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GERMAN NAVY

Cruisers and Light Cruisers

(Including Minelaying Cruisers)

JUNE, 1917

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ROGER WELLES,
Captain, U. S. Navy, Director of Naval Intelligence.

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Part III.
Section 3.
June 1917.

GERMAN NAVY.

PART III.

SECTION 3.

CRUISERS AND LIGHT CRUISERS.

(Including Minelaying Cruisers.)

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CRUISERS.

Roon.

(See Plate 16.)

Programme year	1902–03.
Designation before launch	Ersatz *Kaiser.*
Where built	Imperial Dockyard, Kiel.
Laid down	1st August 1902.
Launched	27th June 1903.
First commissioned	5th April 1906.

Cost.—

	£
Hull, machinery, &c.	660, 469
Gun armament	195, 695
Torpedo armament	19, 569
Total	£875, 733

General Remarks.—Fitted as flagship. The *Yorck,* the *Roon's* sister ship, struck a mine and sank off the Jade river on 4th November 1914.

Complement.—Peace complement, 633 (as private ship); war complement, about 725.

General Appearance.—*See* Photograph Book.

General Dimensions, &c.—

Length between perpendiculars	403 ft. 6 ins.
" L. W. L.	417 " 8 "
" extreme	419 " 4 "
Breadth, extreme	66 " 3 "
Draught, designed load	23 "11 "
Displacement, designed load	9,348 tons.
Height of fore funnel to L. W. L.	72 ft. 0 ins.
" " lower masthead to L. W. L.	92 " 0 "

Constructive Details.—The ship is well subdivided. The deadwood is cut away before the central screw. Bilge keels are fitted.

There is a central watertight passage, under the armoured deck, extending for about 185 ft. of the middle section and passing through the funnel casing; it contains electric leads, voice pipes, steering, and engine-room communications, &c., and is entered by a watertight door at each end.

At the forward end it opens on to a compartment 23 ft. square, which serves as the transmitting station, communicating with the conning tower by an armoured tube, of oblong section, $2\frac{1}{2}$ ft. by $1\frac{1}{2}$ ft.

Armour.—

Material.—Krupp non-cemented.

Belt.—Complete, 7 ft. 6 ins. wide, lower edge about 4 ft. below L. W. L., 3.9″ thick amidships, 3.1″ forward and aft.

Citadel.—7 ft. wide, 200 ft. long, 3.9″ thick, closed at the ends by diagonal bulkheads of same thickness, which embrace the armoured tubes to turrets.

There are also three transverse bulkheads in connection with belt, 3.1″ thick, one just before ammunition tube to fore turret, one just abaft tube to after turret, and one right aft.

Prinz Heinrich.

(*See Plate 17.*)

Programme year	1898–99.
Designation before launch	"A."
Where built	Imperial Dockyard, Kiel.
Laid down	1st December 1898.
Launched	22nd March 1900.
First commissioned	11th March 1902.

General Remarks.—Fitted as flagship.

Cost.—

	£
Hull and machinery	567, 515
Gun armament	146, 771
Torpedo armament	19, 569
Total	£733, 855

Complement.—In peace time, 567 (as private ship).

General Appearance.—*See* Photograph Book.

General Dimensions, &c.—

Length, between perpendiculars	393 ft. 8 ins.
Length, L. W. L.	409 " 9 "
Breadth, extreme	64 " 3 "
Draught, designed load	23 " 11 "
Displacement, designed load	8,756 tons.
Height of fore funnel to L. W. L.	70 ft. 0 ins.
" " " lower masthead to L. W. L.	95 " 0 "

Constructive Details.—The ship is well subdivided. Cork cofferdams are fitted above the belt, before and abaft the citadel armour. The deadwood is cut away before the central screw. Bilge keels are fitted. There is a central watertight passage under the armoured deck from the central conning station forward to the bulkhead abaft the engine rooms, passing between the funnel uptakes. It contains wires, voice tubes, steering shafts, and engine-room telegraph shafting, &c., and is entered by watertight doors at each end.

Armour.—

Material.—Krupp, non-cemented.

Belt.—Complete, 7 ft. 6 ins. wide, extending to about 4 ft. 6 ins. below L. W. L., 3.9" thick amidships, 3.1" forward and aft.

Citadel.—140 ft. long, 7 ft. wide, 4" thick, closed at the ends by diagonal bulkheads of the same thickness, which embrace the armoured tubes to conning towers.

Battery.—Above the citadel is the battery armour 3.9" thick. The battery is closed by transverse bulkheads of the same thickness. There are splinter bulkheads 1.2" thick between the guns, extending about one-third of the way across the ship. There is no centre line protection.

Turrets.—
For 9.4-in. guns—5.9" thick.
For 5.9-in. guns—3.9" thick.

Ammunition Tubes.—
For 9.4-in. turrets—3.9" thick.
For 5.9-in. turrets, above side armour—3.9" thick.

Conning Towers.—
Fore—5.9" thick; communication tube—3.2".
After—.8" thick; " " .5".

Control Tower.—3.9".

Prinz Heinrich—*cont.*

Armour—*cont.*

Horizontal.—Two protective decks. The principal one extends from stem to stern and is 1½" on the flat, 2" on the slopes. The second is formed by the lower deck, outside citadel, 8", roof of citadel outside battery and roof of battery 1.2" thick.

Armament.—

Guns and Ammunition Supply.—
(For arcs of training, *see* plate.)
2—9.4-in. (24-cm.) Q.F., L/40; in turrets forward and aft on Drehscheiben-Lafette C/99.
10—5.9-in. (15-cm.) Q.F., L/40.
Four in single turrets on Turm-Lafette C. 97/99.
Six in armoured battery on main deck on C.P. Mounting C/97.
*10—15-pr. (8.8-cm.) Q.F., L/30.
Eight on the superstructure. One each side, between the 5.9-in. turrets on upper deck.
2—.31-in. (8-mm.) Maxim automatic.
†1—7-pr. (6-cm.) Q.F., L/21, boat and field gun.
For further details, *see* Part IV. of this book.

Torpedo Tubes.—
3—17.7-in. (45-cm.), submerged; one under ram and one each side in line with after side of foremost turret.
1—17.7-in (45-cm.), above water (armoured), in stern.

Torpedoes.—12 carried in peace, 15 in war time.

Searchlights.—
4—35.4-in. (90-cm.); two in the upper tops and two on platforms amidships.

Fire Control and Communications.—Siemens and Halske electrical range and order transmitters, with loud-speaking telephones as alternative. Large voice pipes to 15-pr guns.

Boats.—*See* Section 1.

Boat Cranes.—Two, for hoisting large boats abreast the after funnel, worked by hydraulic pressure.

Steering Gear.—Partly balanced rudder. Two steam steering engines in separate compartments.

Machinery and Boilers.—

Main Engines.—
Three sets, in separate compartments, centre one abaft the other two, which are abreast.
Type—Vertical, four-cylinder, triple expansion.
Diameters of cylinders, 35 ins.; 52.4 ins.; two of 60.2 ins.
Length of stroke, 37.4 ins.

Boilers.—
Fourteen in number, eight of which are fitted to burn coal and oil.
Date when first used at sea, 1902.
Type—Dürr, with super-heaters.
Position—The boilers are in four separate compartments, three in each of the two after rooms, divided by centre line bulkhead. The two forward rooms are divided by an athwartship bulkhead, and each contains four boilers.
Full working pressure, 194 lbs.
Total tube heating surface, 42,820 sq. ft.

* Some or all of these guns have probably now been removed (June 1917).
† Probably landed for service in the field.

26346—17——2

Prinz Heinrich—*cont.*

Machinery and Boilers—*cont.*

Boilers—cont.

Total grate surface, 1,017 sq. ft.

Total super-heater surface, 2,357 sq. ft.

Forced draught in closed stokeholds; two centrifugal fans for each stokehold. Boilers are separated from stokeholds by air casings.

Auxiliary Machinery includes—

Pumps, with total capacity 2,214 tons per hour.

Dynamos—Four, 110 volts.

Propellers.—Three; outer screws, three-bladed, diameter 15 ft. 3 ins.; centre screw, four bladed, diameter 14 ft.; pitch, variable, 17 ft. 8 ins. to 21 ft. 7 ins.

At trials, pitch of 18 ft. 8 ins. gave best results.

Surface area of the blades of each propeller, 49.1 sq. ft.

Speed, Horse-Power, and Fuel.—

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
	Knots.		
Prinz Heinrich	20	15,000	(a) 1,564 (b) 197

Steam Trials.—

Ship.	Nature of Trial.	Date.	Speed.	Horse-Power.	Revolutions.	Remarks.
Prinz Heinrich	6 hours full power		20.0	15,703	127	Coal per 1 h. p. per hour, 2.1 lbs.
,, ,,	24 hours		18.16	10,355	111	1.91 lbs., air pressure, .39 ins.

Endurance.—

	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Miles.	
At 4/5ths designed power	19.0	12,000	284	2,800	
At maximum continuous seagoing speed	18.6	10,900	259	3,000	
At 3/5ths designed power	17.6	9,000	206	3,600	
At 2/5ths designed power	15.8	6,000	149	4,420	
At 1/5th designed power	12.6	3,000	86	6,150	
10 knots	10.0	1,860	56	7,400	

Fürst Bismarck.

(See Plate 18.)

Programme year	1895–96.
Designation before launch	*Ersatz* Leipzig.
Where built	Imperial Dockyard, Kiel.
Laid down	1st April 1896.
Launched	25th September 1897.
First commissioned	1st April 1900.

Fürst Bismarck—*cont.*

General Remarks.—Fitted as flagship.

Underwent alterations, 1912–1914, to adapt her for service as Torpedo School Ship, but is reported (May 1917) now to be used as a Training Ship for Stokers.

First Cost.—

Hull, machinery, &c	660,470
Gun armament	146,771
Torpedo armament	34,736
Total	£841,977

Complement.—In peace time, 594 (as private ship).

General Appearance.—*See* Photograph Book.

General Dimensions, &c.—

Length between perpendiculars	393 ft. 8 ins.
" L. W. L	412 " 5 "
" extreme	416 " 8 "
Breadth, extreme	66 " 11 "
Height of axis of 9.4-in. guns, forward, at mean draught	About 34 ft.
Height of axis of 9.4-in. guns, aft, at mean draught	" 23 "
Draught, designed load	26 ft.
Displacement, designed load	10,520 tons.

Hull.—

Material.—Steel, sheathed with wood and covered with Muntz metal.

Constructive Details.—The keel line runs up abreast the side propeller brackets to give increased turning power, coming down again further aft to give the rudder the full depth.

A central passage of small dimensions, for communications, extends almost the whole length of the ship.

There is a complete belt of cork cofferdams above the armoured belt.

The decks are covered with corticine.

Armour.—

Material.—Krupp steel.

Belt.—Complete, 7 ft. 6 ins. wide, 7.9″ thick amidships, tapering to 3.9″ at lower edge; 3.9″ at ends.

Turrets.—

For 9.4-in. guns—7.9″ thick.

For 5.9-in. guns—3.9″ thick.

Casemates.—3.9″ thick.

Ammunition Tubes.—

9.4-in. guns, 7.9″ thick.

5.9-in. guns, 3.1″ thick.

Conning Towers.—Fore—7.9″; after—3.9″ thick.

Communication Tube.—Forward, 7.9″; aft, 3″ thick.

Horizontal.—Deck, at upper edge of belt, 2″ over machinery, $1\frac{1}{4}$″ forward and aft; under-water deck at ends, 2″. Splinter decks, .8″.

Armament.—

Guns and Ammunition Supply.—

(For arcs of training, *see* plate.)

4—9.4-in. (24-cm.) Q. F., L/40; in pairs in turrets forward and aft, on Drehscheiben-Lafette C/97. Central sighting hood.

Fürst Bismarck—*cont.*

Armament—*cont.*

Guns and Ammunition Supply—cont.

12—5.9-in. (15-cm.) Q. F., L/40.

Six in single turrets—one each side abreast of foremast, two each side on upper deck, on Turm-Lafette C/97. No sighting hood, sighting slits in armour.

Six in casemates on C. P. Mounting C/97—one each side on upper deck abreast fore turret, two each side on main deck in double gun casemates. Separate electric, alternative hand, dredger hoists to each upper deck casemate; in double gun casemates two hoists in one armoured tube.

*10—15-pr. (8.8-cm.) Q. F., L/30, two on main deck abreast after turret, four on upper deck, two on fore bridge, two on after bridge.

4—.31-in. (8-mm.) Maxim automatic.

†1—7-pr. (6-cm.) Q. F., L/21, boat and field gun.

For further details *see* Part IV of this book.

Magazines and Stowage.—The after submerged torpedo room and the central casemate magazine are between the engine and boiler rooms.

Torpedo Tubes.—

5—17.7-in. (45-cm.) submerged. One under ram, fixed, ahead; two on each broadside fixed about 17° before the beam.

1—17.7-in. (45-cm.) (armoured) above water, in stern.

Searchlights.—

6—One in fore upper top, one on after bridge, and four on main deck.

Fire Control and Communications.—The foremost conning tower is about 14 ft. wide by 7½ ft., and contains a large voice pipe communicating to the transmitting station below the protective deck. All gun-fire is controlled from the conning tower.

Boats.—*See* Section 1.

Boat Cranes.—Two, between the funnels, for hoisting large boats.

Machinery and Boilers.—

Main Engines.—

Three sets, in separate watertight compartments, manufactured by the Germania Works, Kiel.
Type—Vertical, four cylinder, triple expansion.
Diameter of cylinders, 37 ins.; 57.5 ins.; two of 63 ins. Length of stroke, 33.8 ins.
Working pressure (at engines), 172 lbs. per sq. in.
Revolutions at full power, 115 (designed).

Boilers.—

12 in number, fitted to burn coal and oil.
Date when first used at sea, 1900.
Type—Eight cylindrical, four Schulz, Navy type.
Full working pressure—180 lbs. per sq. in.

Total heating surface	Cylindrical	23,400 sq. ft.
	Schulz	17,450 " "
Total grate surface	Cylindrical	655 " "
	Schulz	327 " "

Auxiliary Machinery includes—

Steam.—Two capstan engines, one forward and one aft.
Two turret turning engines.
Pumps with a total pumping capacity of 2,214 tons per hour.

* Some or all of these guns have probably now been removed (June 1917).
† Probably landed for service in the field.

Fürst Bismarck—*cont.*

Machinery and Boilers.—*cont.*

Electric.—

Five dynamos, each 490 amperes, 110 volts.
Nine motors for winches.
Four motors for training 5.9-in. guns.
Four motors for ammunition hoists, 5.9-in. guns.

Propellers.—Three.

Speed, Horse-Power, and Fuel.—

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
	Knots.		
Fürst Bismarck	19	13,000	(a) 1,377 (b) 98

Steam Trials.

Ship.	Nature of Trial.	Date.	Speed.	Horse-Power.	Revolutions.	Remarks.
Fürst Bismarck	Full power		18.51	12,976	118	

Endurance.

—	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		*Tons.*	*Miles.*	
At $\frac{4}{5}$ths designed power	17.8	10,400	248	2,460	
At maximum continuous seagoing speed.	17.6	10,000	237	2,540	
At $\frac{3}{5}$ths designed power	16.6	7,800	181	3,180	
At $\frac{2}{5}$ths designed power	14.7	5,200	131	3,900	
At $\frac{1}{5}$th designed power	11.6	2,600	76	5,270	
At 10 knots	10.0	2,040	61	5,650	

LIGHT CRUISERS.

Ersatz Ariadne, *Ersatz* Amazone, *Ersatz* Medusa, P., Q., *and* R.

Name.	Designation before Launch.	Programme Year.	Where Built or Building.	Ordered.	Laid Down.	Launched.	Commissioned for Trials.	Completed Trials.
	Ersatz *Ariadne*	1916–17	Three probably at Weser Yard, Bremen, two at Howaldt's Works, Kiel, and one at Schichau Yard, Danzig.	....	1915	*–. 4. 16	*–. 2. 17	....
	Ersatz *Amazone*	1916–17		....	1915	*–. 5. 16	*–. 2. 17	....
	Ersatz *Medusa*	1917–18		....	1915	*–. 12. 16	....	....
	P	1917–18		....	1915	*–. 12. 16	....	....
	Q	†		....	1915	*–. 12. 16	....	....
	R	†		....	1915	*–. 12. 16	....	....

* Approximate dates.
† Under the pre-war programme of construction, these two vessels might be laid down at any time between 1914 and 1917.

General Remarks.—These vessels were laid down, mostly ahead of programme date, to replace the light cruisers lost during the war. They are believed to be generally similar to the new *Königsberg* class (*see* below), and will probably be named *Dresden, Magdeburg, Leipzig, Cöln, Mainz,* and *Bremen.*

Königsberg, Karlsruhe, Emden, *and* Nürnberg.

(*See Plate* 20.)

Name.	Designation before Launch.	Programme Year.	Where Built.	Ordered.	Laid Down.	Launched.	Commissioned for Trials.	Completed Trials.
Königsberg	Ersatz *Gazelle*	1914–15	Weser Yard, Bremen.	*11. 6. 14	1914	*28. 12. 15	*13. 8. 16	*–. 10. 16
Karlsruhe	Ersatz *Niobe*	1914–15	Imperial Dockyard, Kiel.	*11. 6. 14	1914	*–. 6. 16	*–. 11. 16	*–. 2. 17
Emden	Ersatz *Nymphe*	1915–16	Weser Yard, Bremen.	....	1915	*–. 2. 16	*–. 8. 16	*–. 1. 17
Nürnberg	Ersatz *Thetis*	1915–16	Howaldt's Works, Kiel.	....	1915	*20. 1. 16	*–. 11. 16	*–. 5. 17

* Approximate dates.

General Remarks.—These vessels are believed to be somewhat smaller than the *Frankfurt* (*see* p. 13), but in other respects to represent an improvement on her. They carry two less 5.9-in. guns, but can bring the same number of guns to bear on the broadside.

Complement.—War complement, about 450.

General Appearance.—Three straight funnels of equal height, slightly raked, the fore funnel being the largest; overhanging stern.

General Dimensions.—

Length, L. W. L. .... *About* 440 ft. 0 ins.
Breadth .... " 43 " 6 "
Draught, designed load .... " 16 " 0 "
Displacement, designed load .... " 4,200 tons.

Armour.—No details are yet available, but it may be assumed that a practically complete belt and armoured deck are fitted.
The conning tower is before the fore bridge and entirely clear of it.

Königsberg, Karlsruhe, Emden, *and* Nürnberg—*cont.*

Armament.—

Guns.—

(For reported disposition and approximate arcs of training, *see* Plate.)
6—5.9-in. (15-cm.) Q. F., four of which are believed to be on the centre line.
2—22-pr. (8.8-cm.) semi-automatic anti-aircraft guns.

Torpedo Tubes.—

? 2—19.7-in. (50-cm.) submerged; fitted with gyro angling gear which can be set for every 15° from 30° before to 60° abaft the direction of the tube.
2—19.7-in. (50-cm.) above water, one on either side amidships.

Mines.—There is probably no permanent stowage for mines.

Searchlights.—

Probably 4—two on foremast abreast, two on mainmast in fore and aft line.

Speed, Horse-Power, and Fuel.—

Speed (designed).	Horse-Power (designed).	Fuel: (*a*) Coal. (*b*) Oil.
Knots. *About* 28.5	....	Coal and oil.

Frankfurt.

(*See Plate* 21.)

Programme year .... 1913–14.
Designation before launch .... Ersatz *Hela.*
Where built .... Imperial Dockyard, Kiel
Laid down .... 1st December 1913.
Launched .... *About* March 1915.
First commissioned .... " August 1915.

General Remarks.—The *Frankfurt's* sister ship, the *Wiesbaden,* was sunk in action on 31st May–1st June 1916.
These two vessels were the first German light cruisers actually designed to carry 5.9-in. guns, although earlier classes have now been rearmed with guns of that calibre. The armour protection is also believed to represent a considerable advance on *Graudenz.*

Complement.—War complement, 500.

General Appearance.—Three straight funnels of equal height but unequal size, the first being the largest and the second the smallest; funnels slightly raked and have no bonnets; overhanging stern.

General Dimensions.—

Length, L. W. L. .... *About* 460 ft. 0 ins.
Breadth .... " 45 " 0 "
Draught, designed load .... " 16 " 6 "
Displacement, designed load .... " 4,800 tons.

Armour (doubtful).—
Belt.—Nearly complete, about 5.9″ thick amidships, 3″ at ends, and about 8 ft. wide.
Horizontal.—Armoured deck, about 1″ on flat and 1.5″ on slopes.
Gun shields.—About 5″ in front.

Frankfurt—*cont.*

Armament.—

Guns.—

(For reported disposition and approximate arcs of training, *see* Plate.)
8—5.9-in. (15-cm.) Q. F.
2—22-pr. (8.8-cm.) semi-automatic anti-aircraft guns.

Torpedo Tubes.—

2—19.7-in. (50-cm.), submerged; fitted with gyro angling gear which can be set for every 15° from 30° before to 60° abaft the direction of the tube.
2—19.7-in. (50-cm.) above-water, one on either side amidships.

Mines.—There is probably no permanent stowage for mines, but 120 can be carried if required.

Searchlights.—
Probably 4—two on foremast abreast, two on mainmast placed in fore and aft line.

Auxiliary Machinery.—
Turbo-fans are fitted.

Speed, Horse-Power, and Fuel.

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
	Knots.		
Frankfurt..	28.0	....	(a) 1,500 (?) (b) Some.

Pillau.

(*See Plate* 22.)

Name.	Name under which building for Russia	Where Built.	Laid Down.	Launched.	First Commissioned
Pillau..................	Muravev Amurski.........	Schichau Works, Danzig..	12.4.13	11.4.14	*14.12.14

* Approximate date.

General Remarks.—The *Pillau* was one of two ships originally building for Russia but commandeered by Germany on the outbreak of war in August 1914.

Her sister ship, the *Elbing*, was sunk in action on 31st May–1st June 1916.

These two vessels were originally designed to carry 8—5.1-in. guns, but 5.9-in. guns were substituted after they had been taken over by Germany. At the same time the funnels were made considerably taller, the foremost funnel being raised more than the other two.

Complement.—Peace complement, 372; war complement, about 450.

General Appearance.—Three upright funnels, narrowing at the top, the fore funnel being taller than the other two; straight stem.

General Dimensions, &c. —

Length, L. W. L	440 ft. 11 ins.
Breadth..	46 " 0 "
Draught, designed load..	16 " 8 "
Displacement, designed load..	4,330 tons.
Height of fore funnel to L. W. L..	About 60 ft.
" " lower masthead to L. W. L..	" 95 "

Pillau—*cont.*

Armour.—
Material.—Krupp cemented.
Belt.—None.
Conning Tower.—3″ thick.
Horizontal.—Armoured deck, .8″ on flat and 1.6″ on slopes, except over tiller compartment, where it is 3.1″ thick.
Transverse bulkhead forward and glacis aft, where deck drops to a lower level, 3.1″ thick.

Armament.—
Guns.—
(For reported disposition and approximate arcs of training *see* Plate.)
8—5.9-in. (15-cm.) Q. F.
2—22-pr. (8.8-cm.) semi-automatic anti-aircraft guns.
Torpedo Tubes.—
2—19.7-in. (50-cm.) above-water.
Mines.—
Rails for about 200 mines are fitted on upper deck, but no mines are stowed permanently on board.

Searchlights.—
4—two on foremast abreast, two on mainmast placed in fore and aft line.

Machinery and Boilers.—
Main Engines.—
Two sets, in four watertight compartments.
Type—Schichau turbines.
Boilers.—Ten in number; four for oil-firing only, six for coal and oil.
Propellers.—Two.

Speed, Horse-Power, and Fuel.—

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
	Knots.		
Pillau..	27.5	27,400	(a) 984 (b) 250

Endurance.—

——	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Miles.	
At $\frac{4}{5}$ths designed power..................	25.6	21,920	446	1,750	
At maximum continuous seagoing speed.	25.0	19,180	400	1,900	
At $\frac{3}{5}$ths designed power..................	24.2	16,440	352	2,100	
At $\frac{2}{5}$ths designed power..................	22.0	10,960	258	2,600	
At $\frac{1}{5}$th designed power..................	18.0	5,480	164	3,340	
At 10 knots..................	10.0	950	46	6,600	

Graudenz *and* Regensburg.

(*See Plate* 23.)

Name.	Designation before Launch.	Programme Year.	Where Built.	Ordered.	Laid Down.	Launched.	Commissioned for Trials.	Completed Trials.
Graudenz......	Ersatz *Prinzess Wilhelm.*	1912–13	Imperial Dockyard, Kiel.	*–. 4. 12	23. 10. 12	25. 10. 13	*–. 8. 14	*–. 10. 14
Regensburg...	Ersatz *Irene*......	1912–13	Weser Yard, Bremen	*–. 5. 12	1912	25. 4. 14	*–. 12. 14	*–. 3. 15

*Approximate dates.

Cost.—

	£
Hull, machinery, &c	318, 003
Gun armament	73, 386
Torpedo armament	26, 418
Total	£417, 807

General Remarks.—These vessels generally resemble *Stralsund*, but have three instead of four funnels. They were rearmed and given deck torpedo tubes in 1915–16.

Complement.—Peace complement, 364; war complement, about 480.

General Appearance.—*See* Photograph Book, but these vessels have been re-armed and given taller masts since date of sketch.

General Dimensions, &c.—

Length, L. W. L. .... About 460 ft. 0 ins.
Breadth, extreme .... " 45 " 0 "
Draught, designed load .... " 16 " 6 "
Displacement, designed load .... 4,800 tons.
Height of fore funnel to L. W. L. .... About 60 ft.
" " lower masthead to L. W. L. .... " 125 ft.

Armour (doubtful).—

Belt.—Nearly complete, about 4″ thick amidships, 2.5″ at ends, and about 8 ft. wide amidships.

Horizontal.—Armoured deck about 1″ on flat, 2″ on slopes.

Armament—

Guns.—

(For reported disposition and approximate arcs of training *see* Plate.)

8—5.9-in. (15-cm.) Q. F.

2—22-pr. (8.8-cm.) semi-automatic anti-aircraft guns.

2—Machine guns.

†1—7-pr. (6-cm.) L/21, boat and field gun.

The original armament of these vessels was 12—4.1-in.

Torpedo Tubes.—

2—19.7-in. (50-cm.) submerged; fitted with gyro angling gear which can be set for every 15° from 30° before to 60° abaft the direction of the tube.

2—19.7-in. (50-cm.) above-water, one on either side amidships.

Mines.—There is probably no permanent stowage for mines.

Searchlights.—

4—two on foremast abreast, two on mainmast in fore and aft line.

Machinery and Boilers.—

Main Engines.—Turbines, 2 sets, Navy type.

Boilers.—14 Schulz, Navy type. Separate boilers for oil-firing only are to be fitted.

Propellers.—Two.

† Probably landed for service in the field.

Graudenz *and* Regensburg—*cont.*

Speed, Horse-Power, and Fuel.—

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (*a*) Coal. (*b*) Oil.
	Knots.		
Graudenz .... *Regensburg*	27.5	26, 000	(*a*) 1, 279 (*b*) 220

Endurance.—

	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Miles.	
At $\frac{4}{5}$ths designed power	25.5	20, 800	420	2, 300	
At maximum continuous seagoing speed.	24.8	18, 200	380	2, 480	
At $\frac{3}{5}$ths designed power	23.9	15, 600	334	2, 720	
At $\frac{2}{5}$ths designed power	21.7	10, 400	245	3, 360	
At $\frac{1}{5}$th designed power	18.0	5, 200	156	4, 400	
At 10 knots	10.0	1,000	48	7, 900	

Strassburg *and* Stralsund.

(*See Plates* 24 *and* 25.)

Name.	Designation before Launch.	Programme Year.	Where Built.	Ordered.	Laid Down.	Launched.	Commissioned for Trials.	Completed Trials.
Strassburg.....	Ersatz *Condor*...	1910–11	Imperial Dockyard, Wilhelmshaven.	–. 4. 10	....	24. 8. 11	1. 10. 12	23. 12. 12
Stralsund.....	Ersatz *Cormoran*.	1910–11	Weser Yard, Bremen	–. 4. 10	–. 10. 10	4. 11. 11	10. 12. 12	15. 2. 13

Cost.—

	£
Hull, machinery, &c	318, 003
Gun armament	73, 386
Torpedo armament	24, 950
Total	£416, 339

General Remarks.—These were the first German war vessels to be built on the Isherwood (longitudinal) system, and are now the only German light cruisers with four funnels. The lines of the hull are much finer than in previous types, and there is no poop. The special feature of the ships of this type is, however, the introduction of vertical side armour for a portion of their length.

In 1916 the *Stralsund* was rearmed and given deck torpedo tubes, as shown below; she previously carried the same armament as the *Strassburg*.

The *Strassburg* has been fitted during the war with a new and apparently experimental form of fire control; a special control tower, carrying a range-finder, has been added on the top of the original conning tower. The position of the foremost searchlights has also been altered.

Of the other two vessels of this type, the *Breslau* was sold to Turkey on 11th August 1914 and re-named *Midilli*, and the *Magdeburg* was destroyed in the Gulf of Finland on 20th August 1914.

Complement.—Peace complement: *Strassburg*, 370; *Stralsund*, 373. War complement, about 450.

General Appearance.—Four funnels. For general lines, *see* Photograph Book, but changes have been made since date of photograph.

Strassburg *and* Stralsund—*cont.*

General Dimensions.—

Length, L. W. L	446 ft. 2 ins.
Breadth, extreme	43 " 7 "
Draught, designed load	15 " 9 "
Displacement, designed load	4,480 tons.
Height of W. T. pole to L. W. L (about)	138 ft. 0 ins.
Height of fore lower masthead to L. W. L	102 " 0 "
Height of funnel-top to L. W. L	58 " 0 "

Armour.—

Material.—Krupp.

Belt.—3.9″ thick amidships, 2.4″ at ends. The belt is narrow—probably about 6 ft. in width amidships. It extends from about 20 ft. from bow to within about 65 ft. of stern.

Conning Tower.—3.9″ thick, except in rear, where it is 3.1″. The conning tower is on forecastle, and is well before fore-bridge.

Horizontal.—Armoured deck, .8″ on flat and 2″ on slopes.

Armament.—

Guns.—

Strassburg.—

(For approximate arcs of training, *see* Plate.)

12—4.1-in. (10.5-cm.) Q. F., L/45—all with shields. Two on forecastle, two at after end of superstructure, and four on each side on main deck.

2—22-pr. (8.8-cm.) semi-automatic anti-aircraft guns.

2—Machine guns.

†1—7-pr. (6-cm.) Q. F., L/21, boat and field gun.

Stralsund.—

(For reported disposition and approximate arcs of training, *see* Plate.)

8—5.9-in. (15-cm.) Q. F.

2—22-pr. (8.8-cm.) semi-automatic anti-aircraft guns.

2—Machine guns.

†1—7-pr. (6-cm.) Q. F., L/21, boat and field gun.

Torpedo Tubes.—

Strassburg.—

2—19.7-in. (50-cm.) submerged, fitted with gyro angling gear which can be set for every 15° from 30° before to 60° abaft the direction of the tube.

Stralsund.—

2—19.7-in. (50-cm.) submerged, fitted with gyro angling gear which can be set for every 15° from 30° before to 60° abaft the direction of the tube.

2—19.7-in. (50-cm.) above-water.

Mines.—These vessels are fitted aft for dropping mines.

There is probably no permanent stowage for the mines, but 120 can be carried if required.

Searchlights.—

4—in *Strassburg,* two on fore side of foremast, one above the other, and two on mainmast placed in fore and aft line; in *Stralsund,* two on foremast abreast, and two on mainmast placed in fore and aft line. Electrically controlled from positions immediately below.

† Probably landed for service in the field.

Strassburg *and* Stralsund—*cont.*

Range-finder.—A range-finder is permanently fitted on fore conning tower—it is not armoured.

Boats.— *See* Section 1.

Machinery and Boilers.—

Main Engines.—

Strassburg.—Parsons turbines (modified) on two shafts.

Stralsund.—Bergmann turbines on three shafts.

Boilers.—16 Schulz, Navy type.

Propellers.—*Strassburg.*—Two.
Stralsund.—Three.

Speed, Horse-Power, and Fuel.—

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
	Knots.		
Strassburg / *Stralsund*	26.75	24,200	(a) 1,181. (b) Some.

Steam Trials.—

Ship.	Nature of Trial.	Date.	Speed.	Horse-Power.	Revolutions.	Remarks.
Strassburg	Measured mile	—.12.12	28.28	33,742	—	
	6 hours forced draught.	—.12.12	26.9	25,647	305	
Stralsund	Measured mile	—.1.13	28.27	35,515	—	
	6 hours forced draught.	—.1.13	26.95	27,032	397	

Endurance.—

—	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Miles.	
At $\frac{4}{5}$ths designed power	25.1	19,360	394	1,715	
At maximum continuous seagoing speed.	24.4	16,940	354	1,850	
At the $\frac{3}{5}$ths designed power	23.5	14,520	311	2,030	
At the $\frac{2}{5}$ths designed power	21.3	9,680	228	2,515	
At $\frac{1}{5}$th designed power	17.6	4,840	145	3,290	
At 10 knots	10.0	950	46	5,850	

N. B.—Radius of action calculated on coal only.

Kolberg *and* Augsburg.

(*See Plate* 26.)

Name.	Designation before Launch.	Programme Year.	Where Built.	Ordered.	Laid Down.	Launched.	Commissioned for Trials.	Completed
Kolberg........	Ersatz *Greif*.....	1907–08	Schichau Works, Danzig.	—. 10. 07	—. —. 07	14. 11. 08	21. 6. 10	?
Ausburg......	Ersatz *Sperber*...	1908–09	Imperial Dockyard, Kiel.	—. 4. 08	22. 8. 08	10. 7. 09	1. 11. 10	?

Cost.—

	Kolberg.	*Augsburg.*
	£	£
Hull, machinery, &c.	293, 541	318, 003
Gun armament	68, 492	73, 386
Torpedo armament	18, 835	26, 418
Total	£380, 868	£417, 807

General Remarks.—The trials of *Kolberg* were considerably delayed owing to trouble with her turbines, chiefly due to stripping of blades. She was in dockyard hands for nearly three months in 1912, apparently in connection with her turbines. The other two vessels of this type, the *Mainz* and *Cöln*, were destroyed in action on 28th August, 1914.

Complement.—Peace complement, 379; war complement, about 440.

General Appearance.—*See* Photograph Book.

General Dimensions.—

Length between perpendiculars	401 ft. 11 ins.
Length L. W. L.	426 " 6 "
Breadth, extreme	45 " 11 "
Draught, designed, load	16 " 5 "
" maximum load	18 " 4 "
Displacement, designed load	4,280 tons.
Height of forecastle to L. W. L.	about 21 ft. 0 ins.
" poop to L. W. L.	18 " 4 "
" fore bridge to L. W. L.	31 " 6 "
" " compass position to L. W. L.	39 " 4 "
" foremost searchlights to L. W. L.	55 " 9 "
" funnels to L. W. L.	58 " 9 "
" fore crosstrees to L. W. L.	67 " 3 "
" " lower masthead to L. W. L.	102 " 0 "
" " topmast head to L. W. L.	123 " 0 "

Armour.—

Conning Tower.—3.9″ thick, except in rear, where it is 3.1″.

Horizontal.—Armoured deck, .8″ on flat and 2″ on slopes. Transverse bulkhead fitted forward, and glacis aft, where deck drops to a lower level.

Armament.—

Guns and Ammunition Supply.—

(For approximate arcs of training *see* plate.)

12—4.1-in. (10.5-cm.) Q. F., L/45, on C. P. Mountings; 2 on forecastle, 2 on poop, 4 on the upper deck in sponsons forward and aft, and 2 on each side in waist.

2—Machine guns.

†1—7-pr. (6-cm.) Q. F., L/21, boat and field gun.

† Probably landed for service in the field.

Kolberg *and* Augsburg—*cont.*

Armament—*cont.*

Torpedo Tubes.—

2—17.7-in. (45-cm.) submerged; fitted with gyro angling gear which can be set for every 15° from 30° before to 60° abaft the direction of the tube.

Mines.—There is probably no permanent stowage for mines, but 120 can be carried if required.

Searchlights.—

4—43.3-in. Two on foremast abreast, and two on mainmast placed in fore-and-aft line. *Kolberg's* are electrically controlled.

Boats.—*See* Section 1.

Machinery and Boilers.—

Main Engines.—

Kolberg—Melms and Pfenninger turbines.

Augsburg—Parsons turbines.

Boilers.—

Fifteen—Schulz, Navy type.

Propellers.—

Kolberg, two.

Augsburg, four.

Speed, Horse-Power, and Fuel.

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (*a*) Coal. (*b*) Oil.
	Knots.		
Kolberg.... *Augsburg*....	25	19, 600	(*a*) 890. (*b*) Some.

Steam Trials.—

Ship.	Nature of Trial.	Date.	Speed.	Horse-Power.	Revolutions.	Remarks.
Kolberg..........	Full power.........	—. 5. 11	26. 3	30, 400	....	After repair.
Augsburg..........	Measured mile......	—. 3. 11	27. 01	31, 340	516	Maximum.

Endurance.—

—	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Mles.	
At $\frac{4}{5}$ths designed power........	23. 6	16, 000	324	1, 470	
At maximum continuous seagoing speed.	23. 0	14, 000	300	1, 540	
At $\frac{3}{5}$ths designed power........	22. 0	12, 000	258	1, 690	
At $\frac{2}{5}$ths designed power........	19. 8	8, 000	214	1, 900	
At $\frac{1}{5}$th designed power........	16. 2	4, 000	128	2, 560	
At 10 knots........	10. 0	950	46	4, 400	

* N. B.—Radius of action calculated on coal only.

Stuttgart *and* Stettin.

(*See Plate* 27.)

Name.	Designation before Launch.	Programme Year.	Where Built.	Laid Down.	Launched.	First Commissioned.	Completed Trials.
Stuttgart	O	1905–06	Imperial Dockyard, Danzig.	–. 5. 05	22. 9. 06	1. 2. 08	9. 4. 08
Stettin	Ersatz *Wacht*	1905–06	Vulcan Works, Stettin	–. 12. 05	7. 3. 07	29. 10. 07	1. 2. 08

Cost.—

	£
Hull, machinery, &c.	232, 387
Gun armament	66, 047
Torpedo armament	13, 699
Total	£312, 133

General Remarks.—These ships are an improved *Hamburg* type. *Stettin* differs slightly from *Stuttgart*. A noticeable feature is that the centre funnel is closer to the foremost than to the aftermost funnel.

Of the other two vessels of this type, the *Königsberg* was destroyed in the Rufigi river on 11th July, 1915, and the *Nürnberg* was sunk off the Falkland islands on 8th December 1914.

Complement.—Peace complement: *Stuttgart*, 322; *Stettin*, 328. War complement, about 390.

General Appearance.—*See* Photograph Book.

General Dimensions, &c.—

—	*Stuttgart.*	*Stettin.*
Length between perpendiculars	360 ft. 11 ins.	363 ft. 10 ins.
" , L. W. L.	383 " 2 "	
Breadth, extreme	43 " 8 "	43 ft. 8 ins.
Draught, designed load	15 " 9 "	15 " 9 "
Displacement, designed load	3,400 tons	3,494 tons.

Height of fore funnel to L. W. L.	56 ft. 0 ins.
" " lower masthead to L. W. L.	80 " 0 "

Armour.—

Gun Shields.—1.9″.
Conning Tower.—3.9″ thick; 3.1″ in rear; .8″ on top.
Communication Tube.—1.2″.
Horizontal.—Armoured Deck.—Complete. Amidships, .8″ on the flat, 1.77″ on the slopes. Transverse bulkhead forward and glacis aft, where deck drops to a lower level, 3.1″.
Deck forward, before transverse bulkhead, 1.4″ to .8″.
Deck aft, abaft after glacis, 1″.
Glacis over engines, 3.9″.

Armament.—

Guns and Ammunition Supply.—
(For arcs of training *see* plate.)
10—4.1-in. (10.5-cm.) Q. F., L/40; two on forecastle, two on poop, four on the upper deck in sponsons forward and aft, and two amidships, on C. P. Mounting C/04.

Stuttgart *and* Stettin—*cont.*

Armament—*cont.*
Guns and Ammunition Supply—cont.
2—.31-in. (8-mm.) Maxim automatic.
†1—7-pr. (6-cm.) Q. F., L/21, boat and field gun.
Magazines and Stowage.—
4.1-in.—100 rounds per gun.
Overhead rails run along the upper deck each side for transport of ammunition, which comes up a double tube under the forecastle and poop.
Torpedo Tubes.—
2—17.7-in. submerged; one each side between 2nd and 3rd funnels.
Torpedoes.—Four per tube.
Mines.—There is probably no permanent stowage for mines, but 108 can be carried if required.

Searchlights.—
4—two on foremast abreast, and two on mainmast placed in fore-and-aft line.

Communications.—
Siemens-Schuckert's electrical engine-room and revolution telegraphs and helm indicator.

Boats.—*See* Section 1.

Machinery and Boilers.—
Main Engines.—
Stuttgart.—
Two sets, in separate engine rooms.
Type—Vertical, four cylinder, triple expansion.
Revolutions at full power, 145 (designed).
Stettin.—
Four sets.
Type—Parsons turbines.
Revolutions at full power, 540 (designed).
Working pressure at turbines, 175 lbs. per sq. in.
Boilers (both ships).—
10 in number, in five boiler rooms.
Type—Schulz.
Heating surface: *Stuttgart*, 40,000 sq. ft.; *Stettin*, 41,000 sq. ft.
Grate surface, 644 sq. ft.
Working pressure, 220 lbs. per sq. in.
Auxiliary Machinery includes—
Three dynamos—two in engine-room and one on deck.
Propellers.—
Stuttgart.—
Two—three-bladed.
Stettin.—
Four—three-bladed.
Diameter, 6 ft. 3 ins.; pitch, 5 ft. 7 ins.

Speed, Horse-Power, and Fuel.—

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (*a*) Coal. (*b*) Oil.
	Knots.		
Stuttgart	23. 5	13, 000	(*a*) 866
Stettin	23. 5	13, 400	(*a*) 866

† Probably landed for service in the field.

26346—17——4

Stuttgart *and* Stettin—*cont.*

Steam Trials.—

Ship.	Nature of Trial.	Date.	Speed.	Horse-Power.	Revolutions.	Remarks.
Stuttgart........	....	....	23.7	13,745	....	
Stettin............	Measured mile.........	—. 1. 08	25.17	21,600	584	33 fms. at Neukrug.
"	6 hours full power......	"	23.96	15,448	524	
						Coal per hour, turbines only:—
"	24 hours..................	"	20.2	7,000	415	5.9 tons.
"	"	"	12.0	1,344	243	1.788 tons.
"	"	"	12.0	1,403	243	1.564 "
"	Coal consumption trial..	"	17.0	4,195	344	3.838 "

The times and distances in which the *Stettin* was brought to a standstill with the astern turbines working at full power are given in the following table:—

Number of Boilers.	Speed.	Distance.	Time.
	Knots.	Feet.	Min. Secs.
11	24	1,410	1 7
11	20	1,190	1 6½
8	16	770	1 3
6	11	590	57
5	9	500	57½
3	5	260	56½

Endurance.

	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Miles.	
At ⅘ths designed power..............	22.3	10,400	245	1,800	*Stuttgart.*
	22.6	10,800	221	2,020	*Stettin.*
At maximum continuous seagoing speed.	21.5	8,800	207	2,045	*Stuttgart.*
	21.9	9,500	204	2,130	*Stettin.*
At ⅗ths designed power..............	20.8	7,800	192	2,130	*Stuttgart.*
	21.2	8,160	175	2,220	*Stettin.*
At ⅖ths designed power..............	18.7	5,200	130	2,835	*Stuttgart.*
	18.8	5,440	146	2,550	*Stettin.*
At ⅕th designed power..............	14.7	2,600	75	3,860	*Stuttgart.*
	14.8	2,720	87	3,340	*Stettin.*
At 10 knots..............................	10.0	845	33	6,100	*Stuttgart.*
	10.0	860	41	4,750	*Stettin*

Hamburg, Berlin, München, Lübeck, *and* Danzig.

(*See Plate* 28.)

Name.	Designation before Launch.	Programme Year.	Where Built.	Laid Down.	Launched.	First Commissioned.
Hamburg.........	K.....................	1902–03	Vulcan Works, Stettin..........	1. 8. 02	25. 7. 03	8. 3. 04
Berlin...........	Ersatz *Zieten*......	1902–03	Imperial Dockyard, Danzig....	26. 8. 02	22. 9. 03	4. 4. 05
München.........	M.....................	1903–04	Weser Yard, Bremen..........	18. 8. 03	30. 4. 04	10. 1. 05
Lübeck...........	Ersatz *Merkur*.....	1903–04	Vulcan Works, Stettin..........	12. 5. 03	26. 3. 04	26. 4. 05
Danzig...........	Ersatz *Alexandrine*..	1904–05	Imperial Dockyard, Danzig....	—. 8. 04	23. 9. 05	1. 2. 07

Hamburg, Berlin, München, Lübeck, *and* Danzig—*cont.*

Cost.—

	Hamburg and Berlin.	*Lübeck.*	*München and Danzig.*
	£	£	£
Hull, machinery, &c..............	232,388	246,475	232,388
Gun armament.....................	56,262	56,262	56,262
Torpedo armament................	12,231	13,699	13,698
Totals............................	£300,881	£316,436	£302,348

General Remarks.—The increased cost of *Lübeck* is due to her being fitted with turbine engines, the remaining ships having reciprocating engines. *Hamburg* was re-boilered in 1910, and underwent alterations, the nature of which is uncertain, to fit her as parent ship of submarines. The *München* is fitted with submarine sound signalling apparatus.

Of the two other vessels of this type, the *Leipzig* was sunk off the Falkland Islands on 8th December 1914 and the *Bremen* was sunk in the Baltic on 17th December 1915.

Complement.—Peace complement, 303; war complement, about 350.

General Appearance.—*See* Photograph Book. The *Danzig* differs from the other vessels of the type in having her conning tower before and her bridge round foremast. The other vessels have both conning tower and bridge abaft foremast.

General Dimensions, &c.— .... 340 ft. 6 ins.
Length between perpendiculars........................ 362 " 7 "
Length, L. W. L.................................... 43 " 4 "
Breadth, extreme.................................. 16 " 5 "
Draught, designed load............................ 3,200 tons.
Displacement, designed load...................... 58 ft. 0 ins.
Height of fore funnel to L. W. L.................. 71 " 0 "
" " crosstrees to L. W. L.

Armour.—

Gun Shields of 4.1-in. Guns.—1.9″ thick.

Conning Tower.—3.9″ thick. Dimensions about 5 ft. 6 ins. by 9 ft.

Communication Tube.—1.2″ thick.

Horizontal.—Armoured deck.—Complete. Amidships, .8″ on the flat, 1.9″ on the slopes. Transverse bulkhead forward and glacis aft, 3.1″. Deck forward before transverse bulkhead, 1.4″ to .8″. Deck aft abaft after glacis, 1″. Glacis over engines, 3.9″.

Armament.—

Guns and Ammunition Supply.—

(For arcs of training, *see* plate.)

10—4.1-in. (10.5-cm.) Q. F., L/40, on C. P. Mounting C/04.

Two on forecastle, two on poop, and three each side on upper deck. The gun supports are carried down to the armoured deck in cylindrical form, about 2 ft. in diameter. Hoists for 4.1-in. guns, electric, alternative hand.

2—.31-in. (8-mm.), Maxim automatic.

†1—7-pr. (6-cm.) Q. F., L/21, boat and field gun.

Magazines and Stowage.—

There are two magazines, one forward and one aft.

Torpedo Tubes.—

2—17.7-in. (45-cm.) submerged; before conning tower.

Mines.—There is probably no permanent stowage for mines, but 108 can be carried if required.

Searchlights.—

2—One on each mast.

† Probably landed for service in the field.

Hamburg, Berlin, München, Lübeck, *and* Danzig—*cont.*

Boats.—*See* Section 1.

Anchors.—Stockless. Hawse-pipes rather far aft.

Machinery and Boilers.—

Engines, except *Lübeck.*—

Two sets, in separate engine-rooms abreast of one another. The longitudinal bulkhead between the two engine-rooms has no doors in it.

Type—Vertical, four cylinder, triple expansion.

Lübeck—

Engines.—Four sets, in two engine rooms.

Longitudinal bulkhead as in other ships of the class, but there are two small separate compartments for auxiliary machinery.

Type—Parsons turbines manufactured by Deutsche Parsons Marine A.-G. Turbinia.

Two shafts on each side of the ship. Port and starboard outer shafts, H. P. main turbine, and astern turbine. Port inner shaft—L. P. cruising, L. P. main with astern turbine. Starboard inner shaft—H. P. cruising turbine, L. P. main turbine with astern turbine.

Saving of weight on reciprocating engines of sister ships, 52 tons.

Boilers (all ships).—

Ten in number, in three boiler rooms, two in fore, four in middle, and four in after boiler room.

Type—Schulz, Navy type.

Working pressure, 215 lbs. per sq. in.

Total heating surface, 32,650 sq. ft.

Total grate surface, 650 sq. ft.

Height of funnel above grate, 70 ft.

Auxiliary Machinery includes—

Three dynamos—two in engine-room and one on deck.

Pumps with a total pumping capacity of 1,373 tons per hour.

Propellers.—Two, four-bladed; except *Lübeck,* which presumably has the propellers that gave her the greatest trial speed.

Speed, Horse-Power, and Fuel.—

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
	Knots.		
Class except	22	10,000	(a) 846
Lübeck	22	11,200	

Steam Trials.—

Ship.	Nature of Trial.	Speed.	I. H. P.	Revolutions.	Remarks.
		Knots.		No.	Coal per I. H. P. per hour. Lbs.
Hamburg	Measured mile trials	23.1	11,848	147	
München	" "	23.45	12,388	143	
Lübeck	" "	23.1	14,158(T)		
Hamburg	6 hours' forced draught	22.1	10,746	141	2.2
Berlin	" "	22.6	10,857	138	2.1
München	" "	22.0	10,580	135	2.3
Lübeck	" "	22.6	13,879(T)	663	
Danzig	" "	22.7	12,110		
Hamburg	24 hours' coal consumption	20.2	7,244	124	1.82
Berlin	" "	20.3	7,121	121	1.76
München	" "	20.4	7,165	121	1.96

Arcona—*cont.*

General Appearance.—*See* Photograph Book.

General Dimensions, &c.—

Length between perpendiculars .... 328 ft. 1 in.
Length, L. W. L .... 342 " 6 "
Breadth, extreme .... 40 " 4 "
Draught, designed load .... 16 " 4 "
Displacement, designed load .... 2,656 tons.
Height of fore funnel to L. W. L .... 60 ft. 0 ins.
" " lower masthead to L. W. L .... 70 " 0 "

Armour.—

Conning Tower.—3.1″ thick; communication tube, 1.2″.

Horizontal.—Armoured deck, complete, .8″ thick on flat, and 2″ on slopes.

Armoured coamings.—3.1″ thick.

Mines.—*Arcona* was altered in 1912 and fitted for minelaying and minesweeping. According to an estimate she can carry over 400 contact mines, which are placed along the lower deck on rails, a double row being situated on each side of the ship. The rails run past the officers' quarters to a platform at the stern, from which they are launched on either side of the rudder. To enable this to be done the captain's cabin aft was removed.

Searchlights.—

2—one on each mast.

Boats.—One 30 ft. steam and eight pulling boats.

Machinery and Boilers.—

Main Engines.—

Two sets, in separate watertight compartments.
Type—Vertical, triple expansion.
Diameter of cylinders—31.1 ins., 47.2 ins., and 73.2 ins.
Length of stroke—27.6 ins.
Working pressure (at engines)—213 lbs.

Boilers.—

Nine in number.
Type—Schulz, Navy type, fitted to work under forced draught.
Heating surface—24,973 sq. ft.
Grate surface—455 sq. ft.

Propellers.—Two, three-bladed. Diameter, 11 ft. 6 ins.; pitch, 16 ft. 3 ins.

Speed, Horse-Power, and Fuel.—

Ship.	Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
	Knots.		
Arcona	21	8,000	(a) 698

Steam Trials.—

Ship.	Nature of Trial.	Date.	Speed.	Horse-Power.	Revolutions.	Remarks.
Arcona	6 hours' forced draught		21.0	8,291	161	
	24 hours' coal consumption.		19.55	5,881	148	Coal per I. H. P. per Hour. 1.98 lbs.
			12.04	1,318	88	1.98 "

Gazelle, Nymphe, Niobe, Thetis, Medusa, *and* **Amazone**—*cont.*

Armour.—

Gun Shields of 4.1-in. Guns.—1″ thick.

Conning Tower.—*Gazelle, Niobe,* and *Nymphe,* 2.8″ thick, the remainder 3.1″.

Communication Tube.—1.2″ thick.

Horizontal.—There is a complete curved armoured deck, 3 ft. above the load water-line, over the engines and boilers, ¾″ on the flat and 2″ on the slopes, to 4 ft. below load water-line at the sides. At the ends of the machinery spaces the deck dips sharply down to 1 ft. below load water line. All openings, except for funnels, are protected by 3.1″ armoured coamings, 1 ft. high.

Armament.—

Guns and Ammunition Supply.—

(For arcs of training, *see* Plate.)

10—4.1 in. (10.5 cm.) Q. F., L/40, on C. P. Mounting C/97. Two on forecastle, two on poop, two in sponsons under forecastle, two under poop, two under bridge.

2—.31-in. (8-mm.) Maxim automatic.

All hoists electric, alternative hand.

Magazines and Stowage.—

Three magazines on each side. Stowage, 4.1-in.—100 rounds per gun.

Torpedo Tubes.—

2—17.7-in., submerged; one on each broadside. (*Gazelle* has one submerged, under ram, and two above-water-tubes.)

Torpedoes.—*Gazelle* carries three for the bow and five for the broadside tubes.

Mines.—There is probably no permanent stowage for mines, but 70 can be carried if required.

Searchlights.—

2—One on platform on foremast, one on raised platform on poop.

Boats.—*See* Section 1.

Steering Gear.—Harfield's patent (eccentric). The rudder is balanced, hanging freely.

Machinery and Boilers.—

Main Engines.—

Two sets, in separate watertight compartments.

Type—Vertical, four-cylinder, triple expansion, balanced cranks.

Diameter of cylinders—30.7 ins., 44.5 ins., two of 51 ins.

Length of stroke—28.3 ins.

Revolutions at full power—170.

Working pressure (at engines)—200 lbs. per sq. in.

Boilers.—

Gazelle has eight, and the remaining ships nine. In two separate watertight compartments.

Type—Thornycroft in *Niobe*, Schulz in the remaining ships.

Full working pressure—213 lbs.

Total tube heating surface, *Nymphe*, 25,000 sq. ft.

Total grate surface, *Nymphe*, 488 sq. ft.

Auxiliary Machinery includes—

Steam.—Pumps of total pumping capacity of 1,397 tons per hour.

Electric.—

Three dynamos (each 200 ampères and 110 volts), in separate room abaft engine room.

Motors for ammunition supply and ventilating fans.

Coal and boat hoists.

Propellers.—Two, three-bladed. Diameter, 11 ft. 5 ins.; pitch, 16 ft. 5 ins.

Gazelle, Nymphe, Niobe, Thetis, Medusa, *and* **Amazone**—*cont.*

Speed, Horse-Power, and Fuel.—

Ship	Speed (designed).	Horse-Power (designed).	Fuel: (*a*) Coal. (*b*) Oil.
	Knots.		
Class except	22	8,000	(*a*) 571
Niobe	22	8,000	(*a*) 590
Gazelle	20	6,000	(*a*) 590

Steam Trials.—

Ship.	Nature of Trial.	Speed.	Horse-Power.	Revolutions.	Remarks.
Gazelle	Full power	20.2	6,366	—	
Nymphe	"	20.8	8,400	—	
Niobe	"	21.6	8,631	166	
Thetis	"	21.75	8,888	172	
Medusa	"	22.2	8,500	—	
Amazone	"	21.5	8,603	161	

Endurance.—

—	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Miles.	
At ⅘ths designed power	20.0	6,400	152	1,700	Except *Niobe* and *Gazelle*.
At maximum continuous seagoing speed.	19.1	5,500	134	1,840	
At ⅗ths designed power	18.1	4,800	120	1,980	
At ⅖ths designed power	16.0	3,200	82	2,540	
At ⅕th designed power	12.7	1,600	48	3,440	
At 10 knots	10.0	750	30	4,340	

—	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Miles.	
At ⅘ths designed power	20.0	6,400	152	1,760	*Niobe.*
	18.4	4,800	120	2,060	*Gazelle.*
At maximum continuous seagoing speed.	19.1	5,500	134	1,900	*Niobe.*
	17.6	4,200	106	2,230	*Gazelle.*
At ⅗ths designed power	18.1	4,800	120	2,040	*Niobe.*
	16.7	3,600	92	2,440	*Gazelle.*
At ⅖ths designed power	16.0	3,200	82	2,650	*Niobe.*
	14.5	2,400	65	3,010	*Gazelle.*
At ⅕th designed power	12.7	1,600	48	3,560	*Niobe.*
	11.6	1,200	38	4,040	*Gazelle.*
At 10 knots	10.0	740	30	4,500	Both.

Hertha, Victoria Louise, Freya, Vineta, *and* Hansa.

(*See Plate* 30.)

Name.	Name before Launch.	Programme Year.	Where Built.	Laid Down.	Launched.	First Commissioned.	Reconstructed.
Hertha	K.	1895–96	Vulcan Works, Stettin.	–. 9. 95	14. 4. 97	23. 7. 98	1908
Victoria Louise	L.	1895–96	Weser Yard, Bremen.	–. 9. 95	29. 3. 97	20. 2. 99	1908
*Freya**	*Ersatz* Freya	1895–96	Imperial Dockyard, Danzig.	–. 10. 95	27. 4. 97	20. 10. 00	1913*
Vineta	M.	1896–97	Imperial Dockyard, Danzig.	–. 9. 96	9. 12. 97	13. 9. 99	1911
Hansa	N.	1896–97	Vulcan Works, Stettin.	–. 3. 96	12. 3. 98	20. 4. 99	1909

*Partially reconstructed in 1907.

Cost.—

	£
Hull, machinery, &c.	366, 928
Gun armament	85, 616
Torpedo armament	19, 080
Total	£471, 624

General Remarks.—Between 1908 and 1913 all these ships underwent extensive alterations (at a cost of about 49,000*l.* each) to adapt them for service as seagoing training ships for cadets and boys, in lieu of the former old masted training ships. The alterations included the removal of the military foremast, part of the fore superstructure, 2—5.9 in. and 10—1-pr. guns, the after casemate on each side, the midship funnel and several boilers, whilst 4—15-pr. guns were added. In the *Vineta* the port submerged torpedo tube was removed. New boilers were fitted and accommodation provided for about 60 cadets and 250 boys. The ships have now two funnels and two polemasts each.

As light cruisers these vessels may now be considered entirely obsolete. The *Vineta* and *Hansa* are being used as stationary submarine depôt ships (May 1917).

Complement—

as Training Ship—

Excluding cadets and boys† under training, the complement consists of—

Officers, Warrant officers and men.	Seamen branch	123
	Torpedo men	3
	E. R. personnel, artisans, &c.	163

in ordinary capacity (all ranks and ratings) .... 313 / 465

General Appearance.—*See* Photograph Book.

General Dimensions, &c.—

	Victoria Louise, Hertha, Freya.	*Vineta, Hansa.*
Length between perpendiculars	344 ft. 6 ins.	345 ft. 6 ins.
Length L. W. L.	357 " 11 "	360 " 3 "
Breadth, extreme	57 " 1 "	57 " 9 "
Draught, designed load	20 " 4 "	21 " 8 "
Displacement, designed load	5,575 tons.	5,790 tons.
Displacement, full load	6,214 "	5,982 "

† Maximum number that can be carried—cadets about 70, boys 250.

Hertha, Victoria Louise, Freya, Vineta, *and* Hansa—*cont.*

Constructive Details.—The use of wood has been reduced to a minimum, the steel decks being covered with linoleum or cork; cabin bulkheads, chart houses, ladders, &c., are all of steel. The bulkheads of engine and boiler rooms are carried up to the armoured deck without any break or aperture. Cofferdams, 8 ft. high and 27 ins. wide, filled with cork, are fitted round the water-line for 230 feet. The *Hansa* and *Vineta* only are sheathed.

Armour.—

Turrets.—For 8.2-in. and 5.9-in. guns—3.9″ thick.

Casemates.—For 5.9-in. guns—3.9″ thick.

Ammunition Tubes.—3.1″.

Conning Towers.—Fore, 5.9″; after, 4″.

Horizontal.—Armoured deck, complete, 1.5″ on flat, 3.9″ on the slopes amidships (the lower edge being 5 ft. below water-line), 3″ and 2.5″ forward and aft.

Glacis.—4″ round bases of funnels.

Armament.—

Guns and Ammunition Supply.—

(For arcs of training, *see* plate.)

2—8.2-in. (21-cm.) Q. F., L/40, mounted singly in hooded barbettes forward and aft on Turm-Lafette, C/97.

6—5.9-in. (15-cm.) Q. F., L/40; four in single turrets on Turm-Lafette C/97, on the upper deck; two in casemates on main deck.

3—15-pr. (8.8-cm.) Q. F., L/35, with shields.

11—15-pr. (8.8-cm.) Q. F., L/30, with shields.

4—machine guns.

†1—7-pr. (6-cm.) B. L., L/21, boat and field gun.

Magazines and Stowage.—Number of rounds per gun carried, 8.2 in.—80; 5.9 in.—100; 15-pr.—250. Magazines for after 5.9-in. built into the fore part of central engine-room.

Torpedo Tubes.—

3—17.7 in., submerged; one under ram, one each side in line with conning tower, fixed 20° before the beam. (*Vineta* has only 2 tubes, the port tube having been removed.)

Searchlights.—

4—one in fore top, one each side on fore bridge, and one in main top electrically controlled from the conning tower.

Boats.—*See* Section 1.

Boat Cranes.—Two, steam, on either side between funnels.

Steering Gear.—Partly balanced rudder (steam). In *Hertha* and *Hansa* the telemotor system is fitted.

Turning Powers.—Diameter of circle about 500 yards, three engines "ahead."

Machinery and Boilers.—

Main Engines.—

Three sets, in separate engine rooms, the centre set abaft the other two.

Type—Vertical, four-cylinder, triple expansion.

Diameters of cylinders, 28.4 ins.; 43.7 ins.; and two of 51.2 ins.

Length of stroke, 29.5 ins.

Working pressure at engines, 200 lbs. per square inch.

Revolutions at full power, 145 (designed).

Boilers.—The original boilers have probably been replaced by 8 Schulz, Navy type, in all these vessels.

† Probably landed for service in the field.

Hertha, Victoria Louise, Freya, Vineta, *and* **Hansa**—*cont.*

Auxiliary Machinery includes—

Steam.—Fan engines.

Pumps.—Total pumping capacity 2,134 tons per hour.

Hydraulic.—Pumping engine, one in centre of each engine room.

Electric.—Dynamos, four (500 ampères at 110 volts).

Propellers.—Three, three-bladed; diameter, 12 ft. 9 ins.; starboard and centre propellers right- and port left-handed in *Vineta*.

Speed, Horse-Power, and Fuel.—

Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
Knots. 19	10,000	(a) 885, except *Vineta* and *Hansa*. (a) 905

Steam Trials.—

Ship.	Nature of Trial.	Speed.	Horse-Power.	Revolutions.	Remarks.
Hertha	Full power	19.2	10,173	....	With boilers originally fitted.
Victoria Louise	"	19.1	10,000	....	
Freya	"	18.5	10,919	....	
Vineta	"	19.2	10,000	....	
Hansa	"	19.2	10,000	....	

Endurance.—

	Speed.	Horse-Power.	Daily Consumption.	Radius of Action.	Remarks.
	Knots.		Tons.	Miles.	*Vineta* and *Hansa.*
At $\frac{4}{5}$ths designed power	18.1	8,000	186	1,950	1,990
At maximum continuous seagoing speed.	17.2	6,400	153	2,240	2,285
At $\frac{3}{5}$ths designed power	16.8	6,000	136	2,500	2,550
At $\frac{2}{5}$ths designed power	15.1	4,000	98	3,140	3,210
At $\frac{1}{5}$th designed power	11.8	2,000	57	4,500	4,600
At 10 knots	10.0	1,450	42	4,800	4,910

Gefion.

(*See Plate* 31.)

Built at .... Schichau Works, Elbing.
Programme Year .... 1890–91.
Laid down .... 28th March 1892.
Launched .... 31st May 1893.
First commissioned .... 27th June 1894.

Complement.—In peace time, 296.

General Appearance.—*See* Photograph Book.

General Dimensions, &c.—

Length {between perpendiculars .... 344 ft. 6 ins.
Length {L. W. L. .... 358 " 3 "
Breadth, extreme .... 43 " 4 "
Draught, designed load .... 20 " 4 "
Displacement, designed load .... 3,705 tons.

Gefion—*cont.*

Hull.—

Material.—Steel, sheathed with wood and Muntz metal.

Constructive Details.—A cofferdam filled with cellulose is fitted round the water-line between the protective deck and the deck above. The upper deck is not planked, but covered with linoleum. The coal bunkers extend up to the deck.

Armour.—

Gun Positions.—1.3″ shields for the 4.1-in. guns.

Horizontal.—Armoured deck, 1″ thick on the flat and 1.2″ on the slopes, over the engines, boilers, and steering gear only. The engine cylinders, which project above the armoured deck, are protected by a 4″ glacis on a $\frac{1}{2}$″ skin.

Armament.—

Guns and Ammunition Supply.—

(For approximate arcs of training, *see* Plate.)

10—4.1-in. (10.5-cm.) Q. F., L/35; two on forecastle, two on poop, three on each broadside.

6—4-pr. (5-cm.) Q. F., L/40; two under forecastle, two under poop, two on fore and aft bridge.

4—.31-in. (8-mm.) Maxim automatic.

†1—7-pr. (6-cm.) B.L., L/21, boat and field gun.

The *Stern* system of stowing ready ammunition in steel boxes, in the vicinity of the guns, is adopted—20 rounds for 4.1-in.

Torpedo Tubes have been removed.

Mines.—There is probably no permanent stowage for mines, but 70 can be carried if required.

Searchlights.—

2—one on a platform before the foremast, one on platform on poop.

Boats.—*See* Section 1.

Machinery and Boilers.—

Main Engines.—

Two sets, in separate compartments

Type—Vertical, triple expansion.

Boilers.—

Six in number, in three boiler rooms.

Date when first used at sea, 1894.

Type—Cylindrical, double-ended.

Total heating surface, 22,700 sq. ft.

Total grate surface, 715 sq. ft.

Propellers.—Two.

Speed, Horse-Power, and Fuel.—

Speed (designed).	Horse-Power (designed).	Fuel: (a) Coal. (b) Oil.
Knots. 19	9,000	(a) 846

Steam Trials.—

Ship.	Nature of Trial.	Speed.	Horse-Power.	Revolutions.	Remarks.
Gefion	Full power	20.5	9,820	142	Displacement, 3,974 tons.

† Probably landed for service in the field.

MINELAYING CRUISERS.

Brummer, Bremse, Wespe, Biene, Natter, Fliege, Mücke, Hummel, Basilisk, Crokodill, Skorpion, *and* Viper.

(*See Plate* 33.)

Name.	Where Built or Building.	Laid Down.	Launched.	Commissioned for Trials.	Completed Trials.
Brummer	Blohm and Voss Works, Hamburg	1914	1915	–. 3. 16	
Bremse	Vulcan Works, Stettin	1915	1915	–. 7. 16	....
Wespe	" " "	1915	–. 12. 15	1917	....
Biene	Three at Blohm and Voss Works, Hamburg, and two at Vulcan Works, Stettin; the others are doubtful.	1915	1916	1917	....
Natter		1915	1916	....	....
Fliege		1915	1916	....	....
Mücke		1916	....	....	....
Hummel		1916	....	....	....
Basilisk		1916	....	....	....
Crokodill		1916	....	....	....
Skorpion		1916	....	....	....
Viper		1916	....	....	....

General Remarks.—These are vessels of a new type, evolved during the war. They burn oil only.

Though in all essentials light cruisers, they are here classed by themselves as "minelaying cruisers," because it is believed that they are adapted for, and will be used for, minelaying to an extent which differentiates them entirely from previous types. At the same time, they will undoubtedly be employed like ordinary light cruisers for scouting and screening purposes whenever they are not specially detailed for minelaying duties.

Complement.—War complement, about 400.

General Appearance.—Three straight funnels, slightly raked; pole foremast with topmast, stump mainmast; no berthing.

General Dimensions.—

Length, L. W. L.	*About* 420 ft. 0 ins.
Breadth	" 41 " 0 "
Draught	" 15 " 6 "
Displacement	*About* 3,800 tons.

Armour.—No information as to disposition or thickness yet available. The conning tower is before the fore bridge and entirely clear of it.

Armament.—

Guns.—

(For reported disposition and approximate arcs of training, *see* Plate.)

4—5.9-in. (15-cm.) Q. F. on the centre line.

2—22-pr. (8.8-cm.) semi-automatic anti-aircraft guns.

Torpedo Tubes.—

2—19.7-in. (50-cm.) above-water, one on either side amidships.

Mines.—

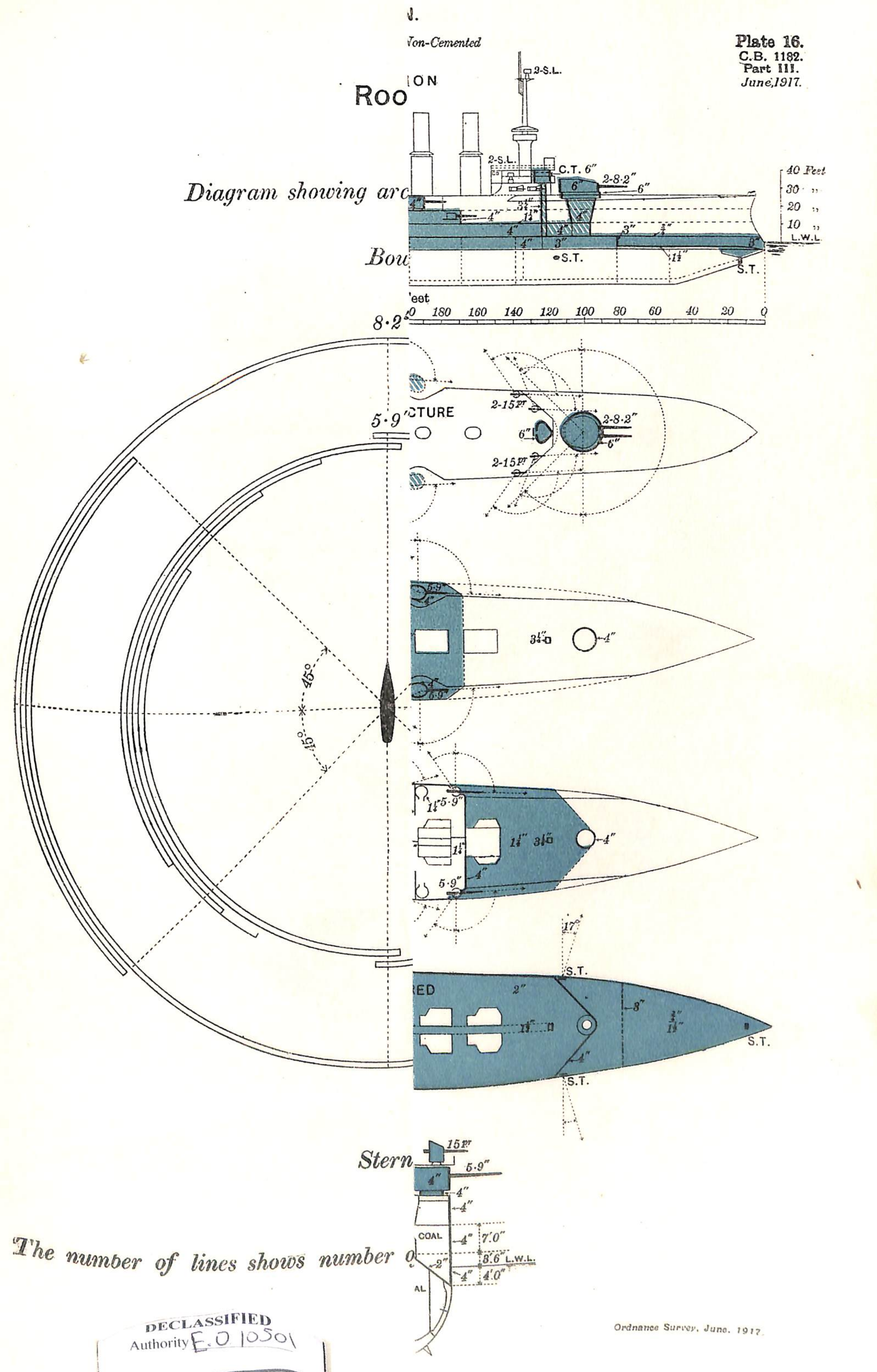
Rails are fitted on both sides of the upper deck for a total of about 180 mines, but no mines are stored permanently on board.

Searchlights.—

4—two on foremast abreast, two on mainmast placed in fore and aft line.

Speed, Horse-Power, and Fuel.

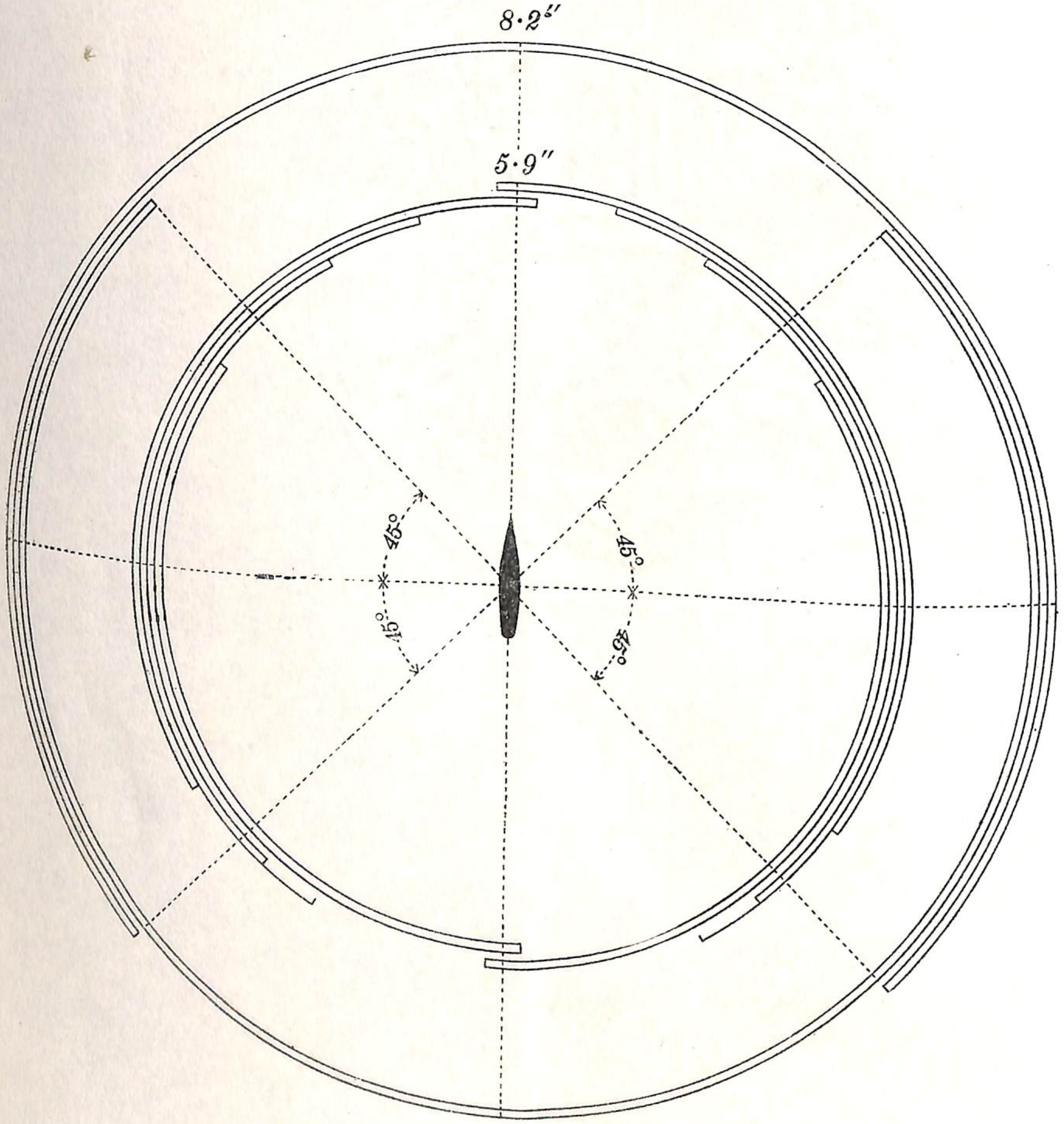
Speed (designed).	Horse-Power (designed).	Fuel.
Knots. *About* 34.0	....	Oil only.



Roon

Diagram showing arcs of fire of Guns.

Bow



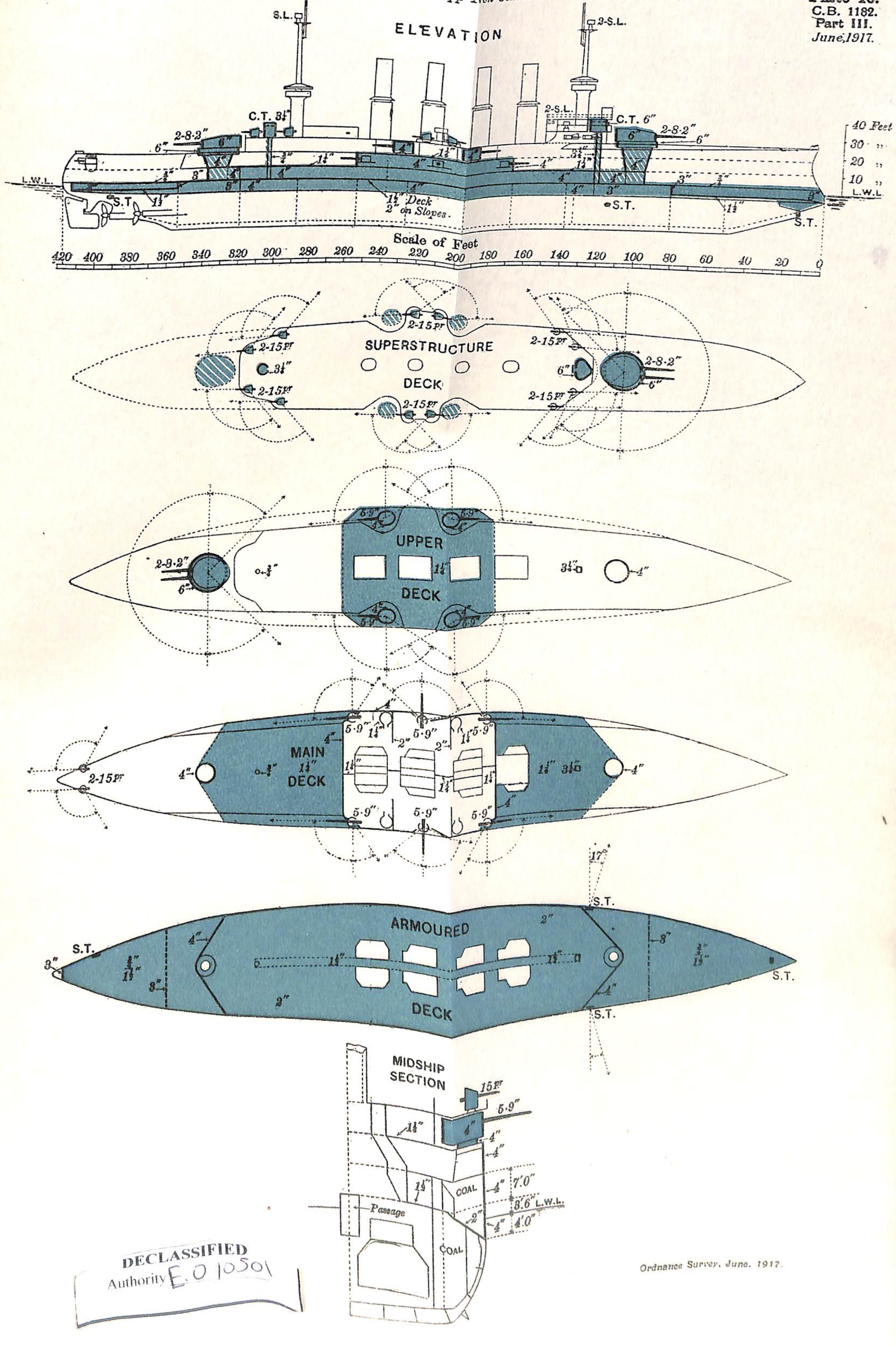
Stern

The number of lines shows number of Guns bearing in each Sector.

Roon.

ARMOUR: – *Krupp Non-Cemented*

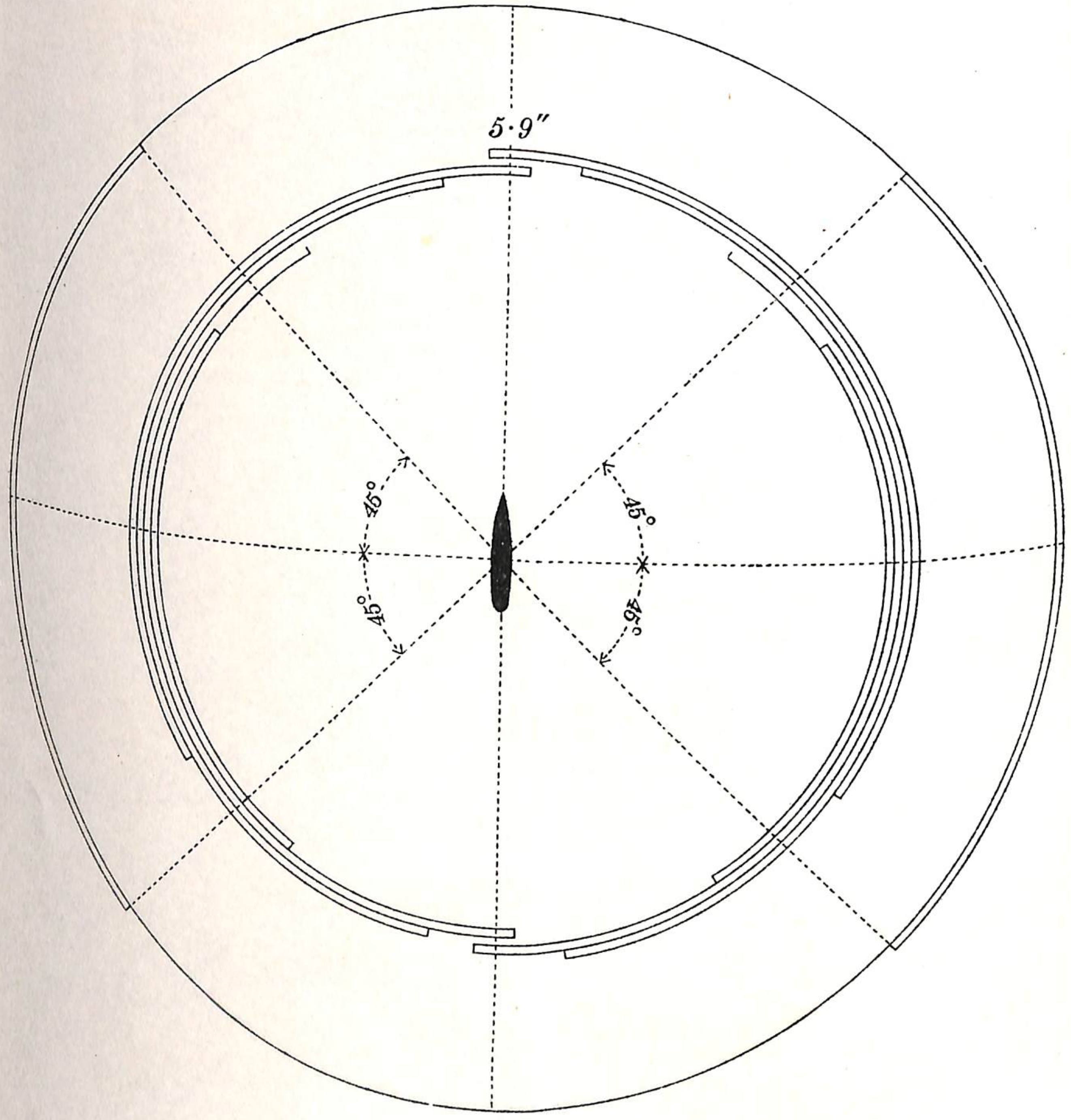
Plate 16.
C.B. 1182.
Part III.
June, 1917.



PRINZ HEINRICH.

Diagram showing arcs of fire of Guns.

Bow



Stern

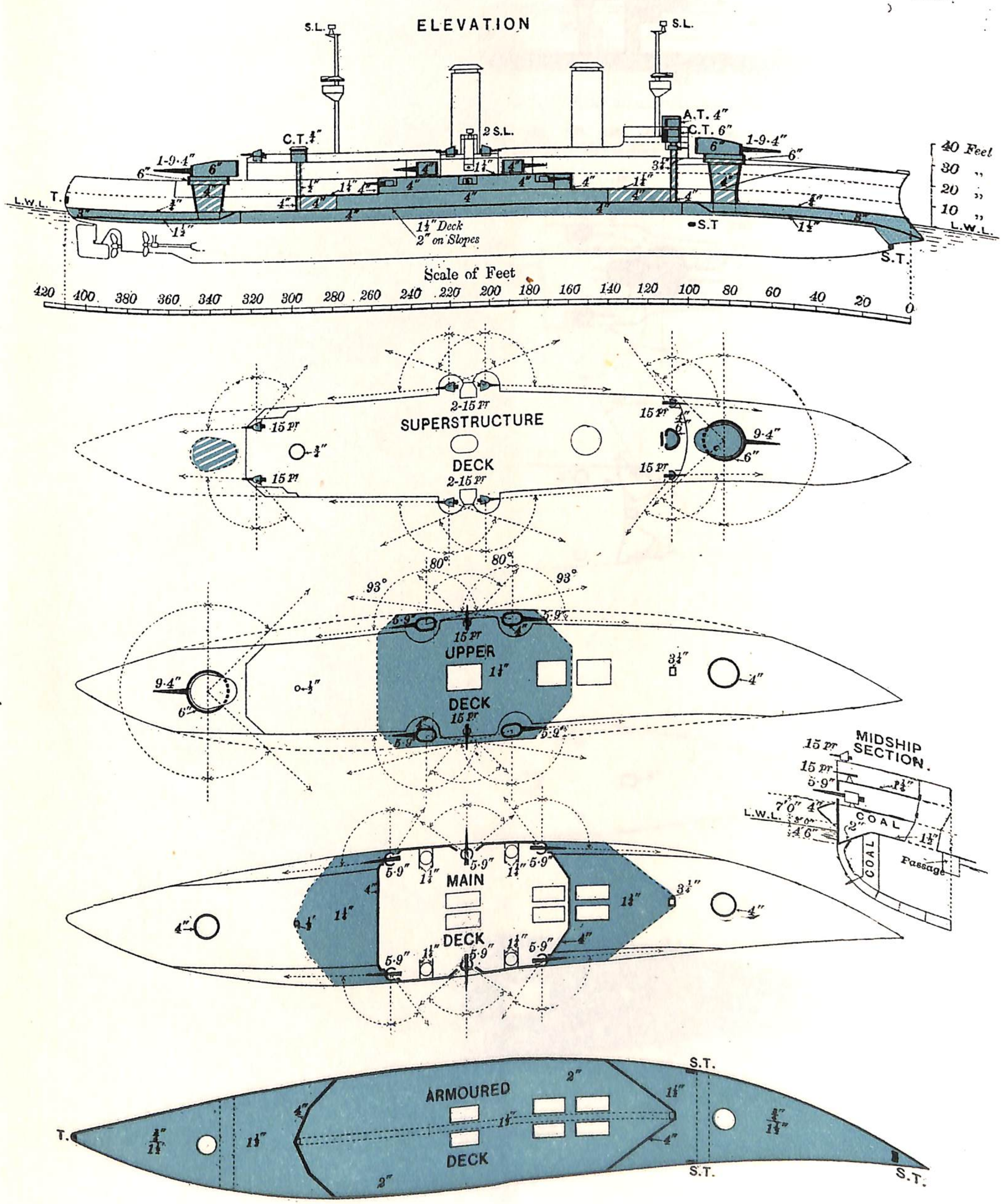
The number of lines shows number of Guns bearing in each Sector.

Ordnance Survey, June, 1917.

PRINZ HEINRICH.

Plate 17.
C.B. 1182.
Part III.
June 1917.

ARMOUR – *Krupp Non-Cemented.*



Ordnance Survey, June, 1917

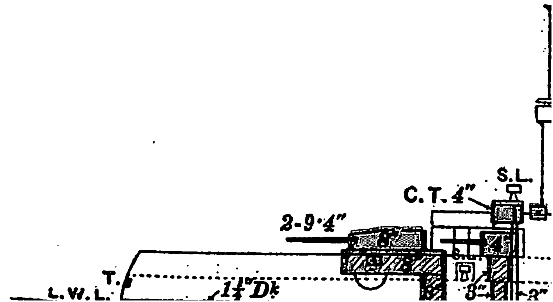
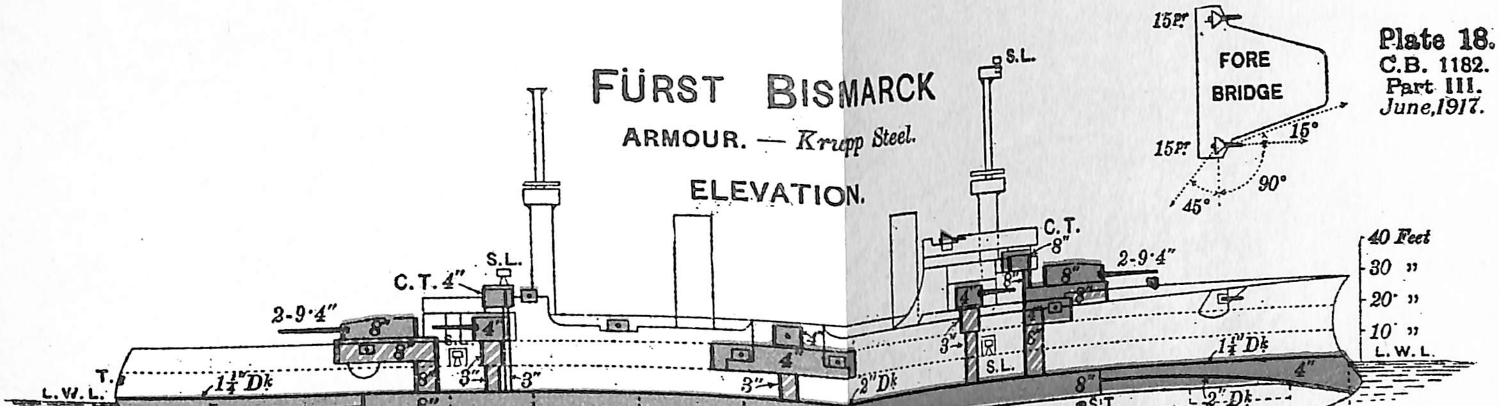

S.L.
C.T. 4"
2-9·4"
T.
L.W.L.
1¼" Dk
3"
3"

Plate 18.
C.B. 1182.
Part III.
June, 1917.

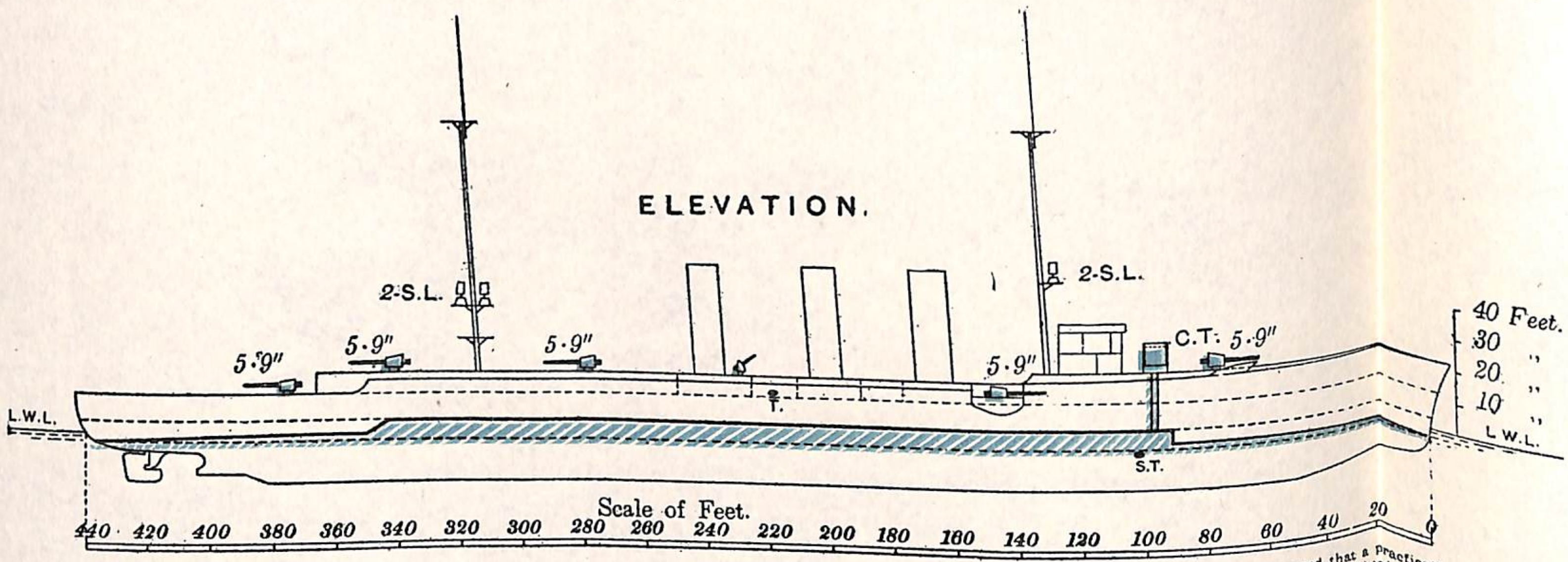
FÜRST BISMARCK

ARMOUR. — *Krupp Steel.*

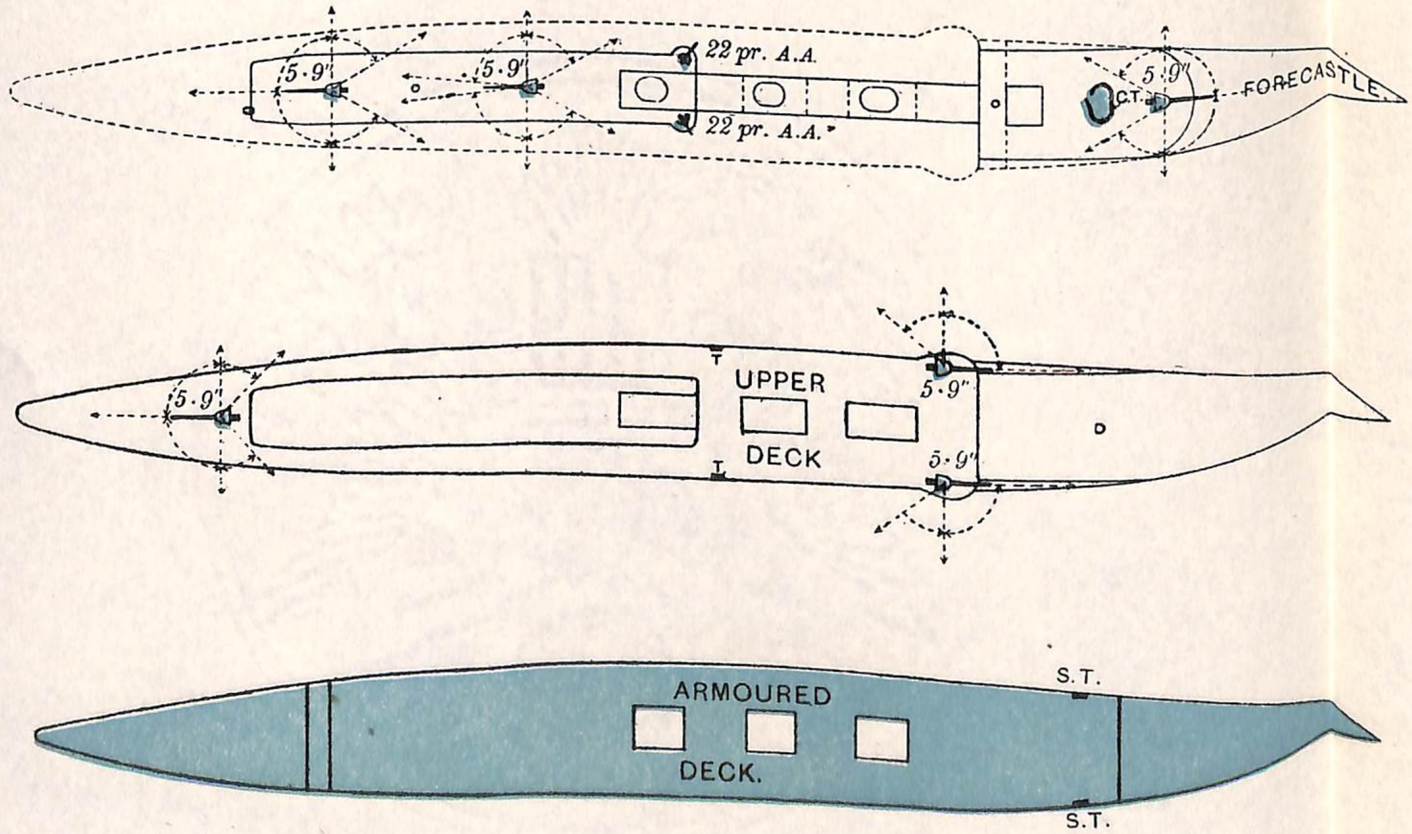
ELEVATION.



KÖNIGSBERG.



Note.—It may be assumed that a practically complete Armour Belt is fitted, width uncertain. Disposition of guns and existence of S.T's uncertain.

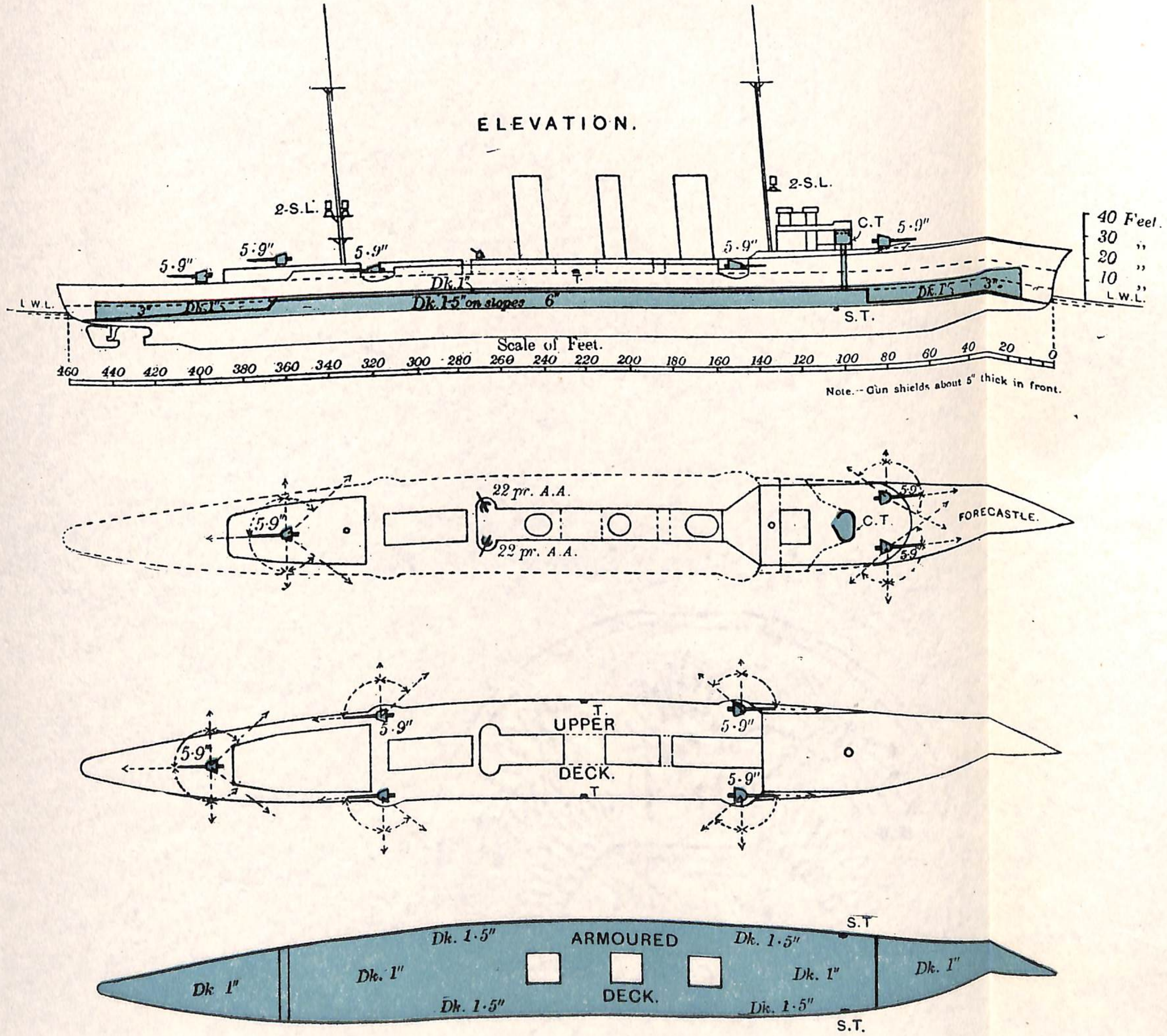


Vessels of Similar Type.

KARLSRUHE. EMDEN, NÜRNBERG.

Ordnance Survey, June, 1917.

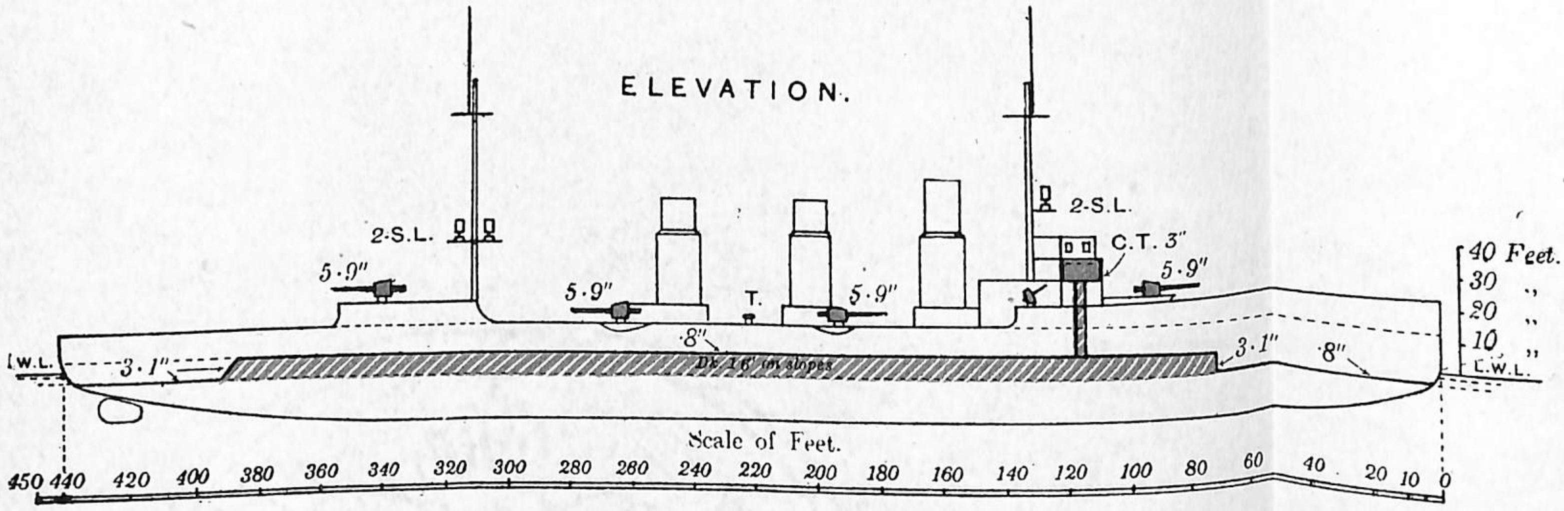
FRANKFURT.

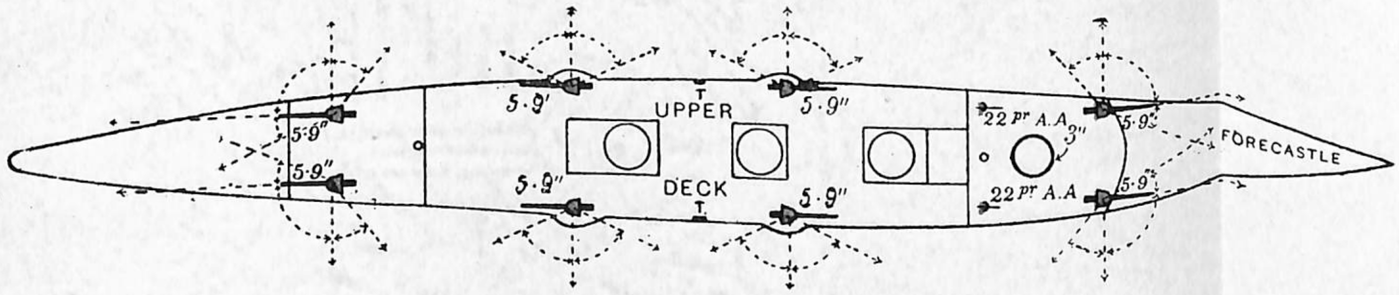


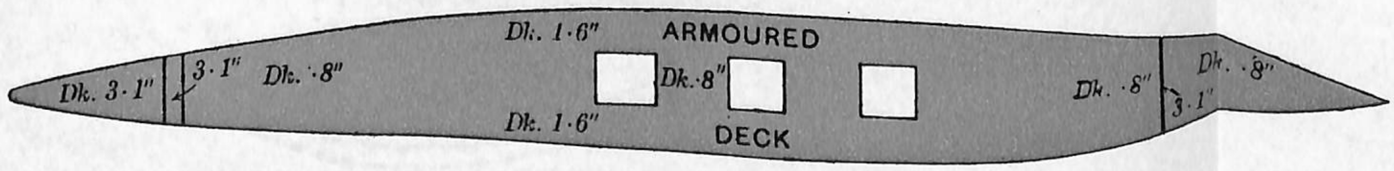
Note.-- Gun shields about 5" thick in front.

PILLAU.

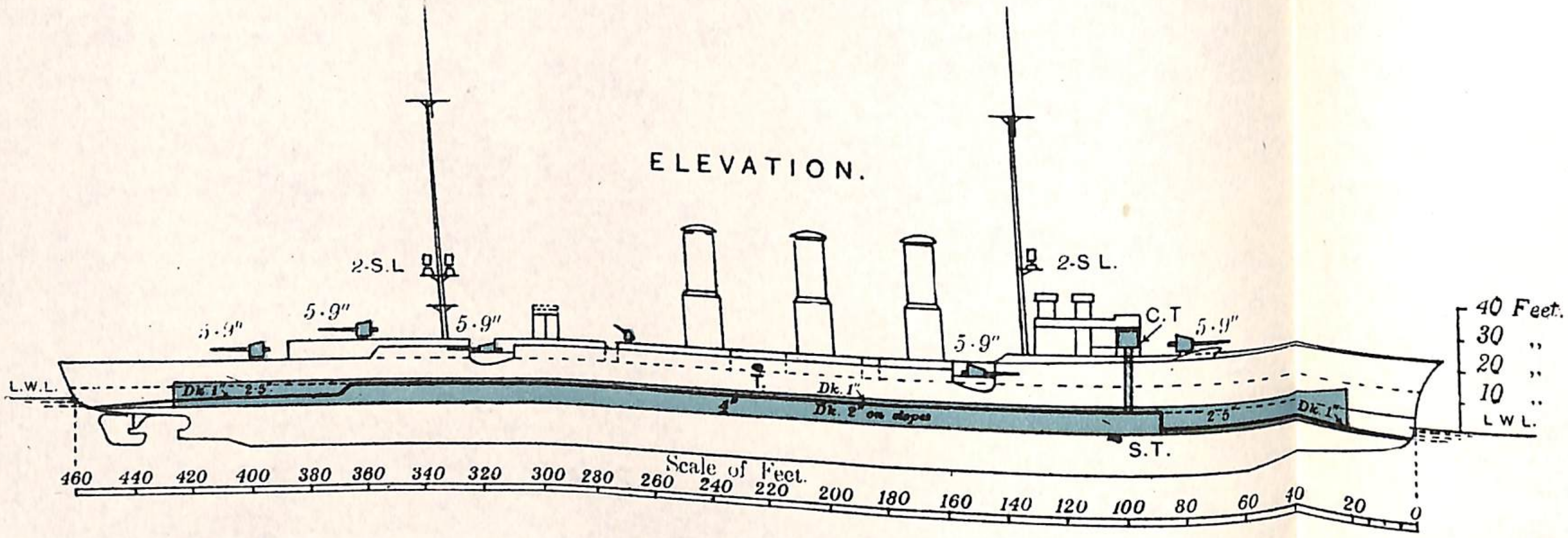
ELEVATION.

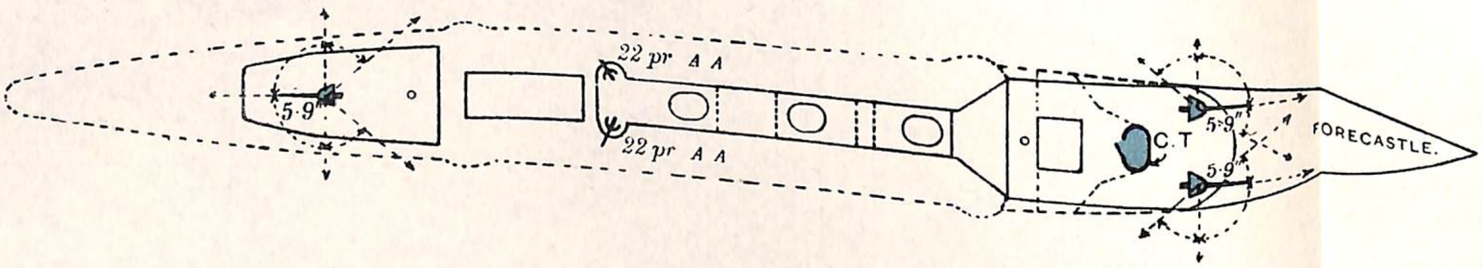


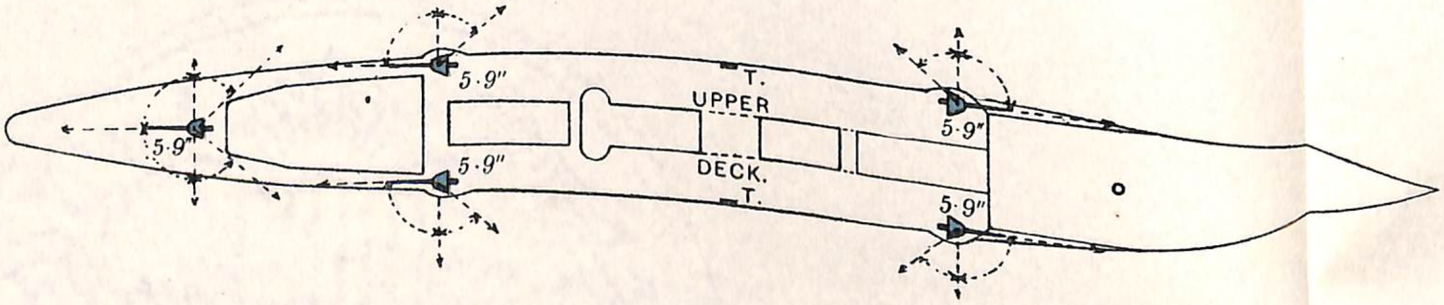


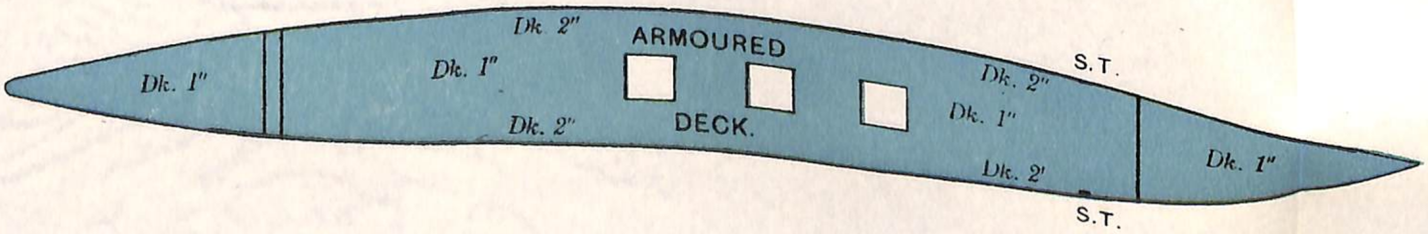


GRAUDENZ AND REGENSBURG.







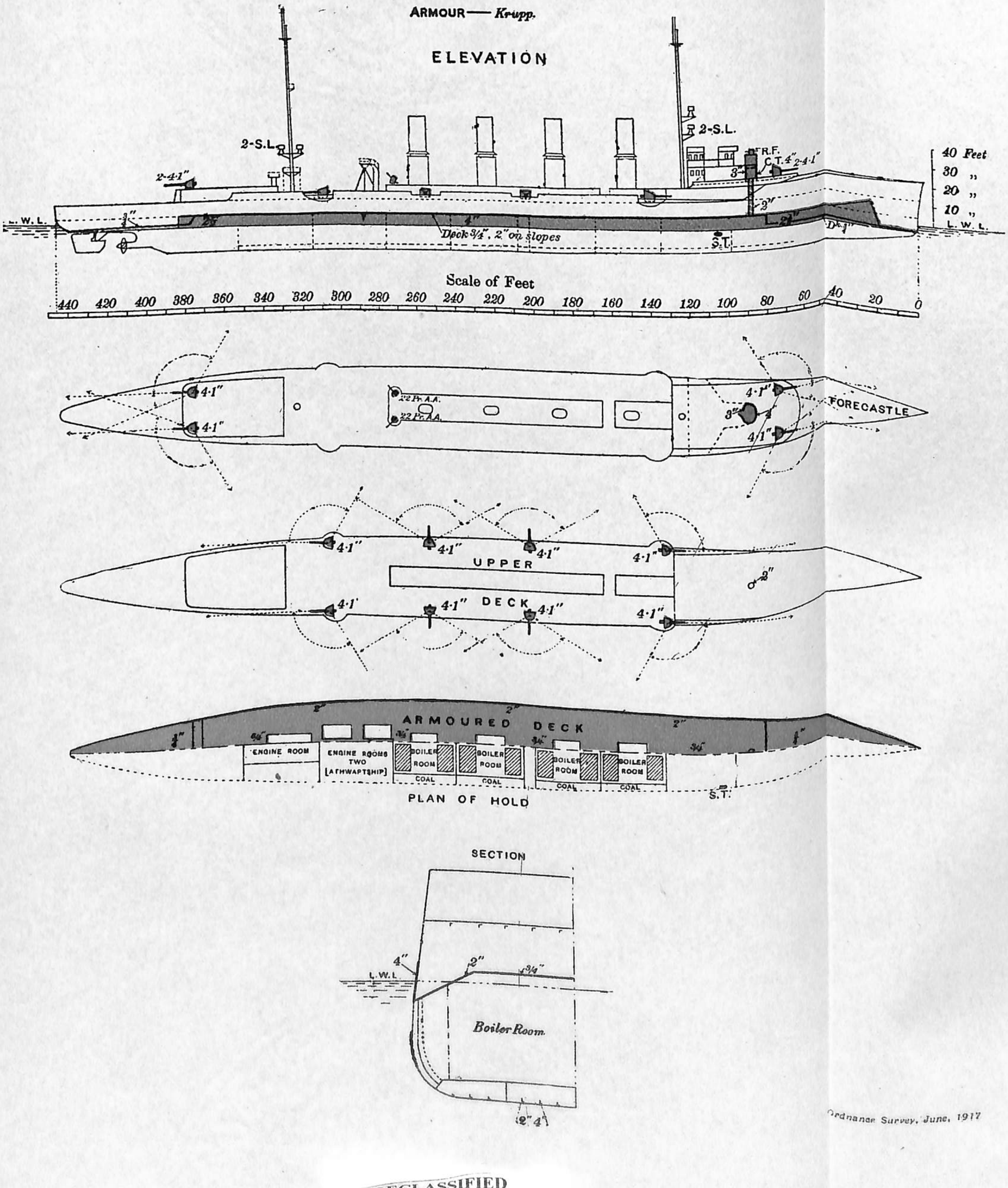


Ordnance Survey, June, 1917.

Plate 24.
C.B. 1182.
Part III.
June 1917.

STRASSBURG.

ARMOUR—— *Krupp.*

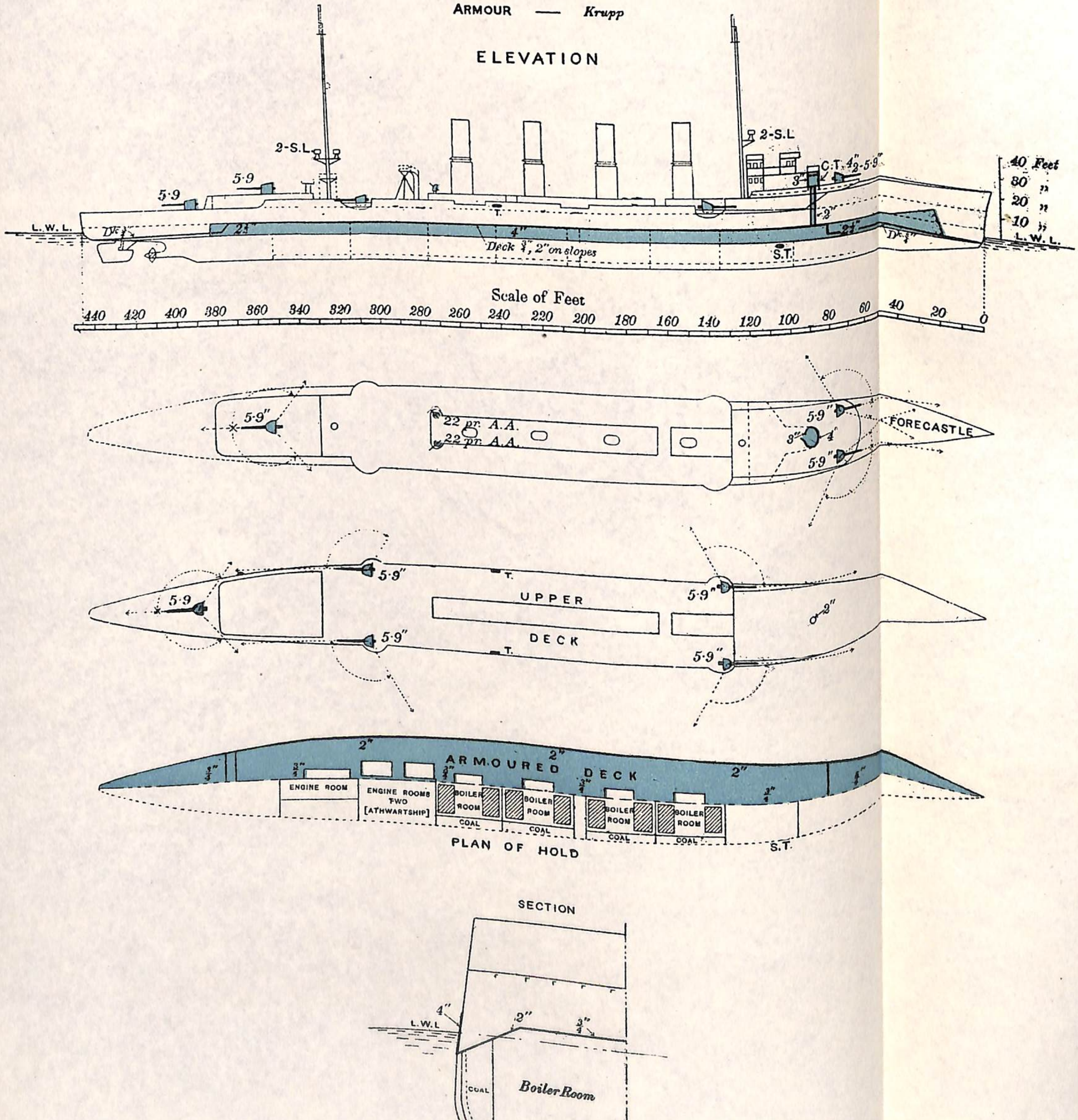


Ordnance Survey, June, 1917

STRALSUND.

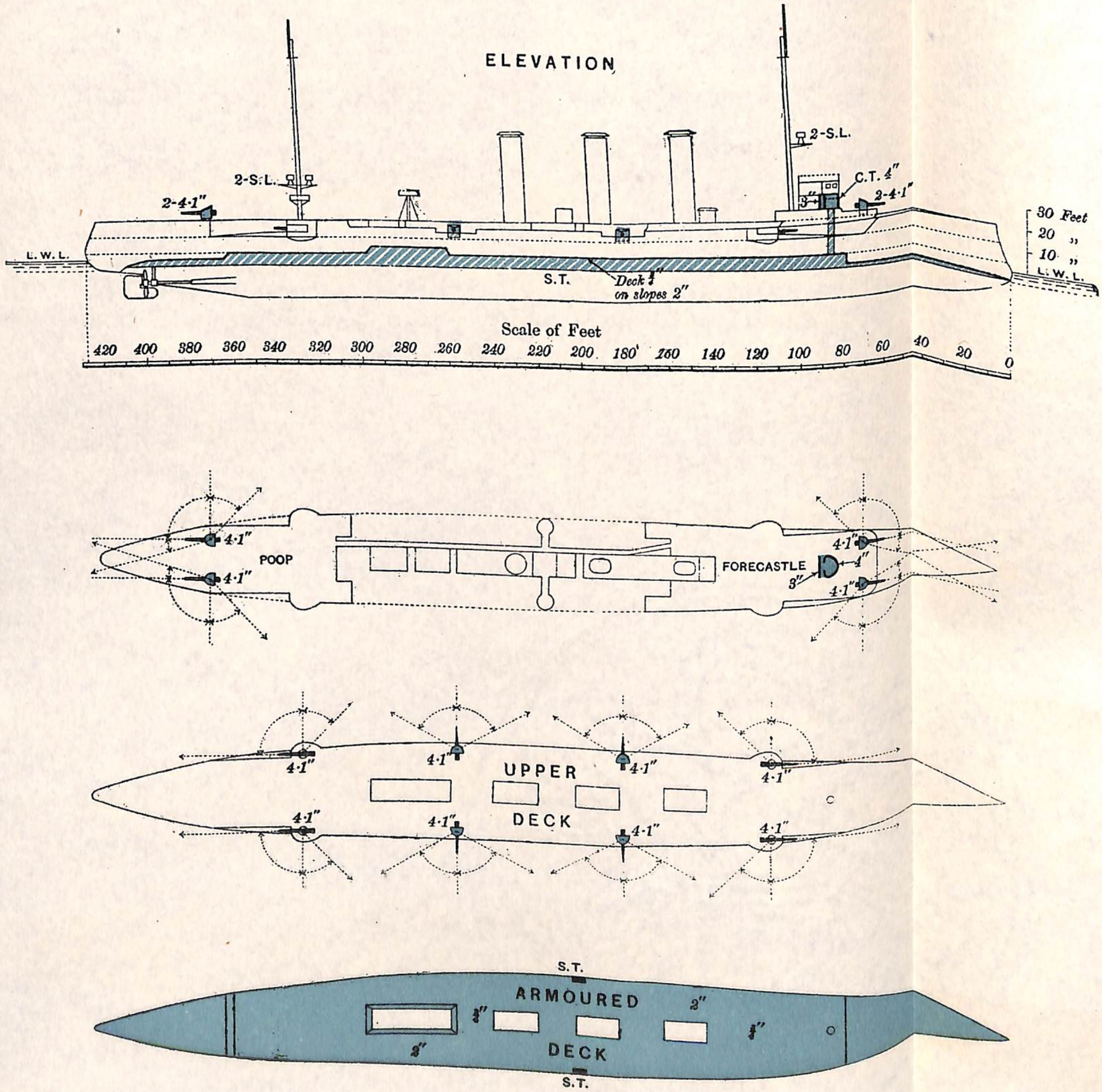
ARMOUR — *Krupp*

ELEVATION

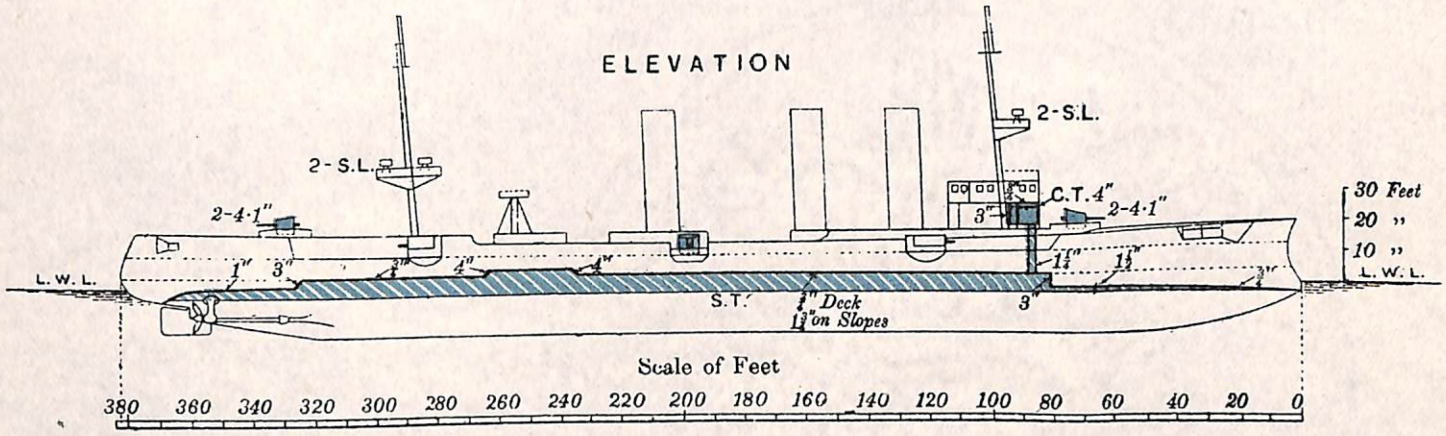


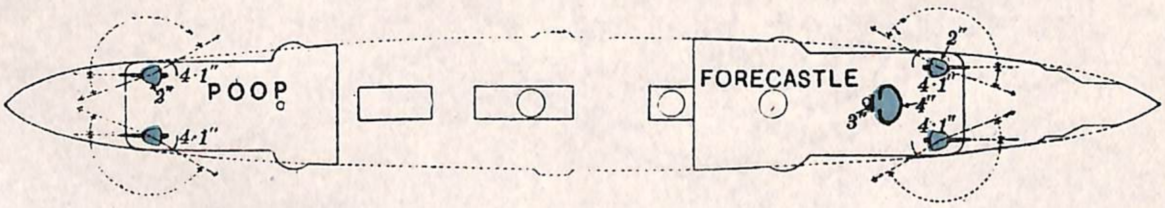
Ordnance Survey, June, 1917.

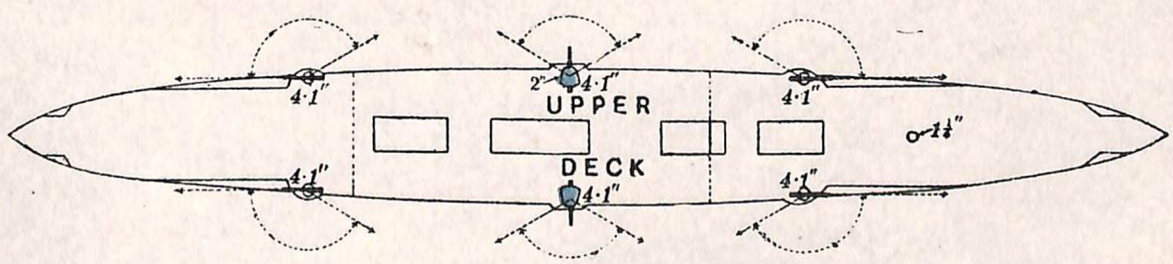
KOLBERG AND AUGSBURG.



STUTTGART AND STETTIN.







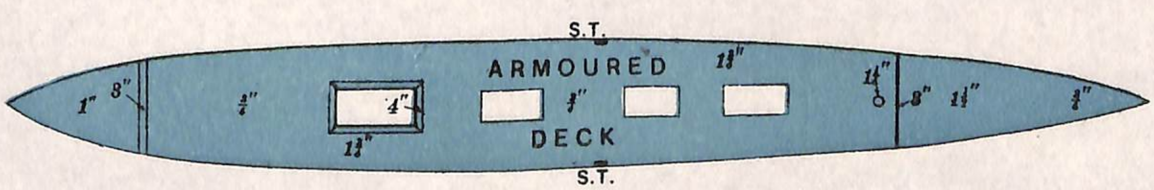
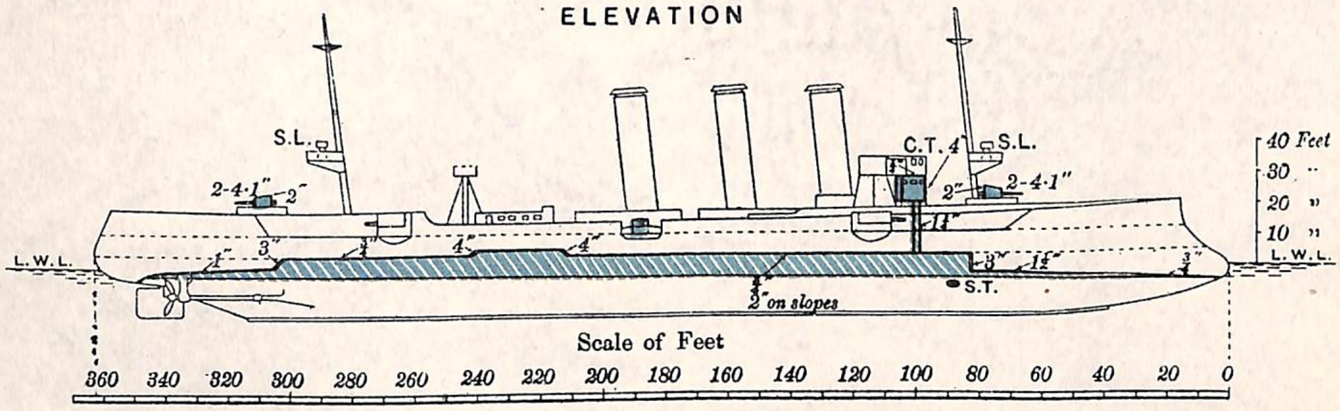


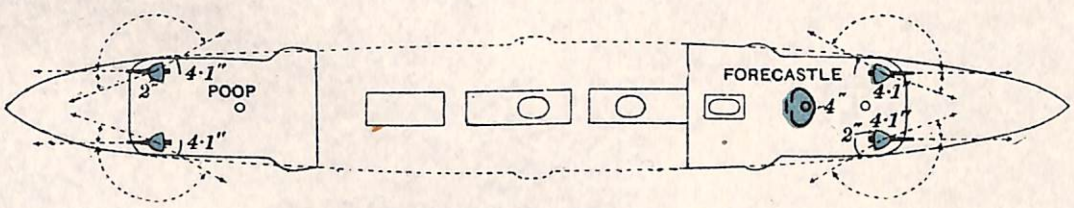
Plate 28.
C.B. 1182.
Part III.
June. 1917.

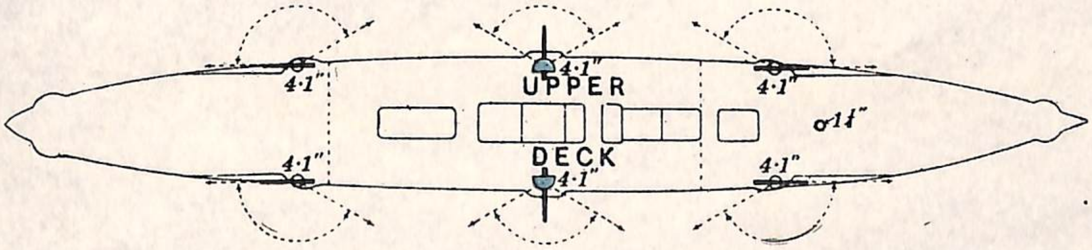
HAMBURG, BERLIN, MÜNCHEN, LÜBECK, AND DANZIG.

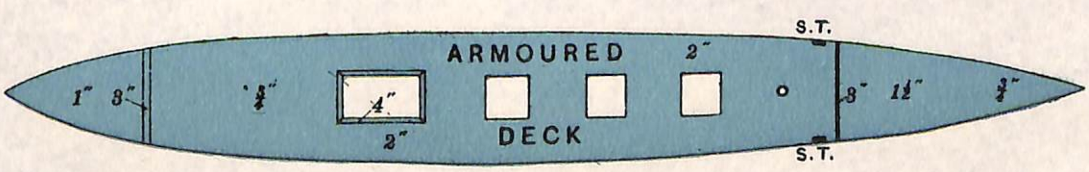
ELEVATION



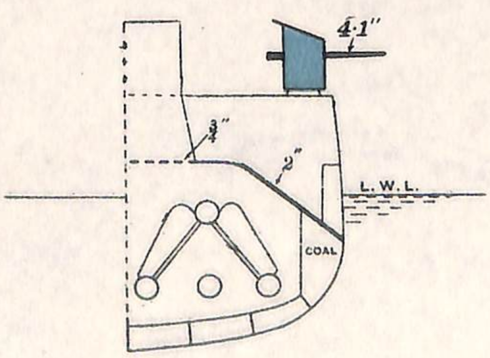
Note.—*In "Danzig" the Conning Tower is before and the bridges around foremast.*







MIDSHIP SECTION

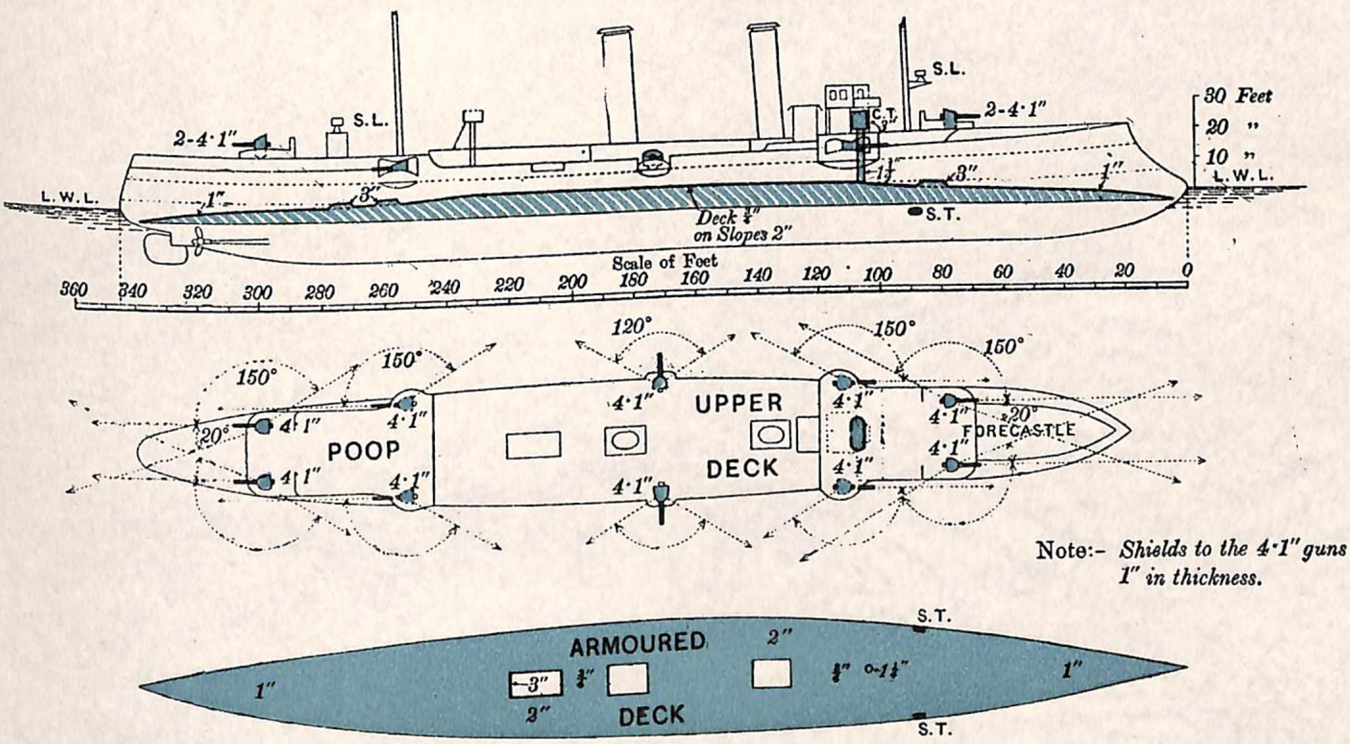


Ordnance Survey, June. 1917.

Plate 29.
C.B. 1182.
Part III.
June, 1917.

NYMPHE, NIOBE, THETIS, MEDUSA, AND AMAZONE.

ELEVATION



Note:- *Shields to the 4·1" guns 1" in thickness.*

Vessels of Similar Type.

GAZELLE.

The Conning Tower is just before the 2nd funnel. One Submerged Tube under ram, and two above water, one either side between 2nd funnel and mainmast.

ARCONA.

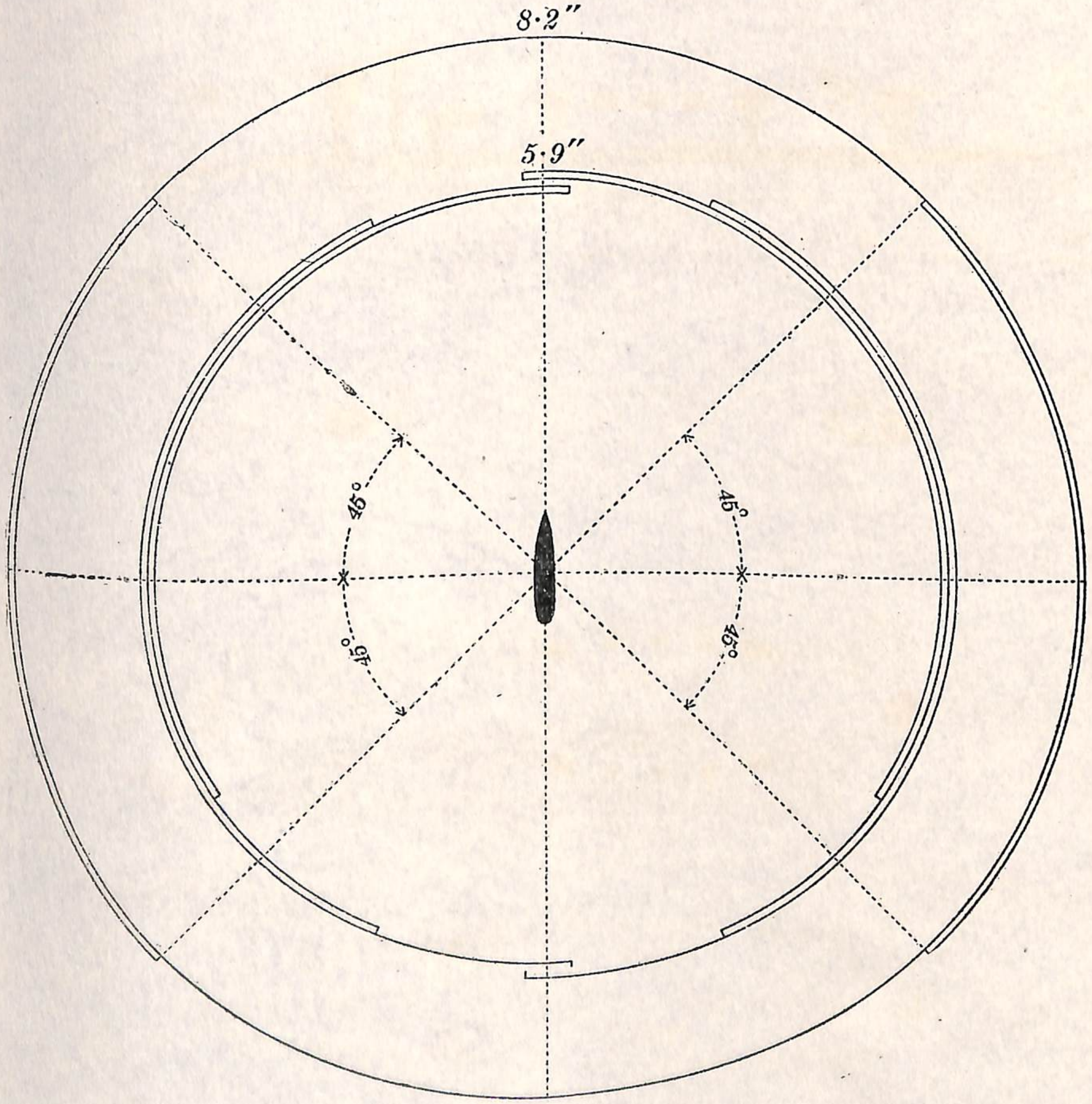
Slightly broader than the above. Armour and Armament similar.

Ordnance Survey, June, 1917.

VICTORIA LOUISE.

Diagram showing arcs of fire of Guns.

Bow



Stern

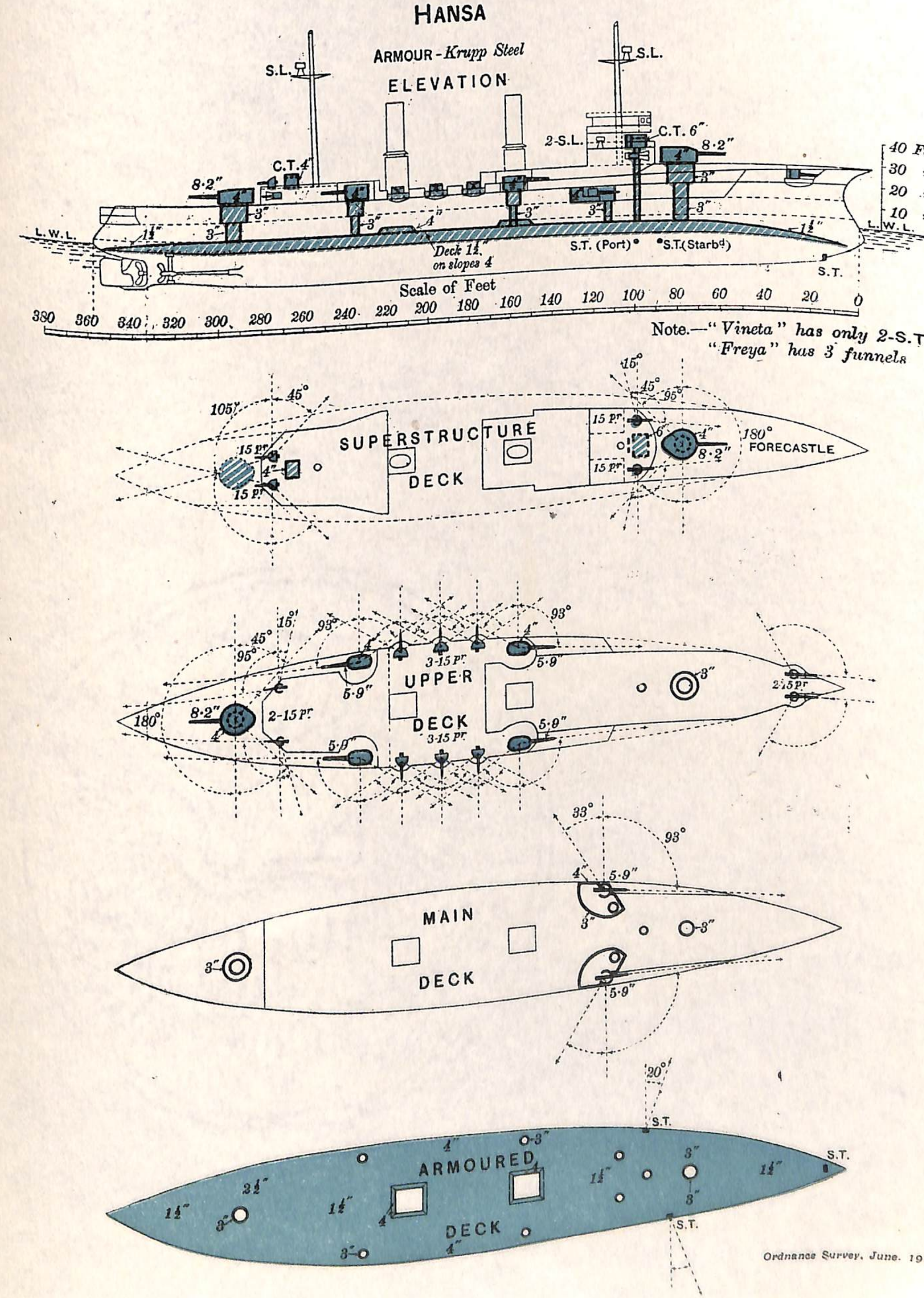
The number of lines shows number of Guns bearing in each Sector.

Ordnance Survey, June, 1917.

VICTORIA LOUISE
HERTHA
FREYA
VINETA
HANSA

ARMOUR - *Krupp Steel*

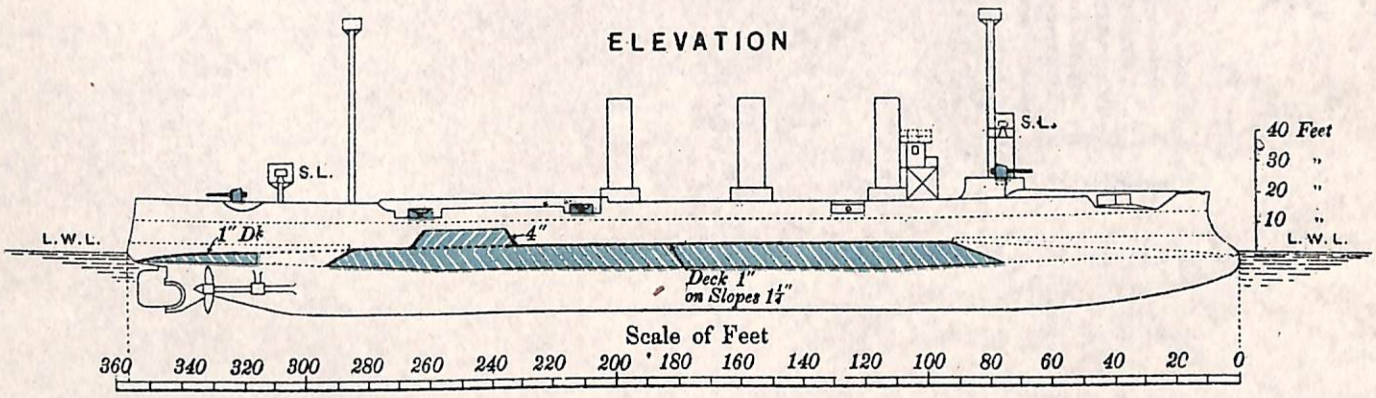
ELEVATION



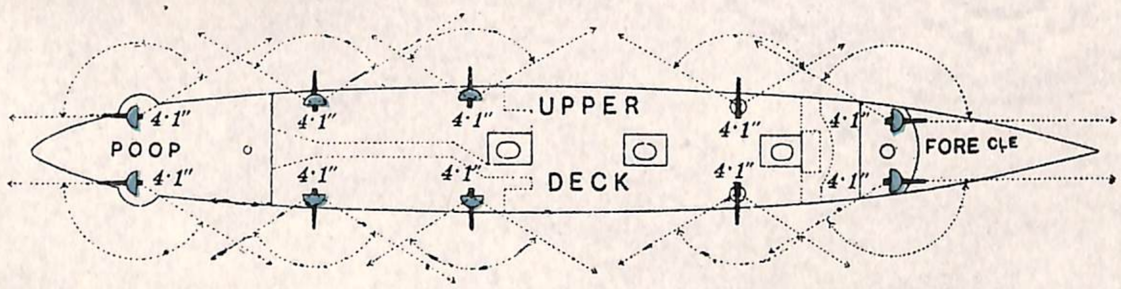
Note.—"*Vineta*" has only 2-S.T.
"*Freya*" has 3 funnels.

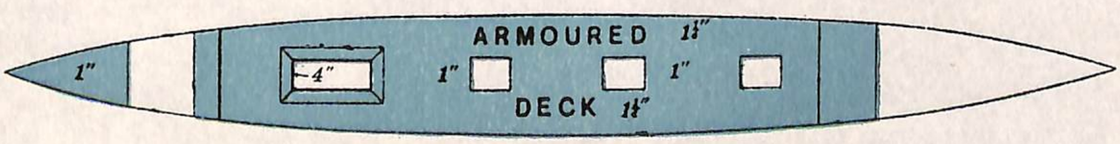
Ordnance Survey, June. 1917.

GEFION.

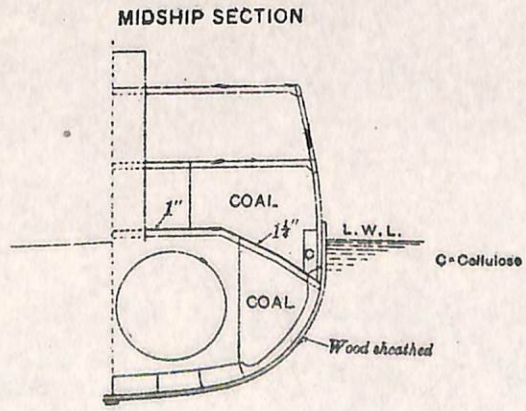


Note :- *Gun Shields 1¼" thick*





MIDSHIP SECTION

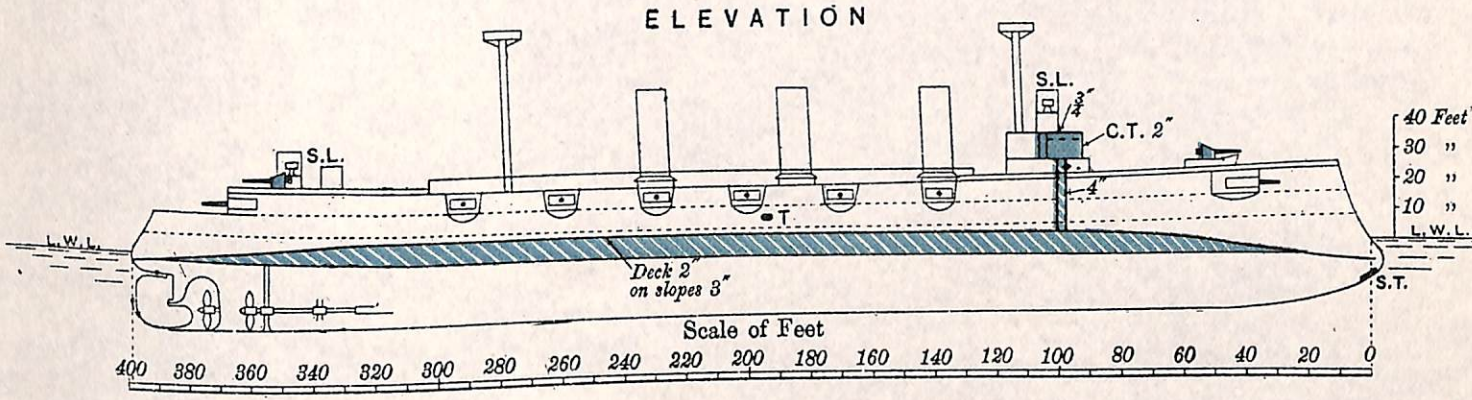


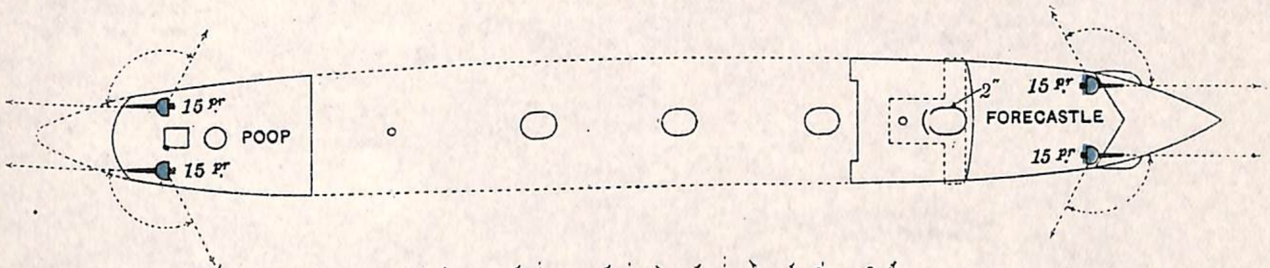
Ordnance Survey, June, 1917

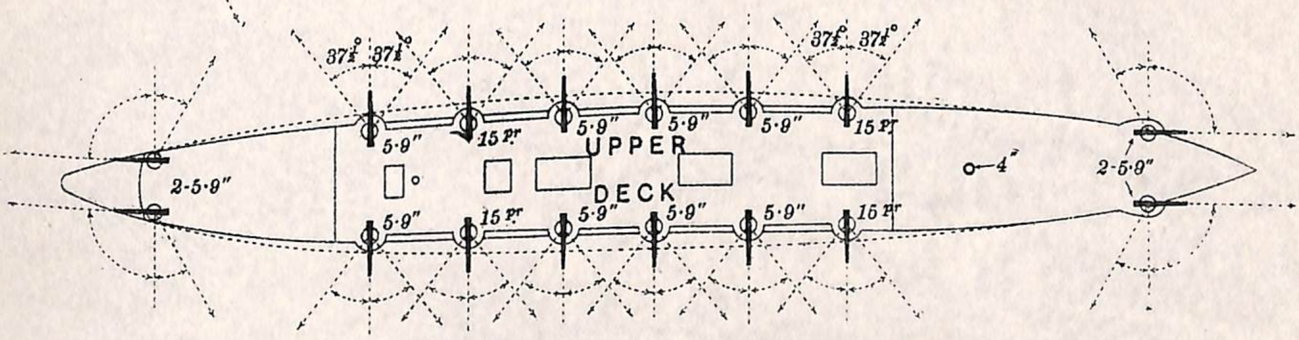
Plate 32.
C.B. 1182.
Part III.
June.1917.

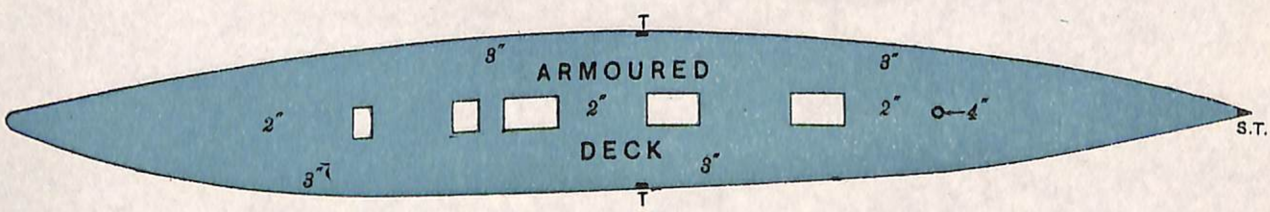
KAISERIN AUGUSTA.

ELEVATION

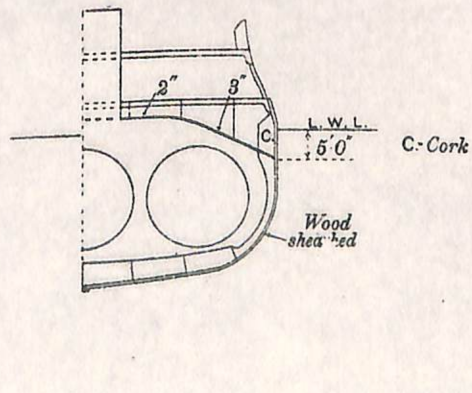




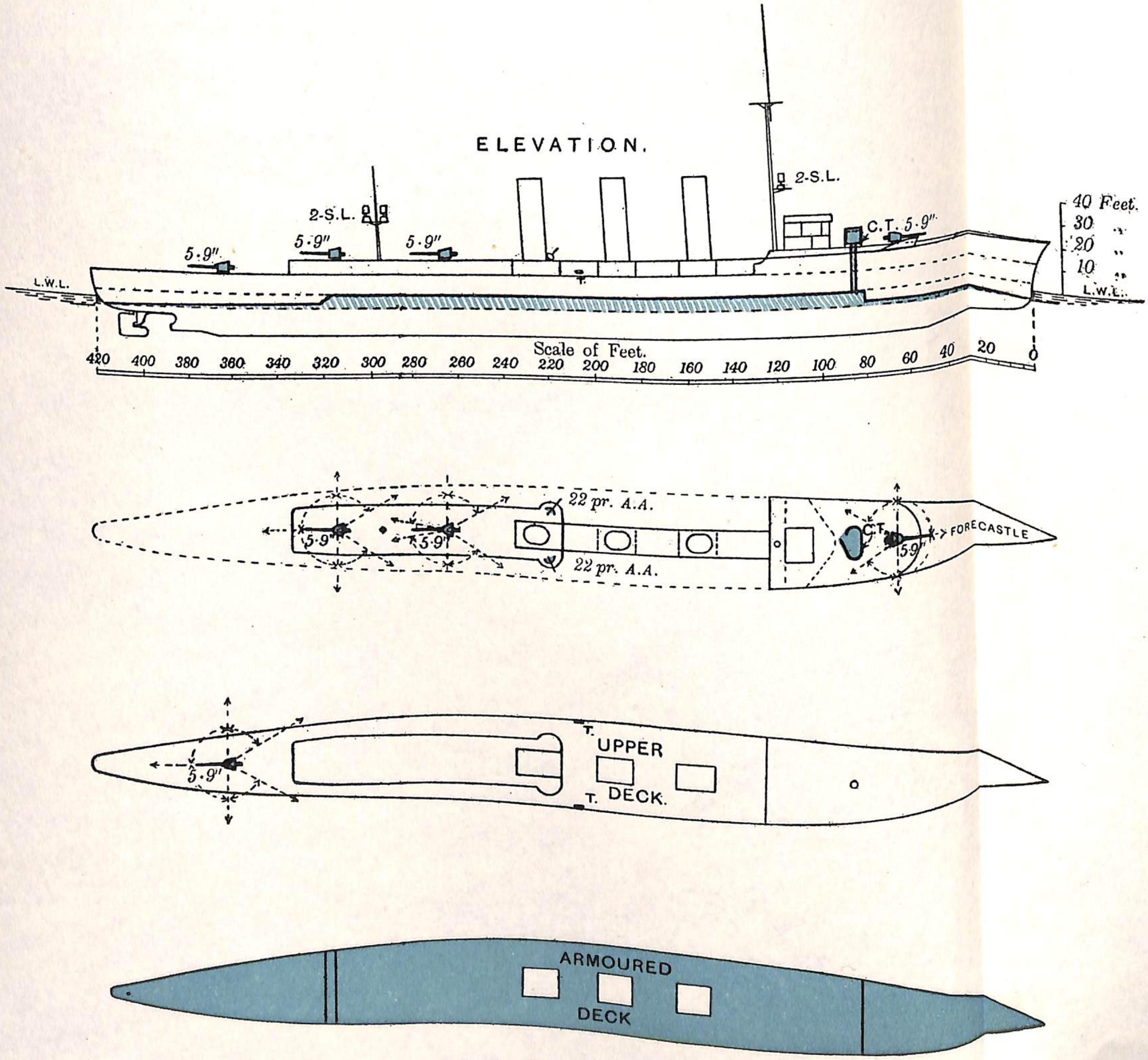




MIDSHIP SECTION



BRUMMER.



Vessels of Similar Type (built or building)

BREMSE, WESPE, BIENE, NATTER, FLIEGE, MÜCKE, HUMMEL, BASILISK, CROKODILL, SKORPION, AND VIPER.