

without notice. The twenty questions will not be difficult, theoretical, or book questions, but such as any man of ordinary capacity who has a fair amount of practical knowledge of the use and working of the steam-engine ought to answer.

Examiners will require all candidates to fill up a Form Exn. 156, and they will forward it to the Chief Examiner of Engineers with the report of the examination.

Masters and mates may cancel questions A, B, and C, but they should fill up the form for questions D, E, F, and G in Appendix A of the Regulations relating to the Examination of Engineers as evidence of their practical knowledge.

If a candidate refers to any book, paper, or memorandum, or obtains information from another candidate or any other person during the examination, he will be treated as having failed, will forfeit his fee, and will not be allowed to be re-examined for a period of six months.

The Examiners will report, in the case of failure, the nature of the question or questions that decided the failure, or the point in the management of the engines or boilers in which the candidate was deficient.

Applicants for the voluntary examinations need not necessarily have served on board steamships; all that is required is that they shall have a practical knowledge of the use and working of the steam-engine.

Practical knowledge is best gained in the engine-room; and the examination of an officer who does not produce official evidence of service in steamships, and of experience of engines, must necessarily be more searching than in the case of one who produces evidence of such service and experience.

A large part of the *viva voce* examination should be conducted on board a steamer, preferably one with which the candidate is unacquainted. He should be told to look about and try to find out the arrangement of the machinery without assistance, and the Examiner should be in the engine-room to see that this independent examination is properly carried out. When the candidate reports that he thinks he knows the arrangement, the Examiner will question him on the uses of the parts, get him to point out the different cylinders, pumps, valves, condenser, &c.; also the dynamo, its field magnets, armature, commutators, brushes, cables, &c. The candidate must show that he understands the run of the pipes in the bilges, not necessarily that he has gone over every one of them, but he ought to be directed to trace at least one important range of pipes, and to thoroughly satisfy the Examiner that he could be safely trusted to manipulate the valves or cocks in connection therewith. It will not often be practicable for the candidate actually to work engines under steam, but he must satisfy the Examiner that he knows how to do so, and that he is aware of the precautions to be taken in regard to water in the cylinders, &c. It is most important that a candidate should show that, in the event of an accident depriving him of the assistance of engineers, he knows what to do to safely take his vessel to an anchorage, or to stop the engines and proceed under sail alone.

The examination of a mate in steam is the same as that of a master. The knowledge required has no reference to the mate's position.

A mate may be examined, but such examination implies that the mate may one day be a master, when the possession of the knowledge will be an advantage to him in the discharge of his duties.

#### APPENDIX I.

##### SIGHT-TESTS.

###### DETAILS AS TO THE CONDUCT OF THE TESTS.

These tests must be conducted under the strict personal supervision of the Examiner. A careful record must be kept of all mistakes made by the candidate both in the form-vision test and in the colour-vision test.

Each Examiner must keep a record of all candidates passed by him for reference when required.

##### I. FORM-VISION TEST.

**1. Form-vision Test to be passed first.**—The first test which the candidate is required to undergo is the test for form vision, and until he has passed this test he must not be allowed to proceed further with the examination.