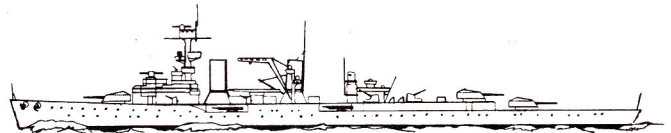
Light Cruiser
Commissioned: 1935
Tonnage: 6,000

Guns: 9 5.9-inch (24 KYDS)   8 3.5-inch (16 KYDS)

Armor:

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

Engines and Speed: 60,000 h.p.; 32 knots

KÖLN

One of a series of undistinguished light cruisers, she helped cover the landing of German troops in Bergen, Norway. Too light to be much of a threat, the *Köln* was sunk at her moorings in 1945 in Wilhelmshaven.

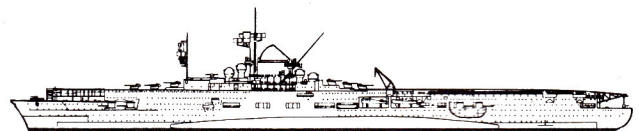Light Cruiser
Commissioned: 1928
Tonnage: 6,000

Guns: 9 5.9-inch (24 KYDS)   6 3.5-inch (16 KYDS)

Armor:

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

Engines and Speed: 65,000 h.p.; 32 knots

GRAF ZEPPELIN

Launched in 1938, the ship was 90% complete when Hitler ordered suspension of construction. On April 25, 1945 the ship was scuttled in shallow water. The Russians refloated the Zeppelin in 1947 but found it uneconomical to repair the ship and accordingly scrapped the carrier in 1948.

Aircraft Carrier
Launched: 1938
Tonnage: 19,250

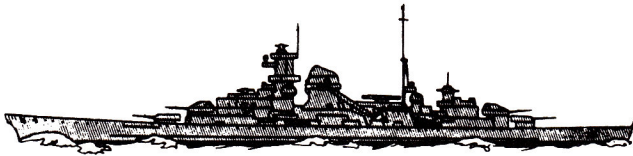Guns: 16 5.9-inch (24 KYDS)   12 4.1-inch (20 KYDS)

Armor:

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

Speed: 33 knots

PRINZ EUGEN

One of the more famous cruisers, due to her famous escort *Bismarck*. She joined the *Scharnhorst* in the "Channel dash" of 11-13 February 1942. Later, she was sent into action in the Baltic with the *Scheer* and *Hipper*, where she survived the war. In 25 July 1946, the United States used her (along with 90 ships), to test underwater atomic detonation at Bikini Atoll.

See **Bismarck, Scharnhorst**
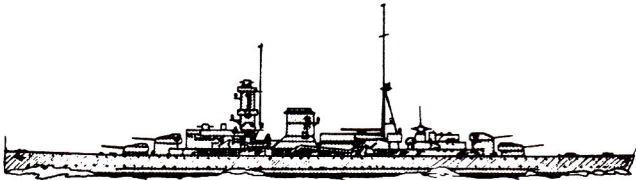
Hipper Class Cruiser
Commissioned: 1938
Tonnage: 14,000

Guns: 8 8-inch (24 KYDS)   12 5.9-inch (20 KYDS)

Armor:

Belt:	4	Conning Tower:	6
Deck:	4	Plotting Room:	4
Gun:	4	Main Fire Control:	2
Crown:	4	Rudder:	4
Secondary:	1		

Engines and Speed: 80,000 h.p.; 32 knots

ADMIRAL HIPPER

A convoy raider of the same class as the *Prinz Eugen,* the *Hipper* participated in the Norway attack with the *Scharnhorst*. Sent into the convoy battle off Cape St. Vincent, she attacked two convoys and, with the help of U-boats and the Luftwaffe, sunk more than seven ships (8-11 February 1941). After participating in the scattering of convoy PQ17, she was sent to the Baltic, where she was sunk.
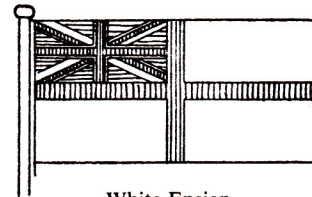
Hipper Class Cruiser
Commissioned: 1937
Tonnage: 14,000

Guns: 8 8-inch (24 KYDS)   12 5.9-inch (20 KYDS)

Armor:

Belt:	4	Conning Tower:	6
Deck:	4	Plotting Room:	4
Gun:	4	Main Fire Control:	2
Crown:	4	Rudder:	4
Secondary:	1		

Engines and Speed: 80,000 h.p.; 32 knots

ALLIED SHIPS

All ships are British except where identified otherwise in the title. Ex: NORTH CAROLINA (U.S.A.)
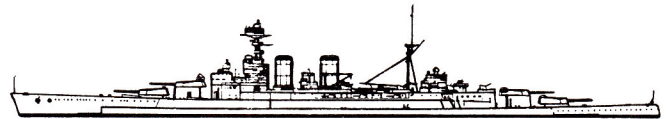

White Ensign

Commodore
1st Class
(Paymaster)

HOOD

Britain's reply to the German arms race during World War I was to build the biggest, strongest, fastest ship in the world. Built in response to the Germany's projected 15-inch battle-cruiser, the plans for the *Hood* were revised in the aftermath of the Battle of Jutland to give her greater armor protection making her comparable to the *Queen Elizabeth* class rather than battlecruisers. She was almost not built, since the Germans abandoned their building program in 1917. Of the four ships planned, the *Hood* was the ship farthest along in the construction process, so she was completed and the others cancelled. There was a movement in the late 30s to add more guns and increase her armor against aircraft along the *Renown* lines, but the war stopped that plan, and she was immediately put into service.

On 3 July 1940, she participated in the Battle of Mers el-Kebir (Oran) in which British Force H attacked the French fleet before they could be handed over to the Germans. On 24 May 1941, flying the flag of Vice-Admiral Holland, she and the *Prince of Wales* attacked the *Bismarck* in Denmark Strait. Five minutes into the battle, the *Hood* blew up, when a shell hit her magazine. While it is believed that she may have had thin armoring, part of the fault may have been that her gunpowder detonators were unprotected.

Battlecruiser
Commissioned: 1918
Tonnage: 41,200

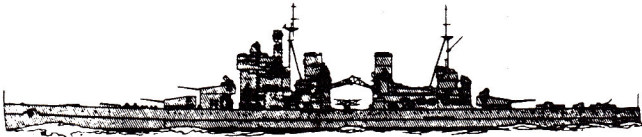Guns: 8 15-inch (34 KYDS)   14 4-inch A.A. 3 pdr. (19 KYDS)
          Torpedoes: 6 21-inch

Armor:

Belt:	12	Conning Tower:	11
Deck:	4	Plotting Room:	11
Gun:	15	Main Fire Control:	2
Crown:	5	Rudder:	4
Secondary:	2		

Engines and Speed: 144,000 h.p.; 30 knots

KING GEORGE V

By 1937, the terms of the 1930 naval agreements had been abrogated by most of Britain's enemies. The naval arms race was on, with the major powers building larger and more powerful ships. The *King George V* class, consisting of five battleships with ten 14-inch guns, was in keeping with the agreements. But with war fast approaching, Britain had no time to upgrade them. Compared to the *Nelson* class, they were balanced and handsome ships. There were some changes in this design, including more armor. There was also room for a Walrus spotting plane and launcher that could be taken down when needed to make space for light anti-aircraft guns.

The *King George V* was launched in December 1940, in time to meet the *Bismarck's* last sortie in May 1941.

King George V Class Battleship
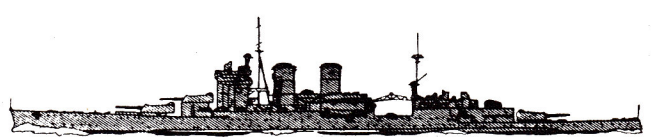Commissioned: 1939
Tonnage: 36,750

Guns: 10 14-inch (34 KYDS)　　　16 5.2-inch (20 KYDS)
　　　64 2-pdr. pom-poms　　　　10 20mm Oerlikons

Armor:

Belt:	15	Conning Tower:	14
Deck:	6	Plotting Room:	14
Gun:	14	Main Fire Control:	1
Crown:	6	Rudder:	4
Secondary:	2		

Engines and Speed: 125,000 h.p.; 28 knots

RODNEY

The *Rodney* might best be described as the "missing link" between the dreadnoughts that sailed with the Grand Fleet in the First World War, and the battleships that fought in the second.

The *Nelson* and the *Rodney* were built to meet the requirements of the Washington Conference of 1921, in which Britain could build two 35,000 ton battleships with sixteen-inch guns. With a lot of aluminium and light fire-proofed woods, these two ships also had powerful guns that could match anything found in European waters, but were hampered by their slow 21 knot movement.

The *Rodney* was hit by a bomb in 1940, but was otherwise untouched. Accompanied by the *King George V,* she aided in sinking the German battleship *Bismarck.*

Battleship
Commissioned: 1925
Tonnage: 33,950

Guns: 9 16-inch (35 KYDS)　　　12 6-inch (24 KYDS)
　　　6 4-7-inch A.A.　　　　　　8 2-pdr. pom-poms
　　　Torpedoes: 2 24-inch

Armor:

Belt:	14	Conning Tower:	14
Deck:	6	Plotting Room:	12
Gun:	16	Main Fire Control:	2
Crown:	8	Rudder:	4
Secondary:	2		

Engines and Speed: 43,000 h.p.; 21 knots

REPULSE

After their commission in 1916, the battlecruisers *Repulse* and *Renown* went through so many refits by 1939 that they were known as Refit and Repair. Their birth was auspicious, being the first two battlecruisers commissioned after Jutland (where three of Britains' nine battlecruisers went to the bottom).

But when WWII began, Refit and Repair were two very different ships. The *Repulse* benefitted from a better armor-belt, and in 1934, was given a catapult seaplane and extra anti-aircraft guns. Sent with the *Prince of Wales* to the Far East, she arrived only to be sunk by the Japanese Air Force.

See **Prince of Wales**
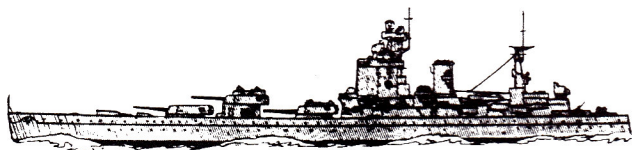
Battlecruiser
Commissioned: 1916
Tonnage: 26,500

Guns: 6 15-inch (34 KYDS)　　　18 4-inch (20 KYDS)
　　　2 3-inch B.L.　　　　　　　Torpedoes: 2 21-inch

Armor:

Belt:	8	Conning Tower:	10
Deck:	4	Plotting Room:	10
Gun:	12	Main Fire Control:	2
Crown:	4	Rudder:	4
Secondary:	1		

Engines and Speed: 120,000 h.p.; 28 knots

PRINCE OF WALES

Another of the *King George V* class ships, the sudden coming of war forced her to be sent out with the dockyard "maties" still aboard. She was badly mauled by the *Bismarck* and sent back for repairs. The rest of her career included carrying Churchill to meet Roosevelt in July 1941 for the Atlantic Charter Conference, and in November joining the *Repulse* to the Far East. Their mission was to defend Malaya in the event of a Japanese attack, but reached Singapore after war had been declared. With the *Repulse* and 4 destroyers under Rear Admiral Phillips, they tried to attack a Japanese force off Kuantan. Japanese torpedo-bombers from Saigon sunk both ships as they returned to Singapore.

King George V Class Battleship
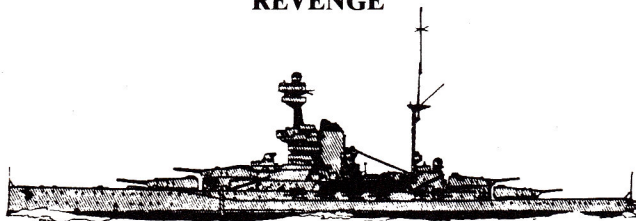Commissioned: 1939
Tonnage: 36,750

Guns: 10 14-inch (34 KYDS)　　　16 5.2-inch (20 KYDS)
　　　64 2-pdr. pom-poms　　　　10 40mm Bofors
　　　10 20-mm Oerlikons

Armor:

Belt:	15	Conning Tower:	14
Deck:	6	Plotting Room:	14
Gun:	14	Main Fire Control:	1
Crown:	6	Rudder:	4
Secondary:	2		

Engines and Speed: 125,000 h.p.; 28 knots

REVENGE

The last class to have 6-inch secondary armament on the main deck, and the only one of its class to be completed in time for Jutland. But while ships in the *Queen Elizabeth* class were being refitted and rebuilt to keep up with developments, the *Revenge* class became increasingly obsolete.

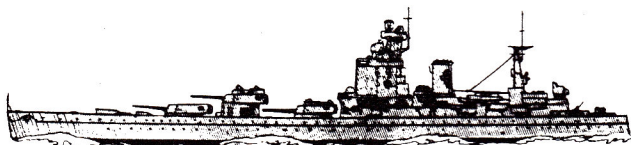Revenge Class Super-Dreadnoughts
Commissioned: 1915
Tonnage: 27,000

Guns: 8 15-inch (28 KYDS) 12 6-inch (24 KYDS)
2 3-inch A.A. Torpedoes: 4 21-inch

Armor:
Belt:	14	Conning Tower:	12
Deck:	4	Plotting Room:	10
Gun:	14	Main Fire Control:	2
Crown:	4	Rudder:	4
Secondary:	2		

Engines and Speed: 40,000 h.p.; 20 knots

NELSON

Like the *Rodney,* the *Nelson* was built within the limits set by the Washington Conference of 1921. Equipped with powerful 16-inch guns, she was hampered by her slow speed, and restricted mostly to convoy duty. The *Nelson* survived the war, being damaged only by two mines and a torpedo.

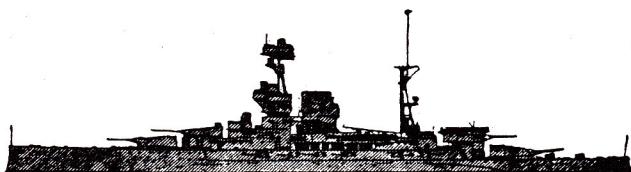See **Rodney**

Battleship
Commissioned: 1925
Tonnage: 33,950

Guns: 9 16-inch (35 KYDS) 12 6-inch (24 KYDS)
6 4-7-inch A.A. 8 2-pdr. pom-poms
Torpedoes: 2 24-inch

Armor:
Belt:	14	Conning Tower:	14
Deck:	6	Plotting Room:	12
Gun:	16	Main Fire Control:	2
Crown:	8	Rudder:	4
Secondary:	2		

Engines and Speed: 43,000 h.p.; 21 knots

RAMILLIES

Part of the *Revenge* class of ships. Built for the last war, the only modifications possible under the press for time was to add as many anti-aircraft guns as deck space would allow, and hope

that the Germans didn't find them first. She was torpedoed and sunk while supporting the Allied landings on Madagascar.

Revenge Class Super-Dreadnoughts
Commissioned: 1916
Tonnage: 27,000

Guns: 8 15-inch (28 KYDS) 12 6-inch (24 KYDS)
2 3-inch A.A. Torpedoes: 4 21-inch

Armor:
Belt:	14	Conning Tower:	12
Deck:	4	Plotting Room:	10
Gun:	14	Main Fire Control:	2
Crown:	4	Rudder:	4
Secondary:	2		

Engines and Speed: 40,000 h.p.; 19 knots

RENOWN

As a result of its 1936 refitting, several important additions were made including extra anti-torpedo bulges, more boats, and additional anti-aircraft guns. Her actions included a brief, indecisive brush with the *Scharnhorst* during the Norwegian campaign. From 1940-41, she was the Flagship of Force H in Gibraltar, fought the Italian Fleet and bombarded Genoa. Reassigned to the Far East in 1944, she bombarded Sebang and Car Nicobar.

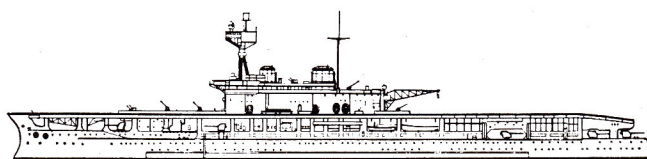See **Repulse**

Battlecruiser
Commissioned: 1916
Tonnage: 26,500

Guns: 6 15-inch (34 KYDS) 20 4.5-inch (20 KYDS)
2 3-inch B.L. 4 4-inch A.A.
Torpedoes: 10 21-inch

Armor:
Belt:	8	Conning Tower:	10
Deck:	6	Plotting Room:	10
Gun:	12	Main Fire Control:	2
Crown:	4	Rudder:	4
Secondary:	1		

Engines and Speed: 120,000 h.p.; 29 knots

ARK ROYAL

The Royal Navy's first ship to be launched as an aircraft carrier was designed first as a cargo vessel. Her long flight-deck jutting squarely over bow and stern set the standard for future carrier designs. Her sixteen 4.5-inch guns were high up beside the flight deck, giving her an excellent field of fire.

Her battle record was enhanced in two cases by rumor. In the early years of the war, the Germans embarrassed themselves at different times by announcing that they had sunk the carrier. Then, while patrolling for the *Admiral Graf Spee,* news reached her that the ship had been driven into Montevideo. It was the news of the *Ark Royal's* coming, and its exaggerated power fed secretly to the Germans, that convinced the captain to scuttle the German cruiser.

She attacked the *Scharnhorst* on 13 June 1940 with 15 aircraft, but failed to damage it. In July, she was part of a task force that attacked the French navy in Oran. She also contributed to the sinking of the *Bismarck* in May 1941. Swordfish from the *Ark Royal,* launched in appalling weather, were able to find and torpedo the *Bismarck's* rudder, jamming it so that the battleships could catch up and sink her. On 13 November 1941, the *Ark Royal* was torpedoed off Gibraltar by U-boat U81 and sank 14 hours later. Apparently, poor damage control was the reason.

Fleet Aircraft Carrier
Commissioned: 1937
Tonnage: 22,000
Guns: (secondary) 16 5-inch (19 KYDS)
6 multiple pom-poms
Aircraft: 60
Armor:

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

Engines and Speed: 102,000 h.p.; 31 knots

EAGLE
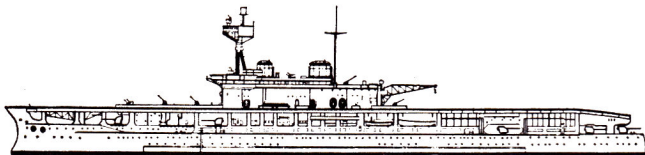
Originally laid down as a Chilean battleship, she was revised as a light aircraft carrier, spending most of her career in the Mediterranean. On 5 July 1940, she helped invade Tobruk harbor, sinking an Italian destroyer and freighter. On 11 November 1940, Swordfish torpedo-bombers attacked the Italian fleet from the carriers *Illustrious* and the *Eagle.* Three Italian battleships were sunk at their moorings. On 11-13 August 1942, she joined the "Pedestal" convoy to relieve Malta, where she was sunk by the Germans.

Fleet Aircraft Carrier
Commissioned: 1918
Tonnage: 22,600
Guns: 4 6-inch (19 KYDS)   9 4-inch A.A. (26 KYDS)
Aircraft: 21
Armor:

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

Engines and Speed: 50,000 h.p.; 22 knots

VICTORIOUS
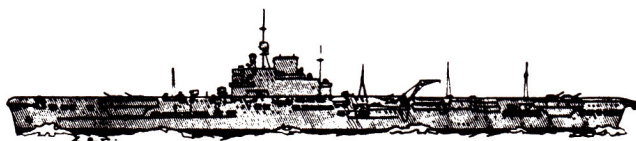
As part of the *Illustrious* class of ships, these aircraft carriers were similar to the *Ark Royal* but had one less deck. While most of these ships saw service mostly in the Far East, the *Victorious* served in the Atlantic. She joined the fleet in time to help sink the *Bismarck,* slowing her with a hit from her Swordfish

torpedo bomber. On 3 April 1944, barracuda dive-bombers from the *Victorious* and *Furious* severely damaged the *Tirpitz.* After the war, the *Victorious* was stripped down almost to her keel and rebuilt to handle the newer jets. She was finally retired in 1968.

Illustrious Class Fleet Aircraft Carrier
Commissioned: 1938
Tonnage: 23,000
Guns: (secondary) 16 4.5-inch (19 KYDS)
Aircraft: 54
Armor:

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

Engines and Speed: 110,000 h.p.; 32 knots

DORSETSHIRE
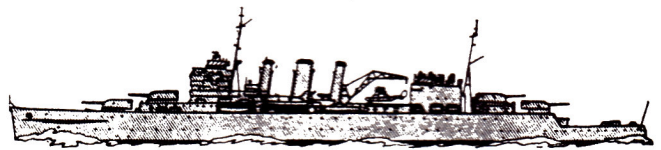
The Washington Treaty set the maximum limit for cruisers at 10,000 tons with 8-inch guns. The *Dorsetshire* was one of those cruisers built under the treaty. On 5 April 1942, the cruisers *Dorsetshire* and *Cornwall* were sunk by Japanese bombers near Ceylon.

County Class Cruiser
Commissioned: 1929
Tonnage: 10,000
Guns: 8 8-inch (29 KYDS)   8 4-inch A.A. (14 KYDS)
8 2-pdr. A.A.   Torpedoes: 8 21-inch
Armor:

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

Engines and Speed: 80,000 h.p.; 32 knots

NORFOLK

This cruiser participated in the *Bismarck* sinking.

County Class Cruiser
Commissioned: 1928
Tonnage: 10,000
Guns: 8 8-inch (29 KYDS)   8 4-inch (14 KYDS)
8 2-pdr. A.A.   Torpedoes: 8 21-inch
Armor:

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

Engines and Speed: 80,000 h.p.; 32 knots

SUFFOLK

A participant in the *Bismarck* action, the *Suffolk* was the first to sight the battleship in the Denmark Strait between Iceland and Greenland.

County Class Cruiser
Commissioned: 1926
Tonnage: 10,000

Guns: 8 8-inch (29 KYDS)   8 4-inch (14 KYDS)
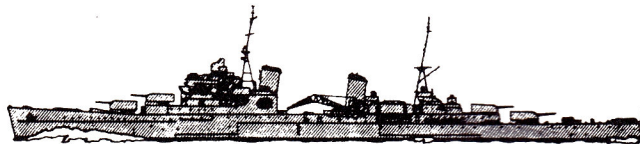   8 2-pdr. A.A.   Torpedoes: 8 21-inch

Aircraft: 1

Armor:

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

Engines and Speed: 80,000 h.p.; 31 knots

MANCHESTER

In reply to the 6-inch cruisers displaying 15 guns in five triple turrets, the British developed the eight ships of the *Southampton* class, each carrying twelve 6-inch guns. The *Manchester* was torpedoed and sunk by an Italian motor-torpedo-boat in 1942.

Southampton Class Light Cruiser
Commissioned: 1937
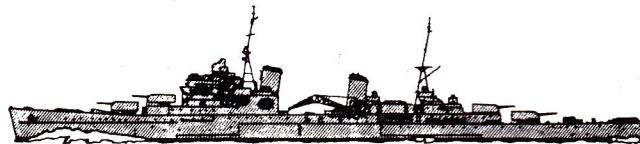Tonnage: 9,000

Guns: 12 6-inch (26 KYDS)   8 4-inch A.A. (14 KYDS)
     8 2-pdr. A.A.   Torpedoes: 6 21-inch

Armor:

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

Engines and Speed: 82,500 h.p.; 32 knots

BIRMINGHAM

Southampton Class Light Cruiser
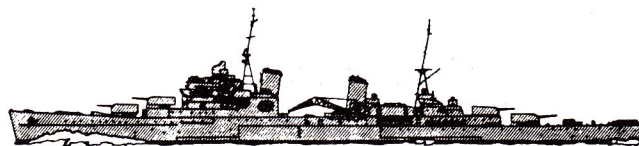Commissioned: 1936
Tonnage: 9,000

Guns: 12 6-inch (26 KYDS)   8 4-inch A.A. (14 KYDS)
     8 2-pdr. A.A.   Torpedoes: 6 21-inch

Armor:

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

Engines and Speed: 75,000 h.p.; 32 knots

SHEFFIELD

Of all the ships in the *Southampton* class the *Sheffield* had the most impressive career. In addition to taking part in the sinkings of the *Bismarck* and *Scharnhorst,* she was in the Barents Sea action of New Year's Day, 1942. While providing coverage to one end of convoy J.W.51B, it was attacked at the other end by the *Lutzow,* the *Hipper,* and several destroyers. In a remarkable display of seamanship, the local escort held off their stronger opponents for three hours until the *Sheffield* and the other cruisers arrived. After a three-hour battle, the Germans withdrew, leaving one destroyer behind and the *Hipper* damaged. The British lost the destroyer *Achates* and the minesweeper *Bramble.* Hitler was so angry he ordered the remaining big ships in his navy to be dismantled, though this was later rescinded. The German head of naval operations, Grand-Admiral Raeder, resigned over the affair. The *Sheffield* survived to be the last of her class, scrapped in 1969.

Southampton Class Cruiser
Commissioned: 1936
Tonnage: 9,000
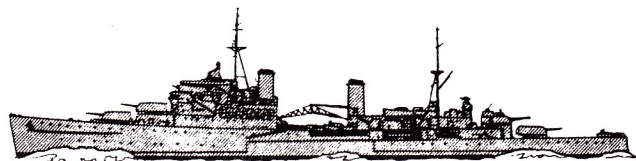
Guns: 12 6-inch (26 KYDS)   8 4-inch A.A. (14 KYDS)
     8 2-pdr. A.A.   Torpedoes: 6 21-inch

Armor:

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

Engines and Speed: 75,000 h.p.; 32 knots

KENYA

The *Colony* class of ships were completed between 1940 and 1943. There were eleven ships in all, and the growing preoccupation with anti-aircraft defense caused the suppression of turrets in these ships to put in more anti-aircraft guns. Both the *Kenya* and *Nigeria* were damaged by torpedoes during the "Pedestal" convoy run to Malta in August 1942. Only two ships from this class were lost during the war, both to German aircraft.

Colony Class Light Cruiser
Commissioned: 1939
Tonnage: 8,000

Guns: 12 6-inch (26 KYDS)   8 4-inch A.A. (14 KYDS)
     20 2-pdr. A.A.   20 20-mm A.A.
     Torpedoes: 6 21-inch

Aircraft: 3

Armor:

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

Engines and Speed: 72,500 h.p.; 33 knots

EDINBURGH
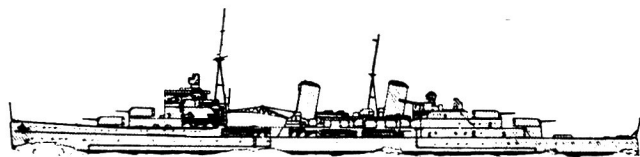
Sunk by British forces after being totally disabled by German torpedo attacks on a convoy run from northern Russia, May 2, 1942.

Belted Light Cruiser
Commissioned: 1938
Tonnage: 10,000

Guns: 12 6-inch (26 KYDS) 12 4-inch A.A. (14 KYDS)
      16 2-pdr. A.A.   Torpedoes: 6 21-inch
Aircraft: 3

Armor:

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

Engines and Speed: 80,000 h.p.; 32 knots

HERMIONE

Sunk by a torpedo in the Mediterranean. Because the guns in the class of ships had very high firing angles, they were used as anti-aircraft cruisers.

Dido Class Light Cruiser
Commissioned: 1939
Tonnage: 5,450

Guns: 10 4-inch (14 KYDS)   8 2-pdr. A.A.
      Torpedoes: 6 21-inch
Armor:

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

Engines and Speed: 62,000 h.p.; 33 knots

AURORA

Arethusa Class Light Cruiser
Commissioned: 1936
Tonnage: 5,200

Guns: 6 6-inch (26 KYDS)   8 4-inch (14 KYDS)
      8 2-pdr. A.A.
Aircraft: 1

Armor:

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

Engines and Speed: 64,000 h.p.; 32 knots

ARETHUSA

The Arethusa class of cruisers were the smallest cruisers the British built before the war, and were considered badly undergunned.

Arethusa Class Light Cruiser
Commissioned: 1934
Tonnage: 5,200

Guns: 6 6-inch (26 KYDS)   8 4-inch A.A. (14 KYDS)
      8 2-pdr. A.A.   Torpedoes: 6 21-inch
Aircraft: 1

Armor:

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

Engines and Speed: 64,000 h.p.; 32 knots

GALATEA

Arethusa Class Light Cruiser
Commissioned: 1934
Tonnage: 5,200

Guns: 6 6-inch (26 KYDS)   8 4-inch A.A. (14 KYDS)
      8 2-pdr. A.A.   Torpedoes: 6 21-inch
Aircraft: 1

Armor:

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

Engines and Speed: 64,000 h.p.; 32 knots

LONDON

County Class Cruiser
Commissioned: 1927
Tonnage: 10,000

Guns: 8 8-inch (29 KYDS)   8 4-inch A.A. (14 KYDS)
      8 2-pdr. A.A.   Torpedoes: 8 21-inch
Aircraft: 3

Armor:

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

Engines and Speed: 80,000 h.p.; 32 knots

EXETER
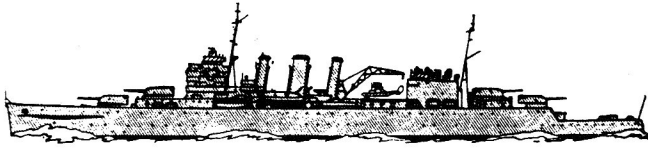
Along with the *York*, the *Exeter* was one of the smaller versions of the *County* class. Several modifications were made to its guns and hull, which were cheaper but made them more vulnerable to enemy fire. Both were lost during the war, and the *Exeter* saw quite a bit of action. She was one of three cruisers that chased the *Admiral Graf Spee* into Montevideo and was engaged by that ship (13 December 1939). She was considerably battered, but continued to fight until nearly sunk. She was then assigned to the Far East theatre in 1942, and was sunk later that same year in the Java Sea while part of a Anglo-Dutch-US squadron.

County Class Cruiser
Commissioned: 1929
Tonnage: 8,390

Guns: 6 8-inch (29 KYDS)		4 4-inch (14 KYDS)
2 2-pdr. A.A.		Torpedoes: 6 21-inch

Aircraft: 2

Armor:

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

Engines and Speed: 80,000 h.p.; 32 knots

CAIRO
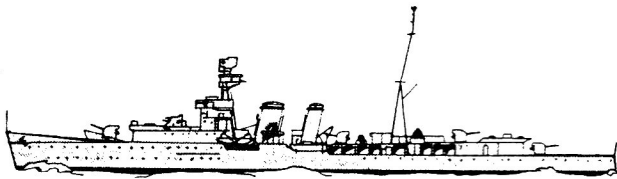
Built for the previous war, these C Class cruisers showed their age. The *Cairo* was sunk by submarines on the "Pedestal" run to Malta (11-13 August 1942).

C Class Light Cruiser
Commissioned: 1918
Tonnage: 4,190

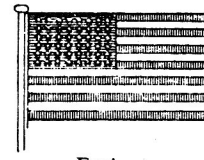|	
Guns: 8 5-inch (19 KYDS)	2 4-inch A.A.
Torpedoes: 8 21-inch	

Armor:

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

Engines and Speed: 40,000 h.p.; 29 knots

NORTH CAROLINA (U.S.A.)

One of two battleships in this class that saw extensive service during the war, mostly in the Pacific. Designed under the London Treaty limitations of 1936, some changes were made when the Japanese rejected the treaty, by replacing the four 14-inch guns with three 16-inch guns. While it reduced the speed by two knots, her protection against 14-inch shells was increased.

North Carolina Class Battleship
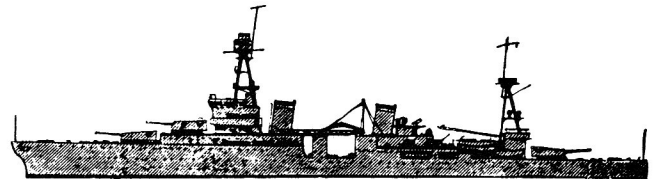Commissioned: 1941
Tonnage: 38,000

Guns: 9 16-inch (43 KYDS)		20 5-inch (18 KYDS)
16 1-inch A.A.		12 ½-inch A.A.

Armor:

Belt:	12	Conning Tower:	16
Deck:	8	Plotting Room:	16
Gun:	16	Main Fire Control:	1
Crown:	7	Rudder:	6
Secondary:	2		

Engines and Speed: 121,000 h.p.; 28 knots

AUGUSTA (U.S.A.)

Cruiser
Commissioned: 1930
Tonnage: 9,050

Guns: 9 8-inch (30 KYDS)		8 5-inch (18 KYDS)

Armor:

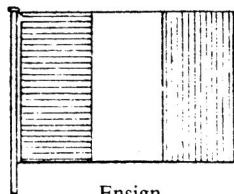|			
Belt:	3	Conning Tower:	8
Deck:	2	Plotting Room:	8
Gun:	2	Main Fire Control:	1
Crown:	2	Rudder:	2
Secondary:	0		

Engines and Speed: 107,000 h.p.; 32 knots

H.M.S. Hood at Scapa Flow, three days before sailing to meet the Bismarck

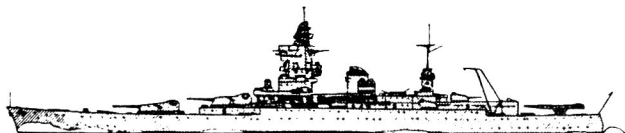## DUNKERQUE (Fr.)

The direct French response to the German *Deutschland* class ships were the two ships *Dunkerque* and *Strasbourg*. Unlike other battlecruisers, all of their main guns were mounted forward, and were far less in size than what the treaties permitted. This allowed the magazine protection to be concentrated, saving considerable weight, but increased the chance of the guns being disabled with one hit. Her career was far less notable than her design, being attacked twice by the British to keep her out of German hands. Although damaged at Oran, she was finally scuttled in 1942 by the French in Toulon.

Dunkerque Class Battlecruiser
Commissioned: 1937
Tonnage: 26,500

Guns: 8 13-inch (45 KYDS)   16 5.1-inch (21 KYDS)
      8 38mm A.A.   32 13mm A.A.

Armor:

Belt:	10	Conning Tower:	11
Deck:	6	Plotting Room:	11
Gun:	14	Main Fire Control:	2
Crown:	6	Rudder:	6
Secondary: 5			

Engines and Speed: 112,500 h.p.; 29 knots

STRASBOURG (Fr.)

Built along the same lines and class as *Dunkerque,* she survived the attack on Oran only to be scuttled later. Her hulk was raised in 1945 and used for experiments until finally broken up in 1958.

Dunkerque Class Battlecruiser
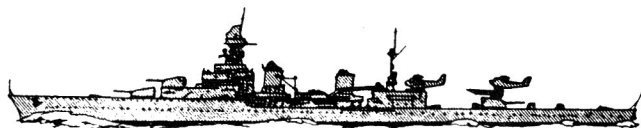Commissioned: 1937
Tonnage: 26,500

Guns: 8 13-inch (45 KYDS)   16 5.1-inch (21 KYDS)
      8 37mm A.A.   32 13mm A.A.

Armor:

Belt:	10	Conning Tower:	11
Deck:	6	Plotting Room:	11
Gun:	14	Main Fire Control:	2
Crown:	6	Rudder:	6
Secondary:	5		

Engines and Speed: 112,500 h.p.; 29 knots

GLOIRE (Fr.)

Light Cruiser
Commissioned: 1933
Tonnage: 7,600

Guns: 9 6-inch (24 KYDS)   8 3.5-inch (19 KYDS)

Armor:

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

Engines and Speed: 84,000 h.p.; 31 knots

GALISONNIERE (Fr.)

Light Cruiser
Commissioned: 1933
Tonnage: 7,600

Guns: 9 6-inch (24 KYDS)   8 3.5-inch (19 KYDS)

Armor:

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

Engines and Speed: 84,000 h.p.; 33 knots

TOURVILLE (Fr.)

Cruiser
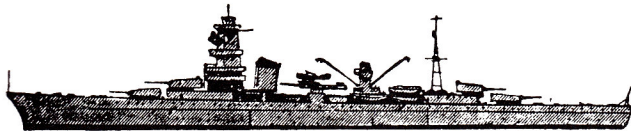Commissioned: 1926
Tonnage: 10,000

Guns: 8 8-inch (25 KYDS)

Armor:

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

Engines and Speed: 120,000 h.p.; 32 knots

ALGERIE (Fr.)

Cruiser
Commissioned: 1932
Tonnage: 10,000

Guns: 8 8-inch (25 KYDS)   8 3.9-inch (19 KYDS)

Armor:

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

Engines and Speed: 86,000 h.p.; 32 knots
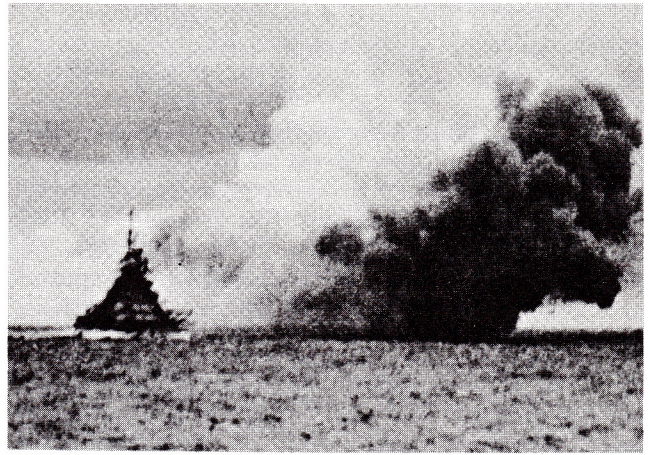
Bismarck firing salvo at H.M.S. Hood

APPENDIX C
DREADNOUGHTS PLAYERS' NOTES

Part of the enjoyment about playing **Dreadnoughts** lies in discovering the nuances that the designers have put into the game system. This applies especially to the *Bismarck* scenario. While we will not give the game away by citing specific examples, rest assured that the British player (i.e. the computer) will be fully prepared to meet almost any plan you can come up with. This game has been designed to recreate the historical situation the captain of the *Bismarck* faced in 1941.

There are, however, some hints and explanations that could help you in your initial cruises. Let's begin with an examination of the *Bismarck*.

The first thing you'll notice about the *Bismarck* is its armor and power. Checking her against the ships in Appendix B will reveal very few rivals. The fact that she can blow most cruisers out of the water with a blast from her 15-inch guns makes her a feared adversary. And there will be times in the heat of battle where you will wonder if anything can bring her down.

That is precisely the wrong attitude to have, because there is no ship in the game (the *Bismarck* included) that can withstand the relentless pounding of shells forever. A shell exploding in the wrong place can do considerable damage. This is especially true when you realize that once a ship's superstructure has been destroyed, any further hits on the superstructure will count as hull hits! There is also a good chance of a single shell doing serious damage to the control tower (forcing a turn of inactivity while the new captain takes over), the rudder (causing the ship to turn in only one direction) or the hull.

The *Bismarck*'s strengths lie with her speed and armor. Note that if she takes too many hits that reduce her speed, she becomes an easier target to hit. After that, it's just a matter of time before she gets sent to the bottom. And that's one secret about **Dreadnoughts** that's not mentioned in the rules: the slower a ship moves, the better target she makes. Since it's impossible for a ship to be repaired within the time constraints of the game, any damage incurred early in the cruise will haunt the player in later battles. So the lesson here is: be very cautious about committing the *Bismarck* to battle.

Of course, there is one tactic that will help there, but we'll let you find it yourself.

WHERE ARE THE CONVOYS?

It may come to pass that, after playing a few games, you'll start wondering where the convoys are. Their initial placement may change from game to game, but the one thing that is constant is that they'll always follow the convoy routes (found by pressing the **R** key while looking at the strategic map). But they won't automatically appear and offer themselves to slaughter. It's up to you, the commander of the *Bismarck,* to search and destroy them.

Here's how: once you get into the convoy lanes, you will find that the most important commands will be Air Search, Patrol, and Visual Display. Just like in real life, you will have to rely on your pilots and your radar operators to seek out the enemy. But they are not perfect by any means. Radar technology in the 1940's was not all it is in the 1980's. Some ships had them, some didn't. **Dreadnoughts** also takes account of human errors, too. If you send out search planes on two consecutive turns, you may get two entirely different reports. Which should you believe? There's no easy way to find out, and that is exactly what the captain of the *Bismarck* faced.

So, you're in the shipping lanes between England and America. What should you do next? You have a number of options at hand. A quick visual search will reveal what you see with your eyes and what your radar operator reports. Ships within visual range will be identified by type (B for battleship, A for aircraft carrier, and so on), while radar will only pick up blips indicating that **something** is out there . . . maybe.

Do you patrol or send out aircraft? Both have strengths and weaknesses. The *Bismarck* cruising slowly in circles can cover three times its radar range of 15 miles, while an Arado float plane can cover a 90 mile radius. Both will have some degree of human error in their reports. Aircraft, however, can only be launched in good weather to have a good chance of making it back.

Sometimes you may have to reveal the *Bismarck*'s position in order to guide the float plane back. This can happen when the plane is a) launched in foul weather, or b) the *Bismarck* is traveling too fast for the plane to locate. Revealing your position could be hazardous, for the British may be listening in. Of course, if you're being

17

shadowed by British cruisers, it won't matter a bit if you reveal your position.

Even worse, you may reveal your position, but the plane still didn't make it back. *C'est la guerre.*

If you successfully accomplish an air search or patrol, the screen will display the results. Convoys (consisting of merchant ships plus their destroyer escorts) will be shown as a group of dashes. The all-important convoy WS.8 will have five dashes. Also, the troop ship *Britannic* represented by the letter T, may also make an appearance. She counts as a convoy in the victory conditions, too!

Getting the *Bismarck* to attack the convoy could be difficult when you realize that, while the float plane is in the air, the ship must carry out its move for that turn. If you work it right, the computer will load the battle program and you're on your way!

BY FIRE AND STEEL
(Surviving the Battle Phase)

You've done it now: the *Prince of Wales* and the *Hood*, along with four destroyers, have intercepted and forced battle on you. You're in the battle phase, and you won't be able to escape until they're sunk or out of visual range. Can you escape?

Oddly enough, chances are good of surviving the encounter. We can't promise that the *Bismarck* will emerge unscathed, but there are some rules to follow that will increase your chances of winning the encounter.

First and foremost, realize that the *Hood* and the *Prince of Wales* are not two ships cut from the same mold. Quite the contrary, there is twenty years and two wars' difference between the two. The battlecruiser *Hood* was built duirng World War I while the *Prince of Wales*, commissioned in 1939, was a member of the *King George V* class of battleships. The advancements in ship design makes the *Prince of Wales* a superior ship.
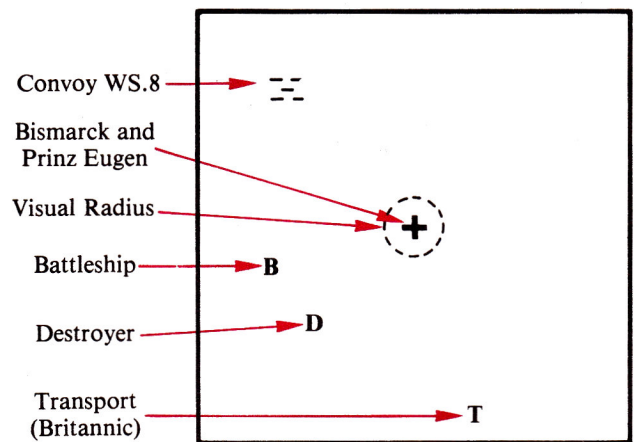
The major difference between the two lies in their armor. The *Hood*'s plotting room and conning tower are weaker than the battleship, as are her secondary guns. Plus, her fatal flaw that caused it to blow up (the unprotected gunpowder detonators) has been built into the computer program. Thus, it's quite possible to recreate the historical outcome of the battle.

So go after the *Prince of Wales* first, before the *Bismarck* suffers any serious damage. If you have the room and the patience, you could take advantage of your superior reach and stay out of the battleship's main gun range. But it's hard to do, and especially difficult to maintain.
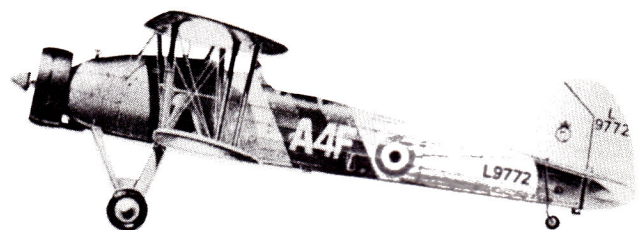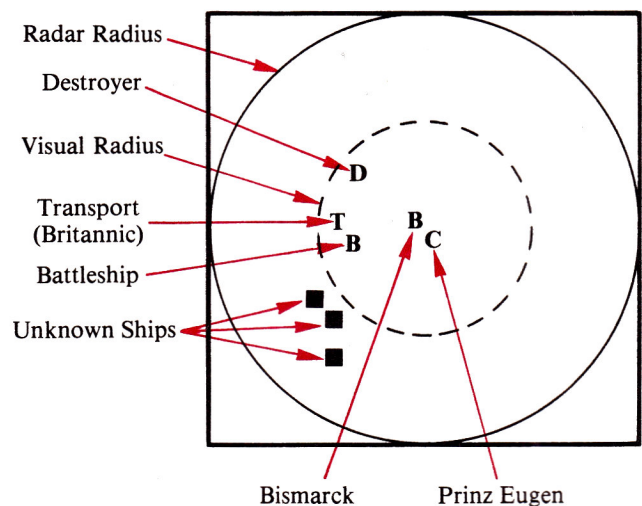
One particularly effective tactic comes from the age of wooden ships and iron men: that of "crossing the T." The tactic requires turning your ship so that her primary and secondary guns are bearing on the target's bow or stern. With the tremendous firepower of the *Bismarck,* this can be devastatingly effective.

Assuming, then, that the *Prince of Wales* and the *Hood* are either sunk or leaving the scene, what about the destroyers? A pleasant surprise awaits you, but we'll not go into that now.

**Sample
Air Search Display**

Convoy WS.8

Bismarck and Prinz Eugen

Visual Radius

Battleship → B

Destroyer → D

Transport (Britannic) → T

**Sample
Visual/Radar Display**

Radar Radius

Destroyer

Visual Radius

Transport (Britannic) → T

Battleship → B

Unknown Ships

Bismarck   Prinz Eugen

Fairey Swordfish I

The Fairey Swordfish torpedo-bomber dated from 1936, despite its antique look. Although slow it had outstanding ruggedness and maneuverability and could fly and operate from carriers in conditions which defeated more modern aircraft. It established a record by remaining in production longer than any other Allied plane in World War II, and proved ideal as an anti-submarine and anti-shipping aircraft when armed with 60-lb rockets.

YOU NAME IT, WE GAME IT . . .

The Avalon Hill Game Company is the world's largest publisher of a great variety of strategy board games of skill. We manufacture over 150 games; including wargames, sports strategy and statistical replay games, games of power politics, adventure and role-playing games, as well as fantasy and science fiction games. For complete information with pretty pictures, write the factory and ask for a *Complete Game Catalog*. Consult parts list for current price.

The Avalon Hill Game Company
Consumer Relations
4517 Harford Road, Baltimore, MD 21214

IF YOU CANNOT LOAD THE PROGRAM

1. Check your equipment carefully to be sure that all cables and connections are correct.

2. Re-read the section in your computer's manual that tells you how to load software. Try to load software again.

3. If possible, load another program from a tape or disk you know works on your computer. This will prove that your equipment works. Try once more to load your game.

4. The normal reason software will not load is tape recorder or disk drive head misalignment. Your computer may be able to save and load programs on its own disk drive, but be unable to read software made on a different disk drive for this reason. Be sure your heads are correctly aligned. Your local computer store or dealer can help you with this.

5. If the program still cannot be loaded, send the software, with a complete description of the problem (what type of computer you have, what the computer says, if anything, when you try to load the software or play the game, and what you did to try to get it to load) to:

Avalon Hill Microcomputer Games
4517 Harford Road
Baltimore, Maryland 21214

Defective software will be replaced.

QUESTIONS ON PLAY

The clarity of these rules has been verified by *Software Testers of Universal Microcomputer Programmers (STUMP)* and deemed *"complete"* in all facets of instruction. Please re-read them in areas that seem unclear at first reading. Questions on play can be answered by the factory *only* upon receipt of a self-addressed envelope bearing first-class postage.
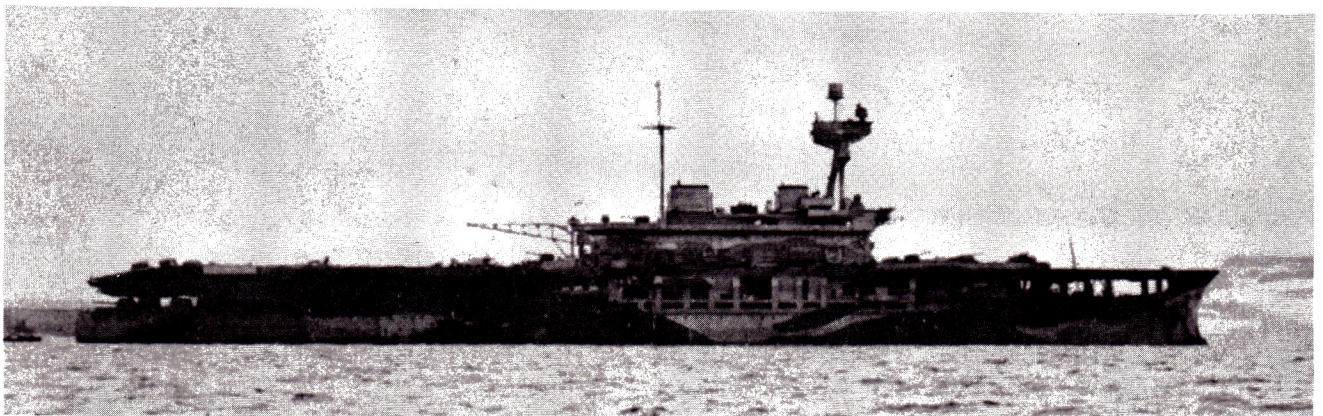
H.M.S. Eagle (shortly before accompanying convoy WS 16)

H.M.S. Hood (1935)