

BIBLIOTEKA
OFIC. SZKOŁY MAR. WOJ.
DZIAŁ NAUKOWY
GDYNIA

Engineering for Nautical Students.

Syllabus of Engineering as prescribed by the Merchant Navy Training Board.

NOTE:—*The numbers in brackets after each section refer to the pages where these are described.*

FIRST YEAR.

Use of instruments and scales. (5.)

The sketching of such objects as nuts, bolts, rivets, and simple engine parts; *e.g.* a winch piston, a stop valve, a connecting rod for a small engine. (6-15.)

Drawing in plan and elevation. (6-9.)

How drawings are dimensioned. (7.)

Practice in this work by making a dimensioned sketch from a given object. (12-15.)

Simple ideas of how a reciprocating engine works; *e.g.* a winch, with names of essential parts and method of lubrication. (24-30.)

How a steam windlass works. (30-32.)

Differences between gear wheels and worm gear. (33-35.)

Simple ideas on general construction of marine boilers. (15-20.)

How to operate a steam valve. How pipe lines are drained. Danger of frost on pipe lines and winch cylinders. (32.)

How steam is produced in a steam boiler. How it works the engine. (20-24.)

SECOND YEAR.

Steering gears, their types and the various means of operation. (61-67.)

Various pumps on board ship, *e.g.* feed, ballast and bilge, and how they are worked. (49-52.)

The pipes and valves for pumping bilges, ballast and oil tanks. (52-55.)

The shafting from the engine to the propeller and the means by which the thrust of the propeller is transmitted to the hull of the ship. (55-61.)

How coal and oil are burned in the furnace of a marine boiler. (39-43.)

Danger of fire and means of preventing, detecting and extinguishing it. (43-47.)

How a refrigerating machine works. The importance of insulation. How the chambers are cooled. (67-71.)

Simple idea of how a steam turbine works. (71-76.)

Simple idea of how a Diesel engine works. (76-78.)

THIRD YEAR.

How electrical pressure, current and resistance are measured. Ohm's Law. Some idea of the size of the units by reference to ship's lighting and power supply. (83-86.)

Dangerous voltages (dry and wet body). (86.)

What a current of electricity can do. Simple ideas of magnetic, heating and chemical effects. (87-92.)

Heating effect of a current. How it increases with an increase in current strength. Melting of substances. Effect of temperature on conducting and insulating properties of substances. How insulated cables tend to insulate heat and so raise the temperature. Fuses. (89-92, 111.)

Primary and secondary batteries. Care and use of accumulators. Electrical corrosion. (92-97.)

Why a ship's supply must have a constant pressure. (98.)

Building up a simple lighting circuit. What candle-power is; how candle-power depends on electrical power; how it varies in different types of lamps. How lamps are rated. Lamps in series and parallel. (106-109, 97.)

How an electro-magnet works. The electric bell and buzzer, telephone, microphone and moving iron ammeter. (101-104.)

How a D.C. electric motor works. Application to construction of a moving coil ammeter. (117, 105.)

Simple ideas on the principle and construction of a dynamo. The spring cut-out as a safety device. Direct and alternating currents. Transformers. (112-121.)

Different types of motors used in ships. The functions of the starter. (118-119.)

Electrical heating and lighting appliances found aboard ship. Measurement of energy in watts. B.O.T. units. Relation of watts to horse-power. (109.)

Simple ideas on the main parts of a ship's wireless apparatus. (122-128.)