

sun by the usual methods. He must understand the use of the sextant with its adjustment, and be able to observe with it, find the index error by the horizon, and read off and on the arc. He must also pass a satisfactory examination in the International code of signals.

In addition to the qualifications of second mate, above stated, he must be able to find the true bearing of the sun, and error of the ship's compass from an observed azimuth of the sun, both from an altitude and also from the "Time Azimuth Tables," and with the variation given compute the deviation; to find the latitude from a single altitude of the sun off the meridian, and to be able to use and adjust the sextant, and find the index error by the sun; and also to ascertain the true bearing of the sun, and the ship's position by Summer's method by projection. He must also be conversant with the use of Mercator's chart, and be able to find on either a "true" or "Magnetic" chart the course to steer, and the distance from one given position to another, and find the ship's position on the chart from cross-bearings of two objects; from two bearings of the same object; the course and distance between the bearings being given; and also the distance of ship from the object at the time of taking the second bearing. He must also understand how to keep a ship's log-book, and answer certain questions relating to cyclones or revolving storms.

IN SEAMANSHIP, &c.—He must give satisfactory answers as to the standing and running rigging of ships; as to bending, unbending, setting, reefing, taking in, and furling sail; as to sending masts and yards up and down, &c., &c.; as to the management of a ship when under canvas, and as to dunnaging and stowing cargo, &c. He must have a thorough knowledge of the rule of the road as regards both steamers and sailing vessels, their regulation lights, and fog and sound signals; and to be able to describe the signals of distress, and the signals to be made by ships wanting a pilot, and the liabilities and penalties incurred by the misuse of these signals. He must be able to mark and use the lead and log-line. He must also understand the use and management of the rocket apparatus in the event of his vessel being stranded, and other questions of a like nature appertaining to the duties of the second mate of a ship.

In addition to the above qualifications, a more extensive knowledge of seamanship will be required as to shifting large spars, rigging shears, taking lower masts in and out, how to moor and unmoor a ship, and to keep a clear anchor, to carry out an anchor, how to manage a ship in stormy weather, how to cast a ship on a lee shore, how to secure masts in the event of an accident to the bowsprit, and how to rig purchases for getting heavy weights, anchors, machinery, &c., in and out. He must give satisfactory answers to the ventilation of holds and the stowage of explosives. He must also know how to rig a sea anchor, and what means to apply to keep a vessel disabled or unmanageable out of the trough of the sea and lessen her lee drift; how to get the cast of deep sea lead in heavy weather; and answer any question appertaining to the duties of an only or first mate which the examiner may think necessary to put to him.

In addition to the above, he will be required to describe the effect of the screw race on the rudder, and the effect produced on the direction of the head of the ship by going (ahead) (astern) with a (right) (left) handed screw when the rudder is (ported) or (starboarded). How to turn a steamship short round. He must also understand the use and action of the sluices, and of the water ballast tanks, and the engine-room telegraph, and questions of a like nature.

A master must be 21 years of age, and have been 6 years at sea, of which one year must have been as first or only mate in a foreign-going ship and one year as second or only mate. He must also prove that he has served at least one year in a square-rigged sailing vessel in the capacity of either apprentice, seaman, mate or master.

IN NAVIGATION.—In addition to the qualifications required for a second, only and first mate, he must be able to compute the latitude from the meridian altitude of a star, to find the magnetic bearing from equidistant compass bearings of any fixed object when at sea, and compute the deviation therefrom. He must construct a deviation curve upon a "Napier's" diagram, which will be furnished by the examiner, and understand the practical application of the same, and give written answers to certain practical