

Three Dutch-built 13.000 ton Lubricating Oil Tankers

The extensive shipbuilding programme announced by the Royal Dutch/Shell Group in the spring of 1951 comprises, in addition to a large number of "general purpose" tankers of 18,000 tons d.w. and some super tankers up to 31,000 tons d.w., a small number of 13,000-ton lubricating oil

carriers. Three vessels of the latter type were ordered from Netherlands shipyards. They are the *Cinulia*, built by Machinefabriek en Scheepswerf van P. Smit Jr., Rotterdam, and the *Crania* and *Camitia*, by C. van der Giessen en Zonen's Scheepswerven N.V., Krimpen-on-Yssel. Of these three vessels, two have already been handed over to their owners and the third ship, the *Camitia* is due for delivery in the near future. The three vessels are the only motorships included in the present programme of the group with regard to vessels intended for operation under the Netherlands flag.

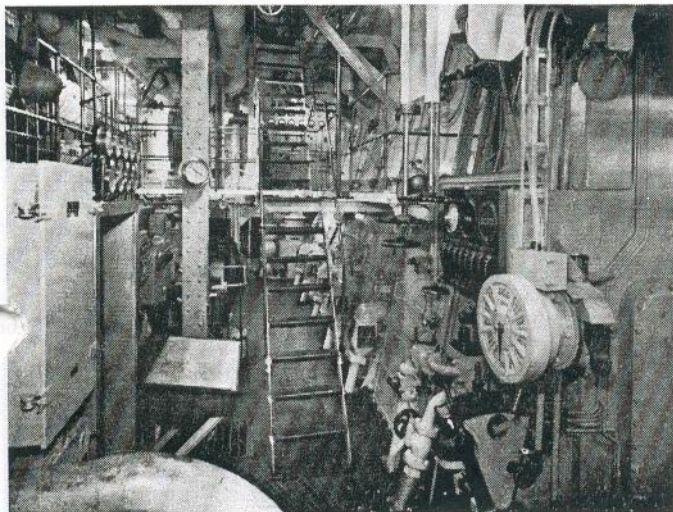
The leading particulars of the ships are as follows:

Length overall . . .	500	ft.	152.66	m.
Length b.p.	475	ft.	144.78	m.
Breadth	62	ft.	18.90	m.
Depth to maindeck . .	35	ft.	10.67	m.
Draught	27	ft. 4 in.	8.30	m.
Deadweight abt. . . .	13,000	tons		

Propelling machinery:

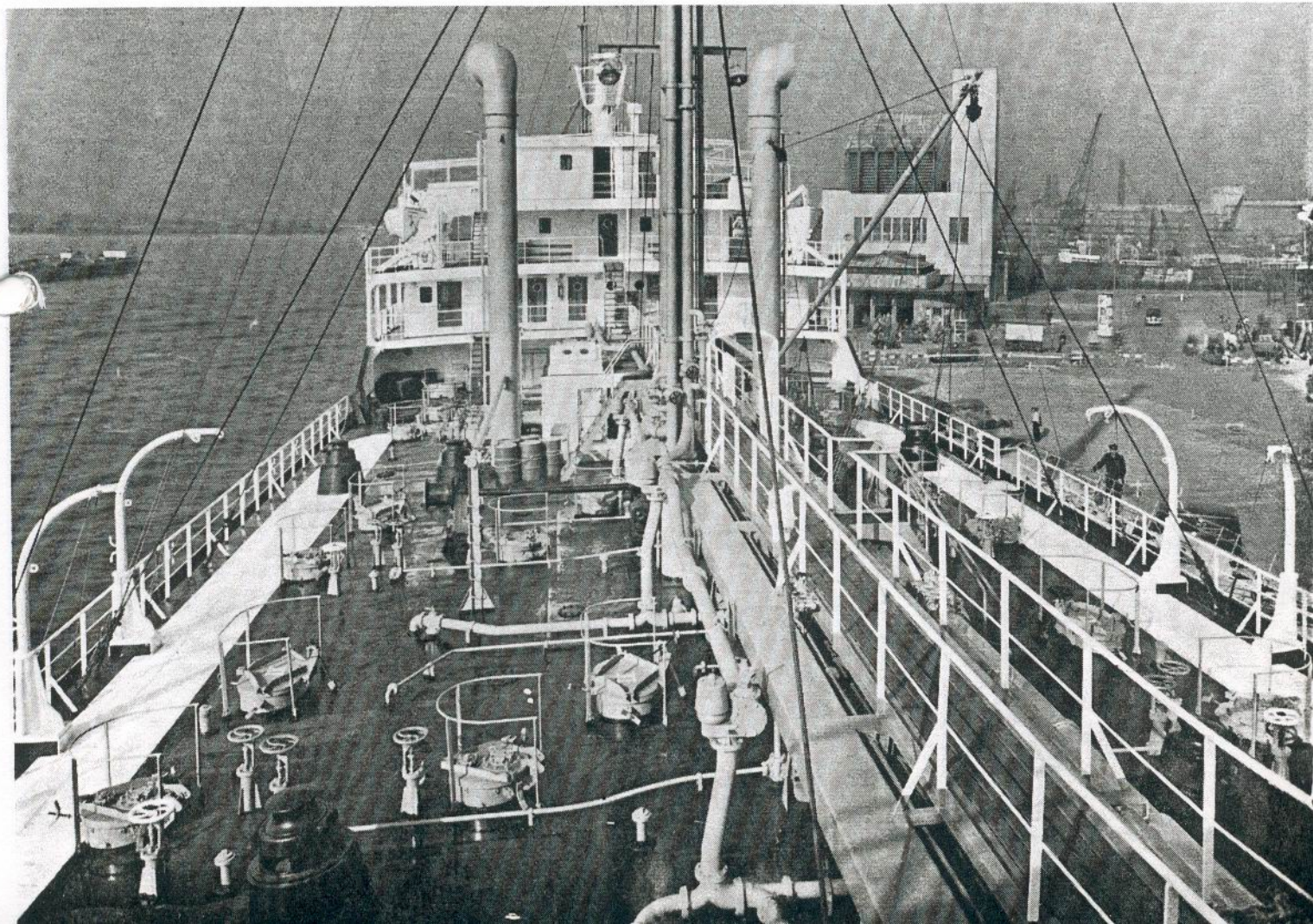
One 5-cylinder, single-acting two-stroke B. & W. diesel engine of 4,600 s.h.p. at 115 r.p.m.

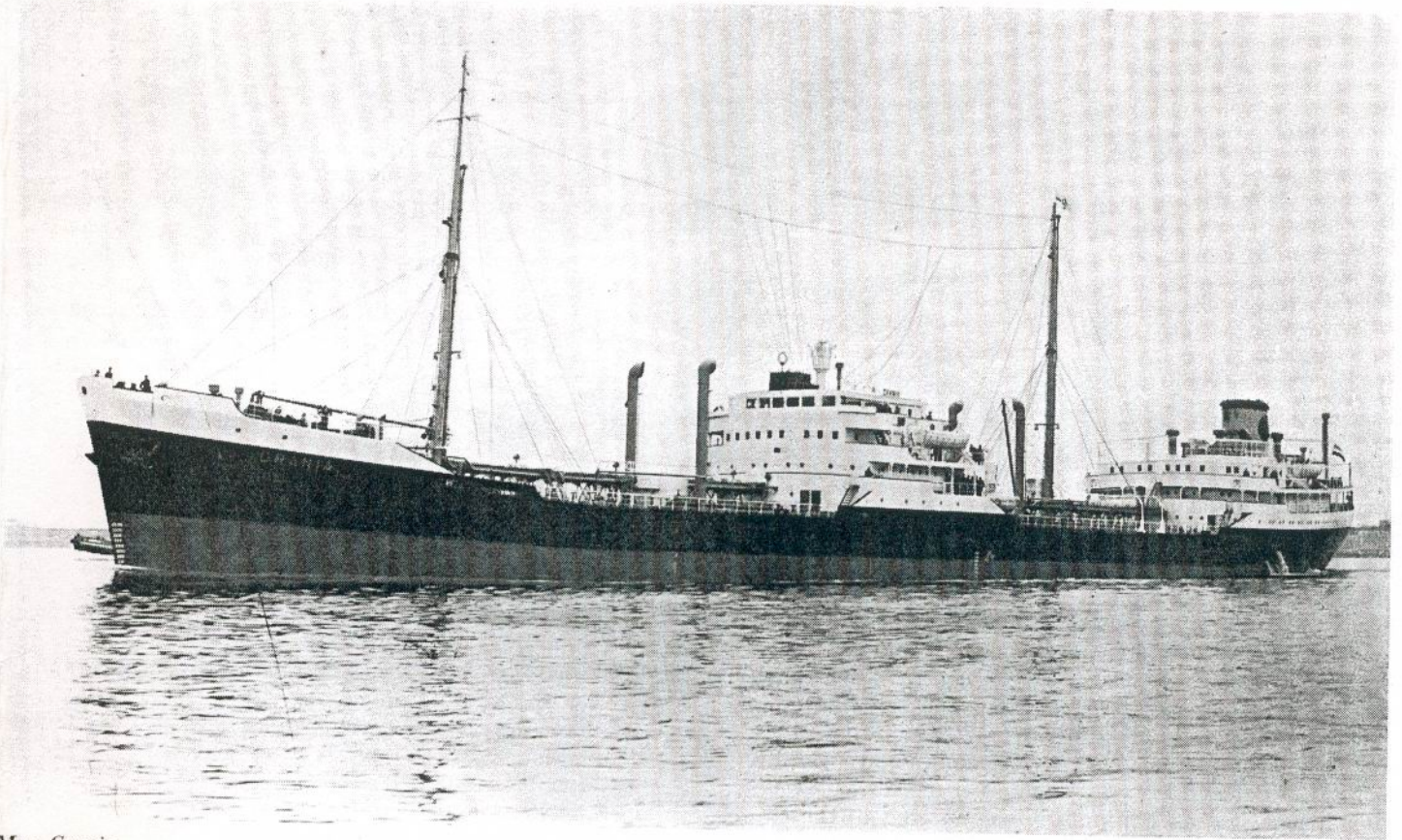
The tankers of the *Cinulia* type have been built to Lloyd's Register of Shipping for "carrying petroleum in bulk". The design incorporates forecastle, bridge and poop erections and the appearance of the vessels is further



Above: Manoeuvring platform

The afterdeck as seen from the poop





M.v. Crania

characterized by their well-raked stem and cruiser stern of the type met with in most tankers of these owners.

The ships have been built on the longitudinal and transverse framing system, with longitudinal framing in the bottom and transverse framing elsewhere. The ships are of fully welded construction with the exception of the tunnel bar, which is riveted.

Two longitudinal and a number of transverse bulkheads divide the hull into 30 cargo tanks. There are two pump-rooms, dividing the cargo section into three parts and enabling the simultaneous carriage of different grades of cargo. Forward of the cargo spaces there are a deep tank arranged for the carriage of fuel oil, as well as a dry cargo hold. A small pumproom is also arranged here, it contains a fuel transfer pump and a general service pump.

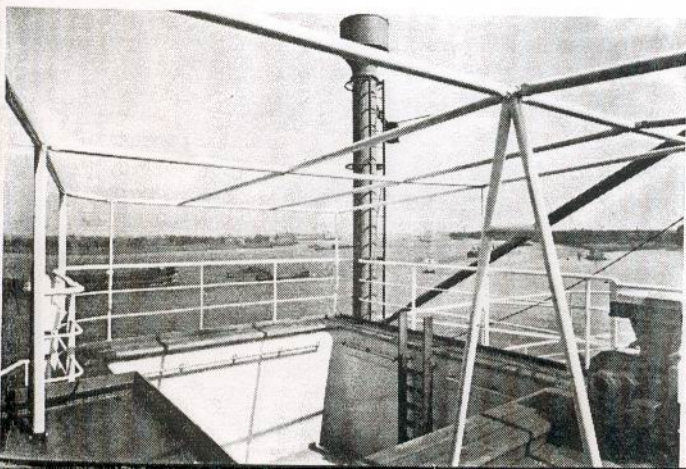
"Guardian" cathodic protection (magnesium anodes) is fitted in the centre tanks which are used for ballasting. Myonite heating coils are fitted in all the tanks. The ships are arranged for Butterworth tank cleaning.

Cargo is handled by two sets of two Hayward Tyler horizontal compound duplex cargo pumps, 24 x 14 x 24 in.,



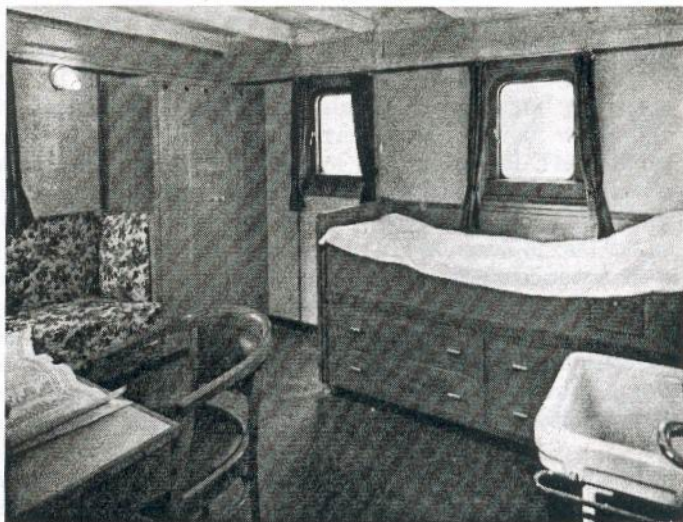
Captain's cabin

The swimming pool



each pump having a capacity of 400 watertons an hour against a back pressure of 140 lbs/sq. in.

Deck Equipment. The deck equipment includes two steel pole masts and two pairs of ventilator posts. One five-ton derrick is attached to the foremast, it is used to serve the dry-cargo hold. In addition there are 1¹/₂-2 ton derricks for handling the cargo hoses, provisions, etc. The derricks are served by steam winches, except those used for taking over provisions, which are served by an electrically-driven winch. The windlass and the two capstans placed



Third Officer's cabin

aft are of the steam-driven "Emerson-Walker" type. The electric hydraulic steering gear is of the four-ram type and has two independent pumping units and two electric motors so as to ensure a 100 per cent. spare capacity. Sperry gyrocompasses with arrangements for automatic steering are fitted, in addition to P.T.H. radar, Kelvin Hughes echosounder, D.F. equipment, and "Redifon" central aerial system.

Steam fire fighting equipment is connected to the cargo tanks and in addition there are the safety precautions required by the Netherlands Shipping Inspectorate. The life-saving equipment includes four light-alloy life-

boats each seating 32 persons. One of these boats is a motorboat. The lifeboats are carried in four sets of "Normal Deck" type gravity davits fitted with "Hand Power" winches and portable electric motor.

Accommodation. The living accommodation is disposed over the bridge and poop deckhouses, all members of the ship's complement being housed in single-berth cabins. The master and the navigating officers are housed in a spacious suite and cabins contained in the bridge deckhouse. The engineer officers are housed on the boatdeck aft, where there is also a large smoke room and permanent swimming pool for use by the officers and crew. The P.O.'s, and the ratings of the deck, machinery and catering departments are housed in the poopdeckhouse. A spacious messroom and recreation room for use by them is also arranged on this deck.

On the poopdeck are the officers' dining room and the P.O.'s mess. The galley, also on this deck, is fitted with an oil-fired range, baking oven, drying hatch, steam oven, an electrically operated potato peeler, etc.

The whole of the accommodation is mechanically ventilated and heated. The installation comprises three plenums for the mechanical ventilation and heating of the accommodation as well as a number of supply and exhaust fans for the ventilation of the galleys, washplaces and toilets. In the accommodation extensive use has been made of "Vynide" and foam rubber is employed in the chairs.

Machinery Equipment. The main propelling machinery of the tankers consists of a 5-cylinder, single-acting, two-stroke, direct reversible Smit/Burmeister & Wain diesel engine of the crosshead type. Each of the cylinders of

Chairs suited for ships' rooms.

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this engine has a bore of 740 mm. and a stroke of 1600 mm. The cylinder liners are chrome-hardened according to the Vanderhorst Porus Krome process. The output of this type of engine is 4,600 b.h.p. at 115 r.p.m. The engine has the thrust-block, electric turning machinery and governor built on. The cylinders are fresh water cooled, while the pistons are cooled by means of lubricating oil. The engine is arranged for the use of boiler fuel. Electricity for power and lighting is supplied by two Smit/Burmeister & Wain diesel generator sets, type 625-MTH-40, each of 360 b.h.p. at 515 r.p.m. The prime movers are direct coupled to a generator of 245 kW, 306 kVA, 450 volts 3-phase, 60 cycles per second. In addition there is a steam-driven alternator of 100 kW, 125 kVA and 450 volts. This set consists of one Reader vertical enclosed two-crank, compound forged lubricated steam engine coupled to a Smit-Slikkerveer alternator.

Also mounted are two electrically-driven vertical two-crank two-stage "Hoek" air compressors, each with a capacity of 200 cu.m./h of free air and an end pressure of 25 atm. at 500 r.p.m.

For the auxiliary air supply is installed a Broomwade self-contained diesel-driven "sleeve-valve" air compressor set with a capacity of 167 cu.ft. free air/min., actually delivered at a final pressure of 100 lbs. The set is powered by a "Lister" type diesel engine.

Steam for various purposes is raised in a Babcock and Wilcox boiler having a normal evaporating capacity of 25,000 p.p.h. (maximally of 30,000 p.p.h.) at a pressure of 220 p.s.i.g., the heating surface being 4,258 sq.ft. There is also one exhaust-gas boiler which is also arranged for oil-firing. The evaporating capacity of this boiler when exhaust-gas fired is 1,600 p.p.h. and when oil-fired 5,200,

the heating surface being 1,050 sq.ft. The pressure is 150 p.s.i.g.

Also installed in the engine room are one "De Laval" purifier and one clarifier for the purification of diesel and fuel oil, while there are two "Everclean" heaters arranged for the heating of the oil. For purification of the lubricating oil there is one purifier with pre-heater.

For cargo tankcleaning purposes there is a pump having a capacity of 450 galls/min exerting a pressure of 200 p.s.i. This pump works in conjunction with a heater capable of heating seawater up to 200 deg. F.

Each of the ships is provided with an evaporator capable of delivering 10 tons of water per 24 hours.

The pumps installed on board these ships include the following: Two Weir vertical boiler feed pumps 7 x 9¹/₂ x 21 in.; one Weir vertical boiler feed pump 4 x 6 x 12 in.; these work in conjunction with a Weir 82 sq.ft. Multiflow surface feed water heater; the following Hayward Tyler pumps: 4 horizontal duplex compound cargo pumps 14 & 24 x 14 x 24 in. (mentioned above); one horizontal Duplex fuel transfer pump 8 x 8 x 10 in.; one horizontal general service pump 6 x 6 x 6 in.; one horizontal duplex drain pump 6 x 6 x 6 in. and one horizontal duplex test pump 3¹/₂ x 1³/₄ x 3¹/₂ in.

All the auxiliaries of main and auxiliary machinery are electrically-operated. The prime movers of this machinery include the following "Heemaf" electric motors: Two vertical A.C. two-speed motors of 43/26 h.p. at 1170 and 580 r.p.m. for lubricating oil pumps; three vertical A.C. motors of 20 h.p. at 1750 r.p.m. for cylinder cooling and sea water pumps; one vertical A.C. motor of 35 h.p. at 1200 r.p.m. for main seawater circulating pump; one vertical A.C. motor of 28 h.p. at 1750 r.p.m. for the general

service pump. In addition, these makers delivered 5 smaller motors for a main feed voltage of 440 volts, 3-phase 60 cycles.

Electrical Installation. The electrical installation of the *Cinulia* was supplied by A. de Hoop N.V., Rotterdam; that of the *Crania* and *Camitia* by H. Kroon & Co., Rotterdam:

When in normal operation the voltage of each of the generators indicated above is automatically regulated by Newton regulators, which are suitable also for automatic regulation of the current distribution between the generators when operating in parallel.

In order to simplify the synchronising and switching in parallel of the generators and to reduce to the minimum the chance of a blackout a special switch has been provided on the main switchboard. This arrangement has been patented by the makers. The new device enables the connection of the generators to be synchronised, with the power rails via a choking coil prior to connecting them direct to the busbar. In this manner the equalizing currents which come into existence by improper synchronisation, are reduced to a value which either will synchronise the running of the generators or will disconnect them. This interruption of the too heavy equalizing current takes place in such a short time that the automatic device of the generator in operation does not react. Prevention of rushes of current when synchronising protects also the crankshaft and couplings of the prime mover against the abnormally big moments which come into existence under these circumstances.

Practically all of the prime movers on *Cinulia* are directly connected to the circuits, a few only start up in stages. The starters of the large prime movers are built together to form two central starting units arranged on the S.B. and P.S. of the main switchboard. The safety devices of all the motors, as well as those of the generators are in 3-phase.

Connected are: 30 electric motors up to 5 h.p.; 10 of 5-10 h.p. and 13 of over 10 h.p. The lighting system, with about 700 connections, has a voltage of 110 which is obtained through one set of 3 single-phase transformers for the aftership and 3 for amidships and the foreship. A shore connection is also fitted.

On the *Crania* and *Camitia* the generators operate in parallel and are connected to the main switchboard which is of the "deadfront cubicle type". The switchboard comprises in the main 3 generator panels, one synchronisation panel and an number of panels for the outgoing groups and starter panels for the engine room motors. A 24-volts circuit in the bridge deckhouse and the aftership are fed by alkaline storage batteries, supplying current for the emergency lighting system and other purposes.

Equipment

on board the "*Cinulia*", "*Crania*" and "*Camitia*"
(Partial List)

v. d. Ben, IJsselmonde: Pipelines;
H. Croon & Co., Rotterdam: Electrical installation *Crania* and *Camitia*;
Fa. Wed. H. van Dam, Bolnes: Ventilator cowls, clothes lockers, pyrometer cabinets, cupboards;
Davit Company N.V., Utrecht: Gravity davits with accessories;
N.V. Eerste Vlaardingse Verffabriek, Vlaardingen: Two coatings of "Lassex" anti-corrosive and protective paints;
Fa. Gerard de Bruyn, Rotterdam: Weir pumps and freewater heaters;
Feteris, The Hague: One Mark 14 valve follow up gyrocompass; one bearing repeater, one steering repeater, one repeater radio D.F. one course recorder, two rudder angle indicators, one rudder angle

transmitter; one duplex gyro pilot for electric and automatic steering control.

Wm. C. Grootenhuis, Rotterdam: Mechanical ventilation and heating equipment, designed supplied & erected by N.V. Machinefabriek "Kennemer", Beverwijk, in conjunction with The Winsor Engineering Co., Ltd., Glasgow;

Heemaf N.V., Hengelo: Sundry electric motors;

Hobart N.V., Rotterdam: One 30-litre mixer with accessories and one potato peeler;

W. A. Hoek's Machine en Zuurstoffabriek, Schiedam: 2 air compressors;

A. de Hoop N.V., Rotterdam: Electrical installation *Cinulia*;

Ingenieursbureau Lemet Chromium, Hilversum: Chrome-hardening cylinder liners main propelling engine;

International Navigatie Apparaten N.V., Amsterdam: "Redifon" central aerial system, type A.133 A;

Ir. J. Janszen, The Hague: Caird & Rainer evaporators and Butterworth heaters of 120 tons; Donkin & Co., Ltd. gland packed rudder carriers;

Keehnen, Rotterdam: Upholstery;

Kon. Grofmederij, Leiden: Anchors and cables;

Nieuwburg, Schiedam: Insulation;

Handelscompagnie N.V., Rotterdam: Rigging;

Peiffer's Machinale Stoelenfabriek, Rotterdam: Chairs;

Pietersen & Co., Rotterdam: "Frigidaire" refrigerators;

v. Rietschoten & Houwens, Rotterdam: Broomwade S.V. 199 diesel-driven air compressor set;

Schouten & Co., Capelle-on-Yssel: Paintwork;

Schreuder's Lakfabrieken, Schoonhoven: Fire-retarding polishing lacquer;

Stroomer's Handelonderneming, Rotterdam: Goodwill foam rubber in chairs;

L. Trost & Co., Rotterdam: Vynide in accommodation;

Vaillant & Sluyterman, The Hague: Hayward Tyler pumps one Michell tunnel shaft bearing for a shaft diameter of 565 mm. and one aftermost bearing; one Reader compound forged lubricated steam engine for alternator set;

Verhoef, Aalsmeer: Light alloy boats and accommodation ladders.

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