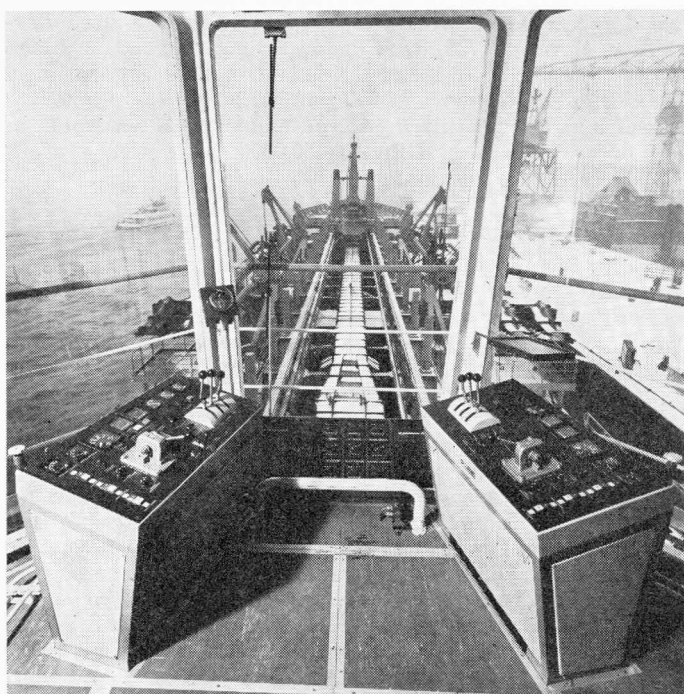


Trailing Suction Dredger 'Hendrik Zanen' with Unattended Engine Room

The trailing suction dredger 'Hendrik Zanen' which was recently added to the fleet of the Hollandsch Aannemings-bedrijf Zanen Verstoep at The Hague, is the first trailing dredger registered in the Netherlands to be certificated for operation with completely unattended engine room. The vessel is one of a series of standard trailing-suction dredgers designed by IHC Holland. Called 'IHC Stantrail', this series is made up of five basic types which can be modified and/or fitted with specially designed additional equipment



Dredgemaster's control position on the bridge. The photograph shows the equipment for the control of two suction tubes, depth indicators, etc.

to suit owners requirements. The 'Hendrik Zanen' is a good example of this type of vessel, as she is an IHC Stantrail 4000. However, her hopper capacity has been increased to 5,500 cu.m., with two instead of one suction tube and an engine room designed for unattended operation. The vessel has been constructed to Bureau Veritas class I.3/3.D. (Haute Mer) 1.1. A et CP Aut. Her first job was dredging at Hook of Holland. The main propulsion machinery is installed in the engine room aft along with the three auxiliary engines; the engines which drive the dredge pumps are installed forward. Propulsion is by two direct reversible Smit-Bolnes diesel engines. Each of these 14-cylinder Vee-form engines develops 2,800 h.p. at 300 r.p.m. and drive screws which are placed in nozzles. The cylinder liners of these engines are hardened in accordance with the Porus Krome process. Connected to the existing cylinder lubricator of the main engines is a Rebs distributing system for valve stem and rocker lubrication and ASSA electric control type LTB to check the oil delivery of the cylinder lubricator. The three auxiliary engines are 6-cylinder Bolnes engines of 660 h.p.; each of them drives a 400 kW generator. The diesel engines which drive the dredge pumps are installed

in a separate compartment between the pumprooms. Each of the dredgepumps is powered by a 9-cylinder in-line Smit-Bolnes diesel engine developing 1,600 h.p. Both engines are started and controlled from the bridge. All the engines are arranged for operation on heavy fuel. The engines drive the pumps through two Lohmann & Stolterfoht highly elastic friction couplings type KAJ280M, with the accompanying switchgear for sand pump drive. Safety valves are built in these couplings and ensure that they are automatically disconnected when a preset torque is exceeded.

The following pumps were supplied by Van Wijk & Boerma: 4 Nijhuis glandpumps, type H 1-50250, capacity 36 cu.m./h at 20 m.w.c. with Heemaf electric motor of 5½ h.p.

2 Houttuin lub.oil pumps for main engines, type 1K 136/78B, capacity 49 cu.m./h at 40 m.w.c., with Heemaf motor of 20 h.p.

4 Houttuin lub.oil pumps for the sandpump engines, type 1K 114/62B, capacity 30 cu.m./h at 40 m.w.c., with 11 h.p. Heemaf motor.

4 Nijhuis type H 1-150250 cooling water pumps (2 for fresh and 2 for salt water), capacity 300 cu.m./h at 23 m.w.c., with Heemaf motor of 35 h.p.

4 similar pumps, type H 1-125250, capacity 150 cu.m./h at 20 m.w.c., with Heemaf motor of 18 h.p.

One diesel-driven Nijhuis firepump type H 1-50200, cap. 36 cu.m./h at 40 m.w.c., with Farymann diesel engine of 11 h.p.

3 combined lub.oil grease lubricating pump sets, each consisting of a Kracht gearpump type MVR 3/30, capacity 3½ cu.m./h at 50 m.w.c. One Woerner grease lubricator with Heemaf motor of 6½ h.p.

2 Nijhuis cooling water pumps (one for fresh, one for salt water), type H-65250, capacity 48 cu.m./h at 20 m.w.c., with 7½ h.p. Heemaf motor.

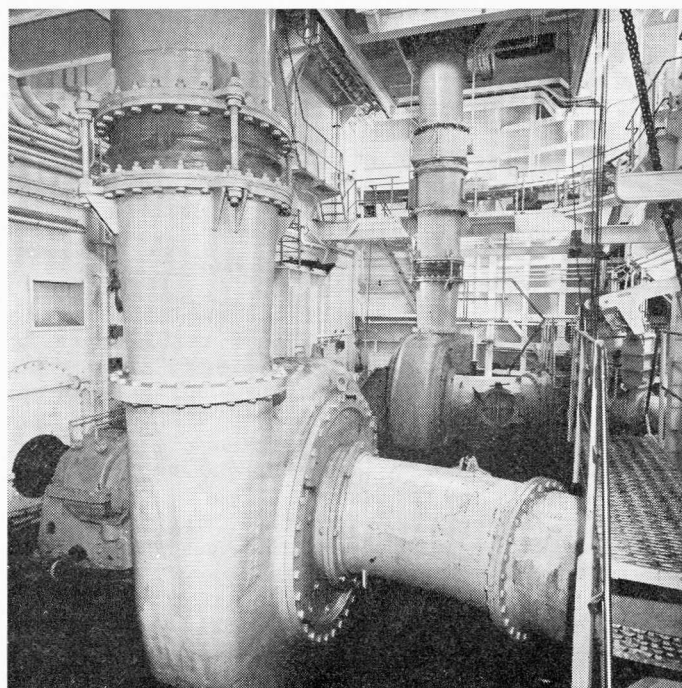
2 Nijhuis bilge/general service pumps, type SL 1-80320, capacity 90 and 60 cu.m./h at, respectively, 18 and 40 m.w.c., with Heemaf motor of 25 h.p.

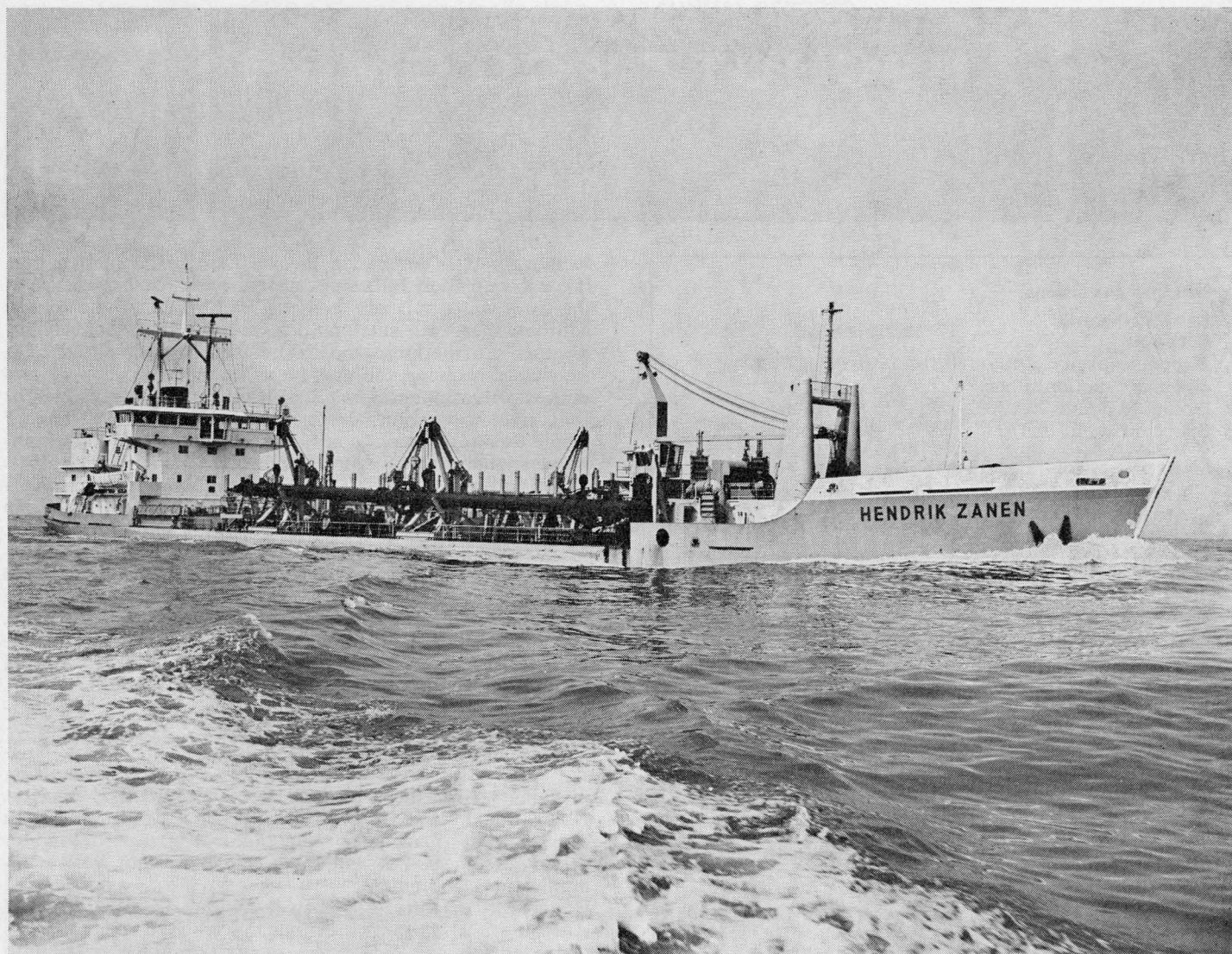
Houttuin transfer pump, type 1K136/78B, capacity 38 cu.m./h at 20 m.w.c., with Heemaf motor of 14 h.p.

6 Houttuin booster pumps, type 1K 50/24B, capacity 1½ cu.m./h at 40 m.w.c., with Heemaf motor of 1 h.p.

2 Houttuin lub.oil transfer pumps and 2 booster pumps, type 1K 65/36B, capacity 3.6 cu.m./h at 40 m.w.c., with Heemaf motor of 2½ h.p.

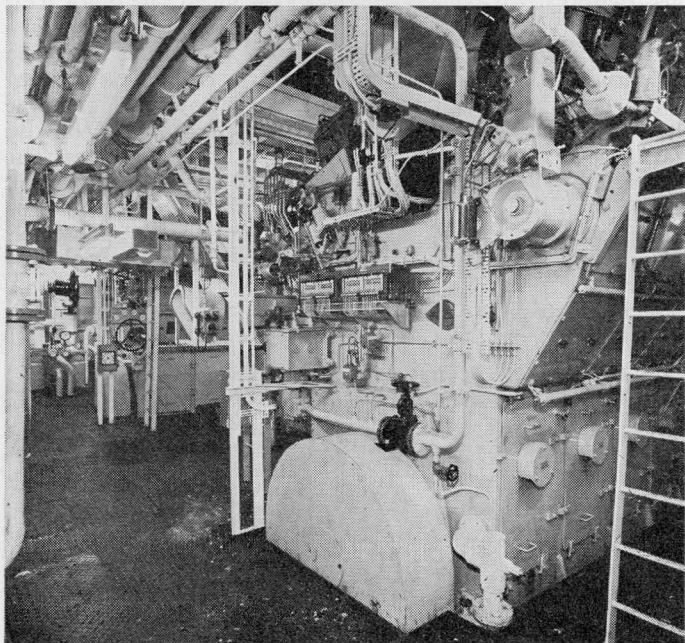
Two dredgepumps are installed in the pumproom forward. Each of the pumps is driven by a Smit & Bolnes diesel engine located in the engine room forward.





One Nijhuis cleansing water pump for gate valves, type H 1-50250, capacity 30 cu.m./h at 30 m.w.c., with Heemaf motor of 7½ h.p.

Propulsion of the 'Hendrik Zanen' is by two 14-cylinder Smit & Bolnes diesel engines of 2,800 h.p. at 300 r.p.m.



The bridge of the 'Hendrik Zanen', showing the conveniently arranged navigational and dredging aids.



Dredging and navigation

The 'Hendrik Zanen' is equipped to attain a maximum dredging depth of 32 m. Each of the twin suction tubes has a diameter of 900 mm. and are handled with the aid of gantries. Dredging operations are controlled from a 'bay window', projecting forward on the bridge. The compartment so formed houses the controls for the suction tubes, including the extensive measuring apparatus. The latter



ANSCHÜTZ

ANSCHÜTZ & CO GMBH

NAUTISCH- EN TECHNISCH BUREAU VENTEVILLE

ROTTERDAM - ANNA STRAAT 2c - TELEFOON 010 - 12 46 52/12 89 25



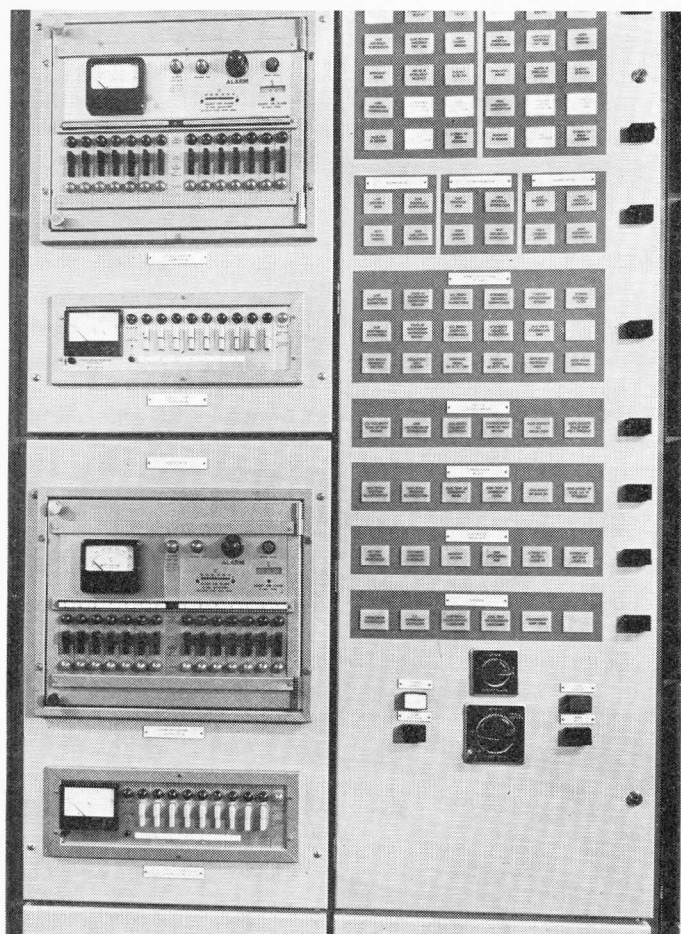
Principal dimensions

Length overall	121.50 m.
Breadth	18.50 m.
Hopper capacity	5,500 cu.m.
Diameter suction tubes	900 mm.
Dredging depth	32 m.
Speed fully loaded	12 knots

Main propulsion machinery:

Two Smit-Bolnes diesel engines, each of 2,800 h.p. at 300 r.p.m.

Part of a panel in the control cabin of the engine room aft, showing equipment for operation with unattended engine room.



includes gauges indicating the vacuum in the suction line, the concentration indicators showing the concentration of the sand/water mixture and the loading rate indicator. In addition there are suction tube and draghead position indicators. Furthermore the 'Hendrik Zanen' is fitted with indicators showing the amount of spoil in the hopper and with swell compensators. The latter make it possible for the vessel to continue dredging in winds of up to force 7 of the Beaufort scale. To ensure that spoil of a predetermined or higher concentration reaches the hopper the ship is also fitted with an ALMO (Automatic Light Mixture Overboard) installation, which ensures that mixture of less than the predetermined concentration does not enter the hopper. The hydraulically actuated valves of the suction and discharge lines, the spoil distribution valves and drop chute valves, as well as the two rows of 14 bottom discharge valves are controlled from a separate desk. Hydraudyne, Bostel, supplied a valve panel with oil reservoir, a double pumpset for the system of bottom and other valves, as well as the control equipment for the complete hydraulic system. Also supplied were hydraulic cylinders for valves and overflow valves.

The 'Hendrik Zanen' is provided with the latest navigational aids, such as the control of the propulsion machinery from the bridge, electric and automatic steering. Navigational aids installed for this purposes include a Stork-Kwant machinery telegraph, a Decca Navigator Mk. 12, Decca Hi-Fix and radio telephony and VHF communications equipment.

For steering the vessel is provided with a type Standard VI Anschütz Kiel gyro compass installation arranged in accordance with the double follow up type and provided with facilities for automatic steering. The automatic steering arrangements are carried out in such a way that it is possible at all times to connect the gear to the position fixing installation to be installed later. A 600 h.p. bow thruster is fitted.

Efficiency

The large, highly complex and costly unit modern dredgers are requires working round the clock in all weathers. This not only means that the ships and their installations must be highly reliable and therefore well-built and equipped to withstand the heavy demands of dredging, and that they must have sufficient fuel capacity to stay out for some length of time, but also that they must be provided with facilities to carry out repairs at sea, without assistance. The 'Hendrik Zanen' having been designed to comply with all these requirements is also fitted with an electric crane which runs on a track over the full length of the hopper. The crane, which must be suitable for handling heavy objects such as dragheads and pumps, can handle 15 ton weights at a radius of 12.5 m.

Continuous operation also requires special provisions to



HAGENUK

NAUTISCH- EN TECHNISCH BUREAU VENTEVILLE

ROTTERDAM (16)

ANNA STRAAT 2c

TELEFOON 010-124652



ensure safety and the wellbeing of a crew working in shifts. Thus an alleyway incorporated in the port air casing affords safe movement between the fore and after parts in rough weather, while comfortable living quarters are arranged forward and aft. The accommodation aft is for 36 persons and includes cabins and messrooms, a sick bay, galley, washplace and toilet. The accommodation forward houses a further 12 men. Life saving gear includes two sets of gravity davits of the 'Normal Track' type built by Davit Company.

Equipment on board the 'Hendrik Zanen' (Partial List)

Almetaal N.V., Amsterdam: Grillo-Ampak fine zinc anodes for cathodic protection.
Bruinhof Beheermaatschappij, Rotterdam: L&S Pneumaflex couplings.
Boer, de, Amsterdam: Rubber packings.
Dam, Fa. Wed. H. van, Bolnes: Ventilator cowls, fire doors in funnel.
Davit Company N.V., Utrecht: Normal Track gravity davits and Hand Power boat winches.
Duijvendijk & Van Overbeek, Rotterdam: Three electrically driven air compressor sets type 2K110, capacity 68 cu.m./h at 900 r.p.m. with Heemaf electric motor.
Grofsmederij, Kon. Ned., Leiden: Anchors and chains.
Hydraudyne N.V., Bostel: Valve panel with oil tank, double pumpset for bottom valve and other valve systems, hydraulic control system, hydraulic rams for valves and overflow valves.
IMEA, Hattem: Galley equipment.
International Verffabriek N.V., Rotterdam: Paints.
Int. Nav. Apparaten N.V., Rotterdam: Decca Navigator Mk 12.
Lemet Chromium, Zwolle: Porus Krome hardening of cylinder liners.
M.D.B. Smeertechniek, Rotterdam: Lubricating equipment for cylinders of Smit-Bolnes engines.
Serck N.V., Rotterdam: Serck lub. oil and fresh water coolers.
Serk-Kwant, Sneek: Telegraph installation.
Venteville, Techn. Bureau, Rotterdam: Anschütz Kiel gyro compass installation, automatic steering gear.
Winel N.V., Assen: Tank vents.
Wijk & Boerma, van, Groningen-Rotterdam: Pumps.

ANNUAL REPORTS

(Continued from page 35)

results. The HAL feels that they should not order a passenger vessel so long as it is not possible to count with a reasonable degree of certainty on a sufficient margin, also for the future to count on a sufficiently large margin between costs and proceeds. The operating result for 1969 is Nfl. 4.1 million, compared with 0.3 million in 1968. A dividend of 9 (5) per cent is recommended.

IHC Holland books order for the world's largest tin dredger

IHC Holland has signed a contract with Conzinc Rio-Tinto Malaysia Sdn. Berhad, a joint venture of Rio-Tinto Zinc and Bethlehem Steel, for the supply of a tin dredger with ore washer. The dredger is to operate in the Labohan Dagang concession in Selangor, Malaysia. It will be the biggest yet built in the world. Its bucket capacity is 650 litres and the maximum dredging depth 45 m. The dredger handles a minimum of 550,000 cu.m. of ground a month, while the annual production of tin concentrates will be 1,000 tons.

The tin ore washing plant is of an entirely new design and will be equipped with circular jigs developed by IHC Holland of large capacity.

The dredger has been designed by Mining & Transport Engineering N.V., Amsterdam, a daughter company of IHC Holland, which will also carry out the order. The contract is worth approx. 15 million Dutch florins and was won in competition with foreign companies.

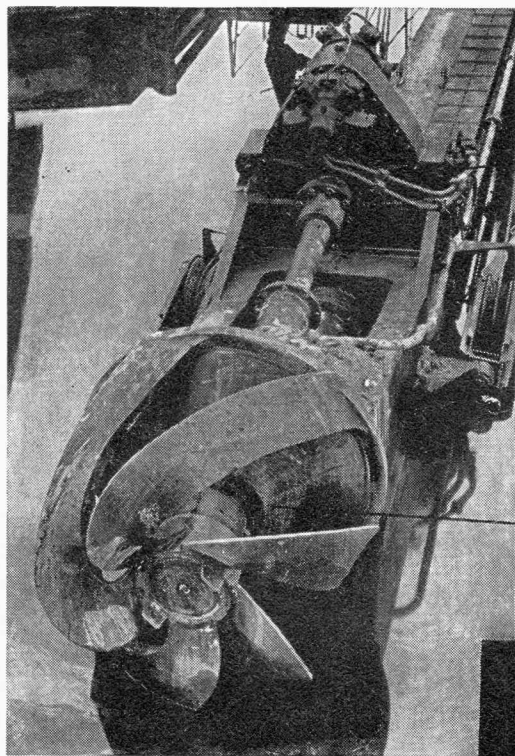
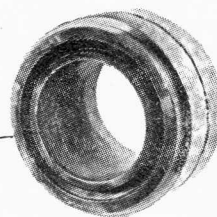


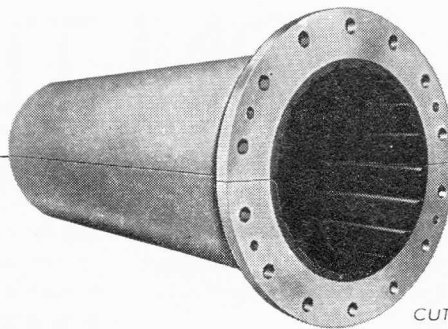
Photo I.H.C. - Holland



MEGI spherical
rubber mountings

B. F. Goodrich - B.T.R. "Cutless" rubber bearings for increase of reliability on cutter dredgers and other applications.

Phoenix "Megi" rubber-to-metal mountings for protection against vibrations, shocks and stress on material.



CUTLESS
rubber bearings



For all information and technical data:

ALEX. A. LOGGERS

P.O. BOX 194 — DORDRECHT — HOLLAND