

Sunday morning. His instructions were to pump the remaining water out of the boiler, and he did this without admitting air. So far as we were able to gather at the time, it seems that the engineer, together with a Chinese fireman, went to take off the lower manhole door. This door was some few inches above the stokehole floor, and, as is the usual practice of Chinamen, the fireman assumed the "squatting" attitude. He was left to himself to remove the nuts and dogs of the door, and when he had done so, he started the door, and was instantaneously drawn in towards the boiler, his stomach practically closing the aperture, and the door swinging to the back of the boiler with a loud report.

Hearing the fireman's cries, the engineer opened the gauge-cocks in order to admit air to the boiler, whilst the fireman in the meantime suffered great agony, being pinned in this position until the vacuum was destroyed.

When the matter was reported to me the next morning, I saw the fireman, who complained of internal injuries. These, however, do not appear to have been of a severe nature, as the man was able to resume his work in a few days.

APPENDIX F.

EXAMINATION OF MASTERS AND MATES IN STEAM. THESE examinations are provided for the purpose of giving masters and mates who are possessed of certificates of competency an opportunity of undergoing a voluntary examination as to their practical knowledge of the use and working of the steam-engine. The Examiners are selected by the Marine Department from the Engineer Surveyors appointed under the Shipping and Seamen Act, 1908.

The examination is open to any person who holds a certificate of any grade in the foreign or home trade, or as master of his own pleasure-yacht. Candidates should fill up the form of application (form Exn. 2) at a Mercantile Marine Office, pay the fee of £1, and deposit their certificates with the Superintendent. The Superintendent will inform the applicant when and where to attend to be examined. If a candidate fails to pass, his certificates will be at once returned to him.

If he passes, the report (Exn. 15) will be sent to the Chief Examiner of Engineers, and the certificate, together with the form Exn. 2, will be sent to the Marine Department. The words "Certified to have passed in steam," with the date and place of examination, will then be entered on the certificate and its counterpart, and the certificate will be sent to the Superintendent of the Mercantile Marine Office of the port named in the form Exn. 2, and be delivered to the candidate in the usual manner.

If a candidate fails, he may not present himself for re-examination until the expiration of three months from the date of failure.

The examination is for the most part *viva voce*, and extends to a general knowledge of the practical use and working of the steam-engine, and of the various valves, fittings, and pieces of machinery connected with it, and of the way in which electric lighting is carried out on board ship. Theoretical questions on calculation of horse-power or areas of cylinders and valves, or any of the more difficult questions relating to steam engines and boilers, will not be asked.

Examiners are to satisfy themselves that the candidates know the names and understand the uses of the various parts of engines and boilers, and their connecting pipes, valves, cocks, &c. Practical know-

ledge, as distinguished from theories and abstruse calculations, is to be the test of the candidate's fitness to have his certificate indorsed.

The Examiner should arrange to conduct part of the examination in the engine-room of a steamship, unless from circumstances he finds it impossible to do so; but in the event of the candidate passing, the Examiner should state in writing what circumstances prevented a visit to an engine-room. If an opportunity offer, the candidate should be permitted, under the guidance of the Examiner, to start and stop the engine of some vessel which may have her steam up.

The Examiner, in sending in his report of the examination, should state where the examination has been held.

Candidates will be required to give written answers to sixteen out of twenty questions taken from the elementary questions printed in Appendix B. These questions will be altered from time to time without notice. The twenty questions are not to be difficult, theoretical, or book questions, but are to be such as any man of ordinary capacity who has any practical knowledge of the use and working of the steam-engine ought to answer.

These questions, with the candidates answers, should be sent to the Chief Examiner of Engineers, with the reports, after each examination.

If a candidate refers to any book or 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 three 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 engine in which the candidate was deficient.

There is nothing in the regulations requiring that applicants for the voluntary examination shall 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. Examiners will not fail to appreciate the fact that 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.

Examiners will require all candidates to fill up a form (Exn. 15*b*), 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, as evidence of their practical knowledge.

A candidate for this examination is required to have a thorough grasp of the construction of the steam engine and boiler, to enable him, in the first place, to understand the nature and importance of any defect which may be reported to him by the chief engineer, and so that he may work in harmony with him in affording time and facilities for disconnections, inspections, adjustments, and repairs:

To have a looking-on knowledge of what the principal repairs are about engines and boilers and pipes, and how these repairs are accomplished:

To be able to form an independent opinion as to breakdown, and the consequent propriety or impropriety of proceeding under steam with temporarily repaired or defective machinery: