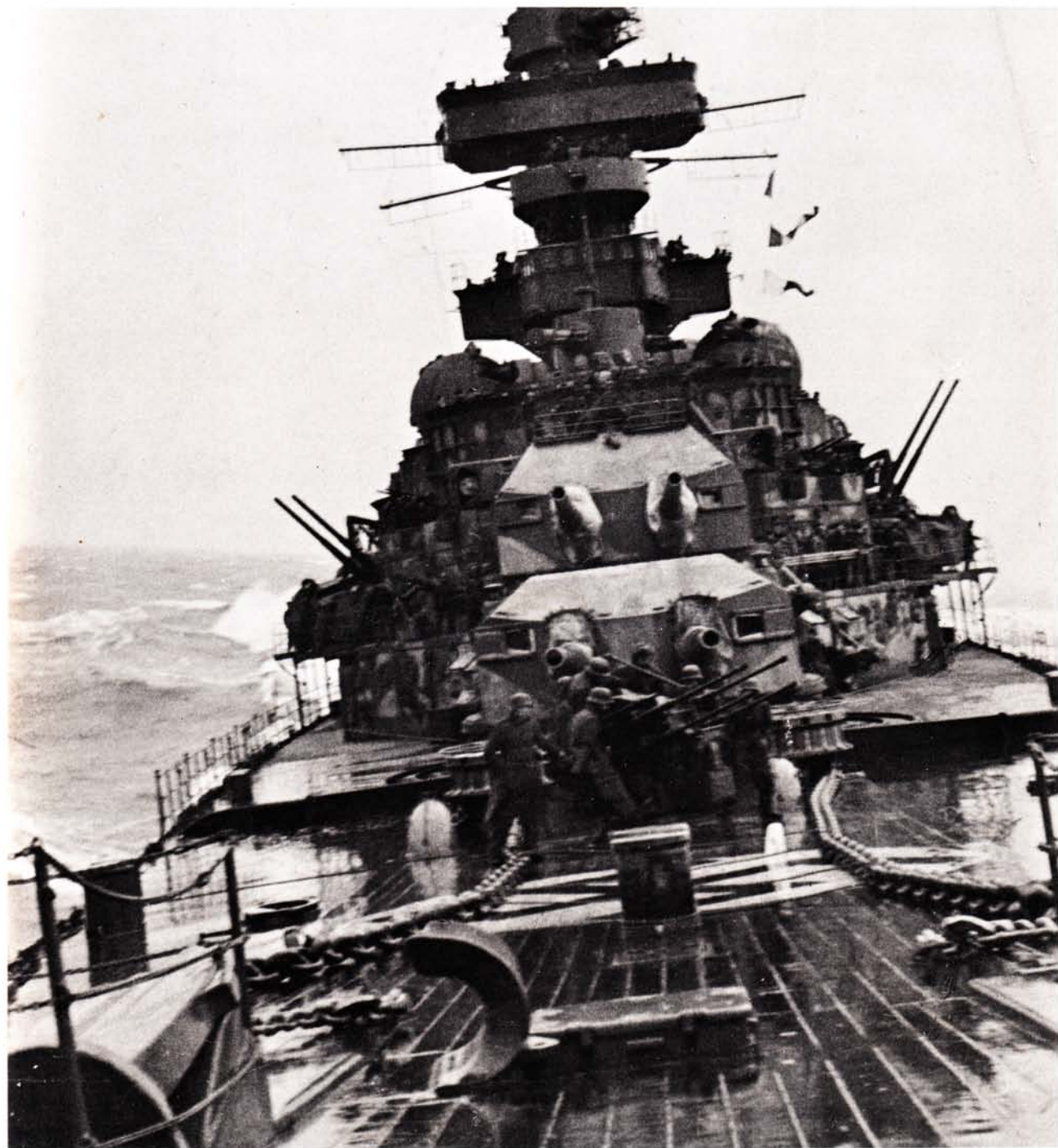


Profile Warship

6

KM Prinz Eugen/Heavy Cruiser 1938-1947

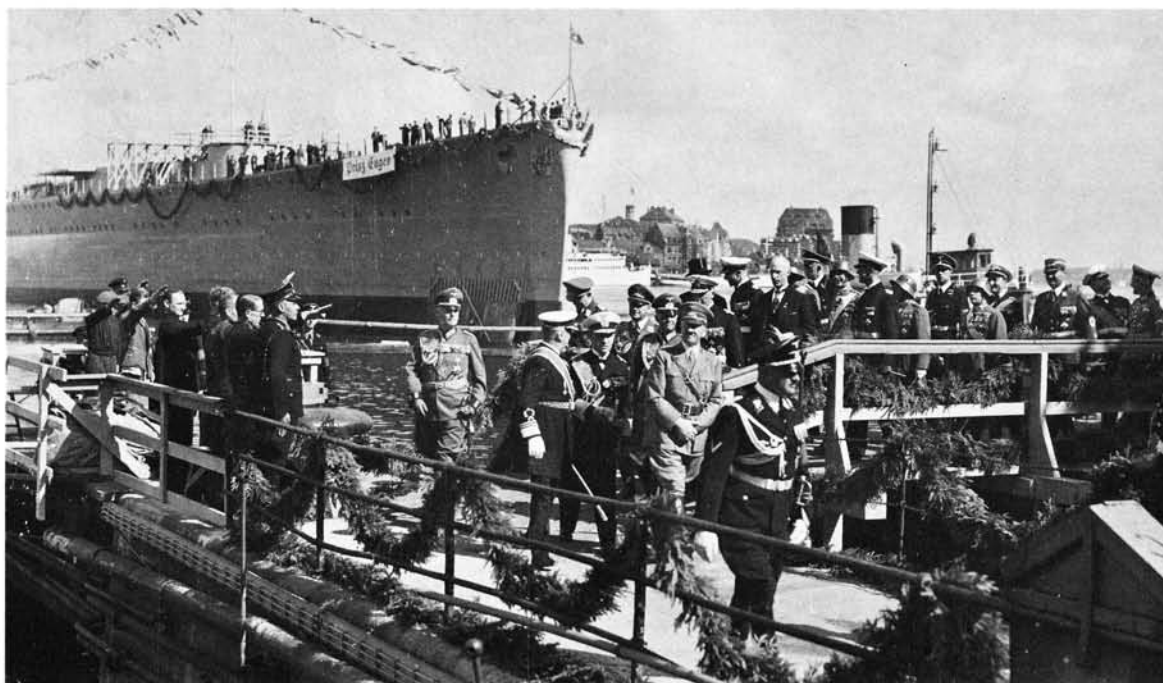
by D. Paul Schmalenbach, F/kapitän a.D.
(Gunnery Officer, 'Prinz Eugen' Aug 1940-Mar 1945)





PRINZ EUGEN

- (1) The frigate *Prins Eugenius* of the 'Imperial India Company', 1716–1725. Several voyages to India and Canton, where in 1718 a personal letter from the German Emperor was handed to the Great Mogul by Captain Tobin. Great political and economic successes. Two ships of the same name, which were known as the 'Bigger Ones'. Home port Ostend, in the Austrian Netherlands. Personal interest of Prinz Eugen as General Stadtholder.
- (2) The battery-ship *St Eugenius*, built in 1715 in Vienna by Hamburg shipbuilder Focke Gerson. Fifty cannon. Sailed July 1717 down the Danube, under the command of Prinz Eugen, to defend the bridge at Belgrade made famous in the song. Participated in capture of Belgrade on 17 July.
- (3) The paddle-steamer *Prinz Eugen*, built 1854 in Venice naval dockyard: 560 tons, six light guns, 180 h.p., nine knots. Foreign service in Turkey and the Black Sea; then employed in war against France 1859, in which the French barque *Raoul* was seized and defended against a French frigate. Name changed in 1861 to *Andreas Hofer*.
- (4) The armoured frigate *Prinz Eugen*, built 1852 in Venice: 3588 tons, 650 h.p., 11 knots, 386 crew. Fitted out at Lissa with 18 smooth-bore 48-pounders (=19 cm). Took part in the victorious Battle of Lissa under the command of Rear-Admiral Wilhelm von Tegetthoff. Gun-duel with the Italian armoured frigate *Maria Pia* at very close range. 1873 training ship; 1876 re-named the *Feuerspeier*.
- (5) The casemated warship *Prinz Eugen*, built in Pola in 1877: 3640 tons, 2700 h.p., 13 knots, 393 crew. Eight 21 cm and four 9 cm guns. Participated in the International Fleet Demonstration in 1880 off Dulcigno, Montenegro, to ensure execution of the Congress of Berlin decisions. Participated in the World Exhibition at Barcelona in 1888. In 1906 she became the repair-ship *Vulkan*.
- (6) The battleship *Prinz Eugen*, launched 1912 at Trieste: 20,330 tons, 25,000 h.p., 20 knots, 950 crew. Twelve 30.5 and twelve 15 cm guns; large number of light guns. Took part in fleet advance 7.8.1914 to relieve German Mediterranean Division; present at bombardment of Ancona on 24.5.1915; in June 1918 in advance to relieve the pressure of the submarine war in the Mediterranean. Handed over to France in 1919.
- (7) The heavy cruiser, *Prinz Eugen*. 1938–1947. World War II: 1941, sinking of HMS *Hood* and *Bismarck*. 1942 (i) The Channel Dash with *Scharnhorst* and *Gneisenau*. (ii) Torpedoed by HM Submarine, *Trident* 1944 the Baltic. (iii) Baltic support of army against Russians.



Launch in Kiel on 22nd August 1938

General-Field Marshal Keitel, Vice-Admiral Horthy (Reich Administrator for Hungary), Grand Admiral Raeder, Adolf Hitler, after the launch.

Kriegsmarine Prinz Eugen

by Paul Schmalenbach *Fregattenkapitän a.D.*

HISTORICAL BACKGROUND TO THE HEAVY CRUISERS:

The Versailles Treaty, 1919

The Versailles Treaty allowed the German Reich a small navy: six armoured vessels and two reserve units, from which there later stemmed the well-known 'pocket-battleships'. These ships were not permitted to exceed 10,000 tons, their armament being limited to a maximum calibre of 28 cm. (See Profile No 4). In addition, there was an allowance of six cruisers of 6000 tons maximum; two reserve ships; 12 destroyers of 800 tons; 12 torpedo-boats of 200 tons and a few reserve boats, minesweepers and training ships. Manning was restricted to a maximum force of 15,000 on a 12-year service engagement, including at the most 1500 officers, serving for a period of 25 years. Submarines were prohibited, as was any type of aircraft.

Section V of the Versailles Treaty signed in 1919 had read:

'In order to facilitate the introduction of general limitation of armament for all nations, Germany undertakes strictly to observe the conditions specified in respect of land and sea forces and air navigation.'

Viscount Harold Rothermere, former director of the Press Office of the British Ministry of information and newspaper proprietor, wrote in his book, 'Warnings and Prophecies', the following sentences:

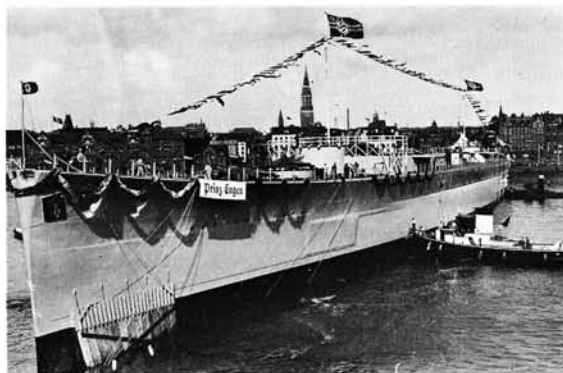
'Germany felt, rightly, that it had been cheated at Versailles. On the pretext that this was the first step to World Disarmament, it had been forcibly disarmed.'

The overwhelming majority of Germans thought like Rothermere and the German Government acted accordingly.

The Naval Staff, under its Chief, Admiral Dr h. c. Raeder, was in no doubt that, should the terms of the Versailles Treaty be relaxed, the details of international naval agreements would have to be observed qualitatively. This would mean that, in the construction of battleships and heavy cruisers, the limits of 35,000 tons and 10,000 tons respectively must not be exceeded. The limits of calibre for main armament would be 38.1 and 20.3 cm. respectively.

The Admiral Hipper Class: the first guns ordered, 1934

The Naval Staff in 1934 issued contracts to the Friedrich Krupp AG in Essen for the construction of 38 and 20.3 cm. guns and double turrets for both calibres. These contracts were a start for the armament of the eventual *Bismarck* Class battleships and of the heavy cruisers of the *Admiral Hipper* Class. But before the construction of these ships could be started there was still some way to go, a way signposted by two dates:



After the launch. In the background the tower of Kiel Town-hall



April 1941 at Kiel



Steaming at over 33 knots. Notice clean entry of the bows and the height of her wash

Prinz Eugen camouflaged before the Bismarck operation. Her reconnaissance aircraft is ready for launching on the catapult



16 Mar. 1935 By a law re-introducing general conscription, the German Reich re-established its military sovereignty.

18 June 1935 The Anglo-German Naval Agreement laid down, *inter alia*, that German Naval strength could amount to 35% of that of the Royal Navy, each class of ship being considered separately.

Germany was therefor entitled, on the basis of the Royal Navy's current 146,800 tons, to build heavy cruisers to a total of 51,380 tons. At a maximum displacement under previous Naval Agreements (Washington 1922, London 1930) of 10,000 tons, this gave Germany the right to build five heavy cruisers, with an armament limited to a maximum calibre of 8 inches (20.3 cm.).

With the signature of the Anglo-German Supplementary Agreement on 17 July 1937, Germany was granted the right to build further vessels of this type, in addition to the three cruisers already under construction. This addition was occasioned by the Soviet Union's declaration of her intention to build seven cruisers with an armament of 18 cm. calibre.

On 9 July 1935 the German Government announced a building programme that, in addition to two battle-ships (each of 26,000 tons and armed with 28 cm. guns), 16 destroyers and 28 submarines, also included two heavy cruisers. The two cruisers, planned in detail between 1934 and 1936 by the Design Section of the Naval Staff and first designated, *G* and *H*, were later named *Blücher* and *Admiral Hipper*. The *Admiral Hipper* was laid down in 1935 in the yard of Blohm & Voss AG, Hamburg, and launched on 6 February 1937, her name being used to designate the whole class. Her sister ship was only begun in 1936 at the Deutsche Werke, Kiel (successors to the former Imperial Shipyard), and launched on 8 June 1937.

PRINZ EUGEN: building and launching

In the autumn of 1936, the Krupp Germania Shipyard, Kiel, started work on the third heavy cruiser, originally designated, *J*.

The launch took place on 22 August 1938 during the period of a State visit by the representative of the King of Hungary, Vice-Admiral Nikolaus Horthy de Nagyhanya, Madame Horthy naming the ship.

In 1866, the Austrian Navy was one of the two navies then in existence in the German Federation. Together with the Prussian navy, the Austrian squadron under Commodore Tegetthoff had fought off Heligoland in 1864. So it was very natural to think of choosing a name for a new ship from their common history in order to emphasize the historical links with the Eastern March. The choice fell first on the victor of Lissa, Rear-Admiral

Wilhelm von Tegetthoff, who without any doubt was the outstanding leader of the former Austrian Navy (the Tegetthoff family originated in Westphalia). The heavy cruiser then being built in the Germania yard was to receive this name. But having regard to the possible injured feelings of their Axis partner, Italy, the Reich Government decided to specify the name, *Prinz Eugen*.

The Three Heavy Cruisers:

Admiral Hipper, Blücher and Prinz Eugen

At first glance, the three cruisers were externally so similar as to be almost identical. This applies in particular to the hulls, the armour-plating and the propulsion units. The *Prinz Eugen* was however 6.6 m longer, 0.6 m wider, had 0.2 m greater draught and correspondingly 200 tons greater displacement.

Prinz Eugen: Design specifications

The ships were of longitudinal-frame, band-steel construction with 18 main watertight compartments and a double bottom over 72% of the total length.

Dimensions:

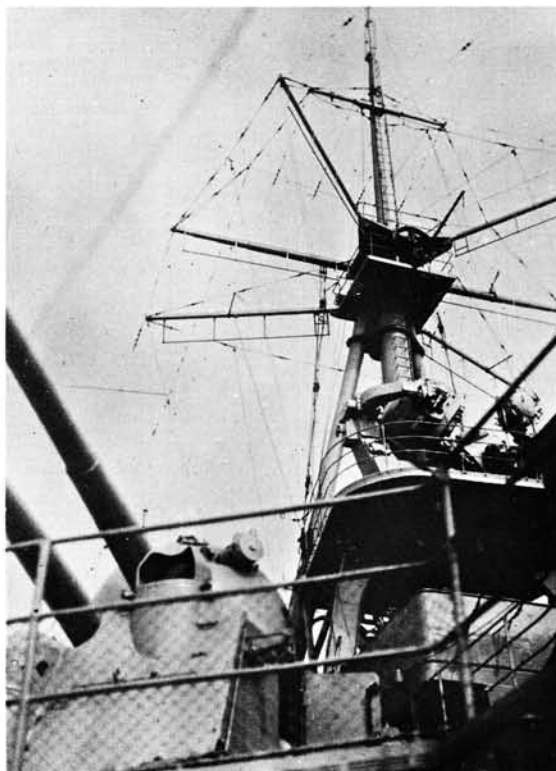
Length, waterline	199.5 m
Length, overall, before modification	207.7 m
Length, overall, (Atlantic stem)	212.5 m
Beam	21.9 m
Draught maximum	7.94 m
Draught full load	6.37 m

Displacement:

Full load	16,230 tons
Maximum load	18,400 tons
Official standard, officially quoted	10,000 tons

Costs:

(in millions of Reichmarks)	
<i>Admiral Hipper</i>	87.8
<i>Blücher</i>	85.8
<i>Prinz Eugen</i> —extra cost due to more modern fire-control system	104.5



The mainmast from aft and looking forward. The extensive aerial network, the two after searchlights and the port after 10.5cm AA mounting are clearly shown



Prinz Eugen: port side, after the new radar has been fitted

Prinz Eugen: starboard side, before fitting of new radar





Torpedoed by HM Submarine Trident (Commander G. M. Sladen). Prinz Eugen, her stern nearly blown off, steams into Trondheimfjord and manoeuvres by using her propellers to steer

Engine Performance:

Contract specification
Admiral Hipper
Prinz Eugen

132,000 s.h.p. = 32 kt.
134,000 s.h.p. = 32.5 kt.
132,000 s.h.p. = 33.4 kt.

Range and Speeds

The cruising range was initially 6300 nautical miles at 20 knots; later, after conversion of a few bunkers and the filling of the roll-damping installation with fuel-oil instead of water, it reached 8000 nautical miles at 20 knots. For this, at type displacement, the ship could carry 1460 cu.m. of oil; at maximum displacement, 3250 cu.m. oil, and after refit, 4250 cu.m.

Range at 4250 tons, with all oil-bunkers 85% full:

2050 nautical miles at 32 knots
= 64 hours = approx. 2.6 days
5500 nautical miles at 18 knots
= 305 hours = approx. 12.8 days
6100 nautical miles at 15 knots
= 400 hours = approx. 16 days

Using only 2 shafts:

6750 nautical miles at 15 knots
= 450 hours = approx. 19 days

Using centre shaft alone:

7600 nautical miles at 12 knots
= 633 hours = approx. 26 days

Speeds

Maximum speed over a period with three shafts, at 290 r.p.m. of the screws, 32.5 knots.

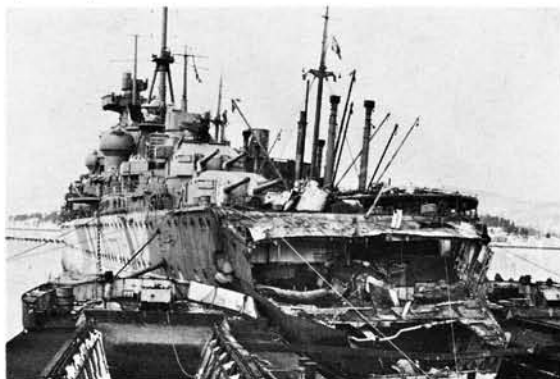
With the two outer shafts in use 27.0 knots (280 r.p.m.).

With centre shaft alone 22 knots (259 r.p.m.).

The reversing turbines could be used continuously for 30 minutes. They delivered 15,000 s.h.p. at 150 r.p.m.

The highest speed attained was 33.4 knots at 133,631 s.h.p.

The stern is dismantled. Assistance is provided by the repair ship



The Mine Boom, Blisters and Underwater Fittings

The three ships had side-blisters to increase stability and unsinkability, and a bow blister that carried a passive underwater listening device. In the midships plane of the forecastle was located a tube, angled forwards and down at approximately 45°, with an internal diameter of some 20 cm. Into this the mine-boom (or 'asparagus' as the crew called it) could be withdrawn when not in use; the lower end of this served as a point of attachment for the mine-deflecting devices. Hawser or chains, hammered to a sharp edge, served as shearing lines to the ends of which were attached the 'Otter' paravanes with their quick-release mountings near the forward turret. To bring this device into operation the boom was extended forward and down, the drive being electric.

The ships had bilge keels and one rudder. There were a great many perforations of the outer shell, by far the largest being the intakes and outlets for cooling water.

Armour Protection

The three cruisers had extensive armour protection. The thickness of the upper deck armour was 12 mm, or 30 mm in the area of the four heavy gun-turrets; the thickness of the actual armoured deck, 20, 30, 40 and 50 mm, depended on the importance of the space beneath to be protected. For this purpose Krupp supplied their Wh-material, whereas 20 mm Wv-material was used for the torpedo bulkhead. Kc-material of Krupp manufacture was used for the hull side armour plating (70 and 80 mm), as well as for all the following protective armour:

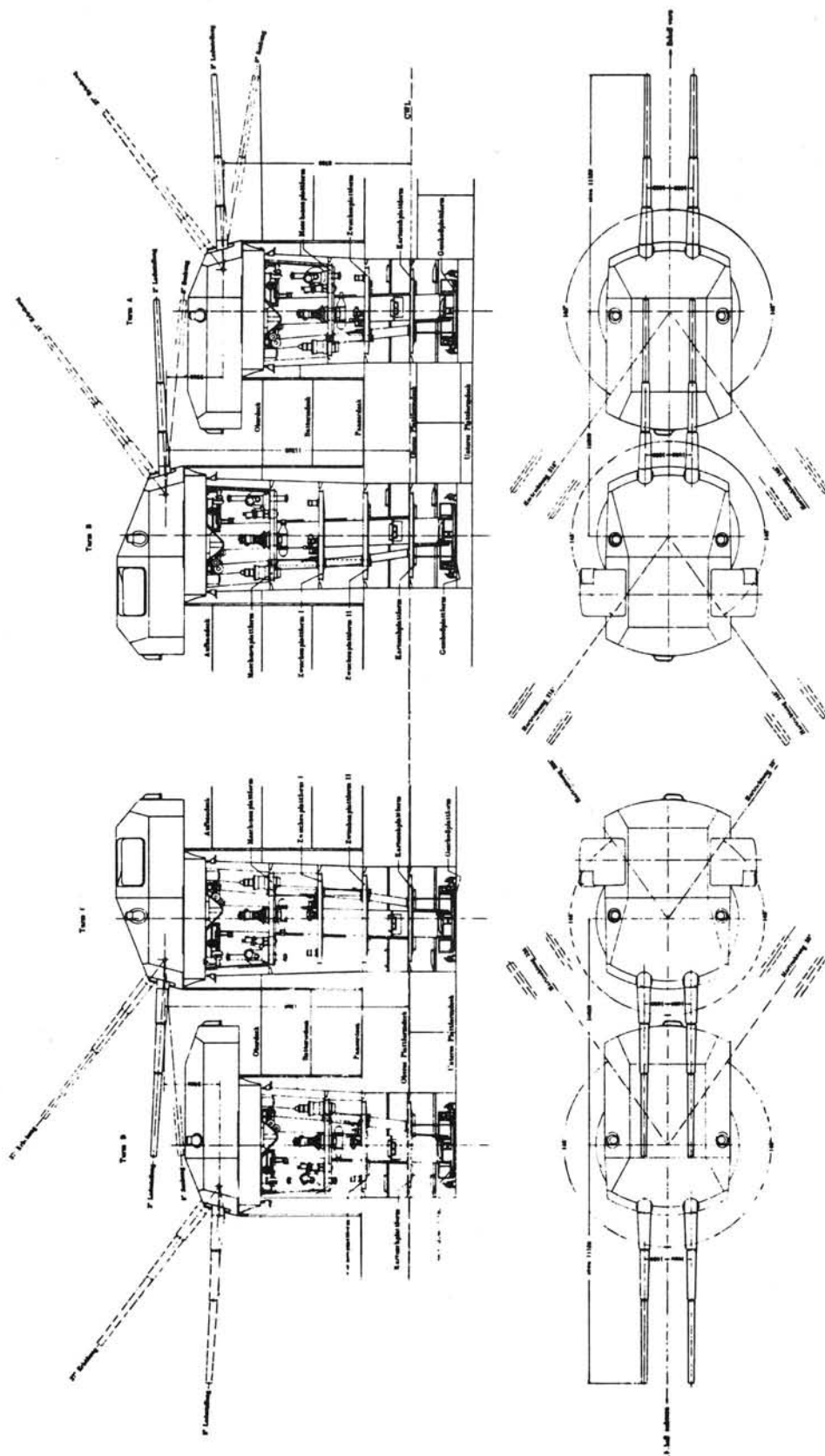
Control Tower—horizontal	50mm
vertical	150mm
After-conning tower—horizontal	20mm
vertical	30mm
Optical range finding apparatus	20mm
Foretop platform	20mm
Spherical segments of the anti-aircraft command-posts	17mm
Main armament turrets—top	70mm
front faces	105mm
side walls	70mm

All cable runs of importance for navigation and fire-control were laid in square trunking of splinter-proof material; this trunking was easy to open.

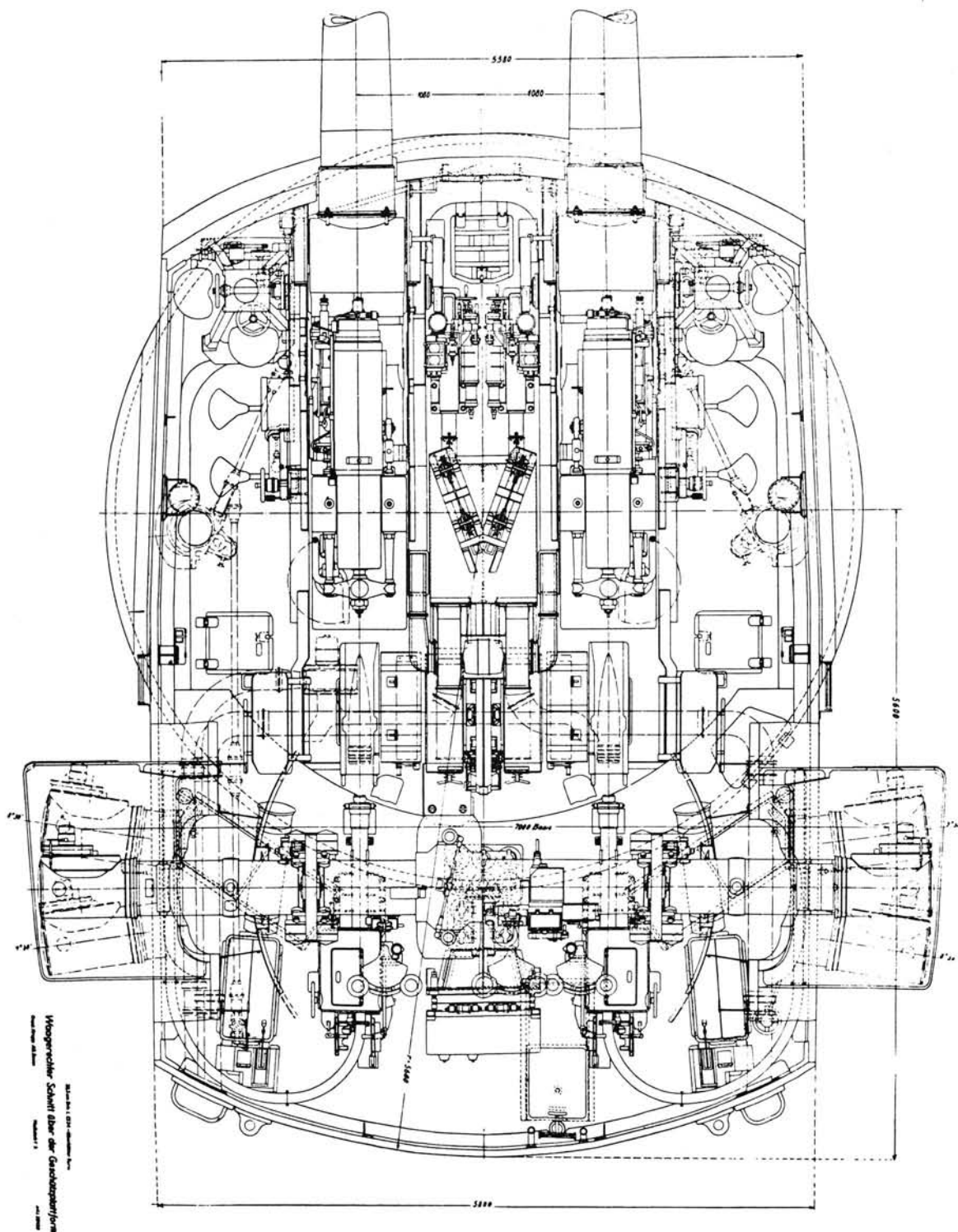
Draught and Sinkage

The moulded depth of the hull at the main bulkhead was 10.15 m for type-displacement and 12.45 m for maximum displacement.

With the ship lying at the designed waterline, the addition of a weight of 14.12 tons caused a general increase in submersion of one centimetre below that level.



The 20.3cm quick-firing guns and turrets



Plan view of a 20.3cm gun turret

The Propulsion Installation

The installation comprised 12 (only nine in the *Seydlitz* and *Lützow*) very high pressure boilers operating at a temperature of 450°C and at varying working pressures (*Blücher* and *Prinz Eugen* 70 atmospheres, *Admiral Hipper* 80, *Seydlitz* and *Lützow* 60 atmospheres). Depending on load, the boilers delivered from 35 to a maximum of 50 tons of steam per hour. The boilers were designed to fundamental ideas by Wagner but, for the *Admiral Hipper* and *Prinz Eugen*, as boilers with forced circulation in accordance with the La Mont principle. These latter used, at maximum load, $0.320\text{ kg. of fuel oil per h.p. per hour.}$

The 12, or nine, boilers were installed in three boiler-rooms arranged one behind the other, and supplied three sets of geared turbines, each arranged in three housings. (Primary revolutions, with high- and medium-pressure stages fully loaded, 3840 r.p.m., with low-pressure stage fully loaded, 2820 r.p.m.)

Each set of turbines drove a propeller-shaft carrying a three-bladed propeller of 3.15 m external diameter. The centre engine was in the after engine-room, the port and starboard engines in the room immediately forward of it. The main suppliers were Deschimag, but for *Admiral Hipper* the Blohm & Voss shipyard and for *Prinz Eugen* Brown, Boveri & Co. The propulsion installation was highly refined and demanded of the engine-room crew very good training and constant close attention. (When the *Prinz Eugen* was finally

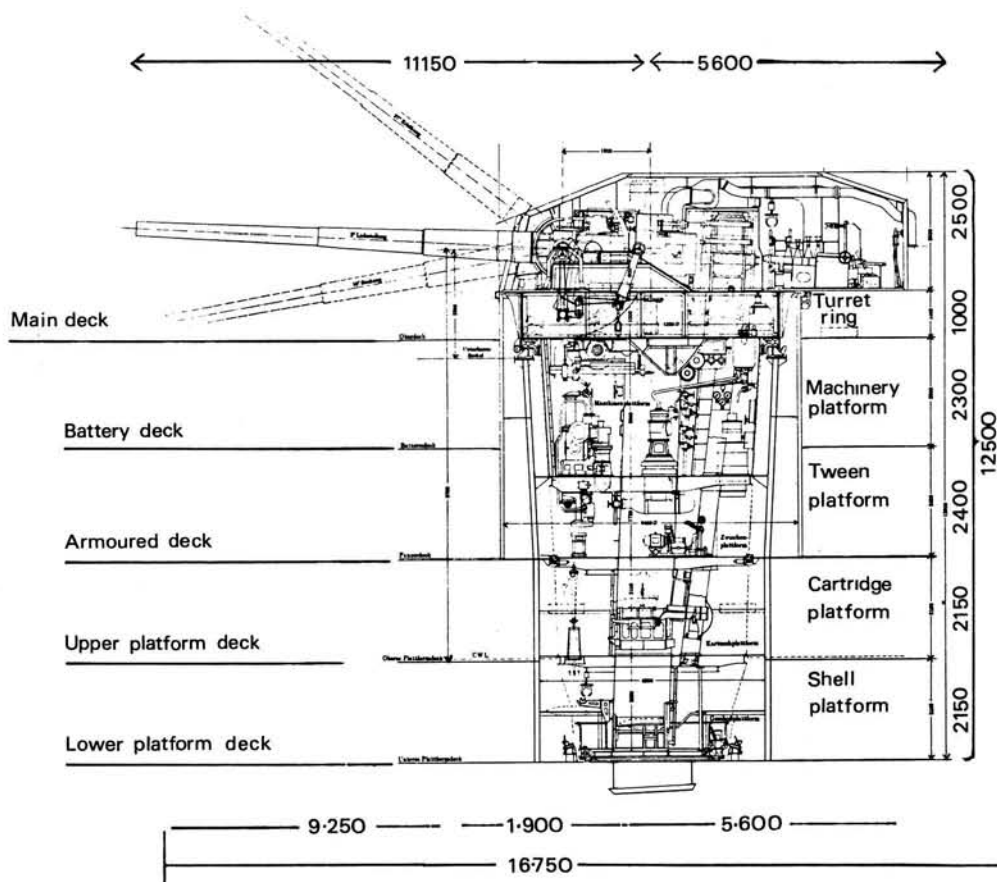


Torpedoed by HM Submarine Trident: the damaged stern

handed over to an American crew one of its 12 boilers was out of action; on arrival in Honolulu only one of the ship's boilers was reputed to be in action.)

The installation of the *Admiral Hipper* produced many problems and repeatedly gave cause for complaint. In the case of the *Prinz Eugen*, after the ship had parted from the *Bismarck* and was operating alone, admittedly in more southerly latitudes, it became obvious that the cooling of the condensers with sea-water was not adequate. The positioning and cross-section of the cooling-water inlets were respectively wrong and inadequate.

Side elevation of a 20.3cm gun turret





Huacarán. Two emergency rudders are constructed, fitted and operated through the stern capstan

ARMAMENT

The 20.3 cm Quick Firing Gun

The main armament was represented by the eight Krupp 20.3 cm guns in four twin-turrets, two forward and two aft, and designated A, B, C and D from the forward turret aft. The heavy guns thus corresponded to the standard introduced into almost every navy. The official description ran:

20.3 cm quick-firing gun C/34 in turntable mounting C/34, where 'C/34' signified start of construction 1934.

The 20.3 cm quick firing gun:

Barrel elevation	45°
Barrel depression	10°
Rate of fire	3 shells/min
Maximum range	39,400 yards

Ammunition:

Armour-piercing shell, with sensitive nose fuse,	960 rounds
or with base fuse	1060 rounds
1944 modification	80 rounds
Starshell	

FIRE CONTROL

Fire-control was exercised by four target-directors, two of which were to port and starboard high up in the foretop and one each in the forward and after command posts. These target directors were replaced at night by four special night target columns on each side of the forward command-post on the bridge, and on each side of the after command-post, and reinforced by two particularly good night-glasses on either side of the lower bridge-structure.

The turrets and guns could be fired individually. The turrets could be remotely controlled together, in groups (forward or aft), or individually, or directed from the control tower.* Fire-control and gun-laying equipment were linked with the turrets by a comprehensive cable-network, which radiated from the main junctions in the two gunnery control-centres. The deflection calculations were made in the two firing-data computers C/38 K, where K designated the version produced for 'kreuzers'.

The computers were installed in the forward and after surface-target computing centres respectively. Here, as also in the three command-posts and four turrets, auxiliary gear was provided to enable fire to be maintained independently in the event of a breakdown in fire-control or rupture of the cable connectors. This equipment comprised the EU/SV indicator (rate-of-range-difference and lateral-deflection indicator), course and a speed indicator for calculating

range settings and a wind speed and direction indicator.

The Turret Machinery

The 20.3 cm turrets were traversed electrically. The elevation of the barrels, the opening and closing of the breeches, the loading of the shell and main cartridge (the detonating charge pushed home by hand!) and the ammunition feed were all operated hydraulically. The hydraulic pump was driven electrically.

The Target Directors

The target directors and range-finding equipment were stabilised in laying and training by a centrally operated 'master stabilising unit' which was duplicated as a stand-by. This made it possible to engage two targets simultaneously, each under complete fire-control.

However, a land-target computer was available only in the forward surface-target computing-centre. This particular equipment enabled land-targets to be bombarded even when they were not visible from the ship. A prior requirement, however, was that the geographical bearing and distance of the target relative to an auxiliary target, visible from the ship, should be known.

Primary Action Control

In battle, the control of the heavy armament was normally exercised from the foretop by the First Gunnery Officer, using one or other of the target selectors located there. Two other Gunnery Officers were in the forward and after command-posts, ready to take over control in case of breakdown or sighting difficulties, and at night to control fire from the night target indicators.

Searchlights

Behind the two night-target columns, two searchlight-training units were arranged on either side for the remote control of the five searchlights, each with 200 cm diameter mirrors. Even the striking and dousing of the arc, as well as the opening and closing of the blind-shutters, was controlled from these training units.

One searchlight was attached to the forward side of the fighting mast below the foretop, two others on either side of the funnel and two on the searchlight platform aft. In the case of the *Blücher*, the searchlights were retained but, in the *Admiral Hipper* and the *Prinz Eugen*, the forward searchlights were removed and replaced by light anti-aircraft guns. In the *Prinz Eugen*, the forward searchlight was replaced in Brest (January 1942) and the two on the funnel in Kiel in June/July 1942; in the *Admiral Hipper* this was carried out during the end of spring, 1941.

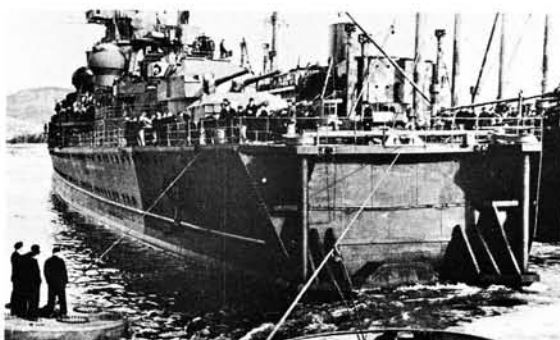
RANGE DETERMINATION: two methods

For daylight engagements, the determination of range became increasingly important as the range increased. For this reason, from as far back as 1932, no pains were spared to ensure maximum accuracy for this important gun-laying parameter. To this end two distinct paths were followed:

* The barrels of the turrets could be freed from each other, i.e., the barrels could be elevated independently of each other, thus compensating for different losses of muzzle velocities. This factor explains the high accuracy of bombardment.



Steering the ship by operating the jury rudders by capstan power. The wires leading through leading-blocks to the rudder yokes can be clearly seen



The repaired stern, showing the new bulkhead and two jury rudders

1. OPTICAL RANGE-FINDERS

The first was the extension and improvement of the method employed hitherto, by increasing the performance of the optical measuring-instruments with a considerable lengthening of the measuring base. So the ships acquired, in addition to two extremely high-intensity instruments with 3 m base on either side of the bridge, five instruments with 7 m base. Two were fitted in the upper turrets, B and C, the turret roofs being suitably modified. Three similar instruments were installed in so called 'swivelling cupolas', mounted on the roofs of the foretop control-post, and the forward and after control-posts respectively.

The instruments in the turrets could be deflected by some 10° relative to the line of fire, since they had to be directed at the target rather than along the line of fire. The swivelling cupolas had unlimited freedom of lateral movement. All instruments were stabilised in respect of elevation, to facilitate gun-laying when the ship was rolling.

2. THE FIRST RADAR

The second method was the use of electromagnetic waves, the time taken for these waves to travel from ship to target and back being measured. This was a fundamental concept first brought to practical realisation on 20 March 1934, in Kiel (48 cm wavelength): the first successful attempt at radar.

After further development and experience, the heavy cruisers were equipped with two radar installations of 80 cm wavelength, changed to 50 cm in 1943. The sets were installed, one on the foretop rotating cupola, the other on the cupola of the after control-post. The range thus measured was initially passed on by telephone; later it was fed in automatically by remote control in the fire-control for the heavy armament.

Radar Search Receivers

In the *Prinz Eugen*, a third set was installed on the main-mast in the summer of 1943. The aerial array stood, free to rotate, at a considerable height, while the associated crew were housed in an extra cabin below. At the same time, receiving aerials were fitted on the four sides of the protective plating round the main anti-aircraft command-post in the foretop, to give warning of enemy radar transmissions.

A.A. Gunnery Fire Control

Under the overall responsibility of the First Gunnery Officer, the Second Gunnery Officer exercised control over the heavy, medium and light anti-aircraft armament. The heavy anti-aircraft guns consisted of 12 10.5 cm guns in twin mountings, the medium originally of 12 3.7 cm guns and the light of eight 2 cm machine guns. All three types of mounting had movement for laying in three axes, the third being designed to counter the ship's rolling motion (parallel to the deck plane in the line of fire).

Prinz Eugen from right ahead. Note the new radar aerial complex and the two large range finders





The new radar seen from the fo'c'sle

The 10-5s

The 12 heavy anti-aircraft guns could, depending on the particular conditions of attack, be massed in four groups with up to four twin mountings, that is up to eight guns, into batteries under the control of an officer or senior petty officer.

The A.A. Directors (Command Posts)

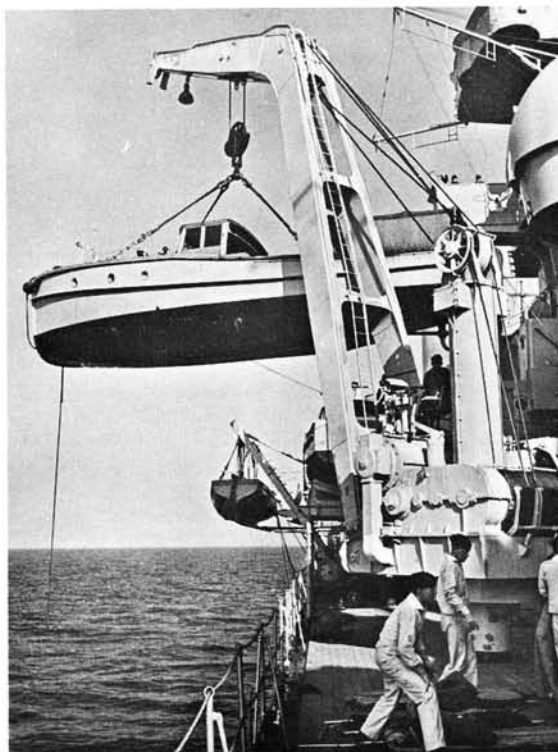
The officer sat in one of the four stabilised anti-aircraft command-posts; these were such a typical feature of German battleships and heavy cruisers, the spherical upper section being gimbal-mounted and enclosing the stabilised gun-laying and ranging platform. Externally these command-posts were identical. The *Prinz Eugen*, like the *Bismarck* and the *Tirpitz*, had the later version, in which the stabilisation was governed by a system of small gyroscopes, whereas the older version still operated with heavy gyros.

The Computers

The rate-of-change of target-bearing and elevation, together with the measured range, were fed into one of the four computers for calculating the deflection and control of the guns (azimuth, elevation and roll angles) and for conversion in the fuse-setting machines to the appropriate time-setting on the shell-fuses. The four anti-aircraft computers were installed in pairs in the forward and after anti-aircraft computer centres respectively.

The 10.5 cm guns also served as medium armament,*

* The port battery of 10.5 guns fired at *Prince of Wales* at ranges from 1500 to 1800 yards.



The ship's boats: motor boat and cutter shown on the crane and at the davits

for use against marine targets. Their maximum range amounted to 19,240 yards, their supply of ammunition 400 rounds per gun, making a total of 4800 rounds.

Target Selection

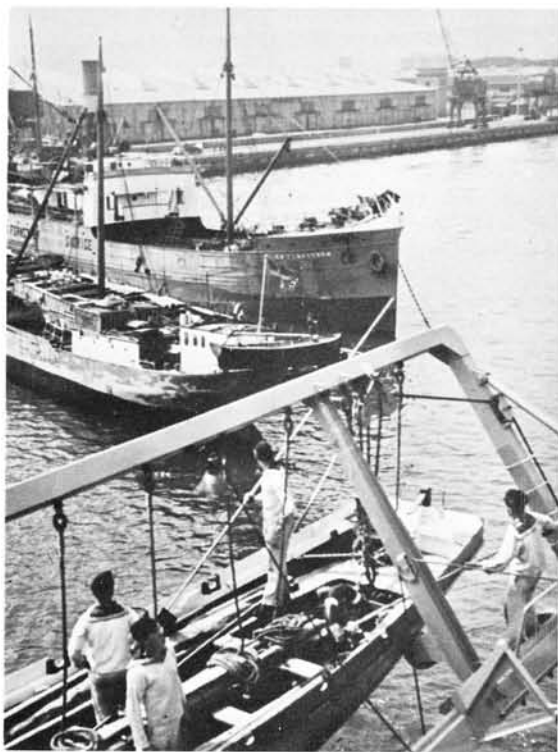
The four battery-controllers had the targets for attack allotted to them by remote indication from the two anti-aircraft command-posts. Target bearing and elevation angles were indicated by one of the target selector units, installed two each in the main command-post (gallery surrounding the foretop command-post) and the reserve post aft (behind the main mast), via remote-controlled slave dials, to the layers in the control post. In both command-posts, there were command switch-panels by means of which control posts, computers and guns could be switched without delay to another control system in order to concentrate fire against the more dangerous attacker. Each battery was represented in the two control posts by a rating acting as 'messenger'.

10.5 cm Ammunition Supply

The ammunition was transferred from the magazines below by electrically-driven endless chains. This conveyor system stopped automatically when the gun's supply requirement was satisfied. A stand-by facility was provided by normal hoists consisting of rope winches with attached baskets each holding six rounds.

The 3-7s

The 12 3.7 cm guns in six twin-turrets were mounted on both sides of the bridge structure, the after anti-aircraft command-post and the after control centre.



The starboard cutter turned out and ready for lowering

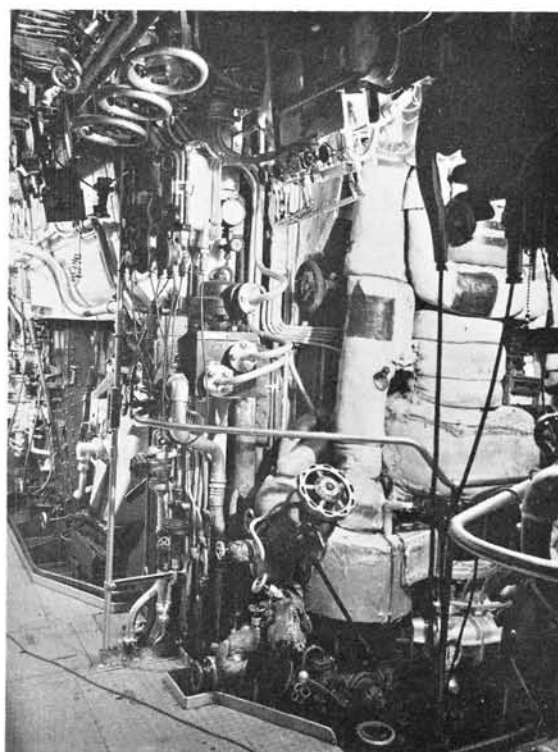
The laying in the three axes was carried out by hand. However, the anti-roll angle could also be stabilised locally with the aid of a gyro-system. Ballistically, the gun was very good, but its rate of fire was not adequate for defence against air attack; it was therefore replaced by the Bofors 4 cm gun.

Close Range Weapons

The original armament also comprised eight 2 cm machine-guns in individual mountings. These were partly replaced by twin or quadruple mountings or by 4 cm guns.

2 cm weapons in quadruple mountings were fitted aboard *Prinz Eugen* in January 1942 as additional armament to reinforce the anti-aircraft defensive capability of the ship during the forthcoming breakthrough in the English Channel. For purposes of deception, it was given out that they were intended as defence against low-flying attacks on Brest.

The anchors and cables. The leadsmen's chains are in the eyes of the ship



Boiler room

Summary of medium and close range A.A. armament

Weapon, calibre, mounting	Strength of armament from:			
	1940/41	Jan. 42	July 42	Oct. 44
4 cm Bofors single mounting	—	—	—	18
3.7 cm Bofors twin mounting	12	12	12	—
2 cm Bofors quadruple mounting	—	20	24	24
2 cm Bofors twin mounting	—	—	32	4
2 cm Bofors single mounting	8	8	—	—

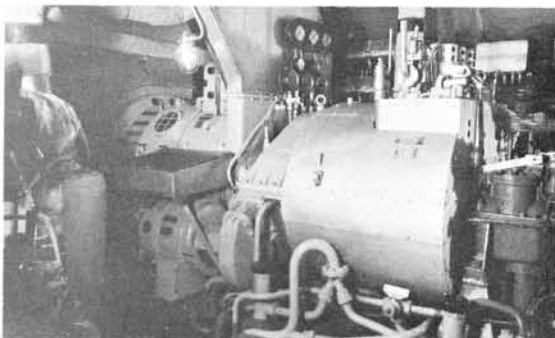
The ammunition supply on board per gun barrel amounted to the following quantity:

2 cm: 2000; 3.7 cm: 1500; 4 cm: 1000 rounds.

Torpedo Armament

The torpedo armament consisted of 12 deck-mounted torpedo-tubes, arranged in four sets of three. The ships carried no reserve torpedoes aboard, except for the *Prinz Eugen*, who received 12 supplementary torpedoes before the *Bismarck* sortie. The warheads were stowed

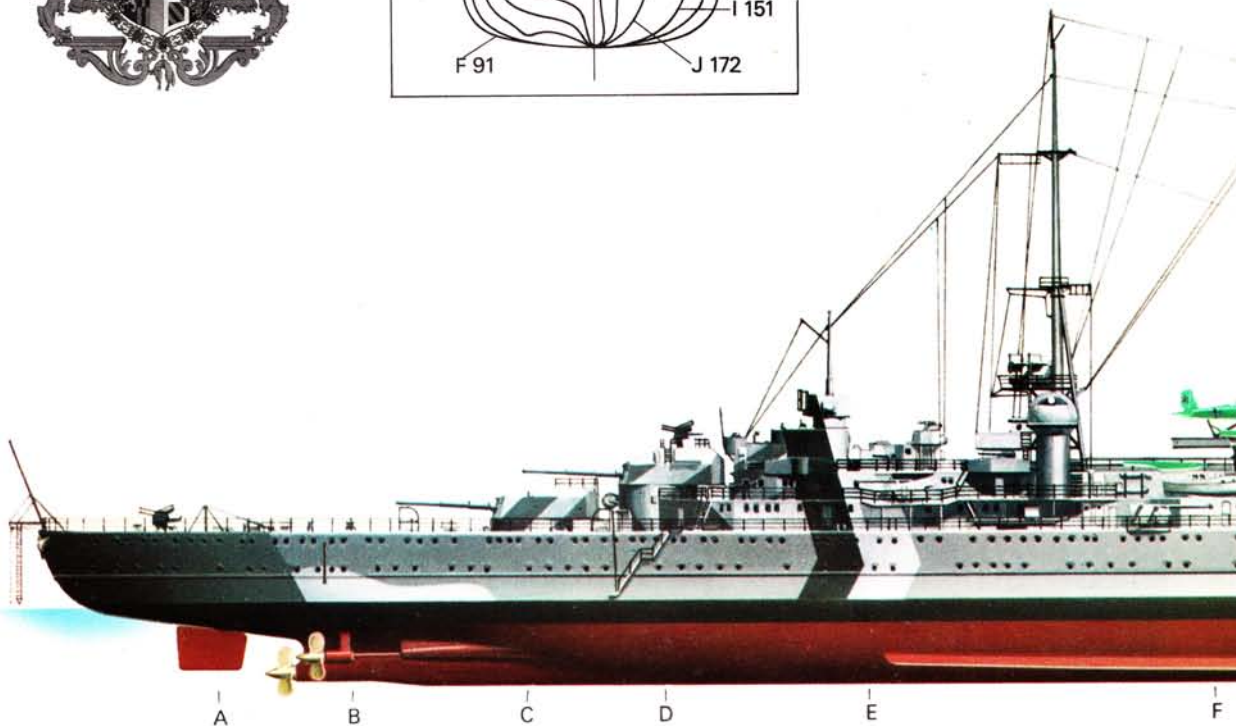
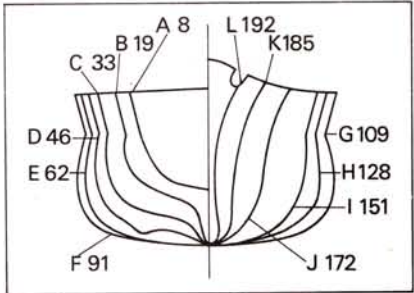
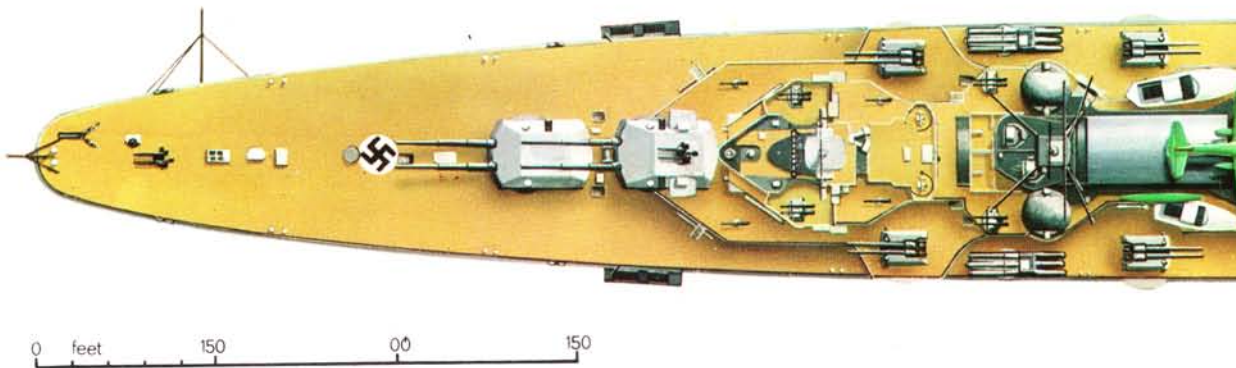
Steam turbine generator



KM Prinz Eugen

KM *Prinz Eugen*, 'Little Brother' to *Bismarck*, is here depicted in the camouflage she wore in the Atlantic operations of May 1941 when *Hood* and *Bismarck* met their end ; and during 'The Dash' up-Channel, in February 1942, of the German heavy units.

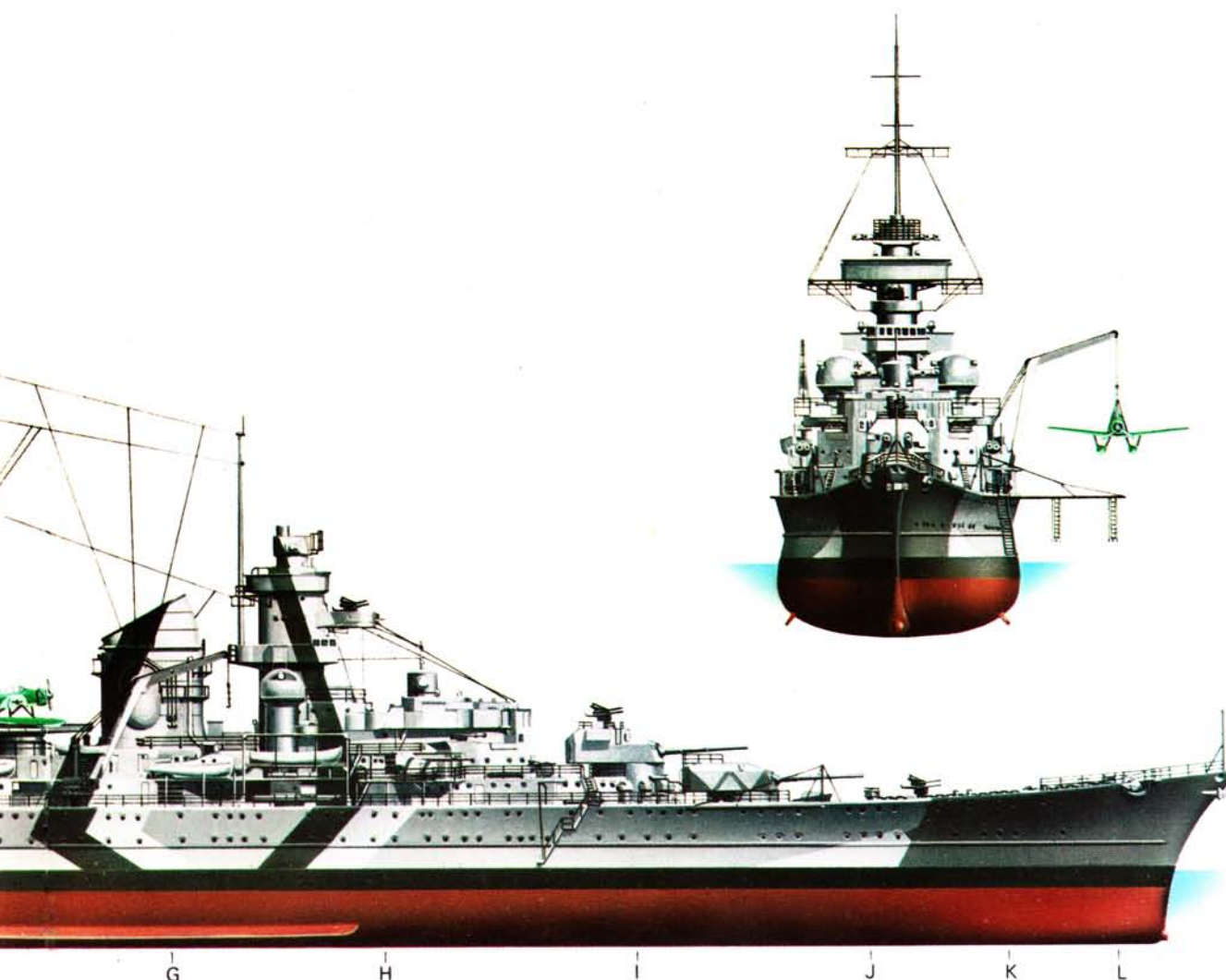
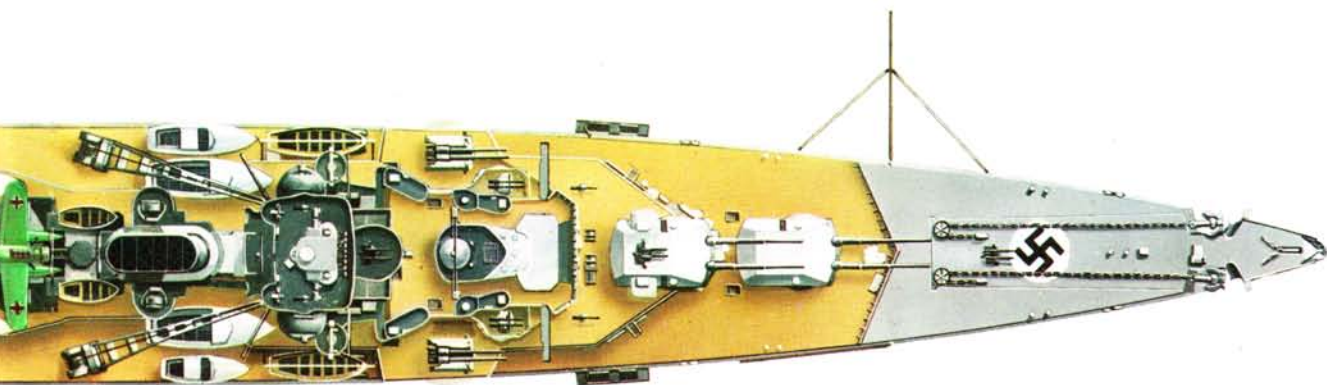
The ship's badge is that of the Coat of Arms of Prinz Eugène of Savoy, a Hapsburg, the eighteenth-century Lieutenant General of the Holy Roman Empire, whose name had been traditional for ships of the Austro-Hungarian Navy.

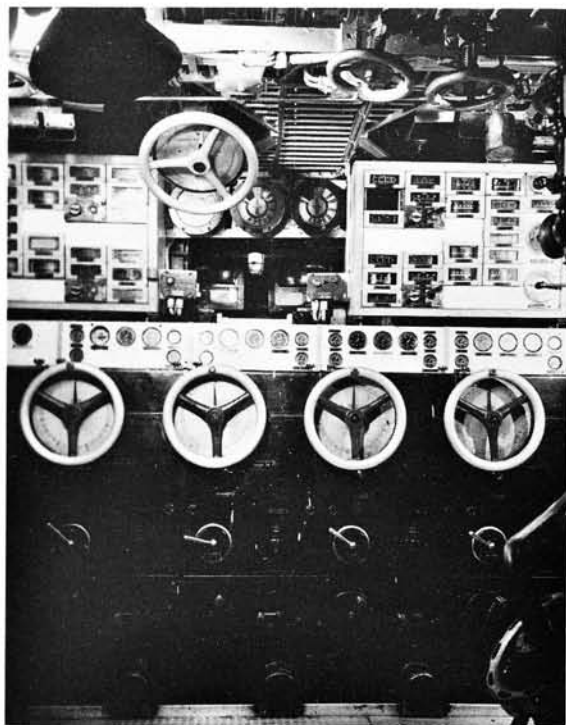


The normal centre-spread presentation has been reversed because the upper deck plan and profile elevation are based upon the original German drawings which used 'Third Angle' projection.

The Arado 96 twin-float seaplanes could be recovered only on the port side where the landing mat was stowed.

Peter and David Warner © Profile Publications Ltd





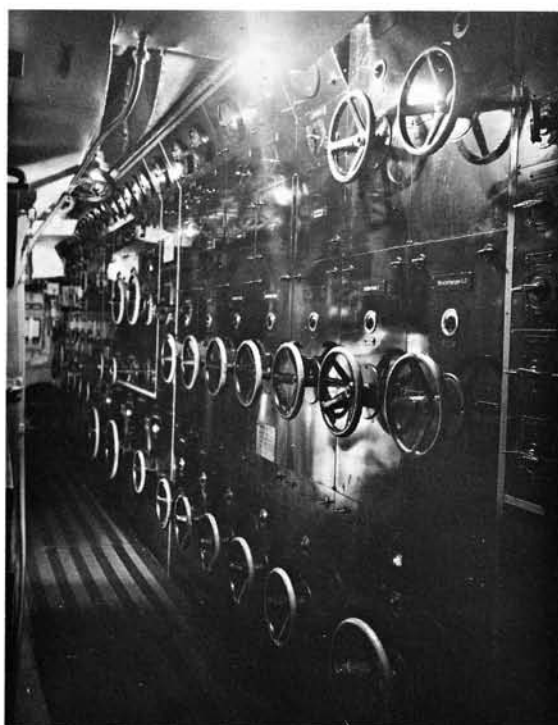
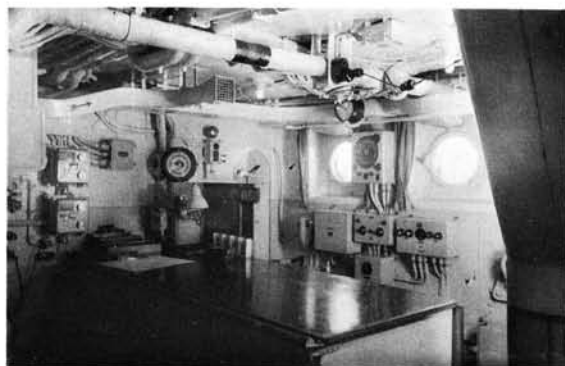
Boiler room control panel

in the torpedo-head magazine below deck. For the remaining parts, storage-lockers were fitted on either side of the funnel on the boat-deck. Before the Channel break-through, these 12 torpedoes were put ashore to avoid unnecessary risk to the ship. Large workshops and torpedo priming and checking areas were located on the upper deck forward of the cross-walk behind the funnel-shaft.

Torpedo Control

The torpedo armament was controlled by the First Torpedo Officer in the forward control post with the aid of torpedo target-directors. Of these, there were two in the forward, and one in the after control-post for the Second Torpedo Officer. It was possible to feed the target-bearing information from the gun's target-selectors in the foretop into the torpedo control-unit, so that the torpedo armament could be used even at very great ranges.

Chart Room



Electrical power station control panel

In addition there were two torpedo night-target columns on the bridge and two on either side of the after control post. The necessary computer and switch-gear were installed in the torpedo computer-centre beneath the armoured deck.

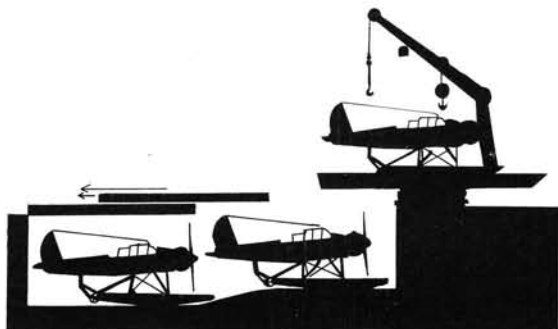
The Ship's Aircraft

The torpedo section, i.e. the torpedo crew, also had responsibility for the whole of the equipment concerned with the take-off, stowage and recovery of the ship's aircraft. The actual catapults were all of the same design.

The provision of additional storage and maintenance accommodation for the three aircraft on each ship was however arranged differently. On the *Admiral Hipper* and *Blücher*, the catapults were immediately forward of the mainmast and the aircraft hangar was forward again of this, that is between catapult and funnel;

Ship's aircraft, Arado 196, being manned for catapulting





Sketch of aircraft stowage

however, on the *Prinz Eugen* the catapult was sited aft of the funnel and forward of the hangar.

The Cranes

The planes were hoisted on to the catapult or into the hangar by means of the ship's crane. In the *Prinz Eugen* only the port crane, lengthened by some two metres and sited some two metres further aft than the starboard crane, could be used for this purpose.

Aircraft Stowage

The aircraft stood one behind the other, the rear aircraft being placed on a carriage which then moved downwards to the rear.

In the *Prinz Eugen*, the hangar roof consisted of two sections, the forward section being pushed aft over the rear section to open right back under the after signal deck until it butted against the after anti-aircraft control post; to make this possible the after mast, i.e. the mainmast, had its foot stepped on a cross-bearer and, for the same reason, the after searchlight platform had splayed legs.

The Arado 196

(See Warship Profile No 4)

The three ship's aircraft were of the *Arado* 196 type: they were twin-float seaplanes for reconnaissance, gun-ranging observation and submarine chasing. Their engines developed 960 h.p., giving them a speed of 174 m.p.h., with a flight endurance of three and a half hours which required 600 litres of petrol. They had two fixed, built-in 20 mm machine-guns. The observer, seated behind, had a moveable 7.9 mm machine-gun and bombs to drop from the belly of the fuselage. As a rule, the aircraft were catapulted off at an angle, to port or starboard.

Recovery

All ships carried out the recovery operation on the port-side, because it was on this side that a landing-mat had originally been provided. This was originally fitted in the *Admiral Hipper*, but was removed in 1939 because it did not prove a success. The two other ships never had this landing-mat.

The landing of the aircraft and their recovery was decisively helped by appropriate ship's manoeuvres, particularly in bad weather. Depending on wind-strength, direction and the sea running at the time, the



Aircraft stowage



Hoisting out the aircraft preparatory to unfolding wings



Diagrammatic sketch of retractable pole-mast

Hooked on! Note the steadying line, the snaking wake and the two torpedo mountings





The cruiser Leipzig rammed by Prinz Eugen. Leipzig is low in the water

ship smoothed the surface by swinging the rudder hard over, from side to side.

The Anchors

The sea-going equipment included anchor equipment and boats. The three bow anchors, weighing 6.5 tons each, were housed in hawse pipes and secured with short chains and tensioning bolts, one to starboard, the second to port and the third amidships in a stem hawse-pipe. In the course of the war, this last was removed as compensation for the weight of the additional anti-aircraft guns; up till then the port anchor had served as reserve anchor.

The anchor chains differed in length (port 250 m, starboard 275 m). The anchor capstans were driven by 50 h.p. electric motors, as was the capstan of the stern anchor, which was attached with a steel hawser 200 m in length.

The Ship's Boats and Rafts

The complement of boats included the following:

No.	Designation	Length	Size of engine	Capacity
one	captain's gig	9.0m	75 h.p.	22 men
two	liberty boat	11.5m	65 h.p.	80 men
one	pinnace	8.0m	52 h.p.	27 men

Pulling boats: two Class I cutters (with 10 oars), a barge for outboard work and two dinghies.

The boats were stowed on either side of the funnel on the boat-deck or on the boat-platform extension to this deck, which extended to the ship's side. The cutters on the other hand were slung in heavy rectangular frames which were lowered for hoisting the boats inboard or out-board but, when clearing away for action, were raised into the vertical position by threaded spindles.—In the course of the war many life-rafts were taken aboard, some of rigid manufacture, others of rubber and inflatable. They were distributed as space permitted and secured in place.

Booms and Accessories

When the ship lay at anchor, boats were made fast to the two lower booms; the captain's gig had its place at the stern-boom on the port quarter.

The ship had two or three accommodation ladders which, because of the great height of the ship's sides, were broken by a platform half-way.

To protect the propellers when lying at a jetty, a guard was attached on either side just above the water-line: this was folded back against the hull when the ship left port.

Masts and Rigging

The rigging of the ship, in addition to the jack-staff on the stem, a flag-staff on the stern-post, and a small staff on the after control-post, consisted of a fighting-mast in the form of a rectangular tower with rounded corners, and a mainmast with a tripod lower section. The fighting-mast carried at the rear a pole topmast which could be completely lowered until it rested on the funnel. The top was then on a level with the foretop control post. On the afterside of the fighting-mast, to starboard, was the shaft for the 2 cm ammunition-hoist.

Inside the mast, the individual decks were linked by companion-hways. The vertical centre-leg of the mainmast was hollow to accommodate the centre section of the upper mast, which could be lowered at need as far as the signal- and aerial-yard. The mainmast had to be shortened this way when the ship passed through the Kiel Canal.

Yards and signal halyards for visual signalling were located at the upper end of the lower section of the mainmast, and below the anti-aircraft control-centre on the turret-mast.

The Radio and Radio-Reconnaissance Equipment

The masts also carried the aerials for a very comprehensive radio installation, with transmitters and receivers each installed in separate rooms. The control of radio communications was centred in the operations information station, where the so-called *B-Dienst* groups were also accommodated (*B-Dienst*=Observation Service, nowadays 'Radio Reconnaissance').

Aircraft Information Centre

A special aviation information centre, for the collection of all reports on friendly and enemy aircraft movements, was located immediately below the foretop station in the turret-mast. It was linked to the anti-aircraft control-centre by telephone and speaking-tube.

The Bridges

Below lay the Admiral's bridge-cabin, below that the Admiral's bridge and below that again a signals centre for command of the formation. The signal bridge below this opened to the rear on to the storage racks for the signal flags and the operation area for the signal halyards. On the two bridge wings stood signal lamps. The lowest two decks of the fighting-mast, designated upper and lower bridge deck, contained living quarters for officers and warrant officers, the meteorological centre and, closest to the bridge, the captain's bridge-cabin.

The Forward Superstructure

The forward superstructure was divided into three decks. The uppermost was called the superstructure deck which, at the forward end, supported the control tower, the substructure of which was continued down to

the next lower deck, the boat-deck. Within this substructure was located the operations information centre already mentioned.

The space between this centre and the front-wall to behind B turret held the chart room including the radio direction-finder.

THE CHART ROOM AND DIRECTION FINDER RECEIVER

The chart room and normal navigation wheelhouse—situated forward of the control tower—were linked by a companionway.

The Control Tower

The control-tower consisted of two parts, one part forward and slightly lower, with the navigational equipment (steering wheel, engine telegraphs, telephones, five telescopes: for captain, officer-of-the-watch, helmsman, navigating-officer, formation command) and an almost circular area, situated slightly higher and enclosed by the lower section at its forward extremity. One gun control and two torpedo controls were centred on this 'forward control station'.

On the roof was a rotating cupola with a range-finder of 7 m base. The control tower and control centre were linked by an armoured shaft. In this control shaft ran the most important telephone and telegraph cables. Metal rungs enabled it to be used as a rapid access route.

The Sick Bay

The remaining rooms in this bridge structure served as living quarters. In the lowest deck, that is the upper or main-deck level, was located the very large ship's sick-bay with all auxiliary accommodation such as operating theatre, investigation room, dispensary and dentist's surgery; and in the forward section the mess, with sleeping and living accommodation for 30 midshipmen.

Accommodation

Further aft on the main deck was the torpedo section already mentioned and, behind the crosswalk, the galley, preparation rooms for 10.5 cm ammunition, aircraft hangar and a large number of air-intake and ventilator shafts for boiler and engine-rooms; then came the after superstructure, which contained on the lowest deck the officers' mess with pantry, cabins for

The starboard crane. The forward middle deck with set of torpedo-tubes: pillar under anti-aircraft control-post A, and under boat platform, the gangway fastened to the rail



The new bow section is outlined in white. Note mines spar protuberance

staff-officers and a large conference room. Above this, on the boat deck, right aft, was the cabin for common use of the Duty Commanding Officer and Captain; forward of this, on the starboard side, working and living quarters for the Admiral, on the port side for the captain; then a pantry and above that—in the substructure of the anti-aircraft control-centre—the bakery and galleys for officers and captain, which however were not used as such during the war, as the whole crew was served the same food.

The Decks

Within the hull, the decks, reading from top to bottom, were named as follows:

- Battery deck
- Lower deck (largely identical with the armoured deck)
- Upper platform deck
- Lower platform deck
- Stowage

In Kiel dry-dock, 1942. The camouflage netting and port propeller guard are visible





3.7cm gun in action. The target director and crew can be seen below the gun mounting



Target director equipment (two in foretop, two in after anti-aircraft control-centre)

Boiler and engine-rooms extended in height through both platform decks. All other compartments, well in excess of 200, all capable of being sealed off and made watertight, were only one deck high.

The battery and lower decks were above all the crew's living quarters. The ratings occupied the midship section, the junior petty officers the forward section, where they had pantries and refrigerators at their disposal, and the chief petty officers—mostly designated 'Portépéeunteroffiziere'—in the after section, where a 'warrant officers' mess, with pantry was installed for their use. Individual, particularly important senior warrant officers, had living quarters in the vicinity of their battle- or duty-stations (senior coxswain, chief yeoman of signals, senior boatswain).

Workshops of the most varied types were distributed throughout the whole ship, though provision stocks and refrigerated storerooms were in the forepart. Even the compartments located on the sloping surfaces of the armoured deck, with almost triangular cross-section and mostly known on board as 'pockets', served as store-rooms.

The Armoured Deck

The armoured deck ran from the stern to forward of the 20.3 cm ammunition magazines for A turret at lower deck level, from there to the stem one deck lower, that is at the level of the upper platform deck. In this extreme, forward section the armour was not angled downwards at the sides. Above the rudder stock a

hemisphere provided protection for this important component.

Magnetic Mine Protection (De-Gaussing)

The ships were provided with MES-equipment (=autoprotection against mines) as protection against mines and torpedoes fitted with magnetic detonators. The cables needed for this purpose were attached on the outside of the hull under half-round covers bolted to the hull. These protective covers were located in the angle between the oblique hull-sides and the side-blisters.

Gyro Compass, Flag-deck and Smoke Apparatus

The gyro-compass equipment consisted of two master-compasses to which up to 20 slave compasses could be linked.

A battle signal station for handling flag-signals was located below the signal-yard of the mainmast on the battery-deck. The signal halyards were therefore very long and were led in through the boat deck via apertures fitted with funnel-shaped guides.

At the stern was a 'smoke locker', accessible only from the upper deck, in which were several containers with smoke-making chemicals. The equipment could be switched on and off both from the forward and after control centres. To enable the ship to conceal itself behind a smoke-screen produced by a source independent of the ship itself, there were 20 smoke buoys

Interior of 20.3cm gun house: 'A' turret, left barrel

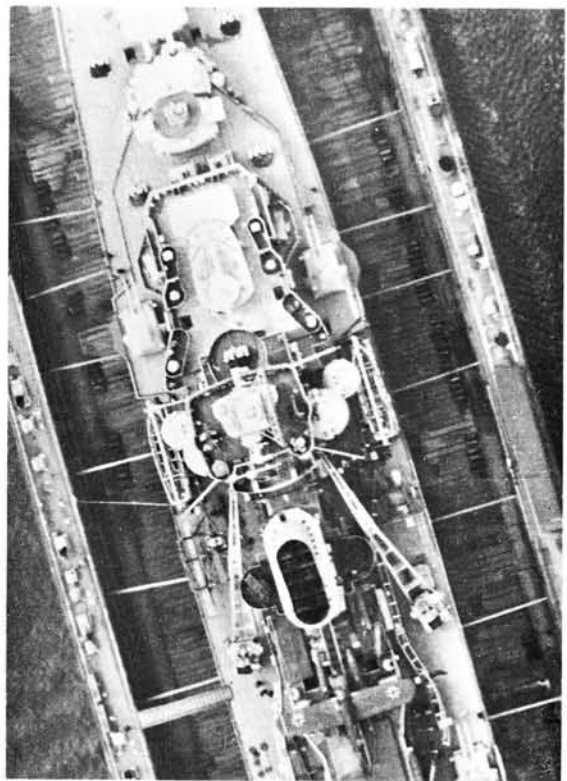


Brest: Prinz Eugen camouflaged against air-raids





20mm gun and range-finder crew



Aerial view of Prinz Eugen in dry dock.

on either side of the aft superstructure. These could be swiftly detached and thrown overboard.

Ship Handling

Opinions about ships of the *Admiral Hipper* class differ regarding their seamanlike handling qualities. This may in part be due to the fact that the two ships, *Admiral Hipper* and *Prinz Eugen*, on whom judgements are available, had differing underwater hull-shapes because of their varying dimensions; added to this, were also slight differences in the rudder arrangements. Both ships rode well, moved gently and were somewhat tender. They responded slowly to the helm, though their response could be accelerated considerably in the *Prinz Eugen*, if the speed was raised.

The turning-circle radius was some 450 m; for the *Prinz Eugen*, after losing her stern and standard rudder and after having two emergency rudders fitted, the turning circle was some 960 m. In this state the *Prinz Eugen* achieved 28 knots on trials. The testing of the emergency rudder was not continued further at the time, as the speed was adequate and there was no wish to risk the whole emergency rudder rig unnecessarily.

Strategic and Tactical Staff Requirements

The ships had been built with the aim, should it come to a war with France, of cutting off as far as possible the supply of French reinforcements and, above all, the transfer of French armies from Africa to Europe. For years on end these ships could have been opposed by only the heavy cruisers of the French fleet and some

of these would have been tied down in the Mediterranean by the Italian threat to the flank. With the exception of the *Algérie*, the French cruisers were considered by the German Navy inferior to their own heavy cruisers.

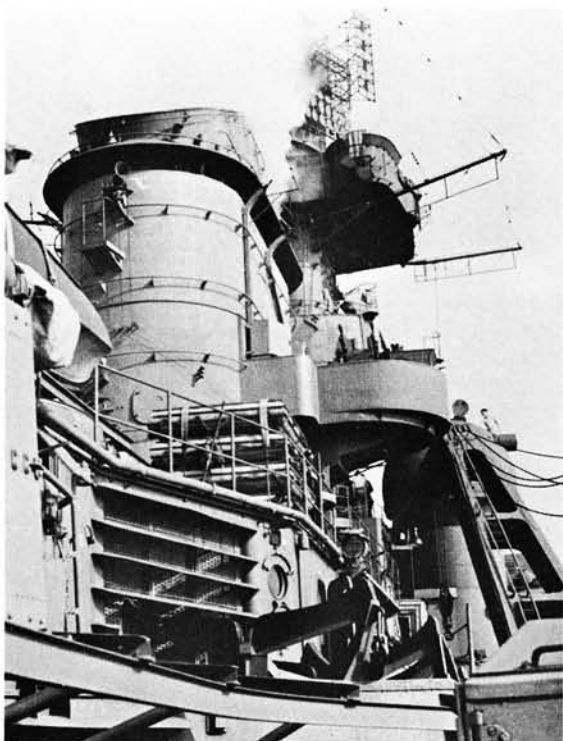
The author still has a very clear recollection, however, that the procedure in the event of an encounter with the *Algérie* had been thought out in great detail and that in many exercises, on clearing away the ship for action, such an encounter specified the hits assumed by those conducting the exercise.

The armoured de-gaussing cable which runs around the ship externally





Overall view of bridge. Men closed up at action stations, but not alerted for action. Captain Brinkmann on starboard wing of bridge, interested in something on starboard quarter, and all on his side looking in that direction. During cruise with the *Bismarck*



1943/45. The starboard well-deck. Note boiler-room intakes. Funnel fumes are obscuring the fighting mast and radar aerials

Bismarck steams past *Prinz Eugen* off Bergen



VERDICT OF HISTORY

From the moment that England had to be taken into account, first as a presumed and then as an actual enemy, any assessment of the ships must be less favourable. No doubt the German Naval Operations Staff still believed for a long time that they could maintain the ships in the Atlantic almost unhindered with the help of a wide-ranging supply network: an assumption that may well have seemed to be substantiated by the *Admiral Hipper* enterprise (November 1940—March 1941).

This supposition was no longer justified a few months later, as was proved in May 1941 by the wholesale extinction of the supply ships which were to look after the *Bismarck* and *Prinz Eugen*. If a verdict on the ships is to be given, it must be said that they were outstandingly suitable for their original task but that they could hardly cope with the actual task imposed on them from May 1941 onwards: the demands which were made upon these superb cruisers exceeded their strength, which can be here expressed as *operational range*.

THE LIFE OF THE HEAVY CRUISER, PRINZ EUGEN

Main dates:

1939

From August until the end of 1939, the sale of the three still incomplete heavy cruisers *Prinz Eugen*, *Seydlitz* and *Lützow* to the Soviet Union was under discussion; on 8.12.1939 the decision was however reached to sell only the *Lützow* to Russia.

July 1940

Still not in commission, the *Prinz Eugen* received one bomb-hit in British air-raids on both 1 and 2.7.1940, while in the Germania yard at Kiel (in front of the main railway station).

1 Aug. 1940

Commissioned at Kiel.

April 1941

Training and exercises of all kinds.

23 April 1941

Damaged by magnetic mine in the Fehmarn Belt. Damage to optical sections of gun control directors and range-finders. Sailing with the *Bismarck* delayed.

18 May 1941

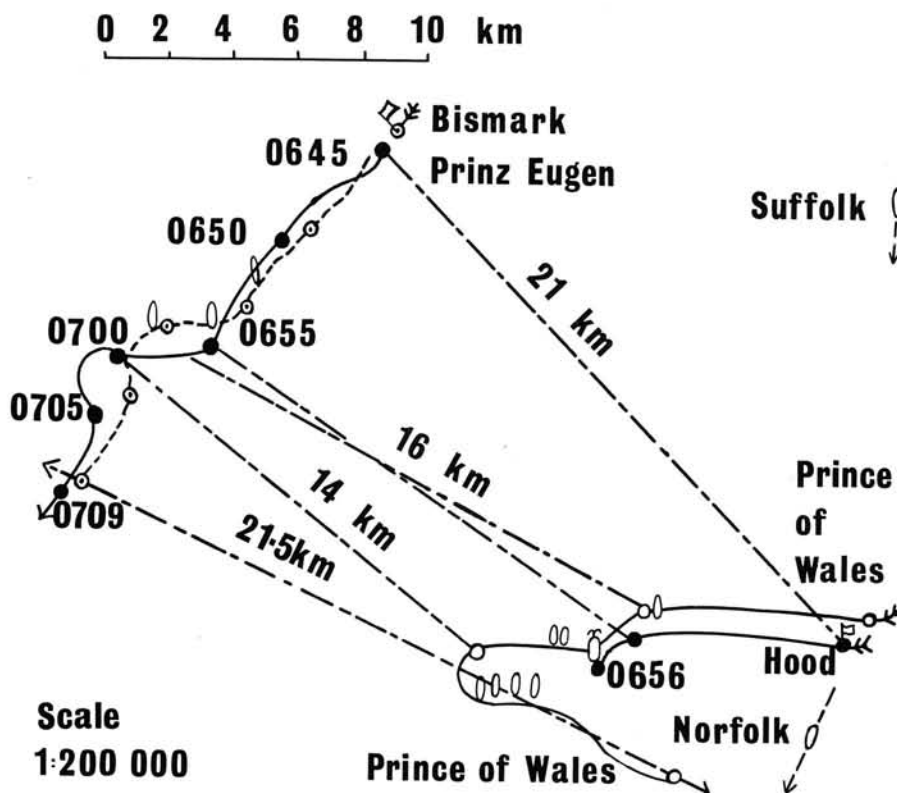
Sailed from Gotenhafen to break out into the Atlantic in company with the *Bismarck*.

21 May 1941

Both ships anchored south of Bergen in the Korsfjord and refuelled. While doing so they were detected by British aerial reconnaissance. The same evening both ships sailed again.

23 May 1941

0822 (CET), the British heavy cruisers *Suffolk* and *Norfolk* sighted the German ships north-west of Iceland in the northern reaches of the Denmark Strait. Both British ships shadowed the German pair. Short ineffectual exchange of fire between the *Bismarck* and the *Norfolk*. During the night the British cruisers lost contact for two and a half hours. The *Prinz Eugen* took up a position ahead of the *Bismarck* because, aboard the latter, the radar on the foretop had broken down.



Plan of the sinking of HMS Hood

24 May 1941 0347 (CET), the *Suffolk* again made radar contact with the German ships. 0653–0713 (CET), engagement with the British battle-cruiser *Hood* and battle-ship *Prince of Wales*, under Vice-Admiral Holland. 0700, the *Hood* exploded and sank in 63° 20'N, 31° 50'W.

Both German ships had opened fire on the *Hood* at the beginning of the engagement. The *Prinz Eugen* scored the first hit of the engagement; the next five hits went to the credit of the *Bismarck*. After the *Hood* had been wiped out, the fire of the German ships was concentrated on the *Prince of Wales*, who received four hits from the *Bismarck* and three from the *Prinz Eugen*. The *Prince of Wales* broke off the engagement but maintained contact with the German ships, as did the *Norfolk* and *Suffolk*. The *Prinz Eugen* was ordered to maintain course and speed in order to draw the pursuit to herself. Between 1900–2000 the *Bismarck* then reduced speed and there was a short exchange of shots with the pursuers. By this manoeuvre the fact that the German ships were parting company was concealed. The *Prinz Eugen* was released by the Commander-in-Chief for commerce raiding in Mid-Atlantic.

- 26 May 1941 The *Prinz Eugen* refuelled from the supply-ship *Spichern* (former Norwegian prize *Krossfonn*).
- 26–29 May 1941 No merchant ships sighted.
- 29 May 1941 Damage to engines forced the cruiser to run for Brest. She reached port 1.6.1941.
- July 1941 Bomb hits while in dock at Brest, during the night of 1–2.7.1941.
- 12 Jan. 1942 Hitler ordered the transfer of the battleships *Gneisenau*, *Scharnhorst* and *Prinz Eugen* through the Channel to Norway.
- 11 Feb. 1942 Sailing of group from Brest was planned for 2030 (CET). Postponed till 2345 on account of an air-raid.

Bismarck from the quarter deck of Prinz Eugen. This photograph was taken shortly after the engagement in which HMS Hood was sunk: the German ships are disengaging at full speed





Break through of Scharnhorst, Gneisenau and Prinz Eugen from Brest to the Elbe, February 1942. In this photograph, the nearer ship is a destroyer of the escorting screen

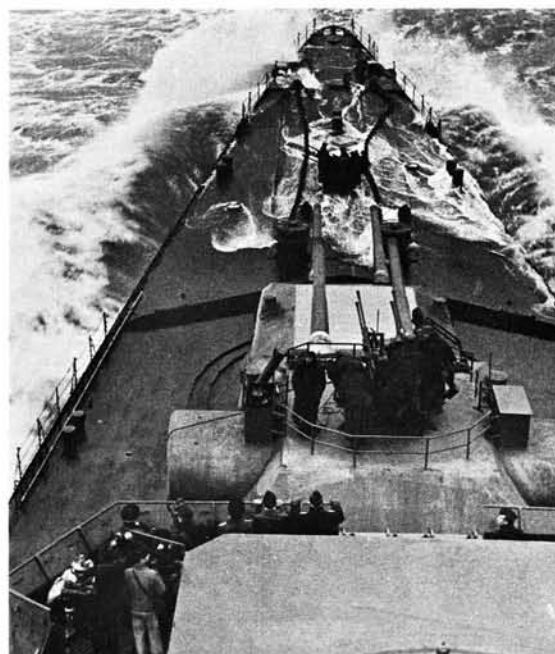
12 Feb. 1942 At 1120 (CET), the German force was detected by enemy air-reconnaissance. The ships at this time were already off the mouth of the Somme. 1319, passage of the Straits of Dover. Even now, still no enemy attacks or attempts at interference. 1325, unsuccessful attack by six British torpedo-bombers, which were all shot down. Between 1640 and 1900, various other attacks by torpedo-bombers and bombers; no success achieved by any of attacks. 1531, off the mouth of the Scheldt, the first damage, by a mine, suffered by the battleship *Scharnhorst*. The *Gneisenau* and *Prinz Eugen* steamed on. 1643, the British destroyers *Campbell*, *Vivacious*, *Mackay*, *Whitshed* and *Worcester*, out of Harwich, attacked the German force off Rotterdam. The *Prinz Eugen* drove off the *Mackay* and *Whitshed*. The German ships were able to evade all torpedo attacks. The *Worcester* was damaged by the *Prinz Eugen*, but reached her home port under her own steam. 2055, the

- 13 Feb. 1942 The *Gneisenau* and *Prinz Eugen* reached the mouth of the Elbe at 0800. As the two battle-cruisers were damaged, the Force Commander, Vice-Admiral Ciliax, transferred his flag to the *Prinz Eugen*. The heavy cruiser *Admiral Scheer* joined the force.
- 21 Feb. 1942 Various deception manoeuvres by the force in the North Sea to mislead the enemy. At 1210, the *Prinz Eugen*, *Admiral Scheer* and three destroyers on a northerly course off the Dutch coast. Contact was lost. Only in the afternoon of 22.2.1942 was enemy reconnaissance able to pick up the ships again, in Grimstadfjord.
- 23 Feb. 1942 Off the Drontheim Fjord, the British submarine *Trident* torpedoed the *Prinz Eugen* at 0700, and seriously damaged the ship. Vice-Admiral Ciliax transferred to the *Tirpitz*.
- Feb.-Mar. 1942 Part of the ship's after section had to be cut away. Emergency rudder repairs.
- 16-18 May 1942 Transfer to Kiel (ship travelled under her own steam). Off Lister, 27 British torpedo-bombers and 19 bombers made a concentrated attack. No hit was scored.
- October 1942 The *Prinz Eugen*, again ready for service, remained initially in home waters.
- January 1943 In company with the *Scharnhorst*, on two occasions attempted to run through Kattegat and Skagerrak to Northern Norway. In both cases sighted by enemy aircraft and attempt abandoned.
- May 1943 The *Prinz Eugen* joined the Fleet Training Squadron. The ship belonged

The Channel Breakthrough. At action stations



The Channel Breakthrough. Anxious bridge personnel conn the ship while station keeping at speed on the next ship ahead



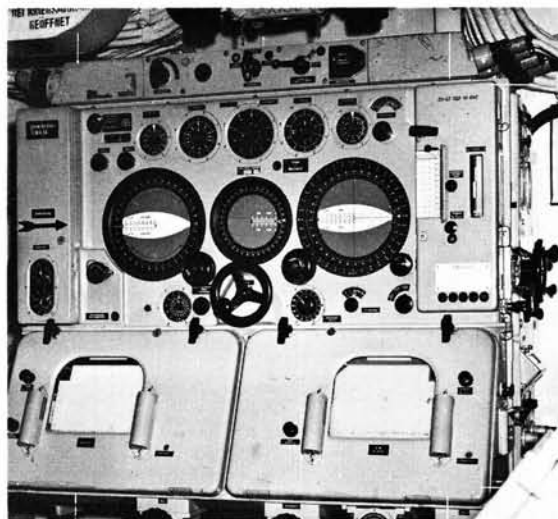
to this Force, or to the Task Force derived from it, until the end of the war, chiefly as flagship.

- Autumn 1943 Special tasks (development of equipment and weapons).
- June 1944 From the heavy cruisers *Prinz Eugen* and *Lutzow* and the 6th Destroyer Flotilla, the Second Task Force was formed; after the break-up of the First Task Force in Northern Norway, the former was given the title, 'Thiele Task Force' after Vice-Admiral Thiele who was commanding the force. The cruiser was operating in the Eastern Baltic, north-west of Utö.
- 19–20 Aug. 1944 Advance into the Gulf of Riga and bombardment of Tukums.
- 15 Sep. 1944 The Task Force was at this time present in full strength in the Åland Sea and, by its presence, forced the unopposed passage of six German freighters coming from the Gulf of Bothnia with cargoes of heavy equipment of the German Lapp-land Army. The Task Force was shadowed by Swedish destroyers and aircraft. (The intervention of the Task Force was necessary because the German freighters had been fired on in the previous few days. Finland had capitulated at this time.)
- October 1944 Employed in support operations for Army Groups in retreat, *inter alia* on 11, 12, 14 and 15 October near Memel.
- 15 Oct. 1944 On the retreat, the *Prinz Eugen* rammed the light cruiser *Leipzig*, north of Hela. The ships were interlocked for 14 hours.
- Nov. 1944 Further support operations for the Army, *inter alia* 20 & 21.11. Sworbe Peninsula; 29–31.1. in Samland, March–April 1945 in the Bight of Danzig.
- April 1945 In company with the *Lutzow*, the *Prinz Eugen* sailed to Swinemünde. The *Lutzow* remained there, while the *Prinz Eugen* sailed on to Copenhagen.
- 8 April 1945 Placed under British command.
- 9 May 1945 In company with the *Nürnberg*, and escorted by the British cruisers *Devonshire* and *Dido*, transferred to Wilhelmshaven.
- 27 May 1945 The *Prinz Eugen* allotted to the USA and taken to Wesermünde.
- 13 Dec. 1945 Sailed for the USA. 22.1.1946 in Boston.
- 13 Jan. 1946 In atom-bomb test (Bikini lagoon); slightly damaged but still afloat. Thereafter anchored near the Kwajalein Atoll; stranded and sank at Enubuj on 22 December 1947.

List of Serving Officers

Equivalent Ranks

Kapitän zur See	= Captain
Fregatten-kapitän ..	
Korvetten-kapitän ..	= Commander
Kapitän-leutnant	= Lieutenant-Commander
Oberleutnant zur See	= Lieutenant
Leutnant zur See	= Sub-lieutenant



After control-room for 20.3cm battery
Analogue computer. Gun-laying computer C/38K S.A.
(S.A. = heavy armament)

Speed *Prinz Eugen* The target course Speed
Firing direction
Rate of training finder Rate of range finder

CAPTAIN:

Kapitän zur See Brinkmann (Helmuth)	8.40—8.42
Kapitän zur See Voss (Hans-Erich)	9.42—2.43
Kapitän zur See Erhardt (Werner)	3.43—1.44
Kapitän zur See Reinicke	1.44—the end

SECOND-IN-COMMAND:

Commander Stooss (Otto) (2.7.41)	8.40— 7.41
Commander Knoke (acting)	12.40— 2.41
vacant	7.41—10.41

(duties undertaken by N.O. &/or G.O.)

Commander Neubauer	10.41— 1.43
Commander Beck (Wilhelm) (acting)	7.42— 9.42
Captain Beck (Wilhelm)	1.43—10.44
Commander Busse (Bernhard)	10.44—the end

NAVIGATING OFFICER:

Commander Beck (Wilhelm)	8.40— 1.43
Commander Busch (Hans-Eberhard) (acting)	2.43— 3.43
Commander Brödermann	4.43— 6.43
Commander Frhr v. d. Recke	6.43—10.43
Commander Rost (Hansfrieder)	10.43— 6.44
Commander Bredemeier	6.44—10.44
Lt. Commander v. Salisch	10.44— 1.45
First Lieutenant Graf Saurma-Jeltsch (acting)	1.45— 3.45
Commander Wolf (Wilhelm)	3.45—the end

FIRST GUNNERY OFFICER:

Commander Jasper (Paul)	8.40— 7.42
Commander Gohrbandt	8.42— 3.43
*Commander Schmalenbach	3.43—the end

SECOND GUNNERY OFFICER:

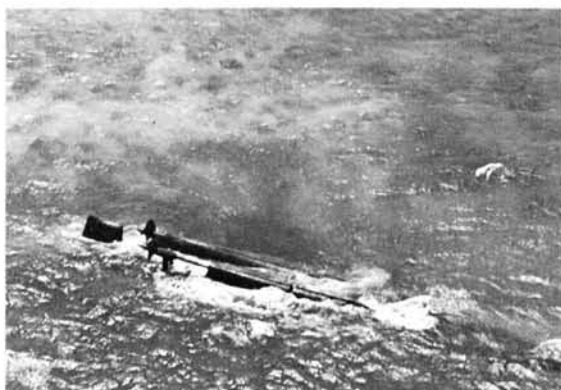
*Lt.-Cdr. Schmalenbach	8.40— 3.43
Lt.-Cdr. v. Stülpnagel	4.43—the end

CHIEF ENGINEER:

Eng. Commander Graser	8.40— 4.42
Eng. Commander Kurschat	4.42—11.43
Eng. Commander Hielscher†	11.43—the end

*Author of Warship Profile No. 6, *Prinz Eugen*.

† (Electrical engineer since 1939)



Prinz Eugen capsized and awash on the reef at Enubuj, Kwajalein Atoll, 1947
U.S. Naval Institute



Bikini 1946: the end

OPERATIONS OF THE CRUISER PRINZ EUGEN

Serial No	Length of operation	Type of operation	Engagement fought with enemy reply. Date of action
1	18.5./1.6.41	Atlantic sortie	Action off Greenland with <i>Hood</i> , <i>Prince of Wales</i> ; 24.5.41
2	11/13.2.42	Breakthrough English Channel	Air and destroyer engagements, including near-sinking of a destroyer at eastern exit from English Channel; 12.2.42
3	20/23.2.42	Advance to Drontheim and bringing in severely damaged ship	
4	16.5./18.5.42	Retreat from Norway, bringing in severely damaged ship	Fighting off aerial attacks off Lister
5	20.8.44	Advance and coastal bombardment	Support for Army's battles by bombarding land targets in Gulf of Riga
6	13/18/9.44	Forward thrust (Advance protection for group of net-laying barges)	Fighting off aerial attack
7	21/25.9.44	Advance protection for convoy	
8	10/13.10.44	Thrust and bombardment of land targets near Memel	Support of Army's battles by bombarding land targets near Memel
9	14/15.10.44	Thrust and coastal bombardment	As above
10	20.11.44	Coastal bombardment	Support for Army by bombardment of land targets on Sworbe peninsula
11	21.11.44	As above	As above
12	29.1/31.1.45	As above	Support for Army by bombardment of land targets on Samland

SUMMARY OF RESULTS OF LAND-TARGET BOMBARDMENT BY THE PRINZ EUGEN

Area of Operation	Dates	No of targets	Heavy Guns Ammunition Consumption Total	Average per target	Directed map, or unobserved fire (*)	Observed fire (**)	'On target' results for observed fire (***)
Tukums	20.8.44	3	265	88	—	265	?
Memel	11/12.10.44	28	1196	43	715	481	403=83.7%
	14/15.10.44						
Sworbe	20/21.11.44	12	514	43	—	—	?
Samland	29/31.1.45	35	871	25	871	—	—
Danzig Bight	10.3./4.4.45	132	2025	15	1026	999	808=80.8%
Heavy guns		210	4871				
Anti-aircraft guns		100	2644				
Total		310	7515				

(*) Bombardment, intended as map-directed (i.e. without observation), and bombardment during observation failed due to enemy interference (interruption of observation, of information links).

(**) Bombardment in which ranging and effective shots were observed, inclusive of individual unobserved salvos or shots.

(***) Documentation inadequate for assessment.

Area of operation	Dates	Heavy Anti-Aircraft Guns Ammunition Consumption No of targets	Total	Average per target	Directed map, or unobserved fire (*)	Observed fire (**)	'On target' results for observed fire
Tukums	20.8.44	—	—	—	—	—	—
Memel	11/12.10.44	—	—	—	—	—	—
	etc						
Sworbe	20/21.11.44	2	198	99	Controlled directly from ship		
Samland							
Danzig Bight	10.3./4.4.45	98	2446	25	1704	739	634=85.7%
Total		100	2644				