

SURVEY VESSELS OF THE GERMAN HYDROGRAPHIC INSTITUTE.

The German Hydrographic Office is not in possession of a Survey vessel especially designed for survey purposes.

The motor vessel "Paul Beneke" (ex "Admiral") has been taken over from the former Navy. Built in 1936 in the dockyards of Lindenau & Co. at Memel, she was bought by the "Hansa Tank Reederei" at Hamburg and occupied in the regular service to seaside resorts. In 1938 she was bought by the Navy and, after some constructional changes, occupied as training ship for navigational instruction trips. After disorganization of the Navy the ship was placed at the disposal of the German Hydrographic Institute, which occupied her as Survey vessel after having made her fit for her special employment by some small constructional changes.

Main measurements. — Length over all, 46 m. 7; beam, 7 m. 56; height of the sides, 3 m.; draught, 3 m. 8; gross register tons, 477.1 GRT.

Engine. — One Sulzer-Diesel motor, 800 h.p.; one Diesel generator, 40 h.p.; one Diesel generator, 55 h.p.; speed, 10 knots; bunker capacity, 27 m³; distance covered (at 10 miles per hour). 2600 miles.

The ship has been built in steel in accordance with the transverse frame system and has been divided lengthways up to the stowing into 8 watertight partitions.

Inside of the ship the following constructional changes have been made serving the special purposes of a survey vessel: Two draughtsman offices; one plan room serving at the same time as calculation room; one room for heliographic copying, serving at the same time as dark room for photographic work.

The ship has been fitted out with an Anschütz type gyroscopic compass for fine measuring, one fluid compass serving as bearing compass, and one fluid compass for ascertainment of magnetic disturbances.

One goniometric bearing plant, type Telefunken, 100-400 metres; one echo-sounder plant, type Atlas, 30 kHz 0-125-1,000 metres range; one echo-sounder plant, type Electroacoustic 30 kHz, 0-125-1,000 metres range and one sound locator for navigational purposes, type Electroacoustic, complete the navigational outfit.

Radio plant. — One long wave transmitter 200 watts, type Telefunken, 585-950 metres; one long wave receiver, type Lorenz, 200-400 metres; one short wave receiver, type Lorenz, 12-200 metres; one all waves receiver, type Philips 14.3-20,000 metres.

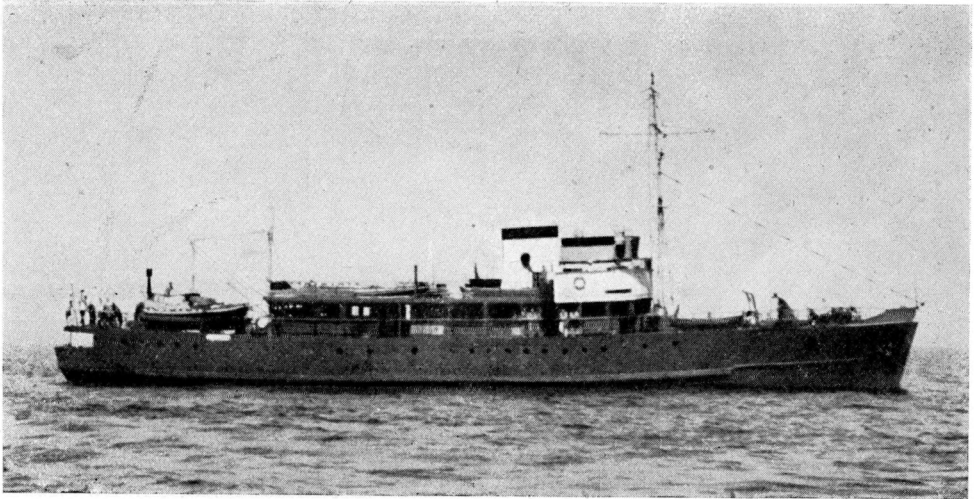
For surveying operations with ship's boats there are two motor jolly-boats. For hoisting in and out the boats a 3-ton derrick mast will serve.

An equipment with all instruments necessary for surveying operations (theodolites, levelling instruments, declination compass, etc.) makes it possible for the ship to carry out all survey tasks which may come up.

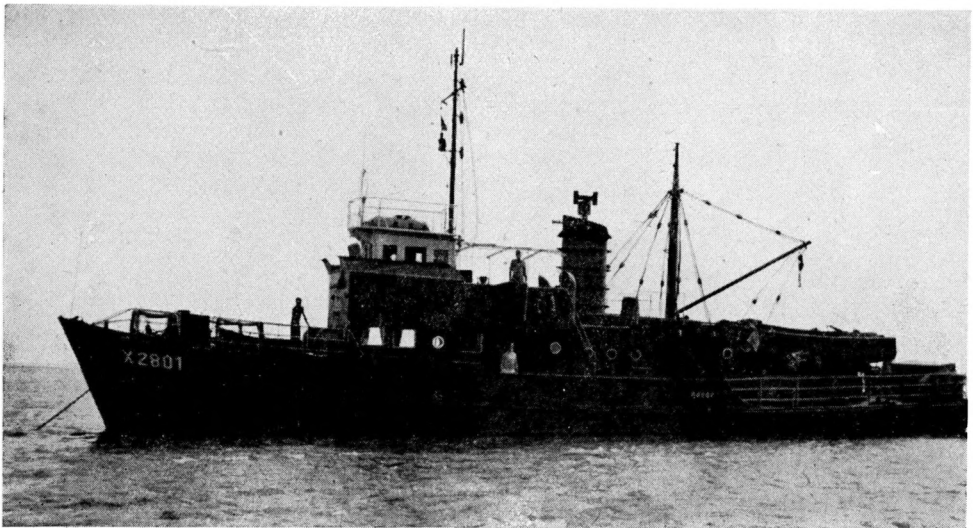
The crew of the sea-going ship consists of the ship's master, who is a survey specialist, three ship's officers and one mate, who are equally all survey specialists; three draughtsmen for working up of the incoming material in the fair charts and three survey groups, consisting each of one plotter, one keeper of the records, two men in charge of the angle-meter, two leadsmen, one boat's helmsman and one water-gauge observer.

The ship is in a position to work simultaneously with three survey groups and to solve any given survey task independently.

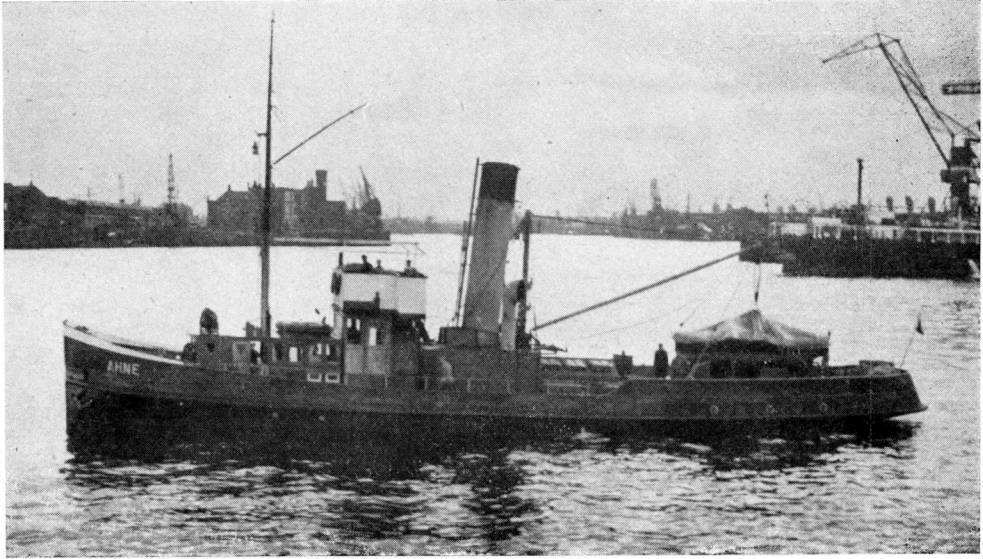
The interior outfit of the ship allows for a complete working-up of the incoming survey material up to the accomplished fair chart on board.



The German Surveying motor vessel "Paul Beneke".



The German Surveying boat "Hooge".



The German sounding vessel "Ahne".



The wreck searching boat "Atair".



Sounding boat.

Sounding Boats "Ruden" and "Hooge".

Besides the Survey vessel "Paul Beneke" there are at the disposal of the German Hydrographic Institute sounding boats "Ruden" and "Hooge", specially constructed for surveying purposes.

In the following a description is given of sounding boat "Ruden" (sounding boat "Hooge" corresponds at large to measurements and equipment of "Ruden").

SOUNDING BOAT "RUDEN".

Sounding boat "Ruden" was built in 1939 in the dockyards of Messrs. D. W. Kremer & Sohn, Elmshorn.

Main measurements. — Length all over, 28 m. 5; length in the load line, 27 metres; beam above the frame, 5 m. 80; height of the sides, 2 m. 70; draught, 1 m. 75; gross register tons, 91,27 GRT.

Engine. — Two four-stroke Benz-Diesel motors each 200 h.p. per 500 rotations; one four-stroke Benz-Diesel motor, 60 h.p. per 600 rotations; speed, 12 miles per hour; fuel capacity, 7.1 m³; distance covered (speed 12 miles per hour), about 1000 miles.

The boat has been fitted out with two propellers of 1,150 m/m and one propeller of 750 m/m which will serve to move the vessel through the water with least speed when at sounding work.

Ship's boats. — One motor dinghy: Length, 5 m. 6; beam, 1 m. 7; height, 0 m. 97; weight, 1795 kilos.

The boat has a flat bottom. The stem has been constructed above the load line as plate stem and has a straight shape falling out towards the front.

The boat is divided into six watertight partitions by five transverse bulkheads at frames 9, 18, 29, 40 and 48.

The boat has a streamlined displacement-suspension rudder with three rudder blades.

The steering of the boat is effected by a propeller steering device by means of shaft transfer to the rudder house. An emergency steering equipment has been arranged independently from the propeller steering device.

The boat is fitted out with two bower anchors which lie in the hawse. For handling the anchors there is a strong windlass with two chain disks and two capstan heads on an elevated foredeck.

The motor dinghy is berthed in boat's bearings on the aft superstructure. The hoisting-out equipment for the boat consists of a mast with derrick. The hoisting and lowering is done by a hand windlass mounted on a motor pit.

Wireless plant. — One 200-watt long-wave transmitter, type Telefunken, 585-950 metres; one all-wave receiver, type Telefunken, 15-20,000 metres; one goniometer bearing plant, type Telefunken, 575-1,350 metres; one echo-sounder plant, type Atlas, 30 kHz, 0-125-1,000 metres range.

The boat is equipped with an Anschütz type gyroscopic compass for fine measuring.

The crew of the sea-going boat consists of the boat's master, who is a trained survey specialist; one mate who acts at the same time as draughtsman; one plotter; two men in charge of the angle-meter; two leadsmen; one keeper of the records; one helmsman and one water-gauge observer.

All sailors have been trained in the survey service thus putting the boat in a position to solve independently any set survey task.

An outfit with all survey instruments coming into question allows the boat to carry out such trigonometrical, polygonometrical and topographical work which turns up in navigational surveying including ascertainment of magnetic disturbances.

Wreck-searching Boats "Atair" and "Wega".

Besides these sounding boats especially built for survey purposes, "Ruden" and "Hooge", several cutters, so-called war fishing-cutters, are at the disposal of the German Hydrographic Institute; these are also being employed as sounding boats.

Two of these cutters, "Atair" and "Wega" have been fitted out with position finding gear and comprise a wreck-searching group.

The boats were built in 1943, of wood with iron frames, at Burmester's, Swinemünde.

Main dimensions. — Length over all, 24 metres; length in the load line, 21 m. 3; beam, 6 m. 4; free board, 0 m. 9; draught, 2 m. 7; gross register tons, 68.65 GRT.

Engine. — One Demag two-stroke Diesel motor 120 h.p.; speed, 9 miles per hour; fuel capacity, 7 m³ 3; distance covered (at 7 miles per hour), 1200 miles; one petrol-aggregate 200 volt alternating current for Asdic.

Wireless plant. — One 20-watt radiophonic transmitter, type Johnson, 100-200 metres; one wreck-searching plant, type SZ. 15 kHz with hydrophone.

The wreck-searching group is fitted out with a complete diving equipment and has two trained divers on board. This equipment has proved to be very good for obtaining exact wreck ascertainment. After having located the wreck, it is easy to ascertain, with the assistance of the diver, the exact depth of water over the wreck, protruding parts, for instance mast stumps, ventilators, etc.

After having ascertained the approximate position of the wreck by means of the Asdic, the place is searched with the ground tackle until the line hooks on the wreck. For this purpose the boats, which are proceeding with a distance of 80 metres between them, carry the ground tackle with which they either sweep the ground or a certain depth. As soon as the ground-tackle has hooked on, the wreck is marked by a buoy and the exact position navigationally ascertained by the usual method (double angle with sextant or compass). Now the diver is sent down, who ascertains the exact position of the wreck below water and the least depth above the wreck.

For operating the ground tackle, a mine-sweeping boat's winch, coupled with the main motor, will serve.

The wreck-searching group is being led by the master of "Atair", who is the survey specialist. The "Atair" has on board a survey group consisting of one plotter, one keeper of the records, two men in charge of the angle-meter and two leadsmen.

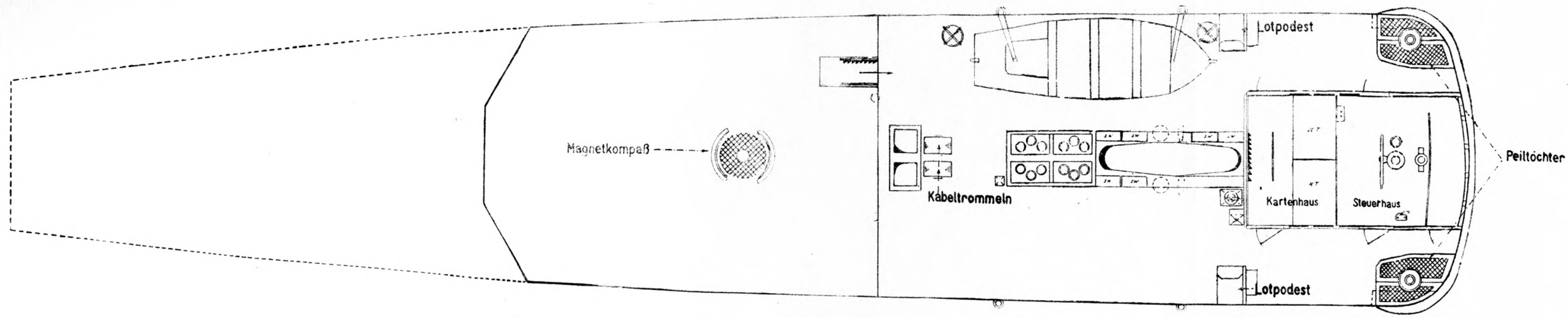
A complete outfit with all instruments necessary for the nautical survey is on board.

The wreck-searching group can equally be charged with small survey tasks.

The Hydrographic Institute does not possess a special type of boat for survey purposes. The boat's work is being carried out by ordinary traffic motor boats, which are being allocated to the survey vessels on demand, and which are provisionally fixed up for survey operations.

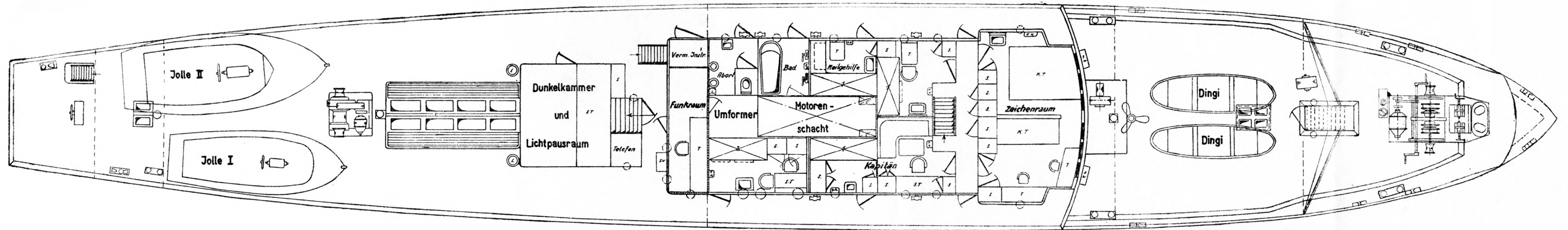


Brückendeck



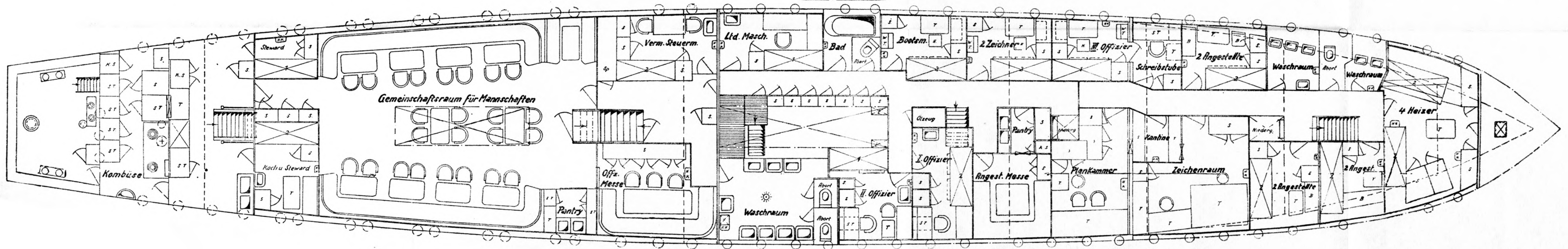
**Vermessungsschiff
„Paul Beneke“**

Oberdeck



0 5 10 15 Metres

Hauptdeck



Zwischendeck

