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*The Marine Act 1890.*REGULATIONS FOR THE EXAMINATION OF ENGINEERS FOR
CERTIFICATES OF COMPETENCY.

WHEREAS by section 59 of the *Marine Act 1890*, it is amongst other things enacted that the Marine Board of Victoria may, with the consent of the Governor in Council, make, alter and repeal regulations for the conduct of the examination of persons desiring to obtain certificates of competency as engineers, as to qualifications to be possessed by such persons, for the issue of certificates of competency thereto, and for prescribing the fees to be paid by applicants for examination (not exceeding the fees mentioned in the Fourth Schedule of the said Act): And whereas the said Board has from time to time made regulations for the purposes aforesaid: And whereas it is expedient to repeal all such regulations now in force except Regulation No. 34, sub-clauses (a) and (b), as published in the *Government Gazette* of the 5th day of May, 1893, and also to make amended regulations in lieu thereof with the exception aforesaid:

And whereas it is expedient to provide that the aforesaid excepted Regulation No. 34, sub-clauses (a) and (b), shall remain in force until the 1st day of January, 1904, and also to provide that clause 23, sub-clauses (a) and (b), of the following amended regulations shall not come into operation until such last-mentioned date:

Now, therefore, the said Board, with the consent of His Excellency the Governor of Victoria, acting by and with the advice of the Executive Council thereof, doth hereby repeal all previous regulations made for the purposes aforesaid and now in force from the date hereinafter specified, except Regulation No. 34, sub-clauses (a) and (b), hereinbefore referred to, which shall continue in force for the time being, and doth make the following

amended regulations in lieu thereof (with the exception aforesaid), that is to say :—

- Regulations. 1. These regulations may be cited as "The Regulations for the Examination of Engineers."
- Commencement. 2. These regulations, except as herein provided, shall come into force on the 1st day of September, 1902, on which date all previous regulations, with the exception of clause 34, sub-clauses (a) and (b) of the regulations published in the *Government Gazette* of the 5th day of May, 1893, shall be repealed, provided that clause 23, sub-clauses (a) and (b) of the following amended regulations shall not come into operation until the 1st day of January, 1904, on which date clause 34, sub-clauses (a) and (b) of the regulations published in the *Government Gazette* of the 5th day of May, 1893, as aforesaid, shall cease to have effect.

GENERAL REGULATIONS.

- Grades of certificates. 1. Certificates of Competency consist of three grades, namely, "First-class Engineers' Certificates," "Second-class Engineers' Certificates," and "Third-class Engine-drivers' Certificates," will be granted to those persons who pass the required examinations, and otherwise comply with the requisite conditions.
- Application. Exn. 3. 2. A person desirous of obtaining a certificate shall make application for examination on the proper form, which may be obtained at the Marine Board Office; such application form, properly filled in, together with the candidate's testimonials, as hereinafter specified, must be lodged with the Secretary at least two days before the date of examination.
- Certificate as to age. 3. Should any doubt exist as to the age of a candidate, he will be required to produce a certificate of birth or baptism, or other satisfactory evidence of age.
- Testimonials; shore service. 4. All candidates will be required to produce, in addition to the official discharge certificates, testimonials as to their workshop service and as to their service at sea. The testimonials as to workshop service must be signed by the employer, and must testify to the candidate's conduct and ability, and state what kind of work he was engaged on (*e.g.*, fitting, erecting, &c.), and for how long.
- Testimonials; sea service. 5. Testimonials as to service at sea must testify to the applicant's sobriety, experience, ability, and general good conduct for at least the last twelve months' service at sea preceding the date of application to be examined. They must be signed by the Master and Chief Engineer (or in the case of testimonials to Chief Engineers, by the Master and Superintending Engineer) and must clearly state whether the applicant was on regular watch and in regular charge of a watch on the main engines or boilers. It is desirable that testimonials of candidates should be indorsed by the Superintending Engineer. No time spent in clerical work will be allowed to count.
- Further as to testimonials. 6. In cases where a testimonial cannot, from any sufficient reason, be obtained from the Master or Chief Engineer of the vessel in which applicant has served, then in lieu of the testimonial of such Chief Engineer, that of the Superintendent Engineer (or person occupying an equivalent position) of the Company or person owning such vessel may be accepted, and in lieu of the testimonial required to be given by the Master, that of the Secretary to or Chairman of the Board of Directors, or Managing Director of the Company owning such vessel, or the Owner or Managing Owner of the same may be accepted; provided that in every such instance the testimonial must state that the facts set forth are in accordance with reports made by the Chief Engineer or the Master, as the case may be, or else that the facts therein set forth are within the writer's personal knowledge.
- Physical defects. 7. The testimonials of candidates who are deaf, or who are labouring under any other obvious physical defect, must contain specific reference to any such defect, and shall indicate whether it in any way interfered with the efficiency of the candidate as an engineer on watch. When these modified testimonials are such as to completely satisfy the Examiner that the defect is not such as to interfere with the efficient discharge of the applicant's duties as engineer, the examination may proceed, otherwise the case must be referred to the Board. Candidates afflicted with nervous impediment in speech may write their answers to *viva voce* questions.
- Testimonials of foreigners. 8. The testimonial of servitude of foreigners and of British seamen who have served in foreign vessels which cannot be verified in any Mercantile Marine Office, 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 evidence will not of necessity be deemed sufficient; and in each case, the Board reserves to itself the right of dealing with any application made under this regulation as it may see fit.

9. Service which cannot be verified by proper entries in the articles of agreement of the ships in which the candidates have served cannot be counted. Service must be verified.

10. Foreign engineers 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. Foreign engineers must know English.

11. When an applicant has passed his examination, and has complied with requisite regulations, he will be notified to that effect by the Secretary, and will subsequently receive his Certificate of Competency from the Board. His testimonials will be returned to him with his certificate. Notification of passing.

12. 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 Board are 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 either have the fee returned to him or have it placed to his credit. Should his services entitle him to a Certificate of a lower grade it may be granted to him, and the difference, if any, between the fee paid by him for the superior Certificate and the fee payable for the inferior Certificate will be returned to him, or placed to his credit. 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 Board see fit to dispense with the re-examination. Service found to be insufficient.

FAILURE.

13. If the candidate fails in practical knowledge he may not present himself for re-examination until he can produce proofs of *three months'* further service at sea as Engineer from the date of failure. If he fails in the English language he may not present himself for re-examination until after a lapse of six (6) months. If he fails in arithmetic, elementary questions, or drawing only, he may come up again at any time. Failure in examination.

FEEES.

14. The fee for examination shall be paid to the Secretary of the Marine Board. Fees to be paid by applicants for examination.

15. If a candidate prior to examination, or during the course of any examination, offer any sum of money or other thing whatsoever by way of reward or bribe to any Examiner or other officer of the Board, for the purpose of influencing him in any manner in regard to such examination, the Board may refuse to permit such candidate to be examined, or, if the examination shall have already commenced, may direct the Examiner not to proceed with such examination. And, further, the Board may forfeit any fee paid by him, and may also debar the candidate from presenting himself at any future examination for a period not exceeding twelve (12) months from the date of the offer of such bribe or reward. Applicants offering bribes to examiner subject to disqualification for twelve months.

16. If a candidate fails in his examination, no part of the fee he has paid will be returned to him. Fee on failure not returnable.

17. The fees to be charged for examination are as follows:— Fees.

| | |
|---|-------------|
| Third-class Engine-driver's Certificate | ... £1 10 0 |
| Second-class Engineer's Certificate | ... 2 0 0 |
| First-class Engineer's Certificate | ... 3 0 0 |
| Extra First-class Engineer's Certificate | ... 1 0 0 |
| Exchange of Certificate (Third-class), as provided in Regulation No. 21 ... | ... 0 5 0 |

CERTIFICATES LOST OR DESTROYED.

18. When any certificate issued by the Board has been lost or destroyed through no fault of the owner, and satisfactory proof of such loss or destruction has been furnished, a duplicate may be issued on payment of a fee of five shillings. Forms of the necessary declaration to be made by applicants may be obtained from, and must be returned to, the Secretary. Certificates lost, &c.

**QUALIFICATIONS FOR CERTIFICATES OF
COMPETENCY.**

Third-class
certificates.

19. **THIRD-CLASS ENGINE-DRIVERS' CERTIFICATES** will be of three classes, and applicable for service respectively in the following classes of steam-ships, namely :—

Class (a). "River Steam-ships," being steam-ships not exceeding 15 tons gross registered tonnage, plying on any river or on any inland waters in the State of Victoria.

Class (b). "River Steam-ships," being steam-ships of less than 100 nominal horse-power, plying on any river or on any inland waters in the State of Victoria, not being salt water.

Class (c). "River and Bay Steam-ships," being steam-ships of less than 100 nominal horse-power, plying in any port or on any river, lake, or bay in the State of Victoria.

Service
qualifications.

20. Service which has been performed in steam-ships under 15 tons gross registered tonnage plying on any inland water or on any river will *not* be accepted as qualifying service for Certificates as Engine-drivers on steam-ships exceeding such tonnage; only such service as has been performed on steam-ships plying in the ports of Port Phillip, Melbourne, Geelong, Western Port, or Gippsland Lakes or on sea-going steam-ships will be accepted as qualifying service for Certificates of Competency for Third-class Engine-drivers on "River and Bay Steam-ships."

Exchange of
certificates.

Under 15 tons
to river steam-
ships under
100 n. h. p.

21. (1) The holder of a Third-class Certificate restricted to service on "river steam-ships" (Class a) not exceeding 15 tons gross registered tonnage, plying on a river or on inland waters, who is desirous of obtaining a certificate applicable to "river steam-ships" (Class b) of less than 100 nominal horse-power, may have his certificate exchanged therefor on his producing satisfactory evidence of having served for a period of not less than three (3) months as leading fireman or assistant engineer on a "river steam-ship" exceeding 15 tons gross registered tonnage, and on his showing to the satisfaction of the Board's Examiner that he has acquired practical knowledge and experience in the working of engines and boilers of such last-mentioned class of steam-ships.

Under 15 tons
to river and bay
steam-ships.

(2) The holder of a Third-class Certificate restricted to service on "river steamships" (Class a) not exceeding 15 tons gross registered tonnage, plying on a river or on inland waters, and desirous of obtaining a certificate applicable to "river and bay steam-ships" (Class c) may have his certificate exchanged therefor on his producing satisfactory evidence of having served for a period of not less than nine (9) months as leading fireman or assistant engineer on a steam-ship plying in the ports of Port Phillip, Melbourne, Geelong, Western Port, or Gippsland Lakes, or on sea-going steam-ships and on his showing to the satisfaction of the Board's examiner that he has acquired a practical knowledge and experience in the working of engines and boilers of the class of steam-ships plying in any such ports.

River steam-
ships under
100 n. h. p. to
river and bay
steam-ships.

(3) The holder of a Third-class Engine-driver's Certificate restricted to service on "river steam-ships" of less than 100 nominal horse-power, desirous of obtaining a certificate applicable to "river and bay steam-ships" (Class c) may have his certificate exchanged therefor on his producing satisfactory evidence of having served for a period of not less than six (6) months as leading fireman or assistant engineer on a steam-ship plying in the ports of Port Phillip, Melbourne, Geelong, Western Port, or Gippsland Lakes, or on sea-going steam-ships and on his showing to the satisfaction of the Board's examiner that he has acquired practical knowledge and experience in the working of engines and boilers of the class of steam-ships plying in any such ports.

Third-class
engine-driver.

22. (1) A candidate for a Third-class Engine-driver's Certificate of any class must be not less than 22 years of age :

(a) A candidate for a certificate restricted to service in a river steam-ship not exceeding 15 tons gross registered tonnage must have served afloat three years as a fireman, or have performed such service which, in the opinion of the Board, is equal to the service first mentioned.

(b) A candidate for a certificate applicable to a "river steam-ship" or to a "river and bay steam-ship" of less than 100 nominal horse-power must have served afloat two years as a fireman, and one year as a leading fireman and assistant engineer, making three years' service, or such service as in the opinion of the Board is equal to the qualifying service first mentioned; provided that not less than six months of the qualifying service must have been service afloat in the engine-room.

(2) All candidates for Third-class Engine-driver's Certificates must—

- (a) Produce satisfactory testimonials for the whole of the period of service.
- (b) Be able to explain the use of the principal parts of engines and boilers in general use on the waters for which he is desirous of being examined, including all valves, cocks, and connexions ; also the salinometer.
- (c) Write a legible hand, and understand the first four rules of arithmetic.

23. SECOND-CLASS ENGINEER.—A candidate for a Second-class Engineer's Certificate must be not less than 21 years of age. Second-class certificates

- (a) He must have served as an apprentice engineer for four years at least, and prove that during the period of his apprenticeship he has been employed on the making or repairing of steam-engines, boilers, &c. Three years of the apprentice time must have been passed in the fitting or erecting shops, or in both. In calculating the four years of artisan service which are to constitute the required apprenticeship, which should not begin at an earlier age than 15, time spent at a technical school (recognised by the Board as suitable) where there is an engineering laboratory, may be taken into account and accepted as equivalent to artisan service at the ratio of three years in the technical school to two in artisan service, provided that the applicant was over 15 years of age, and can produce the Principal's certificate for regular attendance and satisfactory progress, and provided also that in such case the other portion of the time was spent in the fitting or erecting shops of an engineer, as indicated above.

Journeyman's time will be considered as equivalent to apprenticeship.

Every applicant must produce testimonials of ability as an engineer workman to the satisfaction of the Board.

If the candidate has not served for four years as an apprentice engineer, or as journeyman, he will be required to have served, *in lieu thereof*, four years at sea as engineer on regular watch on the main engines or boilers of a foreign-going steamer of not less than 66 nominal horse-power, or six years in a home-trade steamer of not less than 66 nominal horse-power.

- (b) In addition to the apprenticeship as above described, or the alternative sea service, the applicant must have served one year at sea as engineer on regular watch on the main engines or boilers of a foreign-going steamer of not less than 66 nominal horse-power ; or eighteen months in a home-trade steamer of not less than 66 nominal horse-power.
- (c) He must be able to give a satisfactory description of boilers, and the methods of staying them, together with the use and management of the different valves, cocks, pipes, and connexions.
- (d) He must understand how to correct defects from accident, decay, &c., and the means of repairing such defects.
- (e) He must understand the use of the water-gauge, pressure-gauge, barometer, thermometer, and salinometer, and the principles on which they are constructed.
- (f) He must state the causes, effects, and usual remedies for incrustation and corrosion.
- (g) He must be able to explain the method of testing and altering the setting of the slide-valves, and method of testing the fairness of shafts and adjusting them.
- (h) He must be able to calculate the suitable working pressure for a steam boiler of given dimensions, and the stress per square inch on crank and tunnel shafts when the necessary data are furnished.
- (i) He must understand the construction of steering-engines, evaporators, feed-filters, and feed-heaters.
- (j) He must understand the construction of centrifugal bucket, and plunger pumps, and the principle on which they act.

- (k) He must be able to state how a temporary or permanent repair could be effected in case of derangement of a part of the machinery, or total break down.
- (l) He must write a legible hand, and have a good knowledge of arithmetic up to and including vulgar and decimal fractions and square and cube root. He must also understand the application of these rules to questions about safety-valves, coal consumption, consumption of stores, capacities of tanks, bunkers, &c.
- (m) He must be able to pass a creditable examination as to the various constructions of paddle and screw engines in general use; as to the details of the different working parts, external and internal, and the use of each part.
- (n) He must possess a creditable knowledge of the prominent facts relating to combustion, heat and steam.

First-class
certificate

24. **FIRST-CLASS ENGINEER.**—A candidate for a First-class Engineer's Certificate must be not less than 22 years of age.

In addition to the qualification required for a Second-class Engineer,

(a) He must—

- (1) have served at sea for twelve months, with a second-class certificate of competency or service, as senior engineer in charge of a watch on the main engines or boilers of a foreign-going steam-ship of not less than 99 nominal horse-power; or
 - (2) have served at sea for eighteen months, with a second-class certificate of competency or service, as first engineer of a home-trade steamer of not less than 99 nominal horse-power; or two years as second engineer of a home-trade steamer of not less than 99 nominal horse-power, with a second-class certificate of competency; or
 - (3) possess, or be entitled to, a first-class certificate of service.
- (b) He will be required to make an intelligible hand sketch, or a working drawing of some one or more of the principal parts of a steam-engine, and to mark in, without a copy, all the necessary dimensions in figures, so that the sketch or drawing could be worked from.
 - (c) He must also be able to take off and calculate indicator diagrams.
 - (d) He must be able to calculate safety-valve pressures, and the strength of the boiler shell, stays, and riveting.
 - (e) He must be able to state the general proportions borne by the principal parts of the machinery to each other, and to calculate the direct stress, the torsional stress, and the bending stress in round bars, and the direct stress and the bending stress in rectangular bars with given loads.
 - (f) He must be able to explain the method of testing and altering the setting of the slide-valves, and to sketch about what difference any alteration in the slide-valve will make in the indicator diagram, and also the method of testing the fairness of shafts, and of adjusting them.
 - (g) He must be conversant with surface condensation, superheating, and the working of steam expansively.
 - (h) His knowledge of arithmetic must include the mensuration of superficies and solids and the extraction of the square and cube roots, and the application of these rules to questions relating to the power, duty, and economy of engines and boilers, and to the stresses in rods, shafts, and levers of the engine.
 - (i) He must understand the construction of, and be able to maintain in working condition the auxiliary machinery which is placed under his charge, viz.: refrigerating machinery, electric light engines and dynamos, electric motors fitted to ships' boats, hydraulic machinery, and the various descriptions of steering engines, &c.

25. **EXTRA FIRST-CLASS ENGINEER.**— This examination is Extra first-class certificates. voluntary, and is intended for such persons as wish to prove their superior qualifications, and are desirous of having certificates for the highest grade granted by the Board.

26. Applicants are required to make application on form which Exn. 3. may be obtained at the Marine Board Office; such form, properly filled in, together with the candidate's testimonials and discharges, must be lodged with the Secretary at least two days before the date of examination.

27. A candidate for an Extra First-class Engineer's Certificate Qualifications required. must possess a First-class Engineer's Certificate, and have served an apprenticeship of five years at least, or he must have served for one year at sea while holding a First-class Engineer's Certificate.

- (a) He must possess a thorough knowledge of the construction and working of the different forms of marine engines and propellers in all their parts, and be so far acquainted with the elements of theoretical mechanics as to comprehend the general principles on which the machine works, and to illustrate his knowledge of these principles by numerical examples.
- (b) He must possess a knowledge of the theory of strain and stress sufficient to be able to deduce the ordinary rules for the bending of rectangular bars and for the twisting and bending of round bars.
- (c) He must be acquainted with the principles of expansion and the modern theory of heat, and be able to solve, with the assistance of his own books, or without books, according as the examination papers may be set, questions in economy and duty in connexion with engines and boilers.
- (d) He must understand how to apply the indicator, and to draw the proper conclusion from the diagrams, and to construct the approximate diagrams from any given data.
- (e) He must be able to produce, without a copy, a fair working drawing of any part of the machinery, with figured dimensions fit to work them.
- (f) He must understand the principles of the action of the screw propeller and the paddle-wheel, and must be able to estimate numerically the effect in speed of ship and consumption of fuel due to any alteration in pitch, diameter, revolutions, &c., &c.
- (g) He must be able to give a description of boilers and the methods of staying them, and must show that he possesses a knowledge of the theoretical principles which regulate their construction, and that he is able to calculate the strength of the boiler shell, stays, and riveting.
- (h) He must understand the general nature of the strains and stresses produced by the steam pressure, and by the expansions due to unequal temperatures in boiler shells.
- (i) He must have a knowledge of safety-valve construction, and the principles involved in determining the size of a safety-valve, and the construction of spring-loaded and dead-weight valves.
- (j) He must possess a thorough knowledge of the theory of combustion; the chemical composition of fuels; the evaporative duty of fuels of given composition; the production of draught; the effect in regard to economy, safety, and wear and tear, of increasing or of diminishing the proportion of heating surface, of grate bar surface, of area of section of air passages, of area of water surface, of steam space capacity and water capacity.
- (k) He must be able to explain the formation of scale and the precipitation of salt, and the precautionary means adopted in respect thereto, with jet condensers, and with surface condensers.
- (l) He must understand the general principles involved in the construction of the barometer, thermometer, salinometer, and steam and vacuum gauges.
- (m) He must be familiar with the general results obtained from past experience in relation to corrosion, pitting, and galvanic action in boilers, and the use of zinc and of soda in boilers.

- (n) He must give a variety of illustrations of how defects have arisen from accident, imperfect construction, or deterioration, and how these defects might have been prevented, and the best way of repairing such defects.
- (o) He must possess an intelligent knowledge of the properties of the lubricants, boiler cements, and india-rubber in general use in steamers.
- (p) He must understand the causes of spontaneous combustion and the formation of explosive gases in coal holds, and the precautionary measures proper to prevent accidents from these causes.
- (q) He must be able to explain the construction and working of the refrigerating machinery in use on board ship, the electric-lighting plant, the steering engines, hydraulic and pneumatic engines, the pumps, and all other auxiliary machinery placed under the Chief Engineer's control.
- (r) In order to intelligently deal with ballast tanks, the cocks, valves, and pumps of which are under the Chief Engineer's control, and to co-operate the more readily with the master in keeping the vessel in a safe condition, especially when she is light, and when coaling operations are proceeding, candidates are expected to possess an elementary knowledge of the stability of floating bodies.

REGULATIONS FOR ESTIMATING SERVICE.

- Workshop service where engines are not made.** 28. When the workshop service has been performed in a place where steam-engines are not made or repaired, and the class of work done is similar to that required in engine-making, the service may be accepted with an additional year in the engine-room; that is, four years' workshop service and two years in the engine-room, of which one year must have been at sea. The approval of the Board must be obtained in every such case before the candidate is examined.
- Workshop service other than fitting or erecting.** 29. When the workshop service has been performed in a place where engines are made, and the department in which the applicant has been principally engaged is not "fitting" or "erecting," the case must be referred to the Board with a report upon the service performed. If the service be such as is useful training for an Engineer, the Board may accept the service, but in every such case the applicant must prove additional engine-room service as required above.
- Qualifying service defined.** 30. In the case of candidates for First-class Certificates qualifying service means service on regular watch as Senior Engineer in charge of the main engines or boilers. During the whole of the period claimed, candidates must have been in possession of Second-class Certificates.
In the case of candidates for Second-class Certificates, qualifying service means service as Engineer on regular watch on the main engines or boilers. In no case will time spent in clerical work be allowed to count.
- Names on articles.** 31. In all cases the candidates' names must have been duly entered on the ship's articles as Engineers in their proper ratings.
- Regular watch.** 32. Being on regular watch means being on watch for at least eight hours a day.
- Further as to qualifying service.** 33. Only such service as gives the experience required to make a man thoroughly competent as a sea-going Engineer is accepted as qualifying service. Even for a Second-class Certificate the candidate must prove to the satisfaction of the Examiner that he is qualified by experience and knowledge to act as Chief Engineer in an under-powered steamship of 99 nominal horsepower on a voyage, say from Victoria to South Africa or India, taking full responsibility for engines and boiler.
- Sea service.** 34. The sea-service required by these Regulations is, unless otherwise stated, service performed in foreign-going steamships; provided that service performed in any steamship trading between ports on the coast of Victoria shall be regarded as being equivalent to two-thirds of the same period of time served in a foreign-going steamship, *i.e.*, eighteen months' service in the Victorian coast trade will be accepted as equivalent to twelve months' service in any other trade. In all cases the length of service will be deemed to have commenced on the date of signing of the articles of agreement and to end on the date of discharge.
- Coast trade service.**

35. Service as Engineer on regular watch on a river and bay steam-ship of not less than 66 nominal horse-power may be accepted under the following conditions:—

- (a) The service will only count half as much as sea service; *i.e.*, every two months of river and bay service is only equivalent to one month's sea service;
- (b) Candidates for Second-class Certificates must prove, in addition to the river and bay service, at least three months' qualifying service at sea in a steam-ship of not less than 66 nominal horse-power;
- (c) Candidates for First-class Certificates must prove, in addition to river and bay service in vessels of 99 nominal horse-power, at least six months' qualifying service at sea, with a Second-class Engineer's Certificate, in vessels of not less than 99 nominal horse-power.

36. Service performed on board auxiliary screw whalers, and other vessels with auxiliary steam-power of not less than 66 nominal horse-power, in the capacity of engineer may be allowed to count towards qualifying candidates for examination for Second-class Engineers' Certificates of Competency to the extent of one-half the time the vessel is actually at sea. If the candidate is able to prove a larger amount of time under steam, he will be allowed to count the whole of such extended time.

37. Service performed in pilot vessels will not qualify a candidate for examination.

38. Service in sea-going steam dredgers, trawlers, or tug-boats may be accepted under the following conditions:—Two months of such service is only equivalent to one month's qualifying service. Candidates for Second-class Certificates may perform all their sea service in sea-going steam dredgers, trawlers, or tug-boats, but they must have been on regular watch on the main engines or boilers, and the vessels must not be less than 66 nominal horse-power. Candidates for First-class Certificates must have served in vessels of at least 99 nominal horse-power, and have been in charge of a watch on the main engines or boilers. They must, in addition, have served in a qualifying capacity for at least six months in a foreign-going steam-ship, or nine months in a home-trade steam-ship.

39. Service performed in steam yachts, either within or beyond home-trade limits, may be accepted as equivalent to two-thirds of the time performed in foreign-going trading vessels, provided that the candidate's name is entered on the vessel's articles, and that he can prove, to the satisfaction of the Board, that the time claimed was actually served at sea.

Candidates for Second-class Certificates may perform all their service in yachts, but the candidate must have been on regular watch on the main engines or boilers, and the vessel must be of not less than 66 nominal horse-power.

Candidates for First-class Certificates must have served on vessels of not less than 99 nominal horse-power, and must have been in regular charge of the main engines or boilers. In addition they must have served for at least three months in a qualifying capacity on board a foreign-going steam-ship. This additional service will, however, not be required in the case of a candidate who has served for eighteen months as First Engineer, or for two years as Second Engineer, of a steam yacht of the requisite power.

40. The Board may allow an applicant who, in consequence of service abroad, has been unable to obtain a Second-class Certificate, to be examined for a First-class Certificate, although he has not obtained a certificate of the lower grade, provided he is able to satisfy them as to the satisfactory character of his services. If any candidate who has not got a Second-class Certificate of Competency fails to pass the examination for the First-class Certificate, but passes that for the lower grade, he may be given a Second-class Certificate of Competency, but no part of the fee will be returned. A candidate who has been permitted to be examined for a First-class Certificate without first obtaining a Second-class Certificate of Competency or a Certificate of Service, and who fails in his examination in practical knowledge, may not be re-examined for a Certificate of the higher grade until he has served three months as Engineer on regular watch with a Second-class Engineer's Certificate of Competency or Service as required by the regulations. If the candidate fails altogether, *i.e.*, both in the examination for the lower as well as for the higher grade of certificate, he may be re-examined for a Second-class Certificate only, subject to the usual regulations relating to failure.

Certificates.

41. The term "Certificate" in these Regulations means a Certificate of Competency, issued by the Marine Board of Victoria or by the Board of Trade, or by a British Possession under the provisions of the Merchant Shipping Act.

Colonial local certificates.

42. The holder of a Certificate of Competency not granted under the Merchant Shipping Act, or of a Certificate of Competency granted after examination on board one of His Majesty's ships, who wishes to be examined for a Certificate under these Regulations of the same grade, must prove that he has performed the amount of service required by these Regulations for that grade, and complied with the conditions laid down as to testimonials. No fee will be demanded for the first attempt, but if the candidate fails the usual fee will be demanded on any subsequent attempt.

REGULATIONS FOR THE CONDUCT OF EXAMINATIONS.

Candidates who submit themselves for examination must comply with the following regulations, viz. :—

Candidates to be punctual.

43. Candidates are required to appear at the examination-room punctually at the time appointed.

Silence.

44. Perfect silence is to be preserved in the examination-room.

All work to be shown.

45. No candidate will be allowed to work out his problems on a slate or 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.

Additional sheets of paper will be supplied by the Examiner if required, but they must be attached to, and form part of, the examination papers.

Books and papers strictly forbidden.

46. All books necessary for the use of candidates under examination will be provided by the Board, and candidates are prohibited from bringing into the examination-room, any book, paper, document, or memoranda of any description whatever. 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.

Penalty for copying, &c.

47. In the event of any candidate being discovered referring to any 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.

Leaving room.

48. No candidate may leave the examination-room without permission and without giving up the paper on which he is engaged. Under no circumstances will the same paper be returned to him, but the Examiner may substitute other data, or another question.

Injury to books.

49. In the event of any candidate being detected in defacing, blotting, writing in, or otherwise injuring any book, or books, belonging to the Board, he will be required to pay to the Secretary such amount as may be necessary to replace such book, or books. He will not, however, be at liberty to remove the damaged book, which will still remain the property of the Board; he will also subject himself to all the penalties of a failure.

Questions from Form Exn. 15A.

50. All applicants presenting themselves for examination for First and Second-class Certificates of Competency will be required to give written answers to ten questions selected from "Elementary Questions for the First Examinations of Engineers for Certificates of Competency, and of Masters and Mates for Certificates in Steam."

51. The form on which these answers will be written contains also some questions as to the experience of the applicant, and must be answered by him in writing.

Order of examinations.

52. The examination of candidates for Second-class Certificates consists of three parts: Arithmetic, Elementary Questions, and *Viva voce*; and that of candidates for First-class Certificates of four parts: Arithmetic, Drawing, Elementary Questions, and *Viva voce*. See Regulations 23 and 24.

Arithmetic.

53. When the number of marks obtained in arithmetic amounts to 28, that is, two-thirds of the maximum, the candidate shall be deemed to have passed in arithmetic.

If the marks obtained amount to 21, but not to 28, and if the applicant has had long sea experience, his testimonials should be taken into account, and his examination continued, if deemed advisable by the Examiner, and he may be passed or failed, having due regard to his practical knowledge, and to whether he is being examined for a Second-class or First-class Certificate.

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54. Candidates for First-class Certificates shall pass an examination in rough working drawing, which may, in the candidate's option, be either hand sketches clearly dimensioned and complete in the necessary views and sections, or drawings to a scale. Drawing boards and T squares will be provided by the Board, but the applicants will have to bring with them any drawing instruments they may require. instruments are provided.

55. Candidates for examination for Extra First-class Certificates may use the examination-room book of logarithms, which must be always kept under the charge of the Examiner, who will be careful to observe that it is not used to conceal memoranda prepared for these examinations. No other books will be allowed unless the question set specially states that a book may be referred to. Book of logarithms.

56. 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, in the event of his having passed, to the detention of his certificate for such period as the Board may direct. Penalty for breach of rules.

The foregoing Regulations were made and passed at a meeting of the Marine Board of Victoria, held this eleventh day of July, in the year of our Lord One thousand nine hundred and two.

ARCH. CURRIE,
President.

(SEAL)

C. W. MACLEAN,
- Member.

J. GEO. MCKIE,
Secretary.

Approved by the Governor in Council
the 22nd July, 1902.

THOS. BRISBANE,
Clerk of Executive Council.

