

EXECUTIVE COUNCIL.

Hong Kong.

No. 770.

Rules as to the conduct of examinations instituted for persons who wish to procure colonial certificates of competency as masters, mates or engineers in the Mercantile Marine, and as to the qualifications of the applicants, laid down and made by the Governor in Council under section 4 (8) of the Merchant Shipping Ordinance, 1899, Ordinance No. 10 of 1899, on the 26th day of November, 1930.

RULES.

CHAPTER I.

General Rules.

1. These rules are laid down in pursuance of the Merchant Shipping Ordinance, 1899, and shall come into operation on the 1st day of January, 1931, in substitution for the rules heretofore made under section 4 (8) of the said Ordinance.

2. **Examination of Aliens.**—No alien may be examined for a certificate of competency as Master or First Mate unless he has acted as a Master, Chief Officer or Chief Engineer of a British ship or as Skipper or Second Hand of a British fishing boat at any time during the War, and is certified by the Admiralty to have performed good and faithful service in that capacity.

3. Certificates of Competency will be granted to those persons who pass the requisite examination, and otherwise comply with the requisite conditions. For this purpose examiners have been appointed.

4. The examinations will commence on such a day and at such an hour as may be appointed by the Harbour Master.

5. Candidates for examination must make their applications upon the appropriate form, which must be filled in at the Harbour Office, and the Candidates' testimonials and discharges must be lodged with the Harbour Master.

The Examiner should be particularly careful to ascertain that there are no gaps in the candidate's service which are not properly accounted for, before he is allowed up for examination.

6. **Proof of Nationality.**—Every candidate for a certificate of competency of any grade will be required to produce proof of nationality.

7. Proof of British nationality will, in ordinary circumstances, involve the production of a birth certificate or of a certificate of naturalisation. If an applicant for examination cannot produce such a certificate he should be asked to furnish such documentary evidence of nationality, or of birth and nationality of parents, as he may be able to obtain, and, if necessary, the case should be referred to the Principal Examiner of Masters and Mates for consideration.

8. If the applicant is not a British subject he will, as rule, be able to produce some official document testifying to his nationality. If there is any doubt as to the authenticity of such document, the Examiner should consult the nearest Consular Officer of the nation to which the applicant belongs. If necessary, the case should be remitted to the Principal Examiner of Masters and Mates for consideration.

9. **Application: particulars of sea service.**—A candidate's eligibility for examination will depend (amongst other things) upon the amount of sea service which he has performed and upon the ranks which he has held on board the various vessels in which he has been employed. It is therefore most important that the particulars which the candidate inserts in Division H of the application form (Exn. 2) should be accurately stated.

Candidates for certificates, for which service as watch-keeping officer is required, must also produce certificates of watchkeeping service signed by the Masters of the vessels on which they have served. Specimen forms of these certificates are shown in Appendix D.

It must be clearly understood that the amount of service laid down in the Regulations for each grade of certificate of competency is the absolute minimum that can be accepted, and unless a candidate can show the full amount he must in no case be allowed up for examination.

10. **Testimonials required.**—Testimonials to character, including sobriety, and to experience and ability, on board ship for at least the last twelve months of sea service preceding the date of application to be examined, will be required of all candidates, and without producing them no person will be examined.

11. **Penalty for misconduct.**—Candidates who have neglected to join their vessels after having signed articles, or who have deserted their vessels after having joined, or who have been found guilty of gross misconduct on board, will be required to produce satisfactory proofs of two years' subsequent service and good conduct at sea, unless the Governor, after having investigated the matter, should see fit to reduce the time.

12. **Deafness and other physical and mental disabilities.**—If during the progress of the examination the Examiner finds that a candidate is afflicted with deafness, with an impediment in his speech, or with some other physical or mental infirmity, and he is satisfied upon further investigation that the degree of deafness or of the impediment or other infirmity is such as to render the candidate incompetent to discharge the ordinary duties of a mate or master at sea, he should not allow the candidate to complete his examination and should return his examination fee; but every case in which this action is taken must be reported to the Governor.

If the candidate subsequently produces a medical certificate to the effect that his hearing, speech, or physical or mental condition has improved or is normal, the Governor will take into consideration the question of allowing the candidate to sit again for examination.

13. Foreigners must know English.—Foreigners must prove to the satisfaction of the examiners that they can speak and write the English language sufficiently well to perform the duties required of them on board a British vessel. If a candidate fails for ignorance of the English language he will not be re-examined until after a lapse of six months.

14. If, after a Candidate has passed the examination, it is discovered on further investigation that his services are insufficient to entitle him to receive a Certificate of the grade for which he has passed, the Certificate will not be granted to him, but if the Harbour Master is satisfied that the error in the calculation of the Candidate's services did not occur through any fault or wilful misrepresentation on his part, he may be granted a Certificate of such lower grade as his service entitles him to. The superior Certificate will not be granted until the Candidate has performed the amount of service in which he was deficient, and has been re-examined in all the subjects, unless the Harbour Master sees fit to dispense with the re-examination.

15. Examination of Officers in Royal Navy.—Officers of the Royal Navy may be examined for certificates of competency on the same conditions as officers in the Mercantile Marine, but the Lords Commissioners of the Admiralty have directed that the applications of officers wishing to be so examined should be made, if on the active list, through their commanding officers, and if on halfpay direct to the Secretary of the Admiralty, who, in either case, will forward the application to the Board of Trade.

16. Failure in the written or the oral part of the examination.—Candidates for any grade of certificate will proceed to the oral examination irrespective of whether they have passed or failed in their written work.

17. Where a candidate passes in the written portion of the examination and fails in the oral, or vice versa, his pass in that portion in which he has satisfied the examiners will hold good for a period of six months from the date of the examination. If he does not pass the remainder of the examination within this period he will again be required to be examined both in the written and in the oral portions. The Governor may in exceptional circumstances decide to extend this period up to a limit of one year.

18. Penalties for failure.—In the case of a second failure or any subsequent failure in the written or the oral portion of the examination, or in both, an interval of two months must elapse from the date of the last failure before a candidate can be re-examined. No further penalty will be imposed save in those cases where the Examiner considers further sea service necessary. Such sea service will not exceed six months.

When a candidate fails in the oral portion of the examination, the Examiner, in making his report on the form Exn. 14, should state whether any further sea service must be performed by the candidate and he should also insert this information in the form Exn. 2.

Inability to repeat verbatim the Articles of the Collision Regulations will not entail failure in the oral examination if the candidate understands the full significance, content and practical application of the Articles.

19. Examination in Signalling.—A candidate who is eligible for examination for any grade of certificate for which signalling is required may take this part of the examination at any time within the six months immediately before or after he presents himself for examination in the written and oral portions.

A candidate who fails in signalling but passes in every other subject may, at any time within the six months following his first attempt, be re-examined in signalling only, and, if he then passes, will receive his certificate of competency.

Subject to the above conditions, a candidate may be allowed to take the signalling examination in any week during which examinations of Masters and Mates are being held at the port, but the special fee for this examination (*see* rule 24) must be paid for each separate attempt.

20. Candidates failing may be examined for certificate of lower grade.—If a candidate fails in his examination for a foreign-going certificate, and the subjects in which he has failed are not included in the syllabus prescribed for a foreign-going certificate of a lower grade, he may, if he so desires, be examined for the lower grade certificate without further formal application or payment of fee, but he will be required to complete the whole of the work prescribed for such lower grade.

No part, however, of the fee he has paid will be returned to him, and on presenting himself, when qualified, for re-examination for the higher certificate, he will be required to pay a further full fee.

21. Fee always paid first.—Applicants for examination, and persons enquiring as to their eligibility, will be required, in making their application on form Exn. 2, to pay the examination fee before any step is taken in the way of inquiring into their services or testing their qualifications. If the candidate is found not to be eligible the fee will either be returned to him or placed to his credit until he is eligible.

22. The fee for examination must be paid to the Officer deputed for that purpose by the Harbour Master, in the Harbour Office. If a Candidate offers a gratuity to any Officer of the Department, he will be regarded as having committed an act of misconduct, and will be rejected, and not allowed to be again examined for twelve months, either at the Port where the offence was committed, or at any other Port.

23. Fee in case of failure.—The fee paid for examination for a certificate of competency includes the fee of one dollar for examination in the sight tests, and if the candidate fails to pass those tests, this fee will, with the exception of one dollar, be returned to him.

If a candidate fails to pass any other part of the examination no part of the fee will be returned to him.

Where a candidate for a certificate of competency is re-examined in the written or in the oral part of the examination only he will be required to pay in respect of such re-examination a fee of ten dollars.

24. Fees.**Signalling—**

Where a candidate for a certificate for which signalling is required takes the examination in signalling separately from the remainder of the examination, for each attempt \$ 5.00

Sailing ship endorsements—

Where a candidate is examined for a sailing ship endorsement at the same time as for a certificate of competency of the same or of higher grade No fee.
If examined separately \$10.00

SIGHT TESTS.

Examination in the Sight tests only \$ 1.00

NOTE 1.—For certain fees payable by applicants for colonial certificates of competency see section 4 (12) of the Merchant Shipping Ordinance, 1899.

NOTE 2.—No abatement will be made to the fee charged to a Candidate in consequence of his possessing a Certificate of a lower grade.

25. First Aid to the Injured.—(a) Every candidate for a certificate of competency of any grade as Master or Mate will be required to produce a certificate issued by the St. John Ambulance Association, the St. Andrew's Ambulance Association, the St. Patrick's Ambulance Association, the British Red Cross Society, the London County Council, the Glamorgan County Council, the Leith Nautical College or other approved body or by a Medical Officer of one of His Majesty's ships, to the effect that he has passed examination in First Aid to the injured

(b) The certificate must be an adult certificate, *i.e.*, obtained by the candidate when sixteen years of age or more, and the examination for it must have been passed not more than three years before the date of the examination for the certificate of competency. Certificates issued by the St. John Ambulance Association more than three years before the examination for a certificate of competency will, however, be accepted, provided that, at the expiration of three years since its issue, the certificate has attached to it the "Voucher" or "Label" of the Association certifying that the holder has passed re-examination in First Aid.

(c) If a candidate does not possess such a certificate of proficiency in First Aid he should apply some time before he wishes to sit for examination for a certificate as Master or Mate to the local secretary of an approved Association or other approved body, who will inform him of the available facilities for the instruction and examination of candidates in First Aid.

(d) Besides the courses of instruction which are provided on shore at the ports in the United Kingdom, at which examinations for certificates as Master and Mate are held, courses of instruction given by qualified surgeons on board merchant vessels will be accepted by the St. John Ambulance Association as qualifying the candidate for examination for their certificate of proficiency in First Aid, provided the surgeon certifies that he has followed the syllabus of instruction laid down by the Association.

(e) The St. Andrew's Ambulance Association will also accept instruction by a ship's surgeon on board ship as qualifying a candidate for examination for their certificate of proficiency in First Aid, provided their syllabus is followed. In this case the candidate must previously have enrolled and obtained an attendance card, by applying to the local secretary of the Association, or to the head office at 98-108, North Street, Glasgow.

(f) It will not be necessary for the candidate for a certificate as Master or Mate in all cases to produce the formal certificate of proficiency in First Aid issued by the Associations. In order to prevent delay in proceeding with the examination for the certificate as Master or Mate and in the issue of the certificate to successful candidates, the special Mercantile Marine Linen Certificate issued by the St. John Ambulance Association and duly signed by the Lecturer, the Surgeon Examiner, and the Association's local representative, or, in Scotland, a certificate signed by the Local Examiner of the St. Andrew's Ambulance Association, to the effect that the candidate has passed the examination for a certificate of proficiency, may be accepted as showing that the candidate possesses the required knowledge of First Aid.

26. Sight Tests.—(a) Every candidate for a certificate of competency must pass the prescribed sight tests before a certificate can be issued to him. If circumstances render it necessary for him to proceed with the examination in navigation and seamanship before undergoing the sight tests, he should be informed that the examination in navigation and seamanship will be cancelled in the event of his failure to pass either of the sight tests.

(b) *Letter test.*—Every candidate for a certificate must pass the letter test. If he obtained a certificate of competency before January 1st, 1914, he will only be required to possess half normal vision using both eyes together. Otherwise he must pass a higher standard, *viz.*, normal vision using both eyes or either eye separately.

A candidate who fails to pass the letter test may present himself for re-examination at intervals of three months.

(c) *Lantern test.*—Every candidate must undergo the lantern test on every occasion on which he presents himself for examination for his first certificate of competency; but, if he then passes, he will not be required by the Governor to undergo the lantern test on any subsequent occasion.

No person who holds a certificate of competency should be examined in the lantern test.

(d) A candidate who fails to pass the prescribed form vision test may present himself for re-examination at intervals of three months. A candidate who fails to pass the colour vision test, or who is referred by the local examiner for further examination, is not allowed to be re-examined locally. In the case of a candidate who is referred for further examination the Governor will make arrangements for a special examination, and it is also open to any candidate who is adjudged to have failed in the local colour vision test, to appeal to the Governor, who may, if he thinks fit, remit the case to a special body of examiners for decision.

(e) When a candidate fails to pass the local colour vision test, the examiner will point out to him the conditions under which he can appeal. Appeals are to be made through the examiner, and forwarded to the Governor with the examiner's remarks.

(f) *Special Examination: Candidates must attend punctually.*—Candidates who on appeal from the result of the local tests are granted a special examination are notified by the Principal Examiner of the time at which they should attend for special examination and are expected to inform the Principal Examiner whether or not they will be able to attend at that time. Considerable inconvenience has been caused by candidates informing the Principal Examiner that they will attend at the time stated but failing to keep the appointment. Any candidate who, after informing the Principal Examiner that he will attend, fails to appear at the time appointed, will be liable to have his examination postponed indefinitely.

(g) *Failure in Special Examination.*—Where, during the course of a special examination, a candidate is found to have a permanent defect in his eyesight such as to render him unfit for a sea career, he will be finally rejected and will not be allowed to be examined again in the sight tests on any future occasion. This, however, is subject to the proviso that, if the candidate is still dissatisfied, it will be open to him, if he so desires, to present himself for a second special examination on payment of a fee of \$50, provided that he brings with him a friend to witness the examination. This second examination will be entirely voluntary, and will form no part of the Governor's examination for a certificate of competency. The Governor will, however, give consideration to the result of such examination in determining whether a certificate shall be granted.

(h) *Examinations in the Sight Tests only.*—The sight tests are open to all persons serving or intending to serve in the Mercantile Marine or in fishing vessels, and all such persons are recommended to take the earliest opportunity of ascertaining whether their vision is such as to qualify them for service in that profession. Any such person, if desirous of undergoing the tests, must make application to the Harbour Master and pay a fee of one dollar.

This fee will be payable on each occasion on which a candidate is examined.

CHAPTER II.

QUALIFICATIONS REQUIRED FOR THE VARIOUS GRADES, INCLUDING SYLLABUSES OF EXAMINATION.*

27. Value of Certificates.—Foreign-going certificates of competency as Master or Mate issued on or after 1st January, 1931, will be valid for use on any mechanically propelled vessel, but they will not entitle the holders to go to sea as Master or Mate of a foreign-going sailing ship unless endorsed for that purpose. Candidates who desire a sailing ship qualification can obtain the requisite endorsements to their certificates provided that they can comply with the conditions laid down in rule 56 and pass the necessary examination in seamanship. Holders of "Ordinary" certificates issued prior to 1st January, 1931, are entitled to act in their certified capacities in any vessel however propelled.

28. Date of introduction of revised qualifications.—Candidates for certificates of competency who have been examined for and who have failed to obtain a particular

* The sea-service qualifications are shown in tabular form in Appendix C.

grade of certificate prior to 1st January, 1931, may (subject to the provisions of paragraph 19) be re-examined after that date for the grade of certificate for which they have previously failed without performing any additional sea service. All candidates who undergo their first examination for a particular grade of certificate on or after 1st January, 1931, will be required to qualify under the revised sea service rules.

On and after 1st January, 1931, candidates for all grades of certificate will be examined in accordance with the revised syllabuses contained in these Rules.

SECOND MATE (FOREIGN-GOING).

29. Qualifications.—A candidate must be not less than twenty years of age, and must have served four years at sea in foreign-going ships or the equivalent, six years, in home trade ships.

Syllabus.

30. General.—Candidates should demonstrate their understanding of their work by means of sketches and figures drawn with reasonable accuracy but not to scale.

The "Knowledge of Principles" paper is intended to test the candidate's grasp of fundamental technical ideas and processes required in his work at sea. Mathematical proofs of formulae are not required, but a candidate should be able to demonstrate the truth of a formula by means of a figure where possible.

31. Paper 1. (Written.)

Knowledge of Principles. (3 hours.)

(a) The reading of simple graphical diagrams, *e.g.*, stability curves, weather statistics, etc.

(b) The practical use of logarithms to base 10; their use in simple calculations involving multiplication, division, simple powers and roots.

(c) Areas and perimeters of rectangle, triangle, circle, volumes, and surface areas of box-shaped bodies, cylinders and wedges. Practical applications, *e.g.*, weight of general cargo of varied shapes; capacities of holds and bunkers; weight of contents of bunkers.

(d) Plane sections of a sphere. Great and small circles. Angle between two great circles. Shortest distance between two points on a sphere. Formation of spherical triangles. Sides and angles of spherical triangles.

(e) Trigonometrical ratios—sine, cosine, tangent, cosecant, secant, cotangent; haversine.

The simple relations between these ratios. The relation between the ratios of angles which together make (a) one right angle (b) two right angles—*e.g.*, the sine of an angle = the cosine of its complement, etc.

The solution of a plane right-angled triangle. Use of the Traverse Table for solving right-angled triangles. Practical problems on right-angled triangles, *e.g.*, doubling the angle on the bow, four-point bearing, danger angles, distance from a point of land of known height, etc.

(f) Given two sides and the included angle of a spherical triangle, to find the third side.

Given three sides of a spherical triangle to find any angle. (These two problems are preferably done by the use of the haversine formulae.)

A general understanding of the following :—

(g) The earth and its daily and annual movements. Meaning of equator and poles. The position of a place fixed by its latitude and longitude; meridians. Distances measured on the earth; nautical mile; departure. To show clearly, but without proof, the connection between departure, difference of longitude and middle latitude.

(h) The real movement of sun, moon and planets. The celestial sphere; celestial poles; celestial meridian above and below pole; zenith; celestial equator. Altitude and zenith distance of heavenly bodies; celestial horizon; prime vertical; circles of altitude.

(i) Apparent movements of heavenly bodies. Declination. Rising and setting of heavenly bodies. Amplitude. The position of a heavenly body on the celestial sphere both with and without reference to the observer, *i.e.*, Declination with Right Ascension or Azimuth with altitude. Azimuth.

(j) Apparent movement of sun. Mean sun. Ecliptic. Length of day and night. First point of Aries. Right ascension. Right Ascension of mean sun.

(k) General ideas on time. Hour angle. Greenwich and other standard times. Simultaneous hour angles of heavenly bodies in different places. Sidereal time. Relation of longitude and time. Equation of time. Mean and apparent times at Greenwich and elsewhere.

(l) Hour angle of heavenly body + Right Ascension of heavenly body = Hour Angle of Mean Sun + Right Ascension of Mean Sun

The meaning of E. and R. in the Nautical Almanac.

(m) Correction of sextant altitudes. True horizon and visual horizon; dip of the horizon. Effect of atmosphere, refraction. Semidiameter. Parallax.

(n) Geographical position of heavenly body.

The simple explanation of the "Circle of position" on the earth, based on the three following facts :—

Zenith Distance of heavenly body = distance of geographical position from an observer.

Latitude of geographical position = Declination of heavenly body.

Longitude of geographical position = Hour Angle of heavenly body West of the meridian of Greenwich.

How a position circle is placed on a chart in practice.

Position line. Intercept.

A simple description of how a position line is obtained from the observed altitude of a heavenly body by :—

(i) A Meridian Altitude.

(ii) An Ex-Meridian Altitude.

(iii) An Altitude of Polaris.

(iv) An Altitude with an assumed latitude (Longitude by chronometer).

(v) An Altitude with an assumed Dead Reckoning position (Marcq St. Hilaire).

(o) Magnetic meridian. Deviation and variation of the magnetic compass. Correction of compass courses and bearings to magnetic or true courses and bearings and vice versa.

(p) The simple properties of a Mercator's Chart with regard to courses and bearings, longitude and latitude scales and the measurement of distance. Rhumb lines. Meridional Parts.

32. Paper 2. (Written.)

Practical Navigation I. (Including Tides.) (2 hours.)

(a) To calculate approximate time of high water by the use of the High Water Fall and Change constant. To find the time and height of high and low water at Standard Ports (Admiralty Tide Tables). To find the height of tide at a given time intermediate between high and low water, and thence by use of tables or diagram to determine approximate corrections to soundings and heights of objects above sea level taken at such intermediate times. Chart datum lines.

(b) To find course and distance, departure, and difference of latitude between two points by means of the Traverse Table. Practical use of formula connecting departure, difference of longitude and middle latitude.

(c) To find the course and distance between two points by the use of meridional parts (Mercator Sailing).

(d) Chronometers. Stowage at safe distance from magnetic and electrical instruments. Management and care. Handling, winding, comparing. Writing up chronometer journal. Value of daily comparisons. Wireless and other time signals for rating chronometers.

(e) To find true bearing of any heavenly body by Azimuth or Amplitude Tables, diagram, or any other method the candidate may select. To find the error of the compass, and thence the deviation.

33. Paper 3. (Written.)

Practical Navigation II. (3 hours.)

(In the correction of observed altitudes, total correction tables may be used).

(a) By the use of the Traverse Table, to obtain the Dead Reckoning position of the ship at any time, given compass courses and errors, and the run recorded by log or calculated by estimated speed and time by standard clock. The candidate may be asked to allow for the effects of current and wind.

(b) To find the latitude by Meridian Altitude of sun, star, moon or planet, and to determine a position line by this means.

(c) To work an ex-Meridian altitude of the sun, and thence to find a position line.

(d) To determine from observed altitude of sun, star, moon, or planet a position line on which the ship is by longitude by chronometer method if suitable, or by any other method (*e.g.* Marcq St. Hilaire) at the discretion of the candidate.

(e) Given one position line, knowing the speed of ship and interval of time between observations, to transfer such position line to that obtained from meridian or ex-meridian altitude, and thence to determine the ship's position at time of second observation.

34. Paper 4.**Chart Work. (2 hours.)**

(True courses and bearings will, as a rule, be given as from a Compass Card marked 0° to 360° , *e.g.* course 264° True. Magnetic and compass courses and bearings will be given with reference to cardinal points, *e.g.* course $S.84^{\circ} W.$ magnetic. Candidates should conform to this practice).

(a) On a chart, to find the true course and distance between two points; given compass error, to find magnetic and compass course and vice versa; to keep the Dead Reckoning on a chart; to lay off courses, allowing for current.

(b) On a chart, to fix the ship by simultaneous cross bearings, bearing and range, or by wireless cross bearings, applying the necessary corrections. To fix by the bearings of one or more objects with run between, allowing for current; to find the distance at which the ship will pass a given point.

(c) To avoid dangers and to use clearing marks. To use horizontal and vertical danger angles.

(d) To interpret from a chart the information it gives, particularly about buoys, lights, depths and nature of bottom, tides and tidal currents. Recognition of the coast. The intelligent use of Sailing Directions.

(N.B.—The Examiner may ask oral questions on the above syllabus.)

35. Paper 5. (Written.)**Cargo Work and Elementary Ship Construction.**

(3 hours.)

(a) The stowage and dunnaging of different varieties of cargoes, including bulk cargoes. Elementary ideas on the making and use of cargo plans.

The preparation for stowage, breaking out and discharge of cargo.

Rigging a ship for loading and discharging cargo, and the use of derricks and winches. Strength of cargo gear.

The calculation of capacities of bunkers, holds, tanks and boats.

Calculation of capacities taken up by part cargoes and of space remaining. Conversion of weight measurement of cargo into space measurement and vice versa.

(b) The names of the principal part of a ship.

General ideas on ship construction and hull maintenance. The candidate will be expected to show his practical acquaintance with certain portions of his own ship, *e.g.* longitudinal and transverse framing. Bulkheads. Hatches. Rudders and steering gear. Shell plating. Stern frame. Propellers and propeller shafts, stern tube, propeller brackets.

The stiffening and strengthening to resist panting, pounding and propeller vibrations.

Double bottom tanks, bilges, bilge pumps, sounding pipes. Ventilation systems of holds and tanks.

(c) Displacement. Deadweight.

Use of tons per inch immersion scale. Calculation of weight of cargo, etc., from draughts.

Effect of varying density of water.

Buoyancy. Centre of gravity and centre of buoyancy. The laws of floating bodies.

Effect of filling and emptying ballast tanks on centre of gravity of ship as a whole.

36. Paper 6. (Written.)

English. (1½ hours.)

The paper will be designed to test the candidate's ability to write clear and grammatical English with due attention to spelling and penmanship. It will be in no sense a test of technical knowledge.

37. Oral and Practical Portions.

1.—(a) Rigging of ships. Strength of ropes, wire and hemp. Rigging purchases of various kinds and knowledge of power gained by purchases. Knotting and splicing hemp and steel ropes with strict reference to current practice. Seizings, racking chain stoppers, etc.

(b) Sending topmasts up and down.

(c) Bending, setting and taking in fore and aft sails. Management of boats under oars and sail and in heavy weather. Beaching or landing. Coming alongside.

(d) Helm orders. Conning the ship.

2.—(a) Marking and use of ordinary lead line.

(b) Use and upkeep of mechanical logs and sounding machines

(c) Use and upkeep of engine room and other telegraphs.

(d) Rocket and line throwing apparatus.

3.—(a) Anchors and cables. Use, upkeep and survey.

(b) Knowledge of use and maintenance of deck appliances and steering gear.

(c) Fire extinguishing apparatus—steam, chemical and other appliances.

4.—(a) Preparations and precautions for getting under way. Duties prior to proceeding to sea, making harbour or coming alongside, especially at after end of ship.

(b) Keeping an anchor watch. Dragging anchor.

(c) Duties of officer of the watch. Use of compass to ascertain risk of collision.

5.—(a) A full knowledge of the content and application of the regulations for preventing collision at sea. (Candidates will not be placed in the position of handling a sailing ship, but will be expected to recognise a sailing ship's lights and to have a knowledge of her possible manoeuvres according to the direction of the wind.)

(b) Distress and pilot signals; penalties for misuse.

(c) British uniform system of buoyage.

(d) An intelligent use of "Notices to Mariners." (Candidates will not be required to commit these to memory.)

6.—*Signals.*

To send and receive signals in:—

- (a) British Semaphore up to eight words per minute.
- (b) Morse Code by flash lamp up to six words per minute.
- (c) International Code of Signals.

7.—*Practical.*

(a) To read and understand a barometer, thermometer, hydrometer and hygrometer (The instruments supplied by the Meteorological Office will be taken as standard.)

(b) To use an azimuth mirror, pelorus (bearing plate) or other instrument for taking bearings; to place these bearings on a chart, having corrected for given compass error.

(c) To use a sextant for taking vertical and horizontal angles; to read a sextant both on and off the arc.

(d) To correct a sextant into which has been introduced some or all of perpendicularly, side and index errors.

(e) To find the index error of a given sextant.

(f) To check chronometers by signal made by buzzer or other method; to compare two chronometers.

8.—The Examiner may ask the candidate questions arising out of the written work, if he deems it necessary on account of weakness shown by the candidate. (This applies particularly to Paper 5.)

FIRST MATE (FOREIGN-GOING).

38. Qualifications.*—A candidate must not be less than twenty-one and a half years of age, and must have served five and a half years at sea in foreign-going ships or the equivalent, eight years and three months, in home trade ships (see rules 64 and 65). This period of sea service must include *either*

- (a) Eighteen months in a capacity not lower than that of third of three watchkeeping officers on a foreign-going ship whilst holding a certificate as Second Mate of a foreign-going ship (see also par. 70); or
- (b) Two years and three months in a capacity not lower than that of First or Only Mate of a home trade ship whilst holding a certificate as Second Mate of a foreign-going ship (see also par. 66 for conditions under which service as Second Mate of a home trade ship may be accepted).

39. First Mate, Special Rules applying only where a candidate has served continuously with the same Company as apprentice and junior officer.—A candidate who has served continuously with the same Company or shipping firm as apprentice and junior officer may be allowed to present himself for examination for a certificate as First Mate on completion of two years' service, performed while holding a Second Mate's certificate, as the junior of two bridge keeping officers of the watch, provided that the whole of this service has been performed upon ocean-going steamships of

* For convenience of calculation the service required is stated in a tabular form in Appendix C.

not less than 8,000 tons gross, making an average speed of 13 knots or upwards and carrying a crew of not less than 130 men, including at least five deck officers in addition to the Master. If the candidate passes the examination a certificate will not be issued to him, however, until he produces proof of twelve months' sea service in effective charge of a watch (see rule 68) in addition to the two years' service as junior bridge keeping officer described above.

Syllabus.

(The Navigation and chartwork papers may include questions on the syllabus for Second Mate.)

40. Paper 1. (Written.)

Practical Navigation I. (3 hours.)

(a) Knowledge and recognition of stars of first magnitude. To calculate the approximate times (to nearest minute) of meridian passage of any heavenly bodies; to calculate an approximate altitude for setting the sextant for a meridian altitude of a heavenly body.

(b) To find the latitude from an altitude of Polaris. Thence to find a position line.

(c) To work an ex-meridian altitude of any heavenly body and thence to find a position line.

(d) By transfer of a previous position line and an observation of a heavenly body, to obtain a running fix by the use of protractor and plain or squared paper, or by tables. Particular cases of position lines from Meridian Altitudes or from Polaris.

(e) By nearly simultaneous altitudes of any heavenly body, to determine the position at the time of observation from the intersection of position lines.

41. Paper 2. (Written.)

Practical Navigation II. (2 hours.)

(a) To find the magnetic bearing of a distant object by swinging on equidistant compass points, thence to construct a deviation table or curve.

(b) To calculate the initial course and distance on a Great Circle track between two points, and, by the use of the Vertex of the Great Circle, to lay off such a track on a Mercator's Chart.

(c) The use of Admiralty Tide Tables (Part II, Section I, the use of non-harmonic constants and tidal differences.)

(d) The harmonic method of tidal prediction and the use of harmonic constants (Admiralty Tide Tables, Part II, Section II).

42. Paper 3.

Chart Work. (2 hours.)

(a) To interpret from a chart the information it gives and to use Sailing Directions intelligently. Description and recognition of a coast. Landfalls in clear weather. Selection of suitable points for bearings. Distance of sighting lights; distance from point of land of known height; distance of passing a point of land; course to pass a point at a given distance. Danger angles—horizontal and vertical. Entering channels allowing for current. To prepare for anchorage and for entering narrow waters. Reliability of charts. Corrections.

(b) Landfalls in thick weather. Construction and use of line of soundings. The general use of a single position line in making land, including clearing marks. The use of bearings obtained by wireless direction finder, bearings given from shore station, or the use of wireless beacons.

(c) The use of a Gnomonic Chart and transfer of a Great Circle or composite track from such a chart to Mercator's Chart.

(N.B.—The Examiner may ask oral questions on the above syllabus.)

43. Paper 4. (Written.)

Ship Construction and Stability. (3 hours.)

(a) A general knowledge of the principal structural members of a ship. Midship sections of different types of ships, giving the parts their proper names. Scaling dimensions on a midship section to make intelligible reports.

Ability to set out in a clear manner a report on damage sustained by corrosion or by accident.

Construction and stiffening of watertight bulkheads.

Collision bulkhead.

Stern frame and stem and how secured.

Stresses and strains in ships through effect of seas or loading and ballasting.

A knowledge of those portions of a ship specially strengthened to withstand such stresses, or where excessive damage by corrosion is liable to occur.

Rivets and riveting. Testing a line of rivets. Testing watertight work.

Rudders and steering gear. Inspection and maintenance. Hatches and hatch gear. Hawsepipes and cable lockers.

(b) Buoyancy and reserve buoyancy. The righting couple when a ship is inclined. Metacentre and metacentric height. Transverse and longitudinal metacentres. Stiff and tender ships—how to obtain stiffness. Stability at large angles of inclination and what this depends on.

Preparation of data for ascertaining metacentric heights of a ship in any particular condition.

Determination of centre of gravity of a ship in any condition, the centre of gravity in light condition being given. Use of stability curves and data supplied to a ship. Alteration of stability during a voyage. Effect of shifting cargo. Change of trim.

44. Paper 5. (Written.)

Ship Maintenance, Routine and Cargo Work.

(3 hours).

(a) Keeping a ship's log. (Mate's log.)

(b) Ship maintenance and organisation. Indents and stores. Repair lists. Properties and uses of paints. Painting. Chipping, scraping. Cement work. Treatment of wood

work. Inspection and maintenance of bulkheads, double bottoms, deep tanks, rudders. Bottom painting. Drainage of holds and double bottom tanks. Inspection and maintenance of anchors and cables. Maintenance of holds with reference to cargo carrying. Spar ceilings, etc. Inspection and maintenance of pumps, strums, roseboxes and bilges.

(c) Simple calculation of stresses in spans, derricks, topping lifts, etc. Strength of ropes, chains, slings, two slings at an angle, etc. Purchases and power gained by purchases.

(d) *Cargo work*.—(The candidate should, where possible, illustrate his answers from his own experience.)

Stowage of cargo. General—stowage of bag cargoes, bales, casks, etc.

Bulk stowage. Partition and shifting boards. Ceilings and dunnage. Deck stowage. Possible damage and its avoidance.

Good and bad stowage. Special cargoes—explosives, grain, timber, oil in bulk, steel rails, etc.

Given a cargo list, to stow a hold or holds, making a rough cargo plan, with a view to stability of tender and stiff ships, damage and contamination, easy handling and possible optional ports of discharge.

Methods of ventilation of cargoes. Drainage of holds.

Closing of hatches. Cargo working gear—derricks and winches. Organisation of cargo work.

45. Paper 6. (Written.)

Meteorology. (2 hours.)

(a) The principles of the barometer. How to read it and reduce the readings to standard datum.

(b) How to observe the force and direction of the wind with no other instrument than the compass and use of the Beaufort scale.

(c) How to observe and log the state of sea and swell, weather and visibility by the International scales for the use of seamen.

(d) The principles and use of the thermometer, dry bulb, wet bulb and sea surface.

(e) Use of hydrometer.

(f) General knowledge of the wind and current systems of the oceans. How to deduce the set and drift of currents.

(g) The Laws of Storms. Buys' Ballot's Law. Rules for handling ships in tropical revolving storms. The seasons and localities of tropical revolving storms and their precursory signs.

(h) The Visual Storm Warning signals.

(i) The seven fundamental types of weather.

(j) The elementary principles of synoptic charts, including a knowledge of how the atmospheric pressure distribution and gradient is obtained. Principal cloud types.

(k) To draft a wireless weather report and how to decode a weather report made in the International Weather Code, the tables being provided.

46. Oral Portion.

1.—(a) Shifting large spars and rigging sheers.

(b) The handling of heavy weights with special reference to strength of gear used.

(c) Use and maintenance of all deck and above deck appliances and fittings—winches, capstans, windlasses, emergency steering gear, and fittings used between anchor and cable locker. Hoisting in boats.

(d) Bending, setting and taking in fore and aft sails. Management and equipment of ships' lifeboats and number of persons who may be carried in each class of boat.

2. Anchors—different kinds; advantages and disadvantages of each. How to rig a sea anchor and what means to employ to keep a vessel, disabled or unmanageable, out of the trough of the sea and lessen her lee drift. Cables and their care. Preparations for anchoring. Operation of anchoring with single anchor and use of second anchor. Clearing a foul anchor. Mooring. Clearing a foul hawse. Anchoring in a tideway and in a confined space. Dragging anchor. Anchor watch. Slipping a cable. To carry out an anchor with boats. Getting under way.

3.—(a) Effect of propellers on the steering of a ship. Stopping, going astern and manoeuvring. Turning circles. Effects of current, wind, sea, shallows, draft.

(b) Coming alongside a wharf, etc. Turning a steamship short round, manoeuvring in rivers and harbours. Emergency manoeuvres. Man overboard.

(c) Management of steamships in stormy weather.

(d) To get a cast of the deep sea lead.

4.—(a) Testing lifebuoys and life jackets; other lifesaving gear.

(b) Accidents, *e.g.*, collision, running aground, accidents to hatches, leaks, fires and their treatment. Running repairs. Handling a disabled ship.

(c) A practical knowledge of the screening of ships' navigation lights.

(d) Preparation for dry-docking. Use of shores, bilge blocks and bilge shores.

5. *Regulations for prevention of collision at sea*—as par. 38, Section 5 (Oral) Second Mate.

6. **Signals.**—As rule 37, Section 6 (Oral) Second Mate.

7. The Examiner may ask the candidate questions arising out of the written work, if he deems it necessary on account of weakness shown by the candidate.

MASTER (FOREIGN-GOING).

47. Qualifications.*—A candidate must not be less than twenty-three years of age, and must have served seven years at sea in foreign-going ships or the equivalent, ten and

* For convenience of calculation the service required is stated in a tabular form in Appendix C.

a half years, in home trade ships (*see* rules 64 and 65). This period of service must include *either*

- (a) One year and six months in a capacity not lower than First Mate of a foreign-going ship whilst holding a certificate of grade not lower than that of First Mate of a foreign-going ship (*see* rule 67); *or*
- (b) Two years and three months in a capacity not lower than that of First or Only Mate of a home trade ship whilst holding a certificate of grade not lower than that of First Mate of a foreign-going ship; *or*
- (c) Two years in a capacity not lower than that of second of three watchkeeping officers, on a foreign-going ship whilst holding a certificate as First Mate of a foreign-going ship; *or*
- (d) Two years and six months in a capacity not lower than third of three watchkeeping officers on a foreign-going ship, whilst holding a certificate of grade not lower than that of First Mate of a foreign-going ship; *or*
- (e) Three years as Master of a home trade ship: during at least one year of this service he must have held a certificate of grade not lower than that of Second Mate of a foreign-going ship or Master of a home trade passenger ship (*see also* rule 64 for conditions under which service as Second Mate of a home trade ship may be accepted).

A candidate who possesses or is entitled to a Certificate of Service as Master may be examined for a certificate of competency without producing any evidence of sea service.

For interpretation of watchkeeping service for the purposes of these Rules, *see* rule 68.

Syllabus.

48. Paper 1. (Written.)

Practical Navigation. (3 hours.)

A short recapitulation paper in navigation on the syllabus for Second Mate and First Mate, which should include Chart Work.

49. Paper 2. (Written.)

Meteorology. (2 hours.)

Ocean pilotage, *i.e.*, general knowledge of winds and currents, and the selection of routes according to season Icebergs, ice signals, and ice navigation

To be able to plot observations of ships and coast stations, received by wireless, and to construct a simple weather chart. To understand the use of the observation of the change of the barometer by single and collective observations; and to make deductions as to probable changes of weather along the proposed track of his ship.

A general knowledge of the system of wireless weather signals (*when* one International system is brought about).

50. Paper 3. (Written.)**Ship Construction and Stability.** (3 hours.)

(a) The direction of simple ship repairs. Drawing up of simple specifications.

(b) A fuller knowledge of ship construction than in previous examinations. General structure—transverse and longitudinal girders; keels; stern frame, stem and rudder post; centre keelson; bilge and side keelsons; side stringers; tank margin, intercostals; transverse framing; shell plating; rudder propeller brackets, masts and derricks.

Classification of ships. Tonnage—measurement and registration. Freeboard.

Treatment of accidents and damage—collision, springing leaks.

Possible strains incurred by action of waves, improper loading or ballasting, etc.

Working of ship, division of loads.

(c) Stability diagrams and use of stability curves and information. Effect of beam and freeboard on stability. Practical operations to ensure ship stability at sea. Ship with a list. Management of ballast tanks. Effect of free liquid surfaces and risks of flooding hold spaces, filling and emptying tanks at sea. Suspended weights and shifting cargoes. Deck cargoes. Homogeneous cargoes. Ballasting. Effect of admission of water into interior of a ship. Flooded compartments. Stability and trim of a stranded ship. Trim—moment to change trim.

51. Paper 4. (Written.)**English.** (2 hours.)

This paper will test the candidate's ability to write clear and grammatical English, with good spelling and penmanship. It will be in no sense a test of technical or legal knowledge.

52. Paper 5. (Written.)**Ship's Business.** (2 hours.)

(The legal information required will not go beyond the outline of Mercantile Law which the shipmaster must know for practical purposes.)

(a) The official log and reports on exceptional entries.

(b) A shipmaster's knowledge of the law relating to:—

(1) Engagement, discharge and management of a ship's crew. Ship's articles of agreement. Discipline and treatment of offences. Wages and other remuneration. Food and accommodation. Entering and clearing the ship. National Insurance of crew.

(2) Tonnage, lifesaving appliances, salvage and assistance and, in general, the safety of ship, crew and passengers.

(3) Loadline marks and entries and reports to be made respecting them. Surveys required by law.

(4) Hygiene of ships, living spaces, holds, etc. Water. Fresh and preserved food. Infectious diseases. The law relating to them and the procedure on board in such case. Quarantine procedure. Recognition and simple treatment of common illness, *e.g.*, fevers, etc. [See the Ship Captain's Medical Guide.]

(5) The carriage of emigrants.

(c) A simple knowledge of the law relating to cargo, including a knowledge of shipowners' liabilities in carriage of cargo.

(d) A general knowledge of shipping business and documents—charter parties, bills of lading, etc. A knowledge of average—general and particular. Flotsam and jetsam.

53. Paper 6. (Written.)

Magnetic Compass. (2 hours.)

Proofs of formulae not required

(a) Terrestrial magnetism:—Variation. Local attraction. Horizontal force and its varying strength in different parts of the globe with the effect of its change upon deviation.

(b) Properties of magnets:—Meaning of the terms "Hard" and "Soft" Iron. Effect of magnets on a compass needle under varying conditions. Precautions with regard to electric lighting loads and other electric fields. Sub-permanent magnetism and its effects at sea.

(c) Compass compensation:—Methods of swinging ship to obtain a deviation table. Use of curves of deviation. Constant semi-circular and quadrantal deviation. To analyse a table of deviation, obtaining and explaining the approximate co-efficients A, B, C, D, E. General principle of compass correction and the method of correction of B, C and D.

(d) Heeling error:—The nature of the deviation caused and the effect on a ship with a list and when rolling. Method of correction.

(e) A candidate may be required, at some stage in the examination, to carry out certain practical operations of correction on a compass in a binnacle, and/or to construct a deviation table for that compass.

54. Paper 7. (Written.)

Engineering knowledge (including carriage of refrigerated cargoes). (3 hours.)

(The requirements will not go beyond the knowledge that could be obtained by a deck officer who takes an intelligent interest in the machinery of the ship and supplements by a little reading what he has learnt in this way.)

(a) The meaning of general engineering terms, *e.g.* horse power, slip and pitch of propeller, link, latent heat of steam, superheated steam, etc.

A general knowledge of a marine boiler and furnaces, and the procedure for raising steam. The general action of a reciprocating steam engine. Principle of the condenser. Distribution of steam from boiler to engines—valves and pipelines. Admission to engine—slide valves, eccentrics,

expansion link. Starting gear. Simple description (without detail) of various parts of engines and boilers—*e.g.* connecting rod, crank, piston and rings, packing of piston rods, relief valves and cylinder drains, line shafting, couplings, tail shaft, stern tube and packing. Auxiliaries and their uses—circulating pump, air pump, feed pump, bilge pump. Action of propeller. Thrust block. Attachment of propeller to shaft.

Oil fired furnaces and use of oil fuel. A simple knowledge of turbine machinery and of Diesel engines. Warming up and turning engines. Stopping and going astern—how done. A knowledge of what is required in the engine room on the receipt of manoeuvring orders from the bridge. Fuel consumption and economical speeds. Power and speed curves. Effect of alterations of speed on fuel consumption and estimation of adequacy of fuel to complete a given voyage.

(b) An elementary knowledge of refrigeration on board ship. Types of refrigeration on board ships. Types of refrigeration employed in special cases. Stowage and general handling of refrigerated cargoes.

55. Oral Portion.

1.—(a) Exceptional circumstances—loss of rudder: shifting a damaged rudder. Construction of jury rudders. Making and launching of rafts. Collision. Leaks. Damage of all kinds. Running repairs and precautions in case of accidents. Grounding—methods of refloating. Beaching a vessel. Steps to be taken when disabled and in distress.

(b) Preservation of crew and passengers in the event of wreck. Abandoning a wrecked ship. Rockets and rocket apparatus. Communications with the shore.

(c) Assisting a vessel in distress. Rescuing crew of a disabled ship.

(d) Towing and being towed.

(e) Bad weather manoeuvres. Precautions at anchor and at sea. Use of oil.

Anchoring and working anchors and cables in all circumstances. Approaching rivers and harbours and manoeuvring in them.

(f) Drydocking. General procedure and precautions to be observed. Distribution of weight. Drydocking with full cargo for inspection of propellers or shafting. Bilge beds. Leaving the vessel water borne. Putting into port with damage to ship and/or cargo, both from business and technical points of view. Safeguarding of cargo.

(g) Prevention of fire at sea. Spontaneous combustion of fuel cargoes. Full knowledge of the use of fire extinguishing appliance and precautions to be observed in cases of danger to life. Special reference to extinguishing of oil fuel fires.

(h) Methods of fumigating holds and living spaces and safeguards in applying them.

(i) General organisation of ship's work and handling of crew.

2.—*Regulations for prevention of collisions at sea, etc.*

As rule 37, Section 5 (Oral) Second Mate.

3.—Signals.

As rule 37, Section 6 (Oral) Second Mate.

4.—The examiner may ask the candidate questions arising out of the written work, if he deems it necessary on account of weakness shown by the candidate.

56. Sailing Ship Endorsements.—A candidate for a sailing ship endorsement of any grade who has not previously held an endorsement of a lower grade or an Ordinary certificate of a lower grade issued prior to January, 1931, must prove that he has served 12 months in the foreign trade or 18 months in the home trade, in a square-rigged sailing vessel. Service in vessels with auxiliary steam or motor power, which use their propelling machinery only in calms or during light winds, is considered as service performed in sailing vessels.

Subject to the above qualification, a candidate may be examined for a sailing ship endorsement of any grade at the same time as he is examined for a certificate of competency of the same or of a higher grade. If a candidate desires to be examined for a sailing ship endorsement only, he must possess a certificate of competency of at least the same grade as the endorsement which he requires.

57. Second Mate, Sailing Ship Endorsements.—The candidate must understand and give satisfactory answers on the following subjects:—

- (a) The standing and running rigging of ships.
- (b) Bending, unbending, setting, reefing, taking in, and furling sail.
- (c) Sending masts and yards up and down, &c.
- (d) Management of a ship when under canvas.
- (e) The Rule of the Road as regards sailing vessels, their regulation lights and fog and sound signals.
- (f) Any questions appertaining to the duties of a Second Mate of a sailing ship that the Examiner may think necessary to ask.

58. First Mate, Sailing Ship Endorsements.—In addition to the qualifications required for a Second Mate's sailing ship endorsement, the candidate will be required to show a knowledge of the following subjects:—

- (a) Shifting large spars, rigging sheers, taking lower masts in and out.
- (b) How to moor and unmoor ship; to keep a clear anchor; and to carry out an anchor.
- (c) How to manage a ship in stormy weather, and to cast a ship on a lee shore.
- (d) How to secure the masts in the event of accident to the bowsprit.
- (e) How to rig purchases for getting heavy weights, anchors, machinery, &c., in or out.
- (f) How to get a cast of the deep sea lead in heavy weather.
- (g) Accidents, and how to deal with them.
- (h) Any other questions appertaining to the duties of an Only or First Mate of a sailing ship which the Examiner may think necessary to ask.

59. Master, Sailing Ship Endorsements.—In addition to the qualifications required for the sailing ship endorsement for Second and First Mate, the candidate will be required to show a knowledge of the following subjects:—

- (a) Management of ship in heavy weather.
- (b) Rescuing the crew of a disabled vessel.
- (c) Steps to be taken when a ship is on her beam ends, or in any danger or difficulty, or disabled or unmanageable and on a lee shore.
- (d) Heaving a keel out.
- (e) Any other question appertaining to the management of a sailing ship which the Examiner may think it necessary to ask.

60. Cancelled Certificates.—No Certificate which has been cancelled will be re-issued or renewed without the express sanction of the Governor.

61. Government Awards.—Recipients of Government awards can have the fact stamped on their certificates of competency, if they submit evidence of the award together with their certificate to the Registrar-General of Shipping and Seamen, either directly or through the Superintendent of a Mercantile Marine Office.

Holders of a Postmaster-General's certificate as Wireless Operator can also have their certificates of competency endorsed, if they submit the two certificates in a similar manner.

CHAPTER III.

RULES FOR ESTIMATING SEA SERVICE.

62. Sea Service.—In these Rules sea service is reckoned from the commencement to the termination of the voyage. The certificates of discharge for service in the foreign trade will generally be accepted as proof of sea service, but certificates of discharge for service in the home or coasting trade must always be sent to the Registrar-General of Shipping and Seamen for verification. Superintendents and Examiners will be careful to see that these discharges have not been in any way tampered with, and will report any suspicious cases to the Registrar-General of Shipping and Seamen. Where service in charge of a watch is required, certificates of watch-keeping service must also be produced (*see* Appendix D).

For all certificates of competency as Master or Mate in the Mercantile Marine, the qualifying service usually required is service performed in ordinary trading vessels. While the Regulations provide for the acceptance in part of certain kinds of non-trading service (*e.g.*, that performed in fishing-boats, yachts, pilot vessels, &c.), non-trading service not specially provided for in the Regulations cannot be accepted as qualifying service unless it has been submitted to the Board of Trade and their sanction obtained.

63. Sea service for foreign-going certificates.—For foreign-going certificates the term "sea service" means, unless otherwise stated, service performed in foreign-going vessels.

64. Service in Home Trade.—For Home Trade Passenger ship certificates, service in the home trade is accepted in full; but for foreign-going certificates it is regarded as only equivalent to two thirds of the time served in the foreign trade.

The amount of service as Master, First Mate or Only Mate in the home which will qualify a candidate for examination for a certificate as Master or First Mate (foreign-going) is shown in rules 38 and 47.

In addition the Governor will be prepared to consider on its merits any application by a candidate for a First Mate's (foreign-going) certificate for the acceptance of time served as Second Mate in the home trade. The acceptance of such service will be subject to the following general considerations:—

- (a) An adequate proportion of the time must have been spent in actual service at sea, *i.e.* outside partially smooth water limits.
- (b) The service must have involved real responsibility, and an adequate proportion of it must have been spent in sole charge of a watch at sea.
- (c) The service must have been performed while in the possession of a certificate as Second Mate (foreign-going).

The Governor will also be prepared to consider on merits applications for the acceptance of time spent as Second Mate in the home trade as qualifying for a Master's (foreign-going) certificate, subject to the following conditions:—

- (a) The service must have been service in sole charge of a watch at sea and must have been performed while in possession of a certificate as First Mate (foreign-going).
- (b) It must have been performed on a foreign-going agreement.
- (c) It must have been performed between ports in the United Kingdom and the Continent of Europe and the distance between the extreme ports visited during the course of the voyage must be at least 500 miles. In no case will coasting service be considered.

In all such cases, the candidate's application should be accompanied by certificates of watch-keeping service signed by the Master (*see* Appendix D).

The proportion of the time which will be accepted will depend upon the particular circumstances of each case, but in no case will time spent in the home trade be accepted as equivalent to more than two-thirds of the same period of time spent in the foreign trade. Every case in which a candidate claims such services as qualifying must be referred to the Principal Examiner.

Service in a lower grade than Second Mate in the home trade will not be recognised as officer's service towards qualifying a candidate for examination for a foreign-going certificate unless the candidate can produce a testimonial certifying that the service was merely a preliminary to or the finish of a foreign-going voyage and that he served on the foreign voyage in a capacity not lower than the capacity in which he served on the coasting articles.

65. Service in ships trading abroad.—Service in ships trading entirely abroad will be accepted as equivalent to service in foreign-going ships provided that the distance between the extreme ports visited during the course of the voyage is at least 500 miles. If the distance is less than 500 miles, the service will only be accepted as equivalent to service in the home trade.

66. Nature of service determined by actual position on board ship.—Sea service, in whatever trade it may be performed, cannot be regarded as qualifying for examination for certificates of competency unless it can be verified by reference to the articles of the ship in which it was performed, *e.g.*, service claimed by testimonial or otherwise to have been as mate when the actual rating as shown by the articles was only that of boatswain or other petty officer will not be accepted where officer's service is required.

67. Officer's Service.—For the purposes of these Regulations service as First Mate means service as the officer next in seniority to the Master. Service as junior or auxiliary First Mate, or as First Mate under a "Chief Officer," will count as equivalent to service as the second of three watch-keeping officers for qualifying purposes. The facts in each case must be clearly established by the candidate's certificates of watchkeeping service.

For the definition of "watch-keeping service," see rule 68.

68. Watch-keeping service.

(a) **For First Mate.**—When service in charge of a watch is specified in these Rules, candidates for certificates of competency as First Mate must be able to prove that out of the 18 months' service required at least 15 months have been spent in effective charge of a watch for not less than eight hours out of each 24 hours' service at sea. The remaining three months may be service as Junior of two watch-keeping officers but such time will count only as half its duration for qualifying purposes. The exact nature of a candidate's service must be clearly established by a certificate signed by the Master in the form indicated in Appendix D

(b) **For Master.**—During the whole of the qualifying service between First Mate's and Master's certificates that is specified by these Rules, candidates for a Master's certificate will be required to have served in full charge of a watch for eight hours out of every 24 hours' service at sea. The candidate must produce references* from the Master stating clearly that he has had sole charge of a watch for eight hours in each 24 hours' service at sea.

No service performed under the system of double watches, except as the senior officer, will be accepted as qualifying service for a certificate of this grade.

69. Service in possession of certificate.—Officer's service, to be recognised as qualifying for purposes of examination, must be performed with the requisite certificate as specified in Appendix C. The officer's service performed by a candidate who has been duly promoted during the course of a voyage (*see* rule 70) or who, in consequence of serving in vessels plying between ports abroad, has been unable to obtain the necessary certificates, may, however, be recognised, provided that it is in other respects satisfactory.

* See Appendix D.

70. Promotion during voyage.—Whenever a man has, from any cause, been regularly promoted on the occurrence of a vacancy in the course of the voyage from the rank in which he first shipped, and such promotion, with the ground on which it has been made, is properly entered in the articles and in the Official Log Book, he will receive credit for his service in the higher grade for the period subsequent to his promotion.

71. Mixed Service.—Where a candidate has performed his sea service in more than one capacity, or partly in the foreign trade and partly in the home trade, proportionate allowances will be made for each kind of service, provided that in other respects it complies with these Rules.

72. Foreign officers.—Foreign officers who wish to apply for a British certificate of competency must in all cases have performed their qualifying officer's service with the requisite British certificate, and must comply with rule 2. The service may have been performed in foreign vessels if the candidate can produce satisfactory testimonials to conduct and character, and is able to prove that the service has been in the required capacities, and that during the period of service he has held a British certificate of competency of the grade required by the Regulations (*see* rule 73).

73. Evidence as to service in foreign vessels.—The testimonials of service of foreigners and of British officers and seamen serving in foreign vessels, which cannot be verified by the Registrar-General of Shipping and Seamen, must be confirmed either by the Consul of the country to which the ship in which the candidate served belonged or by some other recognised official authority of that country, or by the testimony of some credible person having personal knowledge of the facts required to be established. The production, however, of such proofs will not of necessity be deemed sufficient. Each case will be decided on its own merits, and if the sufficiency of the proofs given appears to be at all doubtful, it must be referred to the Principal Examiner of Masters and Mates, who will, if necessary, transmit it to the Governor for decision.

74. Service as carpenter, sailmaker, cook, steward, &c.—Candidates whose service has been performed in capacities other than apprentice, midshipman, cadet, ordinary seaman or able seaman—*e.g.*, men who have served as carpenter, or sailmaker, or as cook in small vessels where cooking is only a part of a man's duty—will be required to satisfy the Examiner or the Governor that they have during the whole time claimed performed deck duties in addition to their own particular work. These facts may possibly be proved by the production of satisfactory certificates from the Masters with whom the candidate has served; but such service will only be accepted as equivalent to two-thirds of the time served as ordinary deck hand. Failing satisfactory evidence, the applicant will be required to perform additional service in the capacity of seaman. Service as cook (under other conditions than the above), or as steward, or purser, or in the engine room, will not be accepted.

75. Service as Wireless Operator.—If a candidate has been engaged on Articles of Agreement as seaman, or in any seaman rating, and has served both as a seaman and as a wireless operator, two-thirds of such service may be counted

as qualifying service; but the candidate must prove that during the whole period claimed he performed deck duties in addition to the duties of a wireless operator.

If a candidate has been engaged on Articles of Agreement as a wireless operator, and has performed deck duties in addition, two-thirds of such service may be counted as qualifying service provided that the candidate can produce a certificate from the Master to the effect that he has performed deck duties throughout the voyage for a reasonable proportion of time each day and that he has not spent more than two hours a day on regular wireless watch.

If a candidate has been engaged on Articles of Agreement as a wireless operator, and has only served as such, one quarter of the service may be counted as qualifying service, but no amount of such service will be allowed to count as more than 12 months' qualifying service.

76. Apprentices.—The *whole* of the time claimed under indentures of apprenticeship will be accepted as actual sea service to qualify under rule 29 for a Second Mate's certificate provided (a) that the indentures have not been cancelled through some fault of the candidate, but are endorsed by the Owner or Master to whom he was bound to the effect that he has performed his service faithfully during the time he remained as apprentice; and (b) that the candidate has served at sea four-fifths of the time claimed, that is to say, has not spent more than one-fifth of the time in home ports.*

In cases where an apprentice is qualified for examination before the expiration of his indentures, *e.g.*, where he has had training ship or other sea service prior to being bound, which, together with his actual time as apprentice, makes up the required four years, or where his indentures are for a period of more than four years, a letter from the Owner or Master will be accepted in place of the endorsement referred to above.

In the event of the candidate being short of the required four-fifths of the time claimed as apprentice out of the United Kingdom, he will be required to show sufficient additional sea service, either as seaman or junior officer, to make up the four-fifths of the time claimed.

The above-stated general concession to apprentices cannot, however, be taken to cover a case in which, during a large proportion of the period of apprenticeship, the vessel on which the apprentice is serving has been laid up in a foreign port. The proportion of the period of apprenticeship which can be accepted as qualifying service in such a case is dependent on the actual circumstances and each case will be considered on its merits. The Governor is prepared to make as generous an allowance for such service as he properly can, but he is unable to forego the essential condition that candidates for certificates of competency must have sufficient experience of actual sea service.

77. Midshipmen and Cadets.—The *whole* of the time served as midshipman or cadet under indentures will also be accepted subject to the *same* conditions as those laid down for apprentices; and the same will be the case even when not

* In the case of cable ships the time may be counted in full if two-thirds of this period of four-fifths, that is eight-fifteenths of the whole time under indentures, has been spent in service on board the ship out of the United Kingdom and away from the ship's base port (*cf.* rule 87).

bound by indentures, provided that the service as midshipman or cadet has been continuous, that on the date of the termination of the period of service claimed in this capacity the candidate was on Articles of Agreement, and that he is able to comply with the requirements laid down in the matter of serving or making up the four-fifths period at sea during the time claimed.

78. Training ships.—Time served after the age of 14 on board a training ship will be allowed to count as equivalent to one-half the same time spent in service at sea, up to a limit of two years (*i.e.*, no length of service will be allowed to count as more than one year at sea) provided that the candidate can produce a certificate from the Committee or Captain Superintendent that he has conducted himself creditably and passed a good examination in seamanship so far as it is practised in the training ship, as well as in other matters down to the time of his leaving the ship. Training ship service will not be regarded as equivalent to service in square-rigged vessels.

A similar concession is allowed in the case of time spent at the Nautical College, Pangbourne.

79. Shore Schools for nautical training.—Time spent after the age of 14 at a school for Nautical Training conducted on premises ashore may be allowed to count in some proportion, not exceeding one-half, as service at sea provided that :—

- (a) The school is recognised under the appropriate Regulations, by the Board of Education, or by the Scottish Education Department, as the case may be;
- (b) After an inspection by one of their officers the Board of Trade are satisfied that the school gives a training that justifies time spent there being reckoned as part of the necessary qualifying time for a certificate of competency; and
- (c) The candidate produces a satisfactory certificate as regards conduct and proficiency from the authorities of the school on leaving it.

The schools to which these arrangements may apply are of three kinds :—

- (i) Schools at which a boy resides and receives training for a period of years: the maximum remission of sea service that will be allowed in respect of attendance at such a school will be fixed at the time of approval; it will never exceed 12 months.
- (ii) Courses in navigation and seamanship at junior Technical Schools or similar non-residential institutions which boys attend before going to sea: the maximum remission of sea service in these cases will be fixed at the time of approval; it will never exceed six months.
- (iii) Senior courses in Navigation at Technical or other similar non-residential Schools which candidates attend after completing the whole or the larger part of the service required to qualify for examination for a Second Mate's Certificate: the maximum remission of sea service in these cases will be fixed at the time of approval; it will never exceed three months.

In the case of schools of classes (ii) and (iii) the certificates which the candidate produces (par. (c) above) must in addition testify to the candidate's continuous and regular attendance at all the approved classes, and also, in the case of schools of Class (iii), must state the total number of hours during which he has attended at the school.

A candidate who at different times has attended two or more approved schools of Nautical Training will be allowed a remission of sea service in respect of attendance at each of them, subject to the condition that the total remission of sea service in respect of attendance at approved schools and training ships will not in any event exceed 12 months.

Time spent at approved schools will not be accepted in lieu of any part of the officer's service required to qualify a candidate for examination for a certificate as First Mate or Master; or in lieu of sea service required in consequence of failure in the oral examination (*see* rule 18).

A list of approved schools of nautical training is given in Appendix E.

80. Service in Naval Training College.—Time spent at the Naval College at Dartmouth will, subject to the conditions laid down in rule 79, be permitted to count as equivalent to one-half the same time spent in service at sea, and a similar allowance will be made in respect of time spent on courses on shore after promotion to Acting Sub-Lieutenant, subject to the condition that the total remission of sea service in respect of all time spent on shore shall not exceed twelve months. Time spent in shore training will not be accepted in lieu of watchkeeping service.

81. Service in Royal Naval Reserve.—Lieutenants sub-lieutenants, and acting sub-lieutenants of the Royal Naval Reserve who perform sea service on board His Majesty's ships will, if accompanied by a good report, be allowed to count half the time so spent in lieu of qualifying watchkeeping service for certificates of competency as Master or First Mate, subject to a maximum allowance of six months for each grade of certificate.

The time spent by Midshipmen in the Royal Naval Reserve on board sea going vessels of the Royal Navy will, if accompanied by a good report, be accepted in full as qualifying sea service for a Second Mate's certificate, subject to a maximum allowance of six months, provided that a reasonable proportion of such time has been spent at sea and that not more than four weeks have been spent on leave.

Service in Harbour ships and shore establishments of the Royal Navy will not be accepted as qualifying service for any grade of certificate.

82. Service in Royal Air Force.—Officers with certificates as Second Mate or First Mate who hold short service commissions in the Royal Air Force will, if accompanied by a good report, be allowed to count towards qualifying sea service for certificates of competency as First Mate or Master respectively half the time spent under instruction in aviation at a flying training school or with a home defence unit and half the time spent in a fleet air arm or naval co-operation unit, up to a maximum of six months in all for each grade of certificate.

Apprentices and seamen holding short service commissions in the Royal Air Force will, if accompanied by a good report, be allowed to count towards qualifying sea service for a Second Mate's certificate half the time spent under instruction in aviation at a flying training school or with a home defence unit and half the time spent in a fleet air arm or naval co-operation unit up to a maximum of six months in all, provided that the total remission of sea service in respect of R.A.F. service and time spent in a shore training ship or school shall not in any event exceed twelve months.

83. Excursion steamers.—In the case of excursion steamers only such service as can be proved to have been performed at sea will be accepted.

84. Service in fishing or pilot vessels.—Service performed exclusively in trawlers and other deep sea-fishing vessels, or in pilot vessels, will not qualify a candidate for examination. He must in addition prove the following service:—

- (a) For a foreign-going certificate, service for at least 18 months in an ordinary trading vessel in the foreign trade, or the equivalent period, 27 months, in the home or coasting trade.

85. Service in yachts.—Service in pleasure yachts will be accepted as qualifying service under the following conditions:—

- (a) It must in all cases be verified by satisfactory proofs, which must set forth clearly and in detail the nature and duration of the service claimed; and it must be distinctly understood that only actual sea service will be accepted, and that service in harbour or port is inadmissible.
- (b) Service in foreign-going yachts will be accepted in full; and service performed within home trade limits in sailing yachts of not less than 50 tons net register or in steam yachts of not less than 80 tons gross register will be accepted in the proportion stated in rule 64, but candidates must also show:—(1.) For a foreign-going certificate service for at least 18 months in an ordinary trading vessel in the foreign trade, or for the equivalent period, 27 months, in an ordinary trading vessel in the home or coasting trade.

86. Service on rivers.—Service performed on rivers, no matter of what size, and service performed within smooth or partially smooth water limits will not be accepted.

Where any doubt whatever exists on this point, the candidate will be required to produce a certificate from the Master or Owner of the vessel in which the service was performed, before the acceptance of the service can be considered.

87. Service in cable ships.—A candidate, a part of whose qualifying service has been performed in cable ships, will be required to produce, in addition to the usual evidence of sea service, a statement or certificate from the owners of the ship showing the amount of time actually spent at sea. If the time so spent constitutes or exceeds two-thirds of the total

time on articles, this total time may be accepted in full as qualifying service, but in the event of the actual sea service falling below this proportion, the deficiency must be made up by additional service at sea before the total time on articles can be accepted in full as qualifying service.

88. Service in lightships.—Service in lightships will not be accepted as sea service.

CHAPTER IV.

CONDUCT OF THE EXAMINATIONS.

89. The examinations will commence early in the forenoon, and will be continued from day to day until all the Candidates whose names appear upon the Harbour Master's list on the day of examination are examined.

1.—Second Mate (Foreign-Going).

First Day.

- | | |
|--|----------|
| (1) Knowledge of Principles | 3 hours. |
| (2) Practical Navigation I (including Tides) | 2 hours. |

Second Day.

- | | |
|-----------------------------------|----------|
| (3) Practical Navigation II | 3 hours. |
| (4) Chart Work | 2 hours. |

Third Day.

- | | |
|---|-----------|
| (5) Cargo Work and Elementary ship Construction | 3 hours. |
| (6) English | 1½ hours. |

Fourth or Subsequent Days—Orals.

2.—First Mate (Foreign-Going).

First Day.

- | | |
|----------------------------------|----------|
| (1) Practical Navigation I | 3 hours. |
| (3) Chart Work | 2 hours. |

Second Day.

- | | |
|---|----------|
| (4) Ship Construction and Stability | 3 hours. |
| (2) Practical Navigation II | 2 hours. |

Third Day.

- | | |
|---|----------|
| (5) Ship's Maintenance, Routine, and Cargo Work | 3 hours. |
| (6) Meteorology | 2 hours. |

Fourth or Subsequent Days—Orals.

3.—**Master (Foreign-Going).**

First Day.

- (1) Practical Navigation 3 hours.
- (2) Meteorology 2 hours.

Second Day.

- (3) Ship Construction and Stability 3 hours.
- (4) English 2 hours.

Third Day.

- (5) Ship's Business 2 hours.
- (6) Compass 2 hours.

Fourth Day.

- (7) Engineering Knowledge (including carriage of refrigerated cargoes) 3 hours.

Fifth or Subsequent Days—Orals.

90. Candidates to be punctual.—Candidates are required to appear at the examination room punctually at the time appointed.

91. No strangers admitted.—No person will be allowed in the room during the examination, other than those whose duties require them to be present.

No instructors will be allowed on the premises.

92. Loose papers and books removed.—Before commencing the examination, the tables or desks must be cleared of all scraps of paper or books that are not used in the examination.

93. Use of Books and Tables at the examinations.—The following tables and books will be supplied by the Hong Kong Government at the examination rooms:—

Nautical Tables (including logarithm tables) Norie (full edition), Raper (full edition), Inman (full edition), Blackburne.

Alt-Azimuth Tables.—Burdwood, Davis.

Admiralty Tide Tables.—Parts I and II.

Nautical Almanac.—1929 Abridged Edition

Candidates who wish to use other tables than the above may bring such tables into the examination room, on condition that they submit them to the Examiner before the commencement of the examination for scrutiny and approval. These tables must contain no manuscript notes. Subject to the Examiner's approval, no restriction will be placed on the use of any tables, but candidates must understand the theory on which the tables are based and such tables must be capable of giving an answer within the required limits of accuracy (*see* rule 106). When tables other than those supplied by the Hong Kong Government are used in answering a question, the name of the tables and a note of what is actually obtained from them should be stated on the candidate's paper.

94. Use of Instruments.—All instruments necessary for use in the examinations are supplied by the Hong Kong Government, but candidates will be allowed to use their own drawing instruments and slide rules provided that the Examiner's approval is obtained before the commencement of the examination.

95. Unauthorised books and papers strictly forbidden.—Candidates are prohibited from bringing into the examination room books or papers of any kind whatever, other than mathematical tables. The slightest infringement of this regulation will subject the offender to all the penalties of a failure, and he will not be allowed to present himself for re-examination for a period of three months.

A candidate who uses his own mathematical tables or instruments without first obtaining the permission of the Examiner will be subject to the same penalty.

96. Injury to books, instruments, &c.—If a candidate defaces, blots, writes in, or otherwise injures any book or form or damages any instrument belonging to the Hong Kong Government, his papers will be retained until he has replaced the damaged book, document or instrument. He will not be allowed to remove the damaged book or document or instrument, and will be subjected to all the penalties of a failure.

97. Leaving room or building.—No candidate may leave the examination room without permission and without giving up the paper on which he is engaged. Under no circumstances will a candidate be allowed to leave the building while the examination is proceeding. Violation of this rule will subject the candidate to all the penalties of a failure.

98. Silence.—Silence is to be preserved in the examination room.

99. All work to be shown.—No candidate will be allowed to work out his problems on waste paper, or to write on the blotting paper supplied for his use in the examination. Violation of this rule will subject the candidate to all the penalties of a failure.

A sheet of blotting paper should be issued to each candidate with the first examination paper, and it must be returned to the Examiner when the last paper is completed each day. The Examiner will be careful to see that the blotting paper has not been used by the candidate in solving his problems, or for conveying information to other candidates.

100. Copying, &c., to be prevented.—Candidates should be so placed as to prevent one copying from another, and no communication whatever between the candidates should be allowed.

101. Penalty for copying, &c.—In the event of any candidate being discovered referring to any unauthorised book or paper, or copying from another, or affording any assistance or giving any information to another, or communicating in any way with another, during the time of examination, or copying any part of the problems for the purpose of taking them out of the examination rooms, he will subject himself to all the penalties of a failure, and will not be allowed to be examined for a period of six months.

A candidate guilty of a second offence will not be allowed to be examined until 12 months have elapsed.

102. Marking and Conduct of the Written Examination.—For his written work the candidate will be furnished with sheets of the blank ruled paper which is supplied for the purpose, with instructions that he is to work or write only on one side of the paper, and to answer in a clear and legible hand each of the questions on the paper, and to commence each answer by writing in the margin the number of the question to which it relates.

103. Percentage of Marks required for a pass in the written examination.—To pass in the written portion, a candidate will be required to obtain 70 per cent of the total marks for all subjects, and he will also be required to obtain a minimum of 50 per cent in each of the following subjects:—

Second Mate. (Foreign-going):

Knowledge of Principles.
Practical Navigation (I and II).
Chartwork.

First Mate. (Foreign-going):

Practical Navigation (I and II).
Chartwork.
Ship Construction and Stability.

Master. (Foreign-going):

Practical Navigation.
Ship Construction and Stability.
Ship's Business.
Compass.
English.

104. Correction by tables.—In the Knowledge of Principles paper for Second Mate the corrections by inspection of tables given in some of the works on navigation will not be allowed; every correction must appear on the papers of the candidates.

105. Candidates may use own method.—Candidates will be allowed to work out the various problems according to any method they have been accustomed to use, provided such method is correct in principle.

106. Degree of Precision Required.—When making calculations for obtaining a ship's position candidates are expected to work to 0.2 of a minute of arc and to the nearest second of time.

The method of calculation used in obtaining a position line should be capable of giving an answer within 0.5 of a mile.

In calculation of compass errors, bearings and courses, the answer should be worked to within 0.25 of a degree, but in chart work 0.5 of a degree is sufficient.

In calculating the correction to apply to soundings the candidate is not required to work to the exact inch, as is sometimes done. It will be sufficient if he brings his answer within half a foot or so of a precise result.

107. Compass deviation.—In answering questions on the tentative method of compass adjustment, the candidate will be tested by Beall's Compass Deviascope.

108. Sextant.—Particular attention should be paid to the sextant, the examination in which will be conducted orally and practically. Every candidate will be required to measure both vertical and horizontal angles, and will be examined practically as to his knowledge of the adjustments and the use of the various screws; he must be able to read correctly on and off the arc, and must also be able to find the index error both by the horizon and by the sun.

109. Rule of the Road.—In the examination on Rule of the Road the Examiner's duty will be to test the candidate's knowledge of the sense and intention of the Articles of the Collision Regulations. Mere ability to repeat the Articles word for word will not suffice to ensure the candidate's passing, nor will the lack of it necessarily entail failure provided the Examiner is satisfied that the candidate grasps the full significance, content, and practical application of the Articles. Examiners will ask for the content of the Articles not by their number, but by the subject with which they deal, and they will discourage the use by candidates of verses as aids to memorising the Articles. Examiners will not place a candidate for a steamship certificate in the position of handling a sailing ship, but will lay stress on the candidate's ability to recognise a sailing ship's lights and on his knowledge of a sailing ship's possible manoeuvres according to the direction of the wind.

110. No candidate to be examined in successive weeks.—A candidate will not be allowed to undergo examination for the same grade of certificate twice in successive weeks, unless, under very special and urgent circumstances, the Examiner should see fit to relax this rule.

111. Penalty for breach of rules.—Any candidate violating any of the regulations, or being guilty of insolence to the Examiner, or of disorderly or improper conduct in or about the room, will render himself liable to the postponement of his examination, or, if he has passed, to the detention of his certificate for such period as the Governor may direct.

D. W. TRAFMAN,
Clerk of Councils.

COUNCIL CHAMBER,

26th November, 1930.

APPENDIX A.

EXAMINATION IN SIGNALLING.

The examination in Signalling, in all cases in which it is required for a certificate of competency, will consist of an examination in the International Code, the Allied Signal Manual, Morse Flashing, and Semaphore.

The examination in Signalling should in all cases and for all grades consist of an examination in the International Code, the Allied Signal Manual, Morse Flashing and Semaphore.

International Code.—Examiners are recommended to frame the examination in the International Code of Signals, upon the instructions and illustrations given at the commencement of Parts I. and II. of the Signal Book. The information there given will be found sufficient to indicate all the characteristics of the Code.

By the form of the hoist, an observer can at sight understand the nature of any signal he sees flying; the examination should, therefore, tend to elicit a clear knowledge of all the distinctive features of the Code.

With this object in view, the Examiners should question the candidates as to the distinguishing forms of the respective hoists, which will be indicated according as a burgee, a pennant, or a square flag is uppermost, and also with regard to the number of flags, and the position of the Code flag when used in the hoist; making the 1, 2, 3 and 4 flag signals with the flags supplied for the purpose, and varying the signals made, showing 2 and 3 flag signals, with and without the Code flag included, or a Geographical or a Vocabulary signal, the name of a merchant ship or of a ship of war.

As the two latter signals would not be found in the Signal Book, the candidate should know where to find them and how to look them out.

The candidate should:—(a) Be able to read a signal at sight, so far as to name the flags composing the hoist. (b) Know the use of the Code pennant and of the pennants C and D, "Yes" and "No", also of the two burgees A and B, and the square flags S and P, and the flags used to indicate cholera, plague, &c., on board, and the quarantine flag. (c) Be required to signal some word or words not included in the vocabulary of the Code either by letters or by the Spelling Table (page 516) or both. (d) Have a knowledge of the Distant Signals, and of their object, and the different modes of signalling therewith. (e) Know the special Morse signals indicated by certain letters as given on page 550. (f) Have a good knowledge of the Distress Signals and understand the penalty which may be incurred by their improper use.

The International Code is used on board His Majesty's ships, and it has been adopted by all the principal Maritime Powers for their public as well as merchant ships.

Allied Signal Manual.—Candidates will be expected to know the meaning of any or all of the single flag signals given therein, and the signification of the Pilot Jack when incorporated in a hoist. They should also be required to make or read from the Pilot Jack table a hoist given by the Examiner. Candidates need not be expected to commit the Pilot Jack table to memory, but there should be no hesitation whatever in making or reading a signal. They should also know how to recognise any of the Special Signals given in the Allied Signal Manual.

Morse Flashing and Semaphore.—Candidates for the voluntary examination in signalling will be required to attain a minimum speed of 12 words a minute in semaphore and 10 words a minute in Morse flashing (the average length of a word being taken as 5 letters).

Candidates for other certificates will only be required to attain a speed of 6 words a minute in Morse flashing and 8 words a minute in Semaphore.

In the ordinary examination, it will be sufficient if in Morse flashing a candidate is given a test card and a spelling message of 10 words, and in Semaphore a spelling message of 25 words.

The Morse flashing test will be a test message (*see* Allied Signal Manual), followed by a spelling message of 25 words.

In the voluntary examination in signalling, the Semaphore test will be a spelling message of 50 words.

The candidate must attain a degree of accuracy of at least 90 per cent both in making and reading in each method, *i.e.*, Flashing and Semaphore.

In the examination in Morse flashing the candidate should be first required to make a test message, followed by a spelling message of 25 words. The Examiner should then make a test message, followed by a spelling message of 25 words to be read by the candidate.

The same procedure must be observed in the Semaphore examination, except that, as a test message is not given, the candidate will be required to make a spelling message of 50 words and then to read a message of 50 words made by the Examiner. The Semaphore messages may be made either by hand flags or mechanical Semaphore, or both, at the discretion of the Examiner.

In the Morse flashing examination, marks will be allotted for the test message in the proportion of 50/78 of a mark for each correct letter (*see* table at back of test cards), and for the spelling message 2 marks for each correct word or group of figures. The candidate must for a pass gain an aggregate of at least 90 per cent of the maximum marks in both spelling and test messages.

In the Semaphore examination 2 marks will be allotted for each correct word and 90 per cent of the maximum must be obtained for a pass.

The spelling message is left to the discretion of the examiner, and may be a passage from any book or newspaper in English. When the passage contains figures and the candidate does not choose to spell them out, the examiner should see that the proper signs are made before and after the figures.

The message as read by the candidate should be taken down by another candidate where possible, otherwise by a clerk, or other person according as the examiner may deem expedient.

Candidates should be thoroughly tested in the various signs and the procedure of calling up, sending and answering a signal, as laid down in the Allied Signal Manual, and this course should always be strictly adhered to.

Particular attention should be paid by examiners to the accurate spacing of the Morse signs, and to the intervals between letters and words, and also to the correct making of the Semaphore signs. Any attempted increase of speed at the expense of accuracy should be discouraged.

The block letter test and spelling message as read by the candidate should be forwarded on the Form Exn. 19*a*, together with the percentage of marks allotted and report on the Form Exn. 19*b* to the Principal Examiner, with any remarks the examiner may have to add with respect to the examination.

Note.—The International Code of Signals, with the Signal Letters of British Ships, is prepared by the Registrar-General of Shipping and Seamen, and may be obtained of the publishers, Messrs. Spottiswoode, Ballentyne & Co., 1, New Street Square, London, E.C.4, and the principal booksellers at the various ports, price 25s.

The Official Mercantile Navy List and Maritime Directory may be obtained in like manner, price 25s.

The Allied Signal Manual may be obtained through any bookseller, or directly from H.M. Stationery Office, price 1s.

The attention of candidates is drawn to the fact that the Admiralty, after consultation with the Board of Trade, have established Signal Schools at London, Liverpool, South Shields, Glasgow, Southampton and Cardiff, where candidates for certificates of competency can obtain instruction in signalling free of charge.

APPENDIX B.

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 Letter test and in the Lantern test.

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

Spectacles not allowed.—During the examination in the sight tests candidates must not be allowed to use spectacles or glasses of any kind, or any other artificial aid to vision.

I.—LETTER TEST.

1. *Letter test to be passed first.*—The first test which the candidate is required to undergo is the letter test, and until he has passed this test he must not be allowed to proceed further with the examination.

2. *Apparatus used.*—The letter test to be used for all candidates is that conducted on Snellen's principle by means of sheets of letters.

3. *Object of the test.*—The object of the letter test is to determine whether the candidate can reach a sufficient standard of visual acuteness, or, in other words, to find out whether his eyesight is good or bad.

4. *Standard of vision required.*—Every candidate for a first certificate of competency will be required to possess normal vision. With the exceptions indicated below (*see* paragraph 7), every candidate for a second or higher certificate will be required to possess normal vision.

“Normal vision” is defined, for the purpose of these Regulations, as ability to read correctly nine of the twelve letters in the sixth line and eight of the fifteen letters in the seventh line of a test sheet placed in a good light at a distance of 16 feet from the eye.

The candidate will have the option of using either eye separately or both eyes together.

5. *Method of testing.*—The test sheets should be hung on the wall, *in a good light, but not in direct sunlight*, at a height of five or six feet from the ground. The candidate should be placed at a distance of exactly 16 feet from the sheets, and exactly opposite them. This distance should be carefully measured, and should never in any circumstances be varied.

One of the sheets should then be exposed, and the candidate should be asked to read the letters on each sheet, beginning at the top and going downwards. Any mistakes which he makes should be carefully noted. If then it is found that he has read correctly at least nine letters in the sixth line and eight letters in the seventh line of a sheet, the candidate may be considered to have normal vision, and should be marked “passed” in the appropriate column of the form of application (Exn. 2 or Exn. 2A, as the case may be).

6. *Passing or failure.*—If at the conclusion of the test the candidate is found to reach the required standard, he may be considered to have passed, and the Examiner should proceed with the lantern test. If the candidate fails to reach the standard required for the certificate entered for, he should be tested with at least four sheets, and the Examiner should fill in a Form Exn. 17b, and should forward it with any remarks he may wish to make, to the Principal Examiner for his instructions as to whether the candidate is to be regarded as passing or as failing in the letter test.

Failure to pass the letter test is due to some defect in form vision, and the Governor is advised that such defects are sometimes curable. Whenever, therefore, a candidate fails to pass this test the Examiner should advise him to consult an ophthalmic surgeon with a view to ascertaining what is the nature of the defect in his form vision, and whether it is curable.

7. *Lower standard required in certain cases.*—Candidates who are in possession of certificates obtained before January 1st, 1914, may be regarded as passing the letter test if they can read correctly with both eyes at least five of the eight letters in the fifth line of a test sheet.

8. *Tests to be varied.*—The Examiner should take care, by varying the order of the test sheets and by every other means in his power, to guard against the possibility of any deception on the part of the candidate.

II.—LANTERN TEST.

9. *Apparatus.*—A special lantern and a mirror have been provided for this test. The lantern should be placed directly in front of the mirror, so that the front part of the lantern is exactly ten feet from the mirror. Care should be taken that the lantern is properly placed, that is to say, the lights reflected in the mirror must show clearly when viewed from the position of the candidate on the left of the lantern. The Examiner should always satisfy himself that these conditions are fulfilled before commencing the examination.

10. *Darkness adaptation.*—It is essential that a candidate should be kept in a room which is either completely or partially darkened for at least a quarter of an hour before he is required to undergo this test.

Before the examination commences the Examiner must satisfy himself that the room in which it is conducted is so darkened as to exclude all daylight.

11. *Method of testing.*—The lantern supplied for the examination is so constructed as to allow one large or two small lights to be visible, and is fitted with 12 glasses of three colours—red, white and green. At the commencement of the examination the Examiner should show to the candidate a series of lights through the large aperture, and should require him to name the colours as they appear to him. Care should be taken in showing the white light to emphasise the fact that this light is not a pure white. If a candidate makes a mistake of calling this light “red,” a proper red light should be shown immediately after and the candidate’s attention directed to the difference between the two.

After a series of lights through the large aperture has been shown the Examiner should make a complete circuit with the two small apertures, requiring the candidate to name the colours of each set of two lights from left to right. To prevent any possibility of the order in which the lights are arranged from being learnt, the Examiner should at least twice in each circuit go back a varying number of colours.

A record of any mistakes made with either the large aperture or the two smaller apertures should be kept on Form Exn. 17b in accordance with the instructions thereon. In all such cases the mistakes made by a candidate in the letter test should also be recorded on the form.

12. *Passing or failure.*—If a candidate with either the large aperture or the two smaller apertures of the lantern mistakes red for green or green for red, he should be considered to have “failed” in the lantern test.

If the only mistake made by the candidate with the lantern is to call the white light “red,” and if after his attention has been specially directed to the difference between the two he makes no further mistake of this nature, he should be considered to have passed in the lantern test.

If a candidate makes any other mistake with the lantern, *i.e.*, if he calls white “red” repeatedly or red “white” at all, or confuses green and white, his case should be submitted to the Principal Examiner of Masters and Mates and he should be told that the decision as to whether he is passed or failed, or a further examination is necessary will be communicated to him in due course. Pending the receipt of the Principal Examiner’s instructions such a candidate should only be allowed to proceed with the remainder of the examination for a Certificate of Competency on the express understanding that the latter examination will be cancelled in the event of failure in the Sight Tests.

13. *Further examination and appeals.*—If in the cases covered by the preceding paragraph the Principal Examiner decides that a further examination is necessary, arrangements will be made for a special examination to be held. (*See rule 26.*)

If, however, on the report of the local Examiner the Principal Examiner decides that the nature of the mistakes made shows conclusively that a candidate's sight is so defective as to render him unfit to hold a certificate, the candidate shall be considered to have failed.

In cases where, upon the report of the local Examiner, a candidate is failed by the Principal Examiner, as well as in the cases covered by paragraph 12, the Governor will be prepared to allow an examination, subject to the conditions set out in rule 26. In no circumstances may a candidate who fails to pass the lantern test be re-examined locally.

APPENDIX C.

*Sea Service required to qualify for examination for
Certificates of Competency.*

The following is a condensed statement of the sea service required to qualify in each of the various grades of Certificates of Competency. Where service as an officer is required it is shown in tabular form. The letter F is used as denoting foreigngoing and H as denoting Home Trade: thus, 1½F in the first column of the table showing the officer's service for a First Mate's Certificate means 1½ year's service in foreign-going ships; Mate H in the last column means Mate of a Home-trade ship; and so on.

A Candidate for sailing ship endorsement must show that at least 12 months of his service has been spent in square rigged sailing ships.

CERTIFICATES FOR FOREIGN-GOING SHIPS.

SECOND MATE (FOREIGN-GOING).

- Minimum age, 20 years.
- Minimum sea service, 4F or 6H.
- No officer's service required.

FIRST MATE (FOREIGN-GOING).

- Minimum age, 21½ years.
- Minimum sea service, 5½F or 8¼H.
- Officer's service as follows:—

Years.	Lowest Capacity.	Lowest certificate required.
1½ F.	Third of a watchkeeping officers	2nd Mate F.
	Or	
2¼ H.	Only Mate or First Mate	2nd Mate F.

NOTE.—In certain circumstances service as Second Mate in the Home Trade may be accepted (see para. 64).

MASTER OR EXTRA MASTER (FOREIGN-GOING).

Minimum age, 23 years.

Minimum sea service, 7F or 10½H.

Officer's service as follows:—

Years.	Lowest Capacity.	Lowest certificate required.
1½ F.	First Mate	First Mate F.
	Or	
2¼ H.	Only Mate or First Mate	First Mate F.
	Or	
2 F.	Second of 3 watchkeeping officers ...	1st Mate F.
	Or	
2½ F.	Third of 3 watchkeeping officers	1st Mate F.
	Or	
3 H.	Maters	2nd Mate F. or Master H. for one year of such service.

NOTE.—In certain circumstances service as Second Mate in the Home Trade may be accepted (*see* rule 64).

APPENDIX D.

CERTIFICATE OF WATCHKEEPING SERVICE.

FOR A FIRST MATE'S CERTIFICATE.

THIS IS TO CERTIFY THAT Mr. has served on the s.s. from to in the capacity of *(1st) (2nd) (3rd) Watchkeeping Officer. During this time Mr. was an Officer in effective charge of a watch for eight hours out of every twenty-four hours at sea.

Watches were not doubled at any time during the voyage.†

Watches were doubled between the following dates and during this time Mr. served as the { *senior } of two Bridge Keeping Officers.‡

An entry to this effect has been made in the Mate's log.

Signature of Master

CERTIFICATE OF WATCHKEEPING SERVICE.

FOR A MASTER'S CERTIFICATE.

THIS IS TO CERTIFY THAT Mr. has served on the s.s. from to in the capacity of *(1st) (2nd) (3rd) Watchkeeping Officer. During this time Mr. was an Officer in sole charge of a watch for eight hours out of every twenty-four hours at sea.

Watches were not doubled at any time during the voyage.†

On all occasions on which watches were doubled during the voyage Mr. served as the senior of two Bridge Keeping Officers.‡

An entry to this effect has been made in the Mate's log.

Signature of Master

* Obliterate the words that do not apply.
 † Delete this paragraph if watches were doubled at any time during the voyage.
 ‡ Delete this paragraph if watches were not doubled at any time during the voyage.

APPENDIX E.

APPROVED SCHOOLS OF NAUTICAL TRAINING
ON SHORE.

The following is a list of schools of nautical training (other than the Nautical College, Pangbourne—see rule 78) which the Board of Trade have approved (see rule 79):—

A.—RESIDENTIAL TRAINING ESTABLISHMENTS (rule 79 (i)).

Wallasey, Cheshire:—The Lancashire and National and Sea Training Homes, Withins Lane, Liscard, Cheshire.

Half time to count up to a maximum of 6 months

B.—CADET COURSES AT JUNIOR TECHNICAL SCHOOLS AND SIMILAR INSTITUTIONS (Rule 79 (ii)).

Cardiff:—Smith Junior Nautical School, Cardiff.

Hull:—Boulevard Nautical School, Hull.

Glasgow:—Royal Technical College, George Street, Glasgow.

Greenock:—Watt Memorial School, Dalrymple Street, Greenock.

Leith:—Leith Nautical College, Commercial Street, Leith.

London:—L.C.C. School of Engineering and Navigation, Poplar, London, E.

Half time to count in each case up to a maximum allowance of six months.

C.—SENIOR COURSES IN NAVIGATION (Rule 79 (iii)).

Aberdeen:—Robert Gordon College, School Hill, Aberdeen.

Cardiff:—Cardiff Technical College, Cathay's Park, Cardiff.

Dundee:—Dundee Technical College, Bell Street, Dundee.

Glasgow:—Royal Technical College, George Street, Glasgow.

Leith:—Leith Nautical College, Commercial Street, Leith.

Liverpool:—Liverpool Technical College, Central Technical School, Byrom Street, Liverpool.

London:—L.C.C. School of Engineering and Navigation, Poplar, London, E.; King Edward VII Nautical School, Limehouse, London, E.; Sir John Cass Nautical School Aldgate, London, E.

Plymouth:—Plymouth Navigation School, Plymouth.

South Shields:—Marine School of South Shields, South Shields.

Half time to count in each case up to a maximum allowance of three months.