

Lloyd's Register of Shipping

INSTRUCTIONS
TO
NON EXCLUSIVE SURVEYORS.

1929

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INSTRUCTIONS TO NON-EXCLUSIVE SURVEYORS.

COPY OF WARRANT OF APPOINTMENT.

To Mr.———Hereby appointed———Surveyor to Lloyd's Register of Shipping for the———

WHEREAS you were duly elected one of the Surveyors to the Society of Lloyd's Register of Shipping on the——— These are, therefore, to constitute and appoint you the resident Surveyor for the above———strictly charging and requiring you to attend to the following instructions, by which you are to govern yourself in the execution of the important duties entrusted to your management.

1. You will not be allowed to be connected with any other institution having for its object the classification of ships.

2. You will not be permitted to be engaged, directly or indirectly, in any business which can interfere, or admit of even the impression that it can interfere, with the strict impartiality with which the Society's Officers are required to perform the responsible duties entrusted to them.

3. For your information and guidance you will receive herewith :—

- (a) A printed copy of the Register Book.
- (b) A set of the printed Rules which have been established for the general government of the business of the Society.
- (c) A book of Instructions for Non-Exclusive Surveyors.

These volumes, which are to be considered the property of the Society, will demand your serious consideration and attention, and you are, therefore, particularly enjoined to give them a very careful perusal, and strictly to adhere to them so far as they may respectively apply to the cases which will from time to time fall under your cognizance: any proposed deviation therefrom to be at once communicated to the Secretary for the consideration of the Committee.

4. It will be your duty in your capacity of Non-Exclusive Surveyor to Lloyd's Register, and subject to the conditions of the Society's Rules and those laid down in the book of Instructions for Non-Exclusive Surveyors:—

(a) To survey and report to the Committee upon ships, machinery and boilers, being built in your district, with a view to classification by this Society, and those already built, which may be submitted for classification.

(b) At the request of Owners or their local Representatives to hold periodical and other surveys prescribed by the Society's Rules on ships (and their machinery and boilers) arriving within the limits of your district, and to report thereon to the Committee. (*See Section IIIB in the Book of Instructions.*)

(c) To survey ships, machinery and boilers (classed or unclassed) upon application made by the Owners, or their local Representatives, or with their consent, for the purpose of ascertaining any damage that may have been sustained, and to furnish the parties interested with a report on the printed forms provided for the purpose.

(d) To survey yachts and/or their machinery and boilers (classed or unclassed) upon application, with the written consent of the Owner, for the purpose of reporting on their condition previous to purchase.

(e) To survey ships (classed or unclassed) upon application, under the Merchant Shipping Acts, with a view to the assignment of freeboards by the Committee.

(f) To test steel and inspect forgings and castings, etc., at the Manufacturers' works or otherwise, as you may be directed from this office.

(g) To collect information concerning vessels and machinery built and building in your district, whether they are or are not intended for classification, also concerning all changes, losses and additions in connexion with shipping in your district; and to furnish such other information in respect of your port and district as may be required by the Committee.

5. The Committee hold you personally responsible for all surveys reported by you, and it will be your duty in every case thoroughly to satisfy yourself from personal inspection, of the condition of the parts mentioned in your reports of all vessels, machinery and boilers that come under your inspection.

6. In making your reports of the various surveys it will be your duty to employ the forms prescribed in the Book of Instructions. Such reports are to be numbered consecutively as they are from time to time transmitted. Your first report should be numbered . . .

7. You are to forward your reports of survey without delay as soon as the survey (or partial survey) has been carried out. In cases where the fees due for the survey have not been paid, up to the time of forwarding the report, the fact should be clearly indicated, when the issue of certificates and the posting of records thereon will be deferred until payment has been made.

8. You are to keep copies of all documents transmitted by you to the Society.

9. In cases where you may consider repairs to be requisite, you are to make your recommendations in writing to the Owner, Master or Agent; and should these not be attended to within a reasonable time, you are to state the facts in your report to the Committee and to forward a copy of the communication made by you, and of other correspondence connected with the case.

10. On the satisfactory conclusion of your surveys of vessels and/or their machinery you are authorized to grant Interim Certificates on the printed forms, of which copies are attached, as provided for in the Book of Instructions.

11. The Committee alone determine the character to be assigned to vessels and machinery, and certificates of classification under the seal of the Society will at all times be promptly granted, if desired, upon the satisfactory completion of the requisite surveys.

12. In all cases of damage either to vessels or their cargoes in your district, which come to your knowledge, you are, with as little delay as possible, to notify Lloyd's Agent at your port, and afford as much information in regard thereto as may be compatible with your duty as Surveyor to this Society, in order that an early advice regarding such cases may be transmitted to the Committee of Lloyd's.

13. You are authorized to charge fees in accordance with the terms of Sections 28, 29 and 32 of the Rules :—

(a) Fees for First Entry of classification in the Register Book, Section 28 of the Rules, to be wholly credited to the Society.

(b) Fees for the Special Survey of vessels and/or their machinery during construction—in conformity with Section 29.

(c) Fees, under the same Section for attendance on Periodical Surveys, on Damage Surveys, and on Surveys of Repairs, etc., regulated according to the nature and extent of the services rendered, and the custom of the port.

(d) Fees for the survey of vessels holding the dual classification of Lloyd's Register and the Registro Italiano, as prescribed in the Book of Instructions.

The charges under the heads (b) (c) and (d) are to be subject to division in accordance with the arrangements prescribed in the Book of Instructions to Non-Exclusive Surveyors.

14. You are in all cases to state on the report of survey the amount of the fees received by you, also any charges you have made for expenses incurred by you on survey.

15. In the event of your making any charge which may be objected to by Shipowners or Underwriters, you are to be prepared to submit the case to the Committee for consideration, and to abide by their decision in the matter.

16. The Committee will not sanction your sharing your survey fees with any other person.

17. As soon as possible after the completion of each of the four quarters ending on the 30th September, 31st December, 31st March and 30th June, which make up the Society's financial year, you are to forward to this Office on the forms provided for the purpose returns of all moneys received by you :

(a) In your capacity of Surveyor to the Society.

(b) In other capacities than that of Surveyor to Lloyd's Register of Shipping. (*See Book of Instructions.*)

18. In the performance of these several duties, it is the particular desire of the Committee that you should exercise your best discretion, and show the utmost courtesy and forbearance towards all parties whose property may come under your supervision ; taking care, at the same time, to act upon all occasions with due firmness, and to see that the Rules of the Society are strictly adhered to.

Relying, therefore, upon your judgment, and the zeal and strict integrity with which it is expected you will discharge your several duties, the Committee confide to your care and management the important office to which you have been appointed.

Given under the Seal of this Office, at Fenchurch Street,
this———day of———19—. By order of the Committee,
———CHAIRMAN———SECRETARY.

I.—GENERAL.

1. Designation of Surveyors.—In all cases in which the Surveyors refer to the appointments held by them under this Society, they should be careful to use the designation of "SURVEYORS TO LLOYD'S REGISTER." This instruction applies not only to reports and documents, but also to the designation on office doors, &c.

Similarly, Surveyors (other than Surveyors to Lloyd's Register) employed by Lloyd's Agents are required by the Committee for managing the affairs of Lloyd's to designate themselves "Surveyors to Lloyd's Agents," in cases of reference to their appointments.

2. Surveyors and Lloyd's Agents.—It will be noted from the abstract from the Instructions issued by the Committee of Lloyd's to their Agents, printed at the end of the Appendix to the Register Book, that the Committee of Lloyd's state that in selecting a Surveyor for vessels and/or their machinery, they would prefer that the choice of Lloyd's Agent should fall upon the Surveyor to Lloyd's Register of Shipping whenever there is one stationed in the district, who will sign as Surveyor to Lloyd's Register.

In a similar manner, it is desirable that the Society's Surveyors should refer to Lloyd's Agents all persons who apply to them for surveys on goods.

It is the earnest desire of the Committee of Lloyd's Register, as it is that of the Committee of Lloyd's, that the most amicable relations should at all times be maintained between the Surveyors to Lloyd's Register and Lloyd's Agents.

3. Duties of Non-Exclusive Surveyors.—With reference to the duties of Non-Exclusive Surveyors, as set forth in the Warrant of Appointment, it should be particularly noted, as regards Damage Surveys, that the Society's Non-Exclusive Surveyors are authorised to hold Damage Surveys on *any* vessel, whether holding the Society's classification or not, when called upon to do so by,

or with the consent of, the Owners or their Representatives, and to make recommendations for repairs, if necessary.

In such cases inconvenience and delay in the settlement of claims between Owners and Underwriters will be avoided if reports, setting forth the results of the surveys, are issued to the interested parties on Report Form No. 10. (*See* pars. 176–192 on Damage Surveys.) The Surveyor should accordingly, in every case of the kind, offer his services for the purpose of making out a Damage Report.

Further, in the case of classed vessels, but not in the case of unclassified vessels, the particulars of the survey must be reported to the Committee on the Official Report Forms Nos. 8 and 9, concluding with the Surveyor's recommendation as to the classification of the vessel.

Certificates as the result of such surveys and/or repairs are to be issued on Forms B and B1 for the hulls and machinery of classed vessels and Forms C and C1 for the hulls and machinery of unclassified vessels. (*See* pars. 5 and 8 *re* Certificates.)

4. Unofficial Surveys and Services.—The Society's Non-Exclusive Surveyors, *in their official capacity*, are not to undertake (*without the consent of the Committee being specially obtained, by cable if necessary*), any of the following services:—

(a) Surveys of other than classed vessels to ascertain condition, apart from any question of damage from accident or other casualty.

(b) Surveys on condition either of classed or unclassified vessels (excepting yachts, *see* pars. 271–275), at the request of prospective purchasers.

(c) Surveys on goods or cargoes to ascertain the extent of damage, if any, held at the request of Lloyd's Agent or other interested parties.

(d) Acting as Arbitrators.

(e) Undertaking the valuation of Ships or their Machinery.

(f) Making Affidavits.

(g) Making any statement of Average.

Such surveys may be carried out by the Surveyors in their capacity of Marine Surveyors, and any documents issued thereon should bear no reference, either in the heading of the paper or by rubber stamp or otherwise, to their official position. A copy of every report of such survey and/or certificate issued in connexion therewith should be forwarded to the Society's London Office for the Committee's information.

5. Interim Certificates for Classed Vessels.—The only form of certificate authorized by the Committee to be issued by the Society's Surveyors, as the result of surveys held by them on vessels holding or recommended for the Society's Classification, is Certificate B for the hull of a vessel, and Certificate B1 for the engines and boilers.

6. Mode of Concluding Interim Certificates for Classed Vessels.—Should the Surveyors find a vessel to be in such a condition as in their opinion to be fit to carry dry and perishable cargoes and so to report her to the Committee, the words "dry and perishable cargoes" may be added in the space provided on the certificate form.

Further, if upon survey of damage or supposed damage it be found that no important damage has been sustained, so that the sea-going efficiency of the vessel is not interfered with, the Surveyors are at liberty to add the phrase

"Subject to permanent repairs being effected at the first convenient opportunity "

or

"Subject to the vessel being placed in dry dock for further examination at the first convenient opportunity "

as the case may be, to the Interim Certificate.

In any case in which a Special Survey (or Boiler Survey) is due and has not been held or completed a note should be added at the end of the Certificate that "The S.S. No. . . . became due in and should be held before the expiration in of the year of grace allowed by the Rules," or "The Boilers of this vessel became due for survey in"

7. Recommendations must agree with Official Report.—The Committee rely upon care being taken when the forms of Interim Certificate, B and B1, are employed that the facts are clearly set forth, and that the statement of the recommendation as to the class, agrees precisely with that upon the Official Report to the Committee.

8. Interim Certificates for Unclassed Vessels.—In the case of surveys held on damage and/or repairs to vessels not holding the Society's Classification, Certificates may be issued on Form C for the hull, and C1 for the engines and boilers.

Upon reference to Form C, it will be noted that the Surveyors are authorised to state thereon that all repairs (*i.e.* permanent or temporary) executed, under their survey, to an unclassified vessel have been completed to their satisfaction.

In the event of no repairs being in their opinion necessary, the wording of the form may be altered to correspond with the facts, but it is important that Surveyors should confine themselves to an expression of opinion whether or not the vessel "so far as seen" or "so far as the accident is concerned" is fit to proceed on her voyage with or without cargo as the case may be.

The Surveyors should avoid adding to the certificate any form of words that would have the effect of giving an unclassified vessel, of the scantlings of which they can have no information, a *general* certificate of fitness to carry dry and perishable cargoes.

9. Marine Engineers, Employment by Society's Surveyor.—In districts where the Society is represented only by a ship Surveyor, the latter is required, in cases which may arise where surveys of the boilers or machinery of vessels are necessary on behalf of the Society, to avail himself of the services of a competent and disinterested Engineer, on whose reports the Committee will be prepared to act. In such cases the reports to the Committee must bear the signatures both of the Engineer carrying out the survey and of the Ship Surveyor, while all reports or certificates issued to the Owners or their Representatives for such surveys should state that the Society's Surveyor has been assisted by the Engineer, and should be signed by the Ship Surveyor as "Surveyor to Lloyd's Register of Shipping" and by the Engineer as "Marine Engineer".

Particulars as to the position, &c., of the Engineer who may be employed on these occasions should be forwarded to the London Office.

Similarly, at Loading Port Surveys held on refrigerating machinery and appliances, if the Ship Surveyor has any reason to suppose, from the results obtained by the machinery or other causes that the machinery itself is not in good condition, so that a detailed inspection is advisable, he should obtain the assistance of a competent and impartial Engineer in making this inspection, and the reports of surveys and certificates should be signed both by himself and the Engineer as set forth in the paragraph above. (*See par. 156*).

10. Transmission of copies to the London Office.—It is the duty of the Surveyors to forward to the London Office of the Society a copy of every report or certificate which they furnish to Owners or others, also, in the case of any survey of whatever character held on a vessel, classed in the Society's Register Book, particulars must be furnished to the Committee on report form No. 8 (hull) and No. 9 (engines and boilers).

11. Reciprocal Duties of Ship and Engineer Surveyors.—When a Ship Surveyor receives requests for the survey of new steam vessels, it will be his duty to inform the Engineer Surveyor for the district in which the engines and boilers are proposed to be constructed, giving him the names of the Engine and Boiler Makers and all other necessary particulars as promptly as possible, in order to avoid any inconvenience which might arise from the absence of early intimation.

Similarly in any case where it comes to the knowledge of a Ship Surveyor that a classed vessel is to have new boilers fitted, or repairs effected to the machinery, or that damage to the machinery or boilers has been sustained, it will be his duty to apprise the local Engineer Surveyor of the circumstances.

The Engineer Surveyor, on his part, should inform the Ship Surveyor of any cases that may come under his notice which require the services of the Ship Surveyor.

The fees charged for surveys of machinery and boilers should, with the amount of all expenses connected therewith, be collected with any fees charged for the survey held at the same time on the hull of the vessel.

12. Second Surveyor's Duties and Fees.—In ports where only one Surveyor is stationed and it is necessary to select a competent person on the spot to join as second Surveyor in special surveys No. 3 of iron and steel vessels, and re-classification surveys of wood and composite vessels, it is not intended that the second Surveyor shall join the Society's Surveyor in a detailed and continuous survey of the vessel or in any way relieve the Society's Surveyor of his responsibility. In such cases, the second Surveyor need only be called in when the vessel has been opened up for examination, in order to enable him to form an opinion as to the general condition of the vessel, and a small fee only should be paid for his services.

13. Second Surveyor, Wood and Composite Vessels.—In undertaking the survey of wood and composite vessels (including yachts) Surveyors should pay particular attention to the instructions in pars. 159 and 269 regarding the employment of a second Surveyor.

II.—SURVEY OF NEW WORK.

A.—GENERAL.

14. Submission of Plans.—In all cases in which it is intended to build vessels for classification in the Register Book or Yacht Register, plans, as prescribed by Section 2 of the Rules for Steel Vessels, showing the proposed dimensions, scantlings and arrangements, must in the first place be submitted by the Builders through the local Surveyors, for the approval of the Committee.

It should be stated if the proposed vessel is a sister ship to one previously constructed by the same or other Builders.

In the case of yachts to be built for the International Rating Class, either plans or a specification of the yacht (on the proper

form) showing the scantlings and the materials proposed, should accompany the application for survey.

15. Structural Details.—Important structural details such as stern frames, if of special design, must not be sanctioned upon the Surveyor's individual responsibility, but must always be submitted for the Committee's approval, in order that they may be considered in the light of the wide experience and accumulated data which are available in the London Office.

16. Deviations from the Rules in Plans.—In submitting cases for the consideration of the Committee, it will be the Surveyors' duty to draw attention to any deviations from the requirements of the Rules which may exist in the plans, and to express their opinions thereon, also to ascertain and state whether the deviations are proposed for any special object or have arisen through inadvertence. Care should be taken, however, not to disfigure the plans by erasures or corrections. When such corrections are deemed necessary, they should be embodied in the Surveyors' letters.

17. Deviations from the Rules allowed.—Deviations from the Rules will be allowed, provided they are submitted to the Committee and considered by them to be equivalent to the requirements of the Rules. The Builder is required to obtain the Owners' sanction to such deviations, when the Committee deem it to be necessary.

18. Approval by Telegram.—The Surveyors should, when desired by the Builders, state whether it will facilitate their arrangements with respect to the ordering of material or otherwise, if the approval of the principal scantlings be communicated to them by telegram.

19. Formal Request for Survey.—*Before the survey is proceeded with*, the Surveyors are to obtain, from the Builders or Owners, a formal request for survey during construction, and to forward it to the Secretary, who will then authorize the Surveyors to undertake the inspection. Request form No. 1 (ships and machinery) or No. 2 (yachts and machinery) is to be used for this purpose.

20. Survey.—It will then be the duty of the Surveyors carefully to examine the vessel and machinery throughout construction, in order to see that they are being built strictly in accordance with the Rules and the approved plans, and that the workmanship and materials are satisfactory.

21. Accurate Measurements.—The Surveyors must not, in any case, calculate the scantlings, equipment, &c., of vessels, or the working pressure of boilers, or sizes of shafting, upon dimensions furnished by the Builders, without confirming them by actual measurement of the vessels or machinery, as the Committee require the Surveyors to satisfy themselves of all such dimensions by personal measurement.

22. Deviations from Rules or Plans during construction.—In the event of any important deviation being made from the Rules or the approved plans during the progress of the work, the attention of the Builders should at once be called to the matter, and unless the requirements are arranged to be carried out as approved, written notice of the same should be given to the Builders and the facts submitted forthwith for the consideration of the Committee.

23. Deviations from Approved Plans.—The Committee desire it to be clearly understood that deviations from the approved plans must in no case be permitted by the local Surveyor without consultation with the Principal Surveyor of the district or reference to the London Office; further, in any instance in which it is found impracticable to carry out the arrangements shown on the approved plans, and the Builders do not agree to fit an equivalent arrangement, the particulars must be promptly reported to the London Office for the Committee's consideration.

In important matters the approved plans must not be departed from without the proposed alternative arrangement being submitted for the consideration of the Committee. The corrections should be clearly indicated using a different colour ink if necessary (*see also par. 34*).

24. Workmanship.—During the survey special attention should be directed to the necessity of insuring that the workmanship is

of the very best description throughout, and the Committee will hold the Surveyors personally responsible for the workmanship in vessels or machinery being built under their survey.

Whenever the existence of objectionable workmanship or material is observed, prompt and firm measures should be taken to have the unsatisfactory portions rectified, and the vessels or machinery completed in a thoroughly efficient manner, in order that the public may be assured that the Society's surveying duties are faithfully carried out.

25. Autogenous Welding.—Regulations have been adopted by the Committee regarding the construction of the hulls, engines and boilers of vessels by means of Autogenous Welding.

(a) If it is desired to employ welding in the construction of a vessel or in any member of a vessel's structure subject to severe alternating stresses, it is permissible to use only a system of electric welding which has been approved by the Committee as having satisfied the "Tentative Regulations and tests to be complied with by all Systems of Electric Welding for which the approval of the Committee of Lloyd's Register of Shipping is desired." (*See par. 114.*)

(b) The following minor and non-structural items in vessels building to the Society's classification are not subject to restrictions regarding the system of welding which may be employed :—

Deck Rail Stanchions to Plating.

Fastenings for Detachable Rail Stanchions.

Joints of Continuous Railing Rods.

Attaching Deck Collars (L Rings) around Ventilators.

Attaching Deck Collars (L Rings) around Funnel.

Attaching Cape Rings.

Attaching Galley Fixtures to Plating.

Attaching Bath and other Fixtures in Officer's Quarters.

Attaching Cowl Supporting Rings to Ventilators.

Butts of Bulwark Rail.

Skylights over Galley.

Engine Room Skylight.
Engine Room Stairs and Gratings.
Boiler Room Stairs and Gratings.
Attaching Engine and Boiler Room Stairs and Gratings to Plating.
All Stairs and Ladders, including Rail Attachment.
Door Frames to Casings, Hinges, &c.
Clips for attaching Cleading to Casing.
Entire Screen Bulkhead.
Coal Shoots.
Butts of W.T. and O.T. Boundary Bars on Bulkheads or Floors in Double Bottom.
Ventilator Cowls.
Funnels and Uptakes.
Bulkheads which are not structural parts of the ship.
Partition Bulkheads in accommodation.
Framing and Supports for Engine and Boiler Room Flooring or Gratings.
Cargo Batten Cleats.
Tanks which are not structural parts.
Hand Rails on Exterior and Interior of Deck Houses.
Deck Houses not covering unprotected openings through weather decks.
Reinforcing and protecting angles round manholes.
Joints of W.T. Angle Collars at frames in way of W.T. Flats.

(c) Welding as a means of repair of rudder stocks has not been approved.

26. Autogenous Welding, Tentative Regulations and Tests to be complied with by all systems of electric welding for which the approval of the Committee is desired.

(1) The cost of carrying out the required tests must be borne by the proprietors of the system of welding tested.

(2) All test pieces must be prepared in the presence of a representative of the Society and all tests must be carried out under his supervision.

(3) The steel used in the preparation of the specimens must be ordinary ship steel having a tensile strength of from 26 to 32 tons per square inch.

(4) The welding of all specimens must be executed in accordance with the Company's usual practice.

(5) A chemical analysis must be made of the metal of an electrode and of the deposited material of a weld made by the same electrode.

(6) A series of microphotographs, magnification 100 diameters, must be prepared, showing the structure of the material of the weld, that of the plain plating adjacent to the weld, and that of the actual junction between the original and the added material.

(7) Tensile Tests.—Two sets of tensile test pieces with butt joints shall be prepared, each set consisting of specimens of different thickness, viz.:— $\frac{1}{4}$ inch, $\frac{1}{2}$ inch, $\frac{3}{4}$ inch, and 1 inch, together with a corresponding series of unwelded pieces. Each test piece shall be 24 inches in length by 3 inches in breadth, the breadth to be reduced to 2 inches for a distance of 6 inches on each side of the centre. The surfaces of the welded joints must be machined so that the thickness of the specimen in way of the weld is not greater than that of the plain plate. The average tensile strength of the welded joints thus measured must not be less than 90 per cent. of that of the unwelded plate.

In addition to the above, two specimens 20 inches in breadth and $\frac{1}{2}$ inch in thickness, with transverse butt weld, must be made, suitable for testing in a 300 ton machine. In this case the surface of the welding need not be trimmed but may be left slightly above that of the adjacent plating to the extent that would be adopted in actual practice. Small test pieces must be cut from the plain plate to determine its tensile strength. The tensile strength of the above butt welds should be about 90 per cent. of that of the plain plate.

(8) Modulus of Elasticity.—In order to permit the modulus of elasticity of the deposited material to be determined, two specimens shall be prepared from pieces of mild steel 25 inches in length, 3 inches in breadth, and $\frac{1}{2}$ inch in thickness, by cutting out a central rectangle about 13 inches long and $1\frac{1}{4}$ inches wide, and filling this space with deposited material. These specimens to be machined to the usual test piece form, leaving a central portion, about 1 inch in width, of deposited material only.

(9) Alternating Stress Test.—A flat plate, $\frac{3}{4}$ inch in thickness, and 3 feet in length, to be cut through at a distance of 9 inches from one end, and the two pieces butt welded together. The plate to be then cut into longitudinal strips, 15 in number, $\frac{3}{4}$ inch in breadth, and these strips turned into round bars.

The bar to be tested will be fixed in a lathe running at about 1,000 revolutions per minute, and will be so loaded that a uniform bending moment is applied to that portion of the bar containing the weld. The loads to be adjusted so that for different bars the stress applied will vary from 12 tons per square inch to 6 tons per square inch, and the number of revolutions at which the bars break under each stress to be noted in order that a graph may be drawn.

At an applied stress of ± 6 tons per square inch the welded bars must be able to withstand approximately 5,000,000 revolutions.

(10) Impact Test.—Two specimens, $\frac{1}{4}$ inch and $\frac{1}{2}$ inch in thickness respectively, to be prepared of dimensions 5 feet by 2 feet 6 inches, having a butt weld in the centre parallel to the shorter edge.

The plates to be arranged on supports, spaced 4 feet 6 inches apart, placed parallel to the short edges of the plate and raised about 18 inches from the ground. The specimens should be able to sustain two successive blows from a falling

weight as detailed below, without showing any sign of the fracture of the weld:—

Thickness of Plate.	Weight to be dropped.	Height from which weight to be dropped.
$\frac{1}{4}$ inch	2 cwt.	9 feet.
$\frac{1}{2}$ inch	4 cwt.	12 feet.

(11) The Committee may require, in any particular case, such additional tests as may be considered necessary.

27. Quality of Iron.—The Surveyors are to satisfy themselves that the iron supplied for vessels or boilers being built under their survey is of good quality, and capable of fulfilling the conditions prescribed by the Rules. Care should be taken to examine the material as soon after its delivery in the shipyard as possible; and, as the work progresses, the result of punching, shearing, planing, bending, &c., of the plates, frames, and bars, should be closely examined and, if deemed necessary, special tests applied.

In the event of any difficulty being experienced in dealing with cases where the iron is of inferior quality, the Surveyors should at once bring the circumstance under the notice of the Committee.

Where iron is used for masts, bowsprits and yards, it should be tested by hot and cold test (cold test especially), and the Surveyors should state on their report, or otherwise inform the Committee, in what way they have satisfied themselves as to the quality of the iron.

28. Quality of Steel.—It will be the duty of the Surveyor to see that all steel supplied for vessels or boilers being built under survey, has been manufactured at works recognised by the Committee, and has been tested by the Society's Surveyors, in accordance with the Rules. A list of the Steel Works which have been recognised is printed at the end of the Society's Rules.

29. Advice Notes of Steel Delivered.—With the above object, the Surveyors must be careful to require the production of advice notes signed by the testing Surveyor, also to compare the advice

notes forwarded to them by the Surveyors at the Steel Works, with the material delivered, and this should be done at the *earliest possible stage*, in order to prevent the use of material which has not been duly passed and advised by the Surveyors at the works. The Committee attach great importance to this requirement, as, owing to its non-observance, cases have occurred in which steel that had not been tested by a Surveyor to the Society, or had been rejected by the Surveyors at the steel works, was delivered at the shipyard and was being worked into vessels intended for classification in the Society's Register Book.

The date of receipt should be stamped or written on the advice notes at the local office.

The Surveyors should impress upon Shipbuilders and Boiler-makers the necessity of requiring properly signed advice notes to be produced at the time of delivery, for all material supplied to them, and should also arrange for the advice notes to be kept duly filed at the shipyards or boileryards, so as to be always accessible for reference.

30. Completion of Work on Vessels and Machinery.—It is of the utmost importance that the Surveyors should assure themselves, in every case, by *personal inspection*, that all work in vessels or machinery is fully completed to their entire satisfaction before reporting the same to the Committee for classification; and the Surveyors must not, in any circumstances, accept the statements of others as to the completion of work. The greatest care is necessary in this matter in view of the practice which has obtained with some Builders of leaving unfinished work to accumulate until ultimately portions have been overlooked.

31. Completion of Work in other Districts.—When vessels proceed from the port in which they were built into another district, either for fitting engines or for completion, they are to be visited, and the work in progress inspected, either by the Surveyors of the district to which they have proceeded, or, if the port be within easy access, by the Surveyors under whose inspection they were built; and upon a ship leaving a port for either of the

purposes alluded to, the Surveyor into whose district she has gone should be apprised of the fact, and be otherwise governed as above.

When equipment only has to be supplied, or completed, the inspection should be made by the Surveyors at the port to which the vessel has proceeded.

32. First Entry Report.—Immediately the survey is completed, the Surveyors should make out the first entry report on the form provided for the purpose, and be careful to supply all the information therein required, including the date of each visit. (*See also under the heading of REPORTS.*)

In the case of wood ships which have been salted in accordance with the Rules for Wood and Composite Ships, Section 37, it should be clearly stated in the first entry report whether the *beams* have been salted or not. Where the beams have not been salted, the record in the Register Book will stand thus, "Salted †."

33. Builder's Signature.—It is very desirable that the Surveyors should obtain the signature of the Builder to the report of the scantlings, and description of material employed, at the place therein provided; but he is not to be allowed to peruse the general remarks or the opinions expressed on the case.

34. Plans to agree with Report.—It is important that in all cases the plans which are intended to accompany the report be made in exact agreement with the vessel and boilers *as actually built*, and with the first entry report, as the omission to do this leads to considerable delay and inconvenience.

35. Plans Required for Preparing Certificates.—In the case of iron or steel vessels, in order to allow time for the preparation of the first entry certificate, which contains a sketch of the midship section showing the arrangement and sizes of scantlings, &c., the Surveyors should forward, *in advance of the report*, the approved sketch of midship section, taking care that this drawing is accurate in every detail.

36. Separate Sketch for each Vessel.—In view of the number of vessels frequently built from one set of general plans, and the fact that in many cases the vessels differ in various details, rendering it difficult to distinguish the particular vessel to which the alterations marked on the plans refer, a separate sketch of midship section must be sent in respect of each vessel, with the First Entry Report.

37. Vessels' Names on Plans.—In the case of all plans forwarded to this office, the name of the vessel, together with the port and number of report, to which they have reference, should be clearly written on the *outside* of the plans so as to be easily readable when they are folded up.

B.—NEW VESSELS.

In connection with the submission of plans for new vessels the Surveyors are requested to pay special attention to the following matters, namely :—

38. Omission of Bulkheads.—The Committee will be prepared to consider special requests from Owners to meet the necessities of trade for dispensing in new vessels with one or more of the intermediate bulkheads, provided efficient structural compensation be afforded. (*See Rules regarding Watertight Bulkheads.*)

In connection with the above the Committee desire it to be clearly understood that the intention is to meet cases in which the fitting of an intermediate bulkhead would interfere with the requirements of the special trade in which a vessel is to be employed. The Rule on the subject is therefore to be regarded as applying only to cases in which an Owner makes a special request for the omission of one or more bulkheads to be sanctioned by the Committee, and assigns a reason for such omission; and it will not apply to cases in which a vessel is being constructed by a Builder "for stock account," and in which, therefore, the ultimate purchaser and the intended trade are unknown. *See* pars. 53 (c) and (d).

39. Large Hatchways.—In all cases of the proposed adoption of extra large Hatchways, or where it is proposed to enlarge the Hatchways, the Surveyors should submit, without delay, full particulars thereof, with a plan of the deck, and any suggestions they may have to offer on the case, at the same time stating the trade for which the vessel is intended.

40. Trunk Ventilators.—In all cases where ventilators of large size or of exceptional description are proposed to be fitted, a sketch showing the scantlings of the trunks, and the arrangement of stiffening, is to be submitted for the consideration of the Committee before such ventilators can be sanctioned.

41. Steel Wire Rigging.—In submitting plans of Steel Wire Rigging, it should be stated where such rigging is to be made.

42. 'Tween Deck Scuppers.—As damage to cargo has resulted in some cases from the omission to fit a sufficient number of scuppers with proper pipes attached to them in the 'tween decks, to convey water or leakage to the bilges, the Surveyors should give special attention to the requirements of the Rules in this respect.

Where a partial deck, or a stringer plate only is fitted on the 'tween-deck beams, openings should be left in the stringer between each pair of frames, for allowing the condensation or moisture to find its way to the bilges; and where a complete or partial deck is laid, the Surveyors should satisfy themselves that there is a proper arrangement and a sufficient number of scuppers fitted through the stringer plate within the reversed frames, with pipes attached as provided for in the Rules.

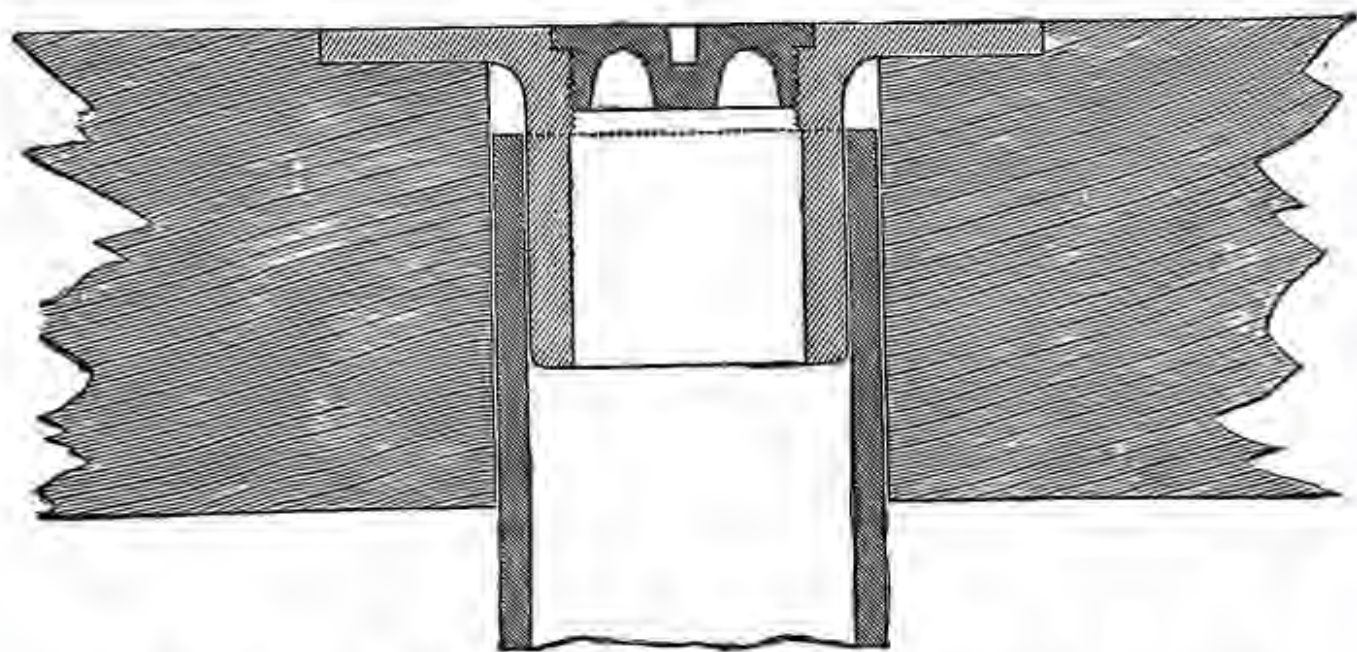
43. Hollow Cope Iron Mouldings.—As serious leakage has in some instances arisen from the use of hollow cope-iron mouldings in the topsides of vessels, all iron mouldings used on the external parts of the hulls of vessels must be of solid section so as to admit of the whole length of the rivets by which the moulding is secured passing continuously through iron.

44. Pumps, Watertight Doors, &c.—In all cases the Surveyors should satisfy themselves that all pumps and watertight doors are

in efficient working order, and should state on the reports that these matters have been attended to.

45. Ceiling on Tank tops.—The Surveyors should see that the requirements of the Rules, Section 31, are in all cases carried out; at the same time, the battens, on which the ceiling, if any, is laid, should be so arranged that water may readily find its way into the bilges. Care should be taken to see that the edges of the ceiling fit close to each other.

46. Tank, Air, and Sounding Pipes at the Decks.—In some instances, leakage has taken place at the connection of the pipes at the decks. The accompanying sketch shows approved arrangements for the connection of such pipes.



47. Testing Gutterways.—All gutterways should be tested by being flooded with water, where possible, to ensure watertightness, as cargoes have frequently been damaged in consequence of this not having been done; and the Surveyors should state clearly on their reports the results of such tests.

48. Stokehold and Engine Room Bulkheads.—Attention is specially directed to the fact that investigation has shown that fires stated to have occurred on board steam vessels, through the spontaneous combustion of coals in coal bunkers, have been attributable to the coal bunkers having been too close to the

boilers and their uptakes. The Surveyors should, therefore, see that sufficient space is allowed in all cases. (*See* Section 27, par. 3, Rules for Steel Ships.)

49. Position of Donkey Boilers.—As regards the position of Donkey Boilers, attention is called to Section 27 of the Rules regarding "Engine and Boiler Space."

50. Rudder Frames. — Cases having occurred in which the moulding of the rudder frame immediately above the upper pintle, as shown at section A B, has been unduly reduced, care should be taken to see that the rudder frames are made of a more satisfactory form at this part, as indicated by the dotted line, when the upper pintle is fitted in the position shown on the accompanying drawing.



1. Details of Construction and Workmanship.—The Committee having had under consideration the subject of differences of practice at various ports as regards questions of detail in the construction of vessels, the Surveyors are requested to give their careful attention to the following instructions in connexion with vessels built under their survey.

(1) In all cases the scribe board should be checked for the rule dimensions before the frame setting is commenced. It is most important that any departure from the approved dimensions should be considered as early as practicable.

(2) Where double bottoms are fitted, the rule widths for the margin plates may be reduced aft of the $\frac{3}{8}$ length at the after ends of vessels, and the rivet attachments should be in accordance with the Rules.

(3) Manholes in the floors and girders of double bottoms are in some cases made larger and more numerous than is

necessary for rendering all parts accessible. The Surveyors should should not allow manholes too large in size to be cut in the ordinary floors in the peaks of vessels.

(4) **Lightening Holes.** — The Surveyors should not sanction any unnecessary lightening of the vertical webs in holds, stringer plates, &c., by means of holes other than those shown on the plans approved by the Committee.

(5) Rivet holes in the liners or slips to frames and beams should not be punched *larger* than the corresponding holes in the plating and frames or beams.

(6) In all cases where flanging is adopted, the faying surface on each side of the rivet hole should not be less than is required where ordinary angles are fitted; and where the flanges do not conform well with the frames and reverse frames, the flanged plates should be removed and accurately fitted before the outside plating or the inner bottom is wrought.

(7) It has been observed that the use of felt or canvas in the construction of ballast tanks is not discontinued in all cases. The Surveyors should take care that the requirements of the Rules, Sec. 10, par. 13, as regards workmanship and testing, are carried out.

(8) In iron or steel vessels the greatest care should be taken that all surfaces are closely fitted, and that all rivet holes are made properly to conform with each other, also that where burrs occur, from punching or shearing, on faying surfaces, the same should be carefully chipped off before the surfaces are brought together. Unfair rivet holes should be rimed and not faired with a cold chisel, and the countersinking should be in accordance with the Rules.

(9) Where coaling hatchways are cut in way of the engine and boiler openings in iron or steel decks required by the Rules, care should be taken that compensation is provided by fitting doubling plates at the sides of such hatchways; and at the corners of large hatchways, doubling plates or other additional strengthening should be fitted.

(10) The angle lugs to receive keelson angles should be long enough for efficiently riveting the keelsons to them.

(11) The size and number of rivets in beam knees should in all cases be in accordance with the Rules, and the Surveyors should ascertain that the beam knee rivets are sound.

(12) The tapered slips to lapped butts should be of sufficient length to avoid sharp bends in the plates, and be properly finished and chipped fair with the outside edges of the plating.

(13) The caulking edges of outside plating must be planed or chipped in all cases.

(14) Where keelsons or stringers are connected to bulkheads by bracket plates, care should be taken that the brackets are of sufficient size with enough rivets to ensure efficient connection.

(15) Strong hold beams between the engines and boilers of steamers have in some cases been omitted, and the Surveyors should take special care to see that these beams are fitted in all cases as required by the Rules.

(16) The rivet holes in the landing edges of outside plating in way of butts should be arranged so as to be kept well clear of the butt, instead of coming in the joint as is sometimes found to be the case, which should be avoided wherever practicable.

(17) Special care should also be taken to maintain the continuity of strength at abrupt terminations of erections and in way of deck openings, and ends of partial double bottoms.

52. Record of Double Bottoms.—The Committee have had under their consideration the subject of the record of double bottoms in the Register Book, particularly in connexion with the case of a steamer in which some of the tanks were intended for water ballast only, while others, although available for water, were

intended to carry oil fuel ; and they have arrived at the following decisions, viz. :—

(i) The full length of the double bottom is to be recorded in the Register Book irrespective of the uses to which the different parts may be put. This length is to include dry tanks when they are watertight compartments, in which case they should be tested as required by the Rules for Water Ballast tanks.

(ii) The total capacity of the double bottom, excluding dry tanks, is to be recorded, and this capacity is to be estimated in tons of salt water.

In forwarding the First Entry report of a vessel, it should be stated clearly whether a dry tank is a watertight compartment, or has communication with the bilge through the margin plate, or has open manholes without covers in the top plating.

53. Record of Bulkheads.—The actual height to which the watertight bulkheads extend is recorded in the Register Book, and Surveyors are reminded of the necessity of making it clear, in all First Entry Reports, to what height the several bulkheads are respectively carried so as to make the records in the Register Book correct.

(a) In Full Scantling Vessels in which the number of bulkheads and height of the bulkheads comply with the Rule requirements, the record in the Register Book will be, for example :—

“ 7 BH.”

(b) In vessels whose draught does not exceed that which could be assigned as a Complete Superstructure Vessel, *i.e.* vessels hitherto designated as of the Shelter Deck type, the Rules permit the bulkheads, with the exception of the collision bulkhead, to be carried to the second deck only, and in such a case the record would be :—

“ 7 BH (Collision Bulkhead to Weather Deck).”

(c) In cases described in par. 38, in which the Committee have agreed to permit one or more of the bulkheads required by

the Rules to be dispensed with, a special notation is required to be made in the Register Book.

For example, where the Rules require 7 watertight bulkheads to be fitted, and permission has been given by the Committee for one of the bulkheads to be dispensed with, the notation would be :—

“1 Intermediate Bulkhead in Forward Hold dispensed with.
6 BH.”

(d) If, instead of dispensing with the whole bulkhead, the portion in the 'tween decks only has been omitted, the record would be :—

“Intermediate 'tween deck bulkhead in forward hold
dispensed with.

6 BH to Upper Deck ; 1 BH to Second Deck.”

54. Removal of Mill Scale.—Attention is called to Section 39, par. 2, of the Rules, as follows :—

(a) “It is recommended that cementing or painting be delayed as long as possible, so that the removal of the black oxide or ‘millscale’ may be facilitated.

(b) “Experience has shown that, as regards durability, it is highly desirable to place steel vessels in dry dock within a reasonably short period after being launched, for the purpose of cleaning and re-coating the bottom.”

55. Preservation of Steel Ships.—In connexion with this matter, attention is also directed to the following circular, issued to Owners of steel vessels :—

“With reference to the question of the liability of vessels built of steel to deterioration from corrosion, I am directed to acquaint you that the Committee of this Society, who have had this subject under their notice, think it right to place the results of their experience in regard thereto before Owners of this description of property.

"It is found that, in cases where the surfaces of vessels built of steel have not been properly scaled in the first instance and then protected with paint of good quality, the material is liable to great deterioration from corrosion, particularly in those portions exposed to the action of salt water. The Committee have no doubt that, with this information in your possession, you will see the desirability of taking the precaution of having new steel vessels belonging to you placed in dry dock and examined, within six months from the date of launching, so that, if symptoms of corrosion are found, the bottom may be properly scaled and coated.

"I am also directed to point out the importance of having the inside and outside surfaces of steel vessels kept free from scale, and properly painted."

56. Constituents of Cement.—In all cases the Surveyors are by personal examination to satisfy themselves that the cement used for the protection of iron and steel vessels is of good quality, well laid on in a substantial and satisfactory manner, and thoroughly set and hard before being covered by ceiling or otherwise.

They must be careful to see that no furnace ashes or other refuse matters are mixed with the cement, as such substances are considered to be quite unsuitable for the purpose, and their use as a substitute for *sand* (as admitted by the Rules) cannot be sanctioned by the Committee. For this purpose clean gritty sand or some equally suitable and approved substance should be obtained.

57. Patent Cements.—Where asphalt, enamel cement, or similar compositions are to be used, the same must be sanctioned by the Owners, and samples are to be submitted for the approval of the Committee.

58. Anchor and Chain Test Certificates.—The Surveyors are to see that proper certificates of test are furnished for anchors and chains and attachments supplied for vessels built under survey and to compare the marks on the anchors and chains with the

certificates in order to satisfy themselves as to the identity of the articles. If found in order, the name of the vessel should be endorsed on the certificates.

For description of the approved methods for testing anchors, chain cables, &c., and illustrations of the markings, *see* pages 42-57.

59. Weights of Heads in Stockless Anchors.—The Surveyors should satisfy themselves by examination of the drop test certificates attached to the Statutory certificates of approved types of patent stockless anchors, when supplied to classed vessels, that such anchors comply with the requirements of Tables 53 and 54 as regards the weight of the head being three-fifths the total weight of the anchor.

The weight of the head may include the weight of the pin, also the weight of the "cup" fitted in the head of Sykes' "Britannic" anchor, and of the "blocks" fitted in the head of Hall's patent anchor, but it must not include the weight of the cast iron balls used in the "crown pin and ball" type of stockless anchor.

60. Weights of Chain Cables.—In all cases the Surveyors must see that the chain cables are up to the weights prescribed in Tables Nos. 53 and 54, which are *minimum* weights and must be adhered to, to entitle vessels to the figure 1 for equipment. In the event of any deficiency being found in this respect, the Surveyors should *at once* call the attention of the Builders to the matter, and report the circumstances to the Committee.

61. Galvanized Anchors and Cables.—In some cases of galvanized anchors and cables, a notation has been made upon the statutory certificates of test, after they have been issued by the Superintendents of Proving Houses, of the weight of zinc stated to have been added in the process of galvanizing. Such a course is quite irregular, being tantamount to tampering with a statutory document, and should any certificates of test be found on which such insertions have been made, they should at once be forwarded to the London Office.

The Committee do not recognise any weight that has been gained in galvanizing as part of the weight of an anchor or cable, so far as regards the requirements of this Society's Rules.

62. Anchors and Chains used for launching vessels.—In some instances the anchors and chains supplied for the equipment of a vessel have been used in launching her, thereby subjecting them to a very severe strain, and in some cases to a strain beyond that which they might reasonably be expected to withstand. In view of the risk of a probable injury to the anchors and chains, the Committee disapprove of this practice, which they suggest should be discontinued, and in all cases special anchors and chains should be kept for the purpose of launching vessels.

C.—TESTING OF STEEL.

63. General.—In testing steel intended for use in the construction of ships or boilers to be built under the Society's inspection, the Surveyors must be governed by the requirements laid down in the Rules for Quality and Testing of Materials.

64. Formal Request for Testing.—In all ordinary cases, when the fees are to be paid by the Steel Manufacturer, the Surveyors are in the first instance to obtain from the Steelmakers, and forward to the Secretary, a formal request for the testing of the material. Request forms, Nos. 5, 6, 7, & 8, are provided for this purpose; also Request forms Nos. 5*, 6*, 7* and 8* for attendance during the year. In cases in which the request for testing or examination of steel or other material and the payment of fees are made by the purchasers or their agents, &c., Request form No. 8a should be employed.

65. Duties of Surveyors in Steel Testing.—The Surveyors engaged on Steel Testing should realise that their duty is not only to witness the actual tests specified by the Rules, but also to see that the system of marking all plates and bars, to enable them to be traced to their original charge, is being properly carried out, and that the marking, selecting,

storing and preparation of the test pieces are regularly and satisfactorily performed in a *bona fide* manner. They should frequently make check tests to ensure that the pieces actually submitted for testing are cut from the plates selected by the Surveyor, and other check tests should be made to see that the tensile strength and the qualities of other plates from the same charge are in uniformity with those of the first selected pieces. These check tests should be carefully watched by the Surveyors to ensure that no substitution of other pieces is made, and that no heat treatment is given to the test pieces.

A record should be made by the Surveyor of all the check tests made.

It should also be the practice of the Surveyor occasionally to change his stamps, and as often as possible he should mark the test pieces on the sheared edges to ensure that no subsequent heat treatment is given them without his knowledge.

In all cases the Surveyor should realise the great responsibility devolving upon him, and if in any instance he has a reasonable doubt either as to the quality of the material tested or as to the test pieces submitted to him, he should require such additional tests to be made as he may deem expedient, and in no case is he to sign the advice notes or pass material of which he has any doubts as to the quality.

If the Surveyor finds that, from any cause, the material submitted for test is not generally of the usual uniform quality, he should acquaint the Principal Surveyor of the district, who will make investigations and, if necessary, report the matter to the Committee.

66. Occasional Attendance.—In cases of Occasional Attendance it is most important that the Surveyor shall closely follow the instructions in par. 3 of Section 5 of the Rules for Quality and Testing of Materials.

He should be careful in the first instance to obtain the Makers' certificate that the material has been tested as required in the Rules. He should then, before making any of the prescribed

tests, inspect all the tensile and bend pieces tested by the Makers. Moreover, the Surveyor should himself see the test pieces which he selects marked with his stamp and also as far as practicable see them cut from the plates or bars. When possible he should stamp the sheared edges of samples in order not only to prevent substitution of test pieces, but also to prevent improper heat treatment being given to the pieces before test.

The check test pieces must be selected by the Surveyor from the plates or bars, and not from shearings previously detached from them, and when marked by the Surveyor for testing they shall be followed, as far as practicable, through the different stages of preparation until the tests are completed.

No material must be despatched from the works until the tests have been satisfactorily complied with, and any failure to comply with the Society's requirements should be at once reported to the Committee.

67. Facilities for Tracing Material.—Attention is specially directed to par. 9 of Section 1 of the Rules for Quality and Testing of Materials, viz. :—

“The Maker is to adopt a system of marking the ingots, billets, slabs, plates, bars, and other material, which will enable all finished material to be traced to the original charge, and the Surveyor must be given every facility for tracing all plates and bars to their respective charges, and for witnessing the required tests. When the Surveyor is satisfied with the material and with the results of the tests, he is to be furnished with two copies of the advice notes of the material for his signature, one of which is to be forwarded by the Manufacturer to the Shipbuilder (or Boiler Maker), and the other is to be forwarded by the Surveyor to the Surveyors at the port where the vessel or boiler is to be built.”

68. Official Test Books.—All tests made by the Surveyors should be duly entered by them in the Official Test Books, in order that there may be a permanent record which will enable all necessary

details to be furnished at any time, in the event of such being required. These books, when filled up, are to be retained in the local office.

69. Advice Notes.—The Surveyors engaged at the steel works will be held responsible for *promptly* forwarding to the local Surveyors at the shipyards and boiler works, the advice notes of the material passed, in order that they may be compared at the *earliest possible stage* with the material delivered. A memorandum of the date of despatch of the advice notes must be made in the Test Books.

70. Cold Bend Tests.—Instances have occurred in which steel plates have failed in being cold flanged although they have previously withstood satisfactorily the usual mechanical tests, and it has been suggested that the failures in some of these cases, in which the plates were comparatively narrow, were due to the plates having been rolled in long lengths and having therefore been submitted to less than the usual amount of cross rolling.

In selecting the cold bend tests required by the Rules the Surveyors should be careful to take a larger proportion of cross bends from plates rolled in long lengths, and generally from plates which have had less than the usual amount of cross rolling than is customary in the cases of plates which have been subjected to a normal amount of cross rolling. They should also select the cold bend tests required from every plate intended for cold flanging so that the test piece will be bent in the same direction as the plate.

71. Rejected Material to be defaced.—The Surveyors at steel works will also be held responsible for seeing that, in all cases where material fails to withstand the prescribed tests, the brands approved by the Committee and stamped on the plates, beams, or angles are defaced by punch marks, as required by the Rules; and the Surveyors must satisfy themselves as to the manner in which the rejected material is being disposed of.

72. Important Cases to be Reported to Committee.—In all important cases in which the material tested does not satisfy the

requirements of the Rules, full particulars should be submitted for the information of the Committee.

73. Quarterly Returns of Steel Tested.—The Surveyors are to furnish for the Committee's information a quarterly statement (on Return No. 9) showing the quantity of steel tested at each of the Steel Works, and the amount rejected.

74. Tests Not Prescribed in the Rules.—In cases where steel and other materials are not required to be in accordance with the Society's Rules, the Committee will approve of the Surveyors testing steel plates, sections and bars, iron and steel forgings and steel castings, to suitable specifications other than those stated in the Rules, if these are mutually agreed upon by the Manufacturers and Purchasers. In the cases of rolled material tested under

these conditions, the Brand  must not be used, this being reserved exclusively for material conforming in all respects to the requirements of the Society's Rules.

The Committee will also approve of the Surveyors testing iron and steel tubes and pipes, copper and brass sheets, plates, and tubes, and similar material used in constructional work, as to which there are no tests mentioned in the Society's Rules, provided the tests actually specified are considered to be of a satisfactory character and are mutually agreed upon by Manufacturers and Purchasers.

In cases where no such tests have been mutually agreed upon, specifications for different materials which are suggested as being suitable for adoption by the mutual agreement referred to will be found in the Book of "Tests of Materials."

It is essential for the efficient performance of the testing that full particulars of the tests required by the specification should, in the first instance, be communicated to the Society by the parties concerned. Particular attention should be drawn to any unusual provisions of the specification.

Before undertaking any services such as are described in the preceding paragraphs the Surveyors must obtain from the parties making the request a signed Request Form No. 8a, as it is to be clearly understood by all parties concerned that the Society only undertakes such duties as those referred to in this memorandum subject to the Rules of the Society, Section 26 of which reads as follows :—

“While the Committee use their best endeavours to ensure that the functions of the Society are properly executed, it is to be understood that neither the Committee nor the Society are under any circumstances whatever to be held responsible for any inaccuracy in any report or certificate issued by the Society or its Surveyors, or in any entry in the Register Book or other publication of the Society, or for any error of judgment, default or negligence of the Surveyors, or other Officers or Agents of the Society.”

D.—INSPECTION OF FORGINGS AND CASTINGS.

75. Large Forgings.—Large forgings intended to be used in the construction of ships or machinery being built under the Society's inspection should be examined while in course of being forged, and, in addition, in the case of shafts, when being rough turned.

For the convenience of Shipbuilders and Engineers, forms (Request Nos. 11, 12, and 12*) have been prepared for supplying the particulars of forgings ordered by them; and these forms, immediately upon receipt, are to be forwarded by the local Surveyors directly to the Officer who will attend to the inspection of the forgings. Although the filling up of the forms will devolve upon the Shipbuilders and Engineers, it will be the duty of the Surveyors to see that the information is furnished in due course.

The forms of particulars should be filled up in every case, whether or not the forgings are to be made in the same locality as that in which the vessel or machinery is being built.

The examination at the Manufacturer's works is, in all cases, to be made by the Inspector of Forgings, wherever one is appointed for the district, but in the absence of a specially appointed Inspector the local Surveyors are to undertake the duty.

As regards engine forgings, it is considered that the most suitable time for the inspection of shafting is during the operation of rough-turning and when the shafts are finished. In all cases where the shafts are rough-turned at the forges, the inspection should be made by the Officer whose duty it is to attend there; but when this operation is conducted at the Engineer's works, the shafting should be examined there by the local Engineer Surveyor under whose inspection the machinery is being constructed, who should make a note to that effect on his report.

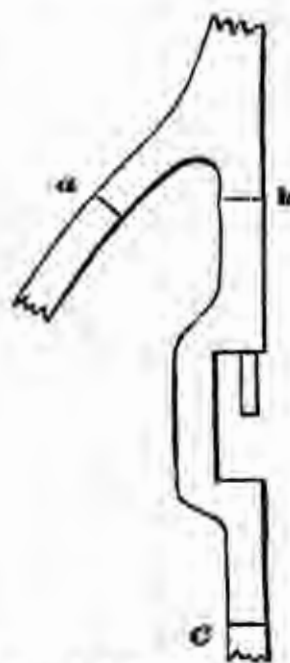
While the Society's Officers attending forges will thus be relieved of the necessity of inspecting each individual engine forging whilst being forged, it is the Committee's wish that they should still keep themselves accurately informed of the practices adopted in the various forges visited, and in the event of objectionable methods of construction coming under their notice, the attention of the Maker should be drawn thereto, and if this does not effect a satisfactory alteration the case should be fully reported to the Committee.

76. Welding of Forgings.—In inspecting the manufacture of ship forgings the Society's Officers should give special attention both to the welding and the position of the welds.

From experiments which have been made it has been found that to insure sound welds in heavy forgings, steam hammers should be employed instead of the sledge hammers formerly used, and in view of this the welding of forgings exceeding forty square inches in sectional area is required by the Committee to be done with steam hammers; also the welds, when of the form shown, should have the V angle not more than 60° . The old plan of screwing the parts together at a welding heat is not found to be satisfactory.



It has been the practice in some works to place the "shut" of the lower part of a stern frame in the sole piece. This is considered to be very objectionable; and the Surveyors should inform Manufacturers that the weld should be placed in the lower part of the posts in all cases, as such connections in the sole piece will not be sanctioned. In Rudder frames the welds of the upper part of the frame to the main piece should not be placed close together as indicated in the sketch at *a*, *b*; but should be arranged so as to be well clear of each other as indicated by *a*, *c*.



77. Shaft Forgings.—As regards material, the Society's Rules permit shafts of all kinds to be made either of ingot steel or of iron. They also permit the use of scrap steel for all shafts except screw shafts. When ingot steel is used, it is required to conform to the test requirements specified in the Rules, but in the cases of scrap iron and scrap steel no tests are required, owing to the impossibility of ensuring that the part of the forging, from which tests can be taken, has been made of the same quality of material as the remainder of the shaft.

The Surveyors are required frequently to visit the Forges where shafts are made in order to see that the general practice adopted is satisfactory, and that the plant is suitable for the size of forging made. Their supervision should embrace the selection and piling of the scrap or bars for blooms, as well as the actual forging of the shafts. They are required also to examine each shaft while it is being rough turned and when it has been finished, and, in the case of screw shafts, they are to satisfy themselves that the liners are sound and well fitted.

As regards the methods of manufacture, the following suggestions are considered to be important.

Ingot steel of the quality prescribed in the Society's Rules is considered to be suitable for all shafts, but many of the Society's

Surveyors are of opinion that iron of high quality is preferable for screw shafts of all but the largest sizes. Scrap iron is considered to be suitable for all shafts when great care is taken properly to clean and select the scrap, but it is generally thought that the best iron shafts are those in which the blooms, from which they are forged, are made from iron bars of good fibrous quality, rolled either from new iron or from scrap iron blooms.

Whilst sound forgings can be made from scrap steel, such forgings are neither so good nor so reliable as those made from ingot steel or from good iron, and the use of mixed iron and steel scrap is objectionable and should be prohibited.

In regard to this it should be noted that in some Forges each piece of scrap used is sheared into two, after the cleaning operation, the cut section enabling steel to be identified and separated.

In nearly all Forges satisfactory mechanical means are adopted for cleaning the scrap used, and it is considered that forgings should not be accepted from Works where this is not done, or where care is not taken to separate steel from iron scrap.

Attention is drawn to the fact that the use of straight shafting, turned only at the couplings and bearings, gives less opportunity for defects of forgings to be discovered than occurs where the shafts are turned all over. The practice of using black shafting has, however, now become rare with high-class Firms.

In some cases the practice of Repairers to stock forgings in order to expedite repairs leads to a large forging being sometimes used for making a small shaft. The heavy turning necessitated by this removes the best of the material and leaves the shaft weaker than one of the same diameter made from a forging of suitable size.

To prevent this practice, and to ensure better supervision of shafts, especially in Works where there are always a large number in hand at one time, each finished shaft should be numbered for identification, and the Surveyor should record upon his report of the shaft, or of the finished machinery, the dates of each inspection made. Further, in cases where shafts are sent unfinished from

the Forges to be completed at other Works, or to be kept as stock shafts for repair work, each unfinished shaft should be stamped with an identification number. The Surveyor under whose inspection the shaft is finished will thus be able to identify the shaft.

In cases where the Surveyors are of opinion that the methods in use in any Forge are not satisfactory, they should communicate with the London Office, when it will be considered what steps are necessary to be taken in the matter.

78. Report on Forgings.—When the forgings have been inspected, a report (on Report No. 6 or 7) should in each case be made out by the inspecting Officer, and, if the inspection is in all respects satisfactory, should be sent without delay to the Surveyors under whose survey the forgings will be used. The Surveyors should be careful to see that this report is forthcoming for every large forging used in vessels or machinery under their survey, and that the forging bears the stamp quoted in the report, which should be attached to the report on the vessel or machinery upon the completion of the same. If the result of the inspection is not quite satisfactory, or if no opportunity has been afforded of making the necessary examination, the case must be specially reported to the Committee.

79. Steel Castings.—In all cases where steel castings are proposed to be used in lieu of forgings, sketches of the proposed castings are to be submitted for the approval of the Committee, and they are to be tested as prescribed in the Rules.

Examination of steel castings (*see par. 98*).

80. Cast Steel Quadrant Tillers.—In any case where it is proposed to use cast steel for quadrant tillers, the Surveyors should, *in the first instance*, submit a sketch showing the scantlings, &c., for the approval of the Committee, and at the same time give the name of the Manufacturers and the number of the vessel for which the casting is intended, in order that instructions may be given as to the testing of the same as required by the Rules.

81. Cast Steel Mast Caps.—Cast steel mast caps may be fitted to vessels intended to be classed in the Register Book on the following conditions:—

Cast steel mast caps and derrick mountings are required to be made at steel works approved by the Committee, and to be tested in accordance with the Rules.

With a view to this being done, test pieces of sufficient size must be cast on the caps to enable the Surveyors to subject the same to such tests as they may deem necessary, in order to satisfy themselves that the material is of good quality. The caps also are to be suspended and the hammer test applied to ensure that the castings are sound in each case.

82. Repair or Patching of Forgings or Castings by Electric Welding, &c.—Electric welding, or any similar process, must not be used for the repair or patching of any new forgings made under the Society's survey; further, it must not be used for the repair or patching of new castings, unless it has been specially sanctioned, and is done under the personal inspection and to the entire satisfaction of the Surveyor.

These requirements coincide with the specifications of the Engineering Standards Committee, which are as follow:—

CASTINGS.—No contractions or other defects in Steel Castings shall be repaired by patching, burning, or electric welding, without the previous sanction of the Inspector. In the case of Steel Castings subjected to steam pressure, such repair shall be sanctioned only when made for the purpose of producing sound surfaces for jointing, &c., and where no loss of strength shall be involved. The Castings must be subsequently annealed. Should a defect impair the strength of a Casting, repair by electric welding, or otherwise, shall not be permitted.

FORGINGS.—The Forgings must be sound, and must admit of being machined to the required dimensions. Defects in Forgings shall not be repaired by patching or electric welding; nor is the steel to be toughened, without the previous sanction of the Inspector.

83. Rejected Steel Castings.—A record is to be kept of all cast steel stern frames, rudders, &c., which may be presented for inspection by the several Makers, also of all such castings which may be rejected by the Surveyors at the Steel Works or at the Shipbuilding Yard or Repairing Works after delivery.

A quarterly return should be forwarded to the London Office, stating the number of castings submitted for examination. In the case of any rejections, a description of each casting rejected should be given, with particulars of the name of Makers, size, nature of defect causing rejection, and whether rejected at Manufacturer's Works or after delivery at the Shipyard or Repairing Works.

A return should also be sent of all cases which have come under notice of the failure of cast steel stern frames, rudders, &c., in vessels coming under repair, and at the same time the Surveyors should state their opinion as to the cause of failure, *i.e.*, whether due entirely to damage, or whether directly or indirectly due to original defect.

E.—DESCRIPTION OF THE METHODS APPROVED BY THE SOCIETY FOR TESTING ANCHORS, CHAIN CABLES, AND SHACKLES; TOGETHER WITH REGULATIONS RESPECTING THE MATERIAL OF MANUFACTURE.

ANCHORS.

84. Material of Manufacture.—Anchors must be made entirely of forged wrought iron, or of forged open hearth ingot steel, or of cast steel; the use of Basic Bessemer steel is, however, prohibited.

85. Procedure in Testing: Statutory Test.—The anchor and stock are first weighed separately. The centre of the crown is distinctly marked with a centre punch or other means, and measurements are then taken as follows, *viz.* :—That from the centre of the crown (*see* Sketch A) to the point of fluke in a straight line is called the *length of arm*. The *length of shank* is

the distance from the centre of the crown to the centre of the shackle pin. The *diameter of trend* is understood as the size of the shank at a distance equal to the length of the arm, measured along the shank from the centre of the crown.

The anchor is then subjected to the tensile test, corresponding to its weight, as prescribed by the Tables in the Anchors and Chain Cables Act, 1899. A triangle is attached to the lever end of the machine, and the arm of the anchor is blocked in the triangle so that the strain may come on the anchor at a distance of two-thirds the length of the arm measured from the centre of the crown. The shackle is then attached by a chain to the hydraulic ram and the strain applied (as shown in Sketch A).


To measure the permanent set, if any, a gauge is used, one point of the gauge being fixed at the tip of each fluke, while the other point marks the anchor near the shackle pin, the marks being made both before and after each test is applied. The distance, if any, between these marks after the test is called the permanent set. Both arms are tested similarly. The permanent set is measured after the first test, before the second arm is tested, new marks being made to ascertain the set of the second arm. A set of $\frac{3}{4}$ inch is the maximum allowed with an anchor of any size.

When the test is completed the anchor is carefully examined all over, especially at the welds and the throats. The shackle is also examined. If a crack or a defective weld is found, the anchor is rejected. The palms or flukes are then struck with a sledge hammer, and if they are found broken or unsound the anchor is rejected. In the case of swivel anchors, such as Trotman's, for example, the jaws which are welded to the shank are sometimes found defective in the welds. After testing anchors of this type, the cross is taken out to permit of the welds and the inside of the jaws being examined.

Both arms of stockless anchors are tested at the same time. They are first tested on one side of the shank, and then reversed and tested on the other side, in a similar manner to that described for ordinary anchors, except that a bar is generally used instead of a triangle for applying the strain to the arms.

86. Cast Steel Anchors and Cast Steel Anchor Heads.—

Cast steel anchors or cast steel anchor heads are carefully examined, then *annealed*, and are also subjected to percussive, hammering, and bending tests, as set forth on pages 51 and 52, before they are fitted, or subjected to the tests above described. The percussive, hammering, and bending tests are carried out at the steel foundry in the presence of one of the Society's Surveyors, and the Superintendent of the Proving House, to which the anchor is sent to be tested by pulling strain, is furnished with a certificate of the form annexed, signed by the testing Surveyor, for attachment to the certificate of proof. Stockless anchors are not approved if the heads are not at least three-fifths of the weight of the complete anchor.

87. Test Marks on Anchors.—When an ordinary anchor has satisfactorily passed the proof tests, it is marked on one side of the crown with the letters denoting the name of the Proving House, the number of the test certificate, the number of the testing machine, the date of the licence, the strain to which it has been proved, and in cases where the anchor has been proved in the United Kingdom with the character B  T. The weights of the anchor and of the stock are stamped on the shank (as shown on the sketch A). Both sets of marks are stamped on the same side of the anchor. (*See Sketch A.*)

In stockless anchors one side of the anchor is reserved for the test marks, &c., the other side may be used for the maker's or other trade marks. The statutory marks are on the left arm (looking from the shackle towards the crown) surrounded by a circle, the drop test marks on the right arm surrounded by a diamond. The statutory marks are stamped on the shanks of stockless anchors near the head, and the weight marks about level with the tips of the arms (*see Sketch B*), these marks are on the same side of the anchor as the statutory and drop test marks on the anchor head.

88. Marking of Anchors by Makers; also description on certificates of test.—Each important part of a forged anchor must be plainly marked by the Makers with the words "Forged

Wrought Iron," or "Forged Open Hearth Ingot Steel." The pieces to be so marked are:—The Anchor Shackle, Shank, Arms, Pin, and Collar Piece. Each Certificate in respect of such anchors must have the words "Forged Wrought Iron Anchor," or "Forged Open Hearth Ingot Steel Anchor," written upon it. Anchor Shackles, if of steel, must be forged and unwelded.

In stockless anchors, the shanks if not made of forged iron, or cast steel, must be of forged scrap steel, or of forged open hearth ingot steel, and be plainly marked by the Makers with the words "Forged Scrap Steel" or "Forged Open Hearth Ingot Steel," and in these cases the certificates are to be endorsed accordingly.

89. Use of Ingot Steel.—Where ingot steel is used in the manufacture of forged stockless anchors, and of the shanks of cast steel stockless anchors (when not of tested cast steel) the steel must be open hearth ingot steel made at Works which are included in the List of Works recognised by the Committee, and the invoices showing that only such steel has been used must be produced for the inspection of the Proving House Superintendents.

CHAIN CABLES AND SHACKLES.

90. Procedure in Testing: Statutory Test.—From *any part of each length* of 15 fathoms, or portion thereof, three links are selected by the Superintendent and cut out for testing purposes. The breaking strain corresponding to the size of the cables, as specified in the Anchors and Chain Cables Act, 1899 (and given in Tables 53 and 54) is then applied to the three links so cut out. If the sample satisfactorily withstands the breaking strain, the length from which it was taken is then subjected to the tensile strain. If, however, the piece selected fails to withstand satisfactorily such breaking strain, another similar sample of three links is cut out of the length from which the one that failed was taken. If the second test is satisfactory the length in question is accepted for application of the tensile strain, but if not, it is rejected.

In one length of cable selected by the Superintendent out of every 25, or less number, submitted by each maker, the breaking

test is made on a sample consisting of one end open link, one enlarged link and one common link ; *or* on one shackle, one end open link and one enlarged link. If this test is satisfactory the length of cable from which the sample was taken is considered to have passed the breaking test. If the test is unsatisfactory a second test is similarly made from the links, &c., from the other end of the cable, and if this second test is satisfactory the length, &c., is considered to have passed the breaking test. If the second test is unsatisfactory, the length of cable is rejected and further tests are made of the end links, &c., of the other lengths of cable. If, however, in the two breaking tests only the shackles fail, all the shackles represented by those which failed are rejected ; but the length of cable may have the end and open links replaced, after which it may again be submitted for sampling and testing by the breaking and tensile tests in the usual manner.

When the breaking test is passed, the parts forming the complete length of cable are joined at the Proving House, by new links of the same size. End and enlarged links which have been selected for the breaking samples are also replaced at the Proving House.

The completed lengths are then subjected to the tensile test, as specified in the Anchors and Chain Cables Act, 1899 (and given in Tables 53 and 54). After this test, each link is carefully examined *twice*, each time by a *different man*, on a convenient bench in a good light, to ensure that no defective links or studs escape notice, every link being turned up so as to permit the inside as well as the outside of each link to be thoroughly examined at each examination. When defective links are found and the number thereof does not exceed five per cent. of the full number of links in the length, they are replaced by new ones, and the length is again submitted to the tensile test and examined. When, however, the number exceeds five per cent. the length is rejected. When a link breaks in the solid iron under this test the whole length is rejected, but if the break occurs at the weld, and not more than five per cent. of the gross number of links are found defective, the broken and other defective links are replaced at the Proving House and the whole length of cable is again submitted to

the tensile test and examined. Incipient cracks, spills in the iron, open welds, malformed or badly fitting studs, and malformed links are some of the defects referred to in this paragraph.

The end links, shackles and shackle pins are examined to see that they bed properly into one another, and that the shackle pins are secured in place by locking pins capable of being readily removed.

The examination of chain cables after testing is most essential and is of equal importance to the application of the proof strains.

91. Test Marks on Cables and Shackles.—After the breaking and tensile tests are both satisfactorily passed, the cables are marked. One link in every five fathoms is marked, the end links and two common links each at 5 fathoms from the end of the 15-fathom length being selected for this purpose. The marks consist of the letters denoting the name of the Proving House, the number of the certificate, the numbers of the breaking and of the tensile machines, the date of the licence of the machines, and the tensile and breaking strains to which the cables have been subjected. (*See Sketch C.*) Each shackle is also stamped with similar marks.

92. Joining Links.—The joining links used at the Proving House are of "Best Best" quality and free from visible defects. To test the quality the Superintendent joins up three links of the same size, taken at random from each delivery, and submits them to a destructive pulling test. If the sample links break at a strain less than 15 per cent. above the statutory breaking strain when the links are below $1\frac{1}{2}$ inches diameter, or less than $12\frac{1}{2}$ per cent. when they are from $1\frac{1}{2}$ to 2 inches diameter, inclusive, or less than 10 per cent. when they are above 2 inches diameter, the delivery of which they form a part is rejected.

93. Shackles, &c.—End shackles and joining shackles are considered to be part of the cable. The breaking strain is applied to at least one shackle out of every 25, including end shackles and spare shackles, and shackles so tested are destroyed and not used as part of the cable. The tensile test is also applied to all

shackles. This may be done, if desired, by having one or more shackles attached to each length of cable tested.

In both stud link and short link cables, the diameter of the iron in the joining shackles, end and intermediate links is to be, respectively, not less than 1.125, 1.125, and 1.0625 times the diameter of the iron in the common link of the chain cable.

If desired, however, joining shackles, end and intermediate links may be made, as formerly, to the usual proportions, respectively, of 1.3, 1.2, and 1.1 times the diameter of the iron in the common link of the chain cable.

94. Bedding of Shackles.—(a) When surveying new outfits of anchors and cables Surveyors should be careful to see that the bending shackles bed properly into the open end links, the pin of the bending shackle being outboard from the cable.

(b) Superintendents of Proving Houses in the U.K. are, in addition, instructed as follows:—

(1) The end shackle should bed properly into any open end link in the cable as the lengths may be changed about at times so that wear may be general over the whole cable and not be confined to one working end.

(2) When odd replace lengths are tested and no end shackle is supplied, the open end links should be parallel at the sides and the radius of the ends where the shackle may bed should be half the inside width of the link.

(c) Surveyors at ports abroad should follow the foregoing procedure when testing and certifying cables manufactured in their district.

In joining shackles the pins are usually made of egg-shape section, the dimensions being, in depth 1.6 times, and in breadth 1.2 times, the diameter of the iron in the common links of the cable.

95. Steel Shackles, &c.—The use of steel for cable shackles is approved, provided that the Makers in sending the shackles for test state in writing that the shackles are made of unwelded

steel; that the shackle selected for the breaking test, after satisfactorily withstanding this test, is subjected to a ductility test by bending it out cold until its sides are at a right angle; and that each shackle is stamped by the Makers on one side above the pin with the letters "U-W.S." signifying "Unwelded Steel." Where ingot steel is used in the manufacture of cable shackles, the steel must be open hearth ingot steel, made at Works which are included in the List of Works recognised by the Committee, and the invoices showing that only such steel has been used are produced for the inspection of the Proving House Superintendents.

96. Anchor Attachments.—Anchor attachments consisting of one or at most a few links of chain cable are sometimes used to enable the cable to be unshackled without withdrawing a stockless anchor from the hawse pipe. These pieces are considered to be part of the cable and are consequently tested. If, however, the diameter of the iron of the studless links of these attachments is at least $1\frac{1}{2}$ times, and the diameter of the iron of the studded links at least $1\frac{1}{4}$ times that of the iron of the common links of the cable, such attachment pieces are subjected to only one test, which is that of the breaking test of the common links of the cable. If an attachment piece, formed of studless or of stud links of the above proportions, contains a swivel, then, in order that it may be subjected only to the breaking test, as above mentioned, the several parts of the swivel must be of the following proportions:—

The diameter of iron in the eye at least	} the diameter of the iron of the common links of the cable with which the attachment is to be used.
$1\frac{1}{4}$ times	
The diameter of the pin at bottom of thread at least $1\frac{5}{8}$ times	
The diameter of iron in the crown of bow piece at least $1\frac{1}{2}$ times	
The depth of the bow piece where bearing on the nut not less than $1\frac{1}{2}$ times	
The depth of the nut not less than $1\frac{5}{8}$ times	
The diameter of the nut not less than	
$2\frac{3}{8}$ times	

The swivel pin in each case is screwed to the Whitworth Standard, and the nut secured by welding it to the end of the pin or by fitting a tapered locking pin. If an attachment piece, with or without a swivel, is made of smaller iron than stated above, it is sampled and subjected to the breaking and tensile tests specified for each 15-fathom length of the cable. But where a set consisting of not more than seven (including the one to be subjected to the breaking test) such attachment pieces, of similar size made by the same firm and consisting of not more than five links or four links and a swivel, are brought to the Proving House to be tested, they may be coupled together and treated as one length. The breaking sample is, as in the case of an ordinary 15-fathom length of cable, composed of three links, or two links and one swivel, and is selected from either or any of the attachment pieces. When so sampled the swivel pin may be either screwed or welded at the option of the manufacturer. If the breaking test is satisfactory, the attachment pieces, as coupled together and forming the length, are then subjected to the tensile test. If the breaking sample fails, the rule regarding the second test is the same as for an ordinary length of cable. Anchor attachments exceeding five links, or four links and a swivel, in length are treated in precisely the same manner as a 15-fathom length of cable. All attachment pieces are marked similarly to the cable, the marks being stamped on each end link.

CAST STEEL ANCHORS.

97. All Cast Steel Anchors intended for vessels classed or proposed to be classed in the Society's Register Book must, in addition to undergoing the statutory tests, be subjected to the percussive, hammering, and bending tests recommended in the report of the Committee appointed by the Board of Trade to consider the question of tests of Cast Steel Anchors.

These tests, which are hereunder set forth, must be carefully and completely made in the presence and to the satisfaction of officers appointed by the Committee, viz.:—

PERCUSSIVE TEST.

(1) Anchors, or when anchors are made of more than one piece, each piece shall be subject to this test, as follows :—

GIVEN WEIGHT.		GIVEN HEIGHT.	
15 cwt. and below	15 feet.
Above 15 cwt.	12 feet.

The anchor or piece shall be raised the given height for the given weight and shall be dropped on a steel or iron slab.

The given height means that the lowest part of the anchor or piece when suspended shall be at least the given height above the iron slab to which it is to be dropped.

(2) An anchor of the Admiralty pattern shall first be raised vertically to the given height with its shank and arms in a horizontal position, and shall be let fall from that height.

(3) It shall then be raised a second time to the given height, and shall be suspended with the crown downwards. Two steel or iron blocks shall be placed underneath it, and it shall be let fall from this position so that one of the blocks receives it on the middle of one arm, and the other block receives it on the middle of the other arm.

(4) The slab for the horizontal test shall be of steel or iron, well laid on a solid concrete foundation to the satisfaction of the Inspector.

(5) If the slab on which the anchor falls is broken by the impact, the test shall be repeated until a slab is made that does not break.

(6) The blocks for the vertical test shall be solid, and shall be of sufficient height to prevent the crown of the anchor from touching the slab, and shall be otherwise to the satisfaction of the Inspector.

HAMMERING TEST.

(7) When the percussive test has been passed successfully, to the satisfaction of the Inspector, the anchor or piece shall be slung and freely put to a hammering test as follows, that is to say, it shall be well hammered over its parts with a sledge hammer weighing not less than 7 lbs., and shall be required to give under this treatment such a clear ring in all its parts as shall satisfy the Inspector that the casting is sound, and without flaws existing, either originally or developed as the result of the application of the preceding percussive tests.

BENDING TEST.

(8) Cast steel may be passed as sufficiently ductile for anchors when a piece of each casting, 8 inches in length, is cut from the casting, turned to 1 inch in diameter, and is then bent cold by hammering through an angle of 90 degrees over a radius of $1\frac{1}{2}$ inches, without showing signs of flaw or fracture.

(9) There must be a piece cast on each cast steel anchor, or on each portion of such anchor when it is made of more than one casting, and such piece must be of sufficient size to enable one test piece of the size before stated to be cut out of it, or it may be (at the discretion of the manufacturer) of sufficient size to enable four test pieces to be cut out of it. If it is only of sufficient size to enable one test piece to be cut out of it, that piece shall be subjected to the bending test named in paragraph 8, and, if it fails to withstand it, the casting is to be rejected.

If the piece is large enough to enable four test pieces to be cut out of it, these four test pieces shall be disposed of as follows, that is to say, one of them shall be turned in a lathe to 1 inch in diameter for a length of 8 inches, and bent cold through an angle

of 90 degrees over a radius of $1\frac{1}{2}$ inches, and if it withstands this test without flaw or fracture, it shall be deemed to have withstood a satisfactory test for ductility. If the one test piece does not pass this test, all or any of the other three test pieces may be tested in a similar manner, and if any one of the four test pieces passes this test, the anchor or part of the anchor, as the case may be, shall be deemed so far satisfactory.

ANNEALING.

(10) Each anchor must be properly and sufficiently annealed, and, when so annealed, shall be stamped "annealed steel." Annealing is not to be regarded as proper, or efficient, unless the process extends from three days for small anchors, up to six days for large ones.

98. Examination of Steel Castings.—Notwithstanding all the care and precaution that may be taken in forming the moulds, and in the selection of the material used for the purpose, steel castings are not infrequently found with more or less serious cracks or defects, owing generally to the uneven rate of cooling.


The Surveyors, at the Manufacturer's works, should examine the castings of all parts of steel anchors intended for ships classed or proposed to be classed in the Society's Register Book, if possible, *before* they are annealed.

They will then be better able to observe any defects which may exist, the skin or scale put on by annealing rendering it more difficult to detect cracks or other defects, particularly when such cracks or defects have been carefully hammered up and closed.

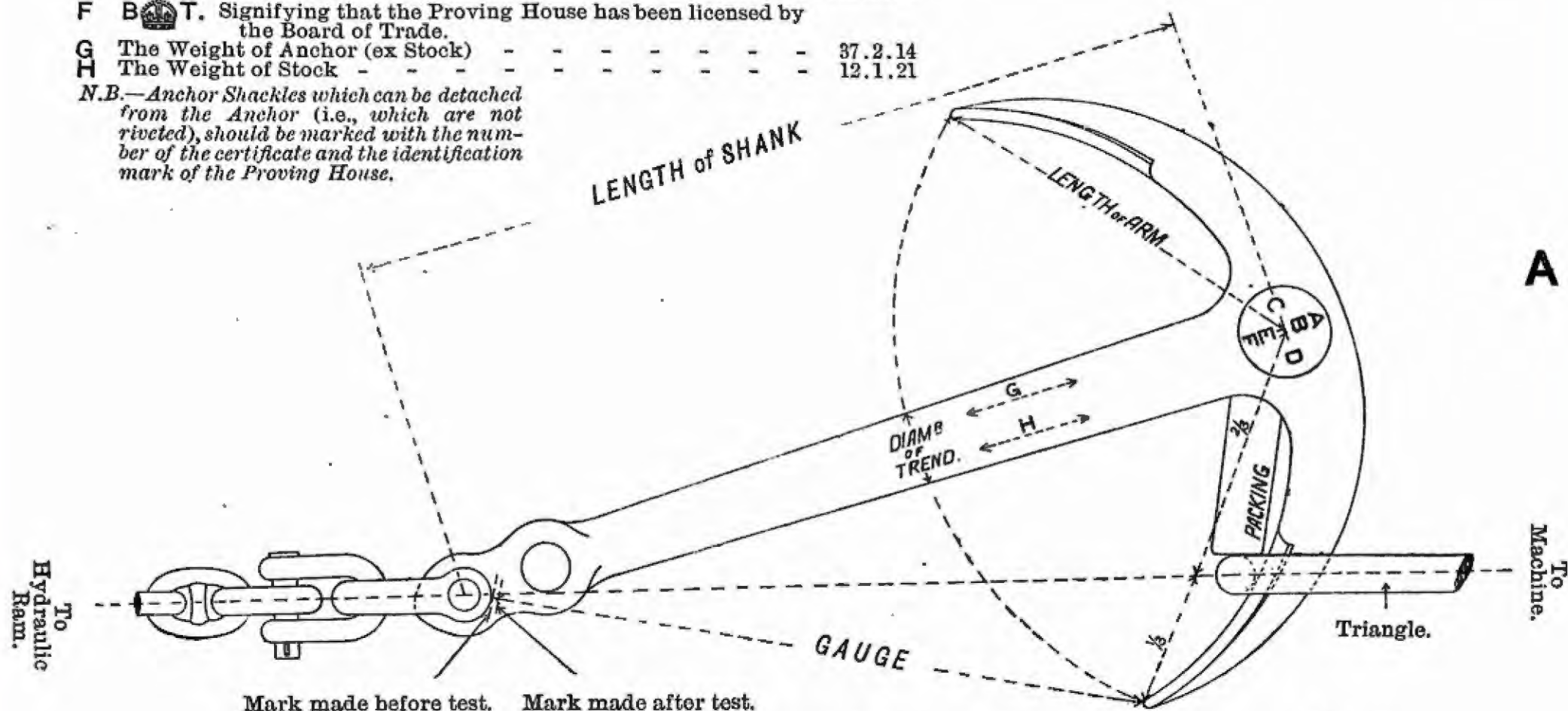
If on examination any such cracks or defects are observed, the anchor should not be tested or passed; but if the defects appear to be on the surface only and can be entirely cut out without damaging the anchor, this may be done in the presence of the Surveyor, who must however satisfy himself that they are entirely removed before he proceeds with the tests.

SKETCHES ILLUSTRATIVE OF THE PROCEDURE FOLLOWED IN THE TESTING AND MARKING OF ANCHORS AND CHAIN CABLES.

Description of Marks put on ANCHORS after Testing.

A	The Identification mark of Proving House	-	-	-	-	-	L.P.H.N.
B	The Number of Certificate	-	-	-	-	-	7953
C	The Number of Tensile Testing Machine	-	-	-	-	-	26
D	The Year the Licence of Machine was granted	-	-	-	-	-	09
E	The Proof Strain applied	-	-	-	-	-	34.4.1.14
F	B  T. Signifying that the Proving House has been licensed by the Board of Trade.						
G	The Weight of Anchor (ex Stock)	-	-	-	-	-	37.2.14
H	The Weight of Stock	-	-	-	-	-	12.1.21


N.B.—Anchor Shackles which can be detached from the Anchor (i.e., which are not riveted), should be marked with the number of the certificate and the identification mark of the Proving House.



Mark made before test. Mark made after test.

The difference between the positions of the marks made before and after testing to be not more than $\frac{3}{4}$ ".

Description of Marks put on STOCKLESS ANCHORS after testing.

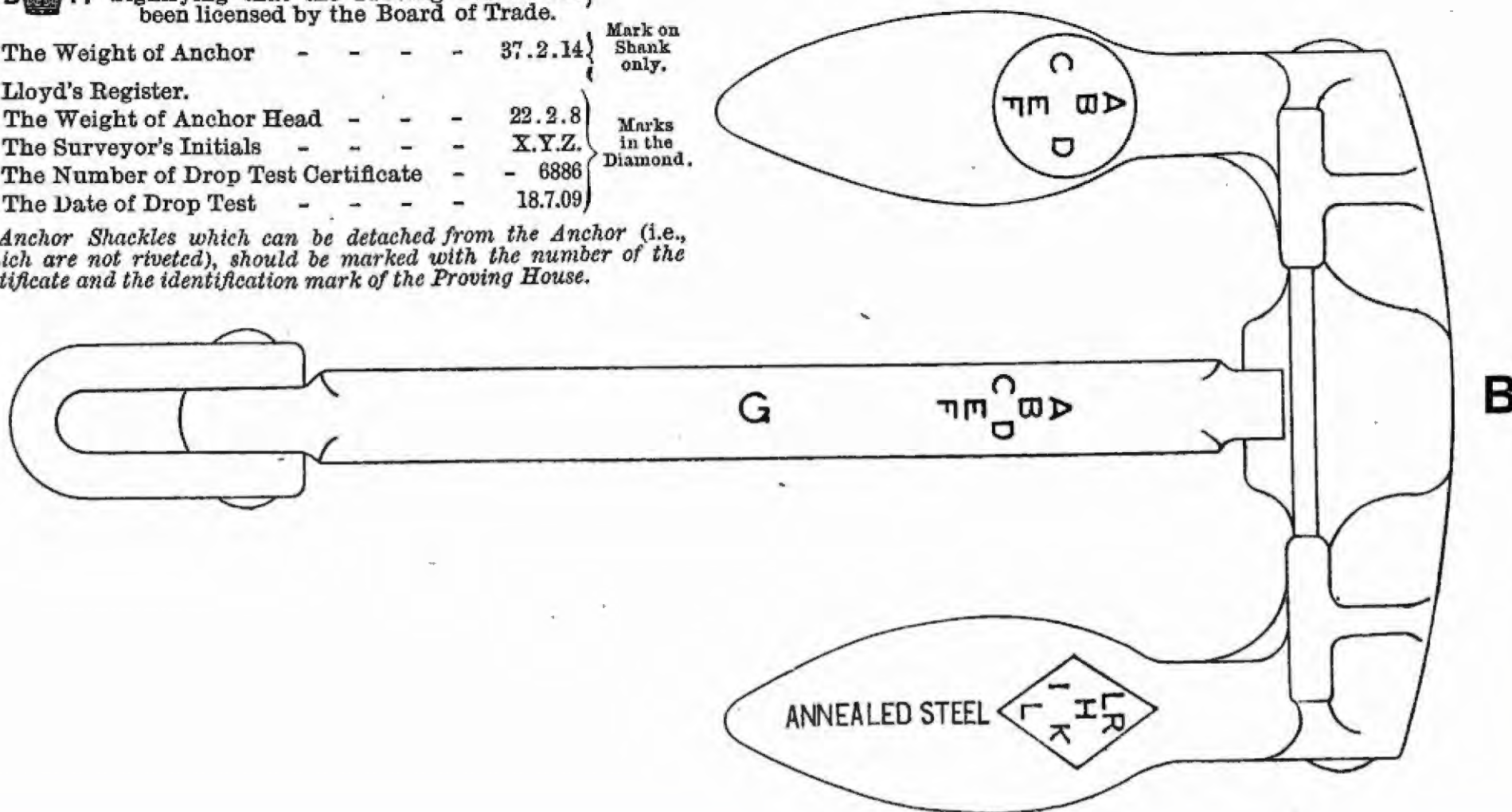
A	The Identification mark of Proving House L.P.H.N.			
B	The Number of Certificate - - - -			7953
C	The Number of Tensile Testing Machine- -			26
D	The Year the Licence of Machine was granted			09
E	The Proof Strain applied - - - -			34.4.1.14
F	B  T. Signifying that the Proving House has been licensed by the Board of Trade.			
G	The Weight of Anchor - - - -			37.2.14
L.R. Lloyd's Register.				
H	The Weight of Anchor Head - - - -			22.2.8
I	The Surveyor's Initials - - - -			X.Y.Z.
K	The Number of Drop Test Certificate - -			6886
L	The Date of Drop Test - - - -			18.7.09

Marks in the Circle and on Shank.


Mark on Shank only.

Marks in the Diamond.

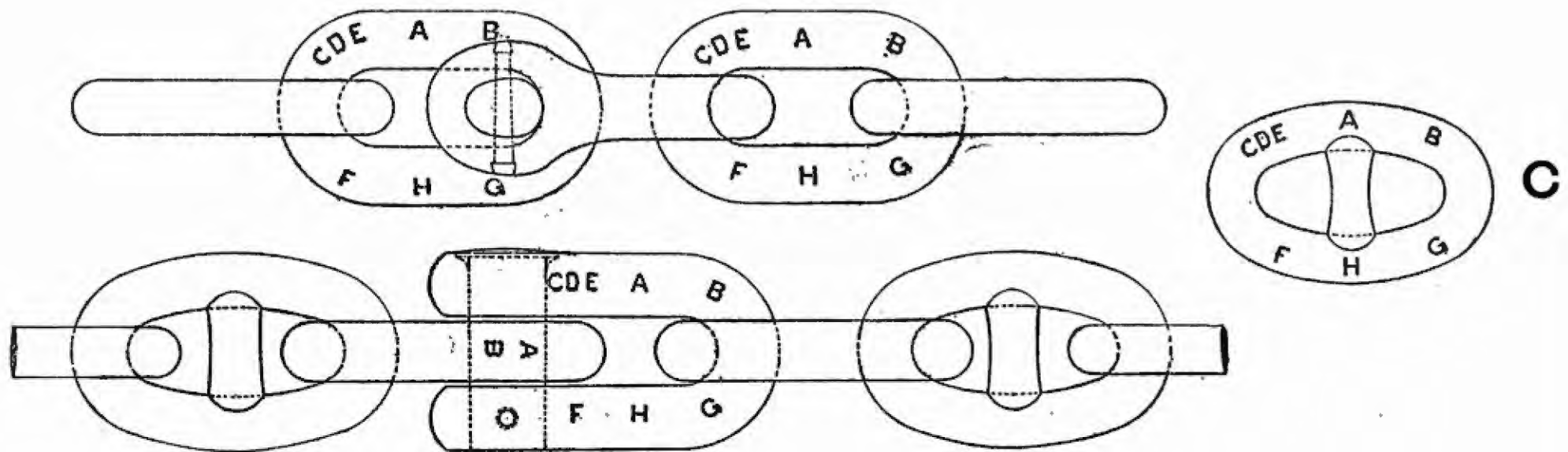
N.B.—Anchor Shackles which can be detached from the Anchor (i.e., which are not riveted), should be marked with the number of the certificate and the identification mark of the Proving House.



Description of Marks put on CHAIN CABLES and SHACKLES after Testing.

A	The Identification mark of Proving House	-	-	L.P.H.N.	E	The Year the Licence of Machine was granted	-	-	09	
B	The Number of Certificate	-	-	-	-	F	The Tensile Strain applied	-	-	13.15.0
C	The Number of Breaking Test Machine	-	-	-	-	G	The Breaking Strain	-	-	20.12.2
D	The Number of Tensile Test Machine	-	-	-	-	H	B  T. Signifying that the Proving House has been licensed by the Board of Trade.			

N.B.—In the case of Cable Shackles, care should be taken that the marks are clear of the wearing part of the bow, and the pins should be marked with the number of the certificate and the identification mark of the Proving House.



99. Certificates for Cast Steel Anchors.—Forms (Certificate form No. 2) are provided to be used in furnishing the Manufacturers of Patent Cast Steel Anchors with certificates after the anchors have been examined by the Surveyors, and have satisfactorily withstood the mechanical tests under their inspection.

With reference to Section 40, par. 5 (*c*), of the Rules, which provides that “the heads of Stockless Anchors are to be not less than three-fifths of the total weight of the anchor,” the Surveyors should be careful when issuing certificates of drop test, to insert thereon the weight of the heads of the anchors as ascertained when the anchors are weighed at the time the percussive and bend tests are applied.

These certificates are to be forwarded with the anchors to the Superintendents of the Proving Houses where the tests prescribed in the Chain Cables and Anchors Acts are to be carried out.

III.—SURVEY OF OLD WORK.

A.—CLASSIFICATION OF VESSELS NOT BUILT UNDER SURVEY.

100. Plans to be Submitted.—In the case of vessels submitted for classification with Lloyd's Register which have not been built under the Society's survey, it is necessary *in the first place* for sketches of midship section and profile to be submitted showing the scantlings and arrangements of the vessel, together with plans of boilers and pumping arrangements and full particulars of the machinery, in order that it may be seen for what class (if any) the vessel may be considered eligible.

101. When Plans not Available.—If plans are not available, full particulars of the scantlings and arrangements must be taken by the Surveyors from the actual hull and machinery and boilers and forwarded on preliminary *first entry report forms* at the earliest possible moment, together with rough sketches, for the consideration of the Committee.

102. Steel Material.—Particulars of the place and method of manufacture of the steel used in the construction should also be forwarded if obtainable.

103. Special Survey Required.—The vessel and her machinery and boilers will also be required to undergo the Special Survey prescribed in the Rules for "Vessels not Built under Survey."

B.—SURVEYS AND SURVEY NOTICES.

104. Special Surveys, Authority to Hold.—As regards the Special Periodical Surveys prescribed by the Society's Rules, Non-Exclusive Surveyors are authorised to undertake the First Special Survey No. 1.

In the case of Special Periodical Surveys subsequent to the First Special Survey No. 1, authority from the Committee to hold the survey is required to be obtained in each instance before the service is undertaken.

With a view to this being done, Surveyors should report to the Committee the circumstances in which it is proposed to submit vessels at their port to any of the Special Surveys in question, and where, in order to avoid delay, it may be desirable to cable, this should be done, and the Society's Private Telegraphic Code employed.

It should be clearly understood that when the Committee authorise a Non-Exclusive Surveyor to carry out a Special Periodical Survey, they require him to hold the survey personally, and on no account should this duty be delegated to any other person without the Committee's authority.

See later under sub-Section E.

105. Notices to Owners.—Notices are issued from the London Office as surveys become due and are sent through the local Surveyors.

Formal Notices of Surveys due are *not* to be issued by the Surveyors upon the arrival of vessels in their districts. In the

case, however, of vessels coming under inspection, in dry dock or otherwise, it will be the duty of the Surveyor to explain to the Owners or their representatives the requirements of the Society's Rules as to the surveys which may be due or about to become due.

106. Local Owners to be kept informed of Surveys due or becoming due.—In the case of vessels owned or managed in the district the Committee rely upon the Surveyors exercising a wise discretion in regard to keeping the Owners or their representatives informed of the surveys required on their vessels, and endeavouring to arrange for the surveys to be held at an early convenient opportunity.

In order to facilitate the arrangements for surveys it is advisable for the Surveyors to make a practice of supplying Owners in their districts (or their Superintendents) at regular periods with a list of surveys due, or requiring to be completed.

107. London Office to be advised of arrangements made for Surveys.—The Surveyors are to keep the London Office advised of all arrangements which may be made with them by Owners or their representatives as to submitting vessels to survey.

C.—REPAIRS.

108. All Repairs to be done under Survey.—It is a condition of the classification of vessels by this Society that all repairs of ships or their machinery that may be required at ports where there is a Surveyor to the Society, in order that the vessels may retain their characters in the Register Book, must be carried out under the inspection and to the satisfaction of the Society's Surveyor. The foregoing requirements are essential to the continuance of a vessel's character in the Register Book, and for this purpose no reports of surveys made by any person whatsoever, other than the Society's Officer at the port where the repairs are made, are recognised or acted upon by the Committee of this Society.

Accordingly, when repairs, alterations, or additions, from whatever cause arising, are carried out in the case of any classed vessel, it will be the duty of the Surveyors to avail themselves of

every opportunity in their power to inspect the nature and extent thereof, and to assure themselves that the work is effected in an efficient manner, in order that they may be enabled to report the facts for the information of the Committee. The report in each case should show whether the repairs were rendered necessary on account of *damage* or of *wear and tear*.

109. Small or Trivial Repairs.—It is not intended, however, that a compliance with this requirement should be exacted to the inconvenience of Owners in the case of small or trivial repairs, and the Committee expect that the Surveyors will exercise a wise discretion in this matter.

110. Necessary Repairs, &c., to be intimated to Owners.—In every case where the Surveyors consider repairs, alterations or additions to be required to a vessel, or her machinery or equipment, they are to intimate the same to the Owners or their representatives as promptly as possible.

111. Owners may appeal to Committee.—If the Owners consider the repairs suggested by the Surveyor to be unnecessary or unreasonable it should be pointed out to them that they may appeal to the Committee, who will direct a special survey to be held; but should the opinion of the Surveyor be confirmed by the Committee, then the expense of such special survey is to be paid by the Owners.

112. Repair of Petroleum Carrying Vessels.—When reporting surveys held on vessels classed for Carrying Petroleum in Bulk, particular attention should be paid to the following points in connexion with repairs due to wear and tear or stress of weather, viz. :—

(1) The report should include a clear and full record of the facts relating to the service of the ship immediately prior to the execution of the repairs.

(2) Repairs due to wear and tear should be clearly differentiated from repairs due to stress of weather.

(3) As far as possible the repairs should be stated for each oil compartment separately.

(4) The repairs of the riveting and caulking should be divided as far as possible into the following separate groups:—

- (a) Butts and seams of bottom plating.
- (b) Butts and seams of side shell plating.
- (c) Butts and seams of decks.
- (d) Bottom longitudinals, with particular reference to end attachments.
- (e) Side longitudinals, with particular reference to end attachments.
- (f) Deck longitudinals, with particular reference to end attachments.
- (g) Oiltight bulkheads, particularly above the line of the second deck.

(5) The method of riveting both before and after the repair should be stated.

113. Retesting of Anchors and Chain Cables after Repairs.—Questions have at times arisen in connection with the repair of anchors and chain cables as to when it is necessary to retest them at a Public Proving House.

In the case of stud link chain cables, studs are sometimes found to be missing from a few of the ordinary links and require to be replaced. These studs can be made either of cast or wrought iron, and, provided they are carefully fitted and the sides of the links are well closed to the studs, it is unnecessary for the chain cable to be retested. If, however, any links are found to be defective so that one or more new links have to be fitted, the chain should be retested at a Public Proving House.

The shackle pins of joining shackles and of anchor shackles are sometimes found to be worn and require renewal. These are straight pins of large size involving no welding in manufacture, and, provided a bend or other test of the material of which the new pins are made is carried out by the Surveyor to ensure that it is of good quality, it is not considered necessary to subject these shackles or anchors to retest after repair.

When the crown pins of anchors are required to be renewed, it is generally because of the amount of wear which has taken place both in the pins and eyes. They are renewed of larger size than the original to ensure a good fit in the anchor heads. They are straight pins of large diameter involving no welding, and the subjecting of the anchors to retest puts such small strains upon the pins that it would not be a criterion of the quality of the material. It is therefore considered that, provided a bend or other test of the material from which the new crown pins are made is carried out by the Surveyor to ensure that they are of good quality, the anchors need not be retested after such a repair.

In all cases where shackles are renewed or when any repairs to shackles or anchors involving welding are carried out, they should be submitted to retest at one of the Public Proving Houses.

114. Autogenous Welding, Repairs by.—Regulations have been adopted by the General Committee regarding the repair of the Hulls, Engines and Boilers of Vessels by means of Autogenous Welding, as follow :—

(1) **Hull.**—(a) Oxy-acetylene welding or electric welding may be adopted for the repairs of fractures to the shell plating at the ends of a vessel, or to stern frames and shaft brackets, where the workmen are known to be experienced in the use of these processes and the welding is carefully examined and tested on completion by the Society's Surveyors. Such repairs are considered to be temporary only, but may be accepted as permanent if, on examination after a sufficient lapse of time, they are found to be satisfactory.

(b) Welding as a means of repair of rudder stocks has not been approved.

(2) **Engines and Boilers.**—(a) Electric and oxy-acetylene welding processes may be used for effecting certain repairs to the furnaces, combustion chamber plating, tube plates and so forth, and for filling in wasted places at those parts of boilers, subject to the restriction that the workmen are known to be experienced in the use of these processes and that the welding

is carefully examined and tested on completion by the Society's Surveyors.

(b) Repairs by means of welding are not allowed for the shell plating of boilers, with the exception of the landing edges of the circumferential seams.

(c) Repairs by welding processes to shafting, piston and connecting rods and so forth are not permitted.

Valve rods and eccentric rods, where reduced in diameter by wear, may be repaired by autogenous welding, provided the sectional area of the reduced part is not below that required and that the usual conditions with regard to such repairs are carried out to the Surveyor's satisfaction.

(d) Approval has been given in some cases to the repair of sole plates and columns of engines by welding, but all such proposals must first be submitted for the consideration of the Committee.

(e) It is also permissible, to a limited extent, to employ welding to fill in surface defects in steel castings to provide sound surfaces for jointing at places which are not subject to stress. This concession, however, does not apply to flaws which may affect the strength or utility of the castings.

(3) **Cutting away Damaged Material.**—It may be pointed out that the use of these processes for cutting away damaged material or removing rivets from a vessel under repair is permissible, provided the work be carried out with the necessary care in order to prevent damaging the material left in the vessel.

(4) **Corrosion of Welded Material.**—Surveyors should make a special point of examining carefully any welded parts of vessels or boilers which come under survey, and report, for the Committee's information, whether any pronounced tendency to corrosion is apparent in any case.

115. Thermit Welding for Ship Repairs.—The Committee have decided to accept this system of welding for temporary

repairs to such parts of the hull structure as do not have to sustain torsional stresses, provided the work be carried out by men thoroughly experienced in the application of the process and be done to the satisfaction of the Society's Surveyors.

Such temporary repairs, however, should be carefully examined periodically by the Society's Surveyors, and in cases where the repairs are below the water line they should be examined at each dry docking.

116. Survey of Machinery after Casualty.—In cases of Casualty in which the class of a vessel is expunged from the Register Book, the records of B.S. and L.M.C. are also expunged, and before the class is reinstated in such cases the engines and boilers must be completely surveyed, in order to bring the record of machinery up to the date of the reinstatement of the class of the hull.

117. Temporary or Postponed Repairs.—It is open to Owners or their representatives to effect temporary repairs or to postpone the repairs until the arrival of the vessel at a home port, provided the defects or damages are in the Surveyors' opinion of such a nature as to admit of being so repaired or the repairs being so postponed with safety. In such cases, the facts should be reported to the Committee forthwith.

118. Unnecessary Expense and Delay to be avoided.—Whilst the Committee require that Surveyors abroad should, on the survey of vessels, see that they are in seaworthy condition, or that repairs which are necessary are being executed, the Surveyors at the same time should avoid unnecessary expense and delay occurring in undertaking repairs which might be more economically carried out under the survey of the senior Surveyors to this Society on the arrival of the vessel to this country. They should, however, in such cases make a full report, without delay, of all that they consider necessary to be done on the arrival of the vessel, to render her eligible to retain her class in the Register Book.

119. Written Notice to be given if Repairs are not being done.—The responsibility of complying with these and other

conditions affecting the classification of vessels necessarily rests with the Owners and their representatives (*see* par. 11 of "General Regulations" in the Rules). If, however, in any case the recommendations of the Surveyors are apparently not intended to be complied with, they are *at once* to give to one or the other a notice thereof, in writing, as full as practicable; and at the same time to transmit to the Committee a copy of the notice, accompanied by any remarks that may be deemed necessary in the case.

120. Telegraphic Report to Committee.—If from any circumstance it should happen that a vessel is likely to remain in port for a short time only, or is about to leave, and requires *essential repairs* which are not being effected, the Surveyors are to telegraph the facts to the Secretary forthwith, for the information of the Committee.

121. Partial Repairs to be Completed at another Port.—In the event of a portion only of requisite repairs being carried out under survey at one port, with the intention to complete them at another port, the Surveyors are to inform the Owner or his representative fully, in writing, of the remaining requirements; and a full statement of the circumstances is to be reported to the Committee, and the Society's Surveyor at the other port informed of the facts.

122. Partial Surveys.—In any case in which a vessel puts into port for the purpose of repair of damage sustained during the voyage, and can be partially surveyed only on account of the cargo on board, it is the duty of the Surveyors to inspect the repair and furnish a report to the Committee, accompanied by any observations they may have to make as to the condition of the vessel so far as examined.

123. Reports to state clearly Parts Surveyed.—The report in each case should state distinctly what parts have and what have not been seen by the Surveyors, so that it may be a faithful record of the survey to which the ship has been subjected. In surveys of this partial nature, the Committee will probably deem

it inexpedient to make a record of them in the Register Book, thus leaving the vessel standing therein on the survey previously held on her. (*See also par. 143.*)

124. Prompt Despatch of Reports.—The Committee desire *seriously* to impress upon the Surveyors the urgent necessity of forwarding to the General Office all reports of surveys *without delay*, as in some cases grave inconvenience has resulted from non-compliance with this requirement.

125. Reports not to be kept back for Fees.—The Surveyors are not in any case to omit to forward a report of survey, because the fees due thereon are not paid, but are to enter on their reports a full statement of the fees corresponding with the account rendered to the owner or his agent. (*See also under the heading of REPORTS.*)

D.—ANNUAL OR OCCASIONAL SURVEYS.

126. All Vessels subject to Annual or Occasional Survey when practicable.—It will be observed from the Rules that all vessels and machinery classed by the Society are subject to Annual or Occasional Surveys *when practicable*.

It should be noted, however, that such surveys are not necessarily required strictly within twelve months, and the Surveyors must therefore be careful not to require such surveys to be held, to the inconvenience of Owners, especially as regards vessels trading between the United Kingdom and Foreign Ports.

127. Nature of Survey and Repairs (if any).—It is presumed that generally in the case of Annual or Occasional Surveys the vessels have been kept in an efficient state of repair, and therefore no stated examination is prescribed by the Rules for such surveys. It will be necessary, however, to examine the vessel or machinery throughout as far as practicable, in order that the Surveyors may satisfy themselves generally as to the condition; and if in any case they discover defects or damage, the examination should be extended, if necessary, to deal efficiently with the matter.

It will be the duty of the Surveyors respectfully to point out to the Owner or his representative the parts requiring repair, and to see that all necessary repairs are effected. (*See also instructions under the heading of REPAIRS.*)

128. Examination of Deck Openings, &c.—At such surveys it is important that an examination be made of the means of protection afforded to all openings in the weather decks of vessels, including fidley casings, hatchway and ventilator coamings, hatch covers, shifting beams and fore and afters.

129. Vessels to be examined when in dry dock.—When a classed vessel is placed in dry dock, or on a slipway or a hard, the Surveyors should offer their services for the purpose of examining the bottom, the sea connections and the propeller fastenings.

130. Surveys of Stern Bush and Screw Shaft.—In reporting the results of surveys held in dry dock the Surveyors should in all cases state on the report the amount the stern bush is actually worn, taking care that the measurement of the wear is ascertained from the bush itself, and not from the outer ring, which may not in all cases be true with the bush. Further, when screw or other shafts are renewed under survey, particulars of the defects in the shaft should be given in the report, and in cases where the Surveyors are able to form a decided opinion, the cause to which the defects are attributable.

Considerable importance is attached to maintaining the shafting in line, especially as regards the screw shaft, it being thought that considerable risk often arises from the stern bush being allowed to become worn, and that fewer failures of these shafts would occur if the bushes were more frequently lined up.

131. Surveys held afloat.—When the survey has to be held afloat, provided the holds are clear of cargo, the Surveyors should be able to ascertain the general condition of the vessel to such an extent as to justify the date of survey being recorded in the Register Book.

132. Reports to show clearly Parts Examined.—In all cases, the Surveyors should be careful to enter on the reports of such surveys, the condition of the different parts of the hull and equipment in the spaces provided for this purpose on the Repair Report Form; also to describe the repairs, if any, which have been carried out. When the survey is of a partial nature only, it should be stated distinctly what parts have and what have not been seen, so that the report may be a faithful record of the survey to which the ship has been subjected. (*See also under the heading of REPORTS.*)

133. Ranging of Chains to be reported.—Whenever Chain Cables are ranged and examined by the Surveyors, the result of the examination is to be reported, and the length and size of the cables stated.

E.—SPECIAL PERIODICAL SURVEYS ON IRON AND STEEL VESSELS AND MACHINERY.

134. When Due.—All classed vessels become due for the Special Surveys numbered 1, 2, and 3 at the termination of the fourth, eighth, and twelfth year respectively from the date of build or from the date recorded in the Register Book of the previous Special Survey No. 3. (*See Rules.*)

135. Machinery and Boilers.—On the occasion of these surveys, the machinery and boilers of steamers and the machinery of motorships (including the donkey boiler, if any) are to be submitted to special survey, unless they have been specially surveyed within a period of twelve months.

In addition, the machinery of motorships requires to be submitted to a "Modified Survey" at each intervening period of two years.

Boilers are to be specially surveyed when six years old, and subsequently they are to be specially surveyed annually.

It should be noted that the effect of the preceding paragraphs is to require all boilers to be submitted for special survey at four years old, six years old, and subsequently annually.

Water tube boilers are to be specially surveyed annually.

Attention is called to a print on periodical surveys of machinery (extract No. 4a), which it is suggested may be of assistance to the Surveyors in communicating to Masters, Chief Engineers, and others what requires to be done in order to prepare for the surveys of engines and boilers.

136. Screw Shafts.—The screw shaft is to be drawn at intervals of not more than three years in the cases of shafts fitted with continuous liners, and of shafts fitted with approved glands or other approved appliances at their after ends to permit of them being efficiently lubricated. In the cases of other screw shafts, they should be drawn at intervals of not more than two years. (On the application of Owners, the Committee will be prepared to give consideration to the circumstances of any special case.)

137. Oil Glands.—The following types of oil glands have been accepted for use on vessels classed, or intended for classification, with this Society, entitling such vessels to the notation of "O.G." in column 7* of the Register Book :—

Blair	Lobnitz
Campbell & Calderwood	Mitsuibishi
Cedarvall	Nova Scotia Steel Co.
Clarke	Ogawa
Ezaki	Ross & Duncan
Ferguson Bros.	Simons
Fukao	Stabilimento Tecnico Triestino
Guyler	Tharatt
Hunter & Milne	Toussaint
Hunter & Smith	United States Packing Co.
Jackson	Vickers
Kawasaki Dockyard	Vista
Krombout	Yarwood
Lejon	

In order to obtain the benefit of the extended interval allowed for the drawing in of screw shafts fitted with these appliances, it is essential that the design and construction of such appliances should ensure protection of the shaft from corrosion, as well as permit of the shaft being efficiently lubricated. *Any other type of oil gland or other appliance than those mentioned above should therefore be specially submitted, with full particulars, to this Office for the Committee's consideration.*

138. Special Surveys of Vessels arriving at Ports Abroad.—In cases where a periodical special survey is only recently due, the Committee do not desire that Owners of vessels registered in the United Kingdom, or on the Continent, should be obliged to submit them to the periodical surveys at distant ports, if the vessels are homeward bound, or are due to arrive in time to undergo the survey within the period specified, having regard to the year of grace admitted by the Rules. In such cases, the Committee have been quite willing to approve of the survey being deferred until the vessel's arrival at a home port, and thus save the Owners additional expense.

139. Boiler Surveys, to be held concurrently with Government Boiler Surveys.—With the object of avoiding the duplication of surveys and of relieving Owners, as far as possible, of unnecessary expense and inconvenience, the Committee desire that, in countries where boilers of steam vessels are required to be submitted to annual inspection by Surveyors appointed by the Government, the Society's Surveyors should arrange, whenever practicable, that the Special Survey and Periodical Surveys of Boilers, due under the Society's Rules, should take place concurrently with the Government Surveys.

Local Surveyors should be careful at all times to give ample notice to Owners of classed vessels in their district of the surveys which the Rules may require to be held from time to time on the boilers of their vessels, and endeavour by arrangement with them to give effect to the Committee's wishes in this matter as above expressed.

140. Survey of Passenger Steamers.—The remarks in the preceding paragraph apply equally in the case of Passenger Steamers locally owned, which have to be inspected annually by the Board of Trade or other Government Officials. The Society's Surveyors should, wherever practicable, arrange personally with the Owners or their Superintendents for any surveys that may be required by the Society's Rules on the hulls, machinery and boilers to be carried out concurrently with the Board of Trade surveys, which become due at least every twelve months. The dates when the Board of Trade Passenger Certificates expire are recorded in Col. 15 of the Register Book.

141. Special Surveys may be held before becoming due.—In any case in which it may suit the convenience of the Owners, the Special Surveys Nos. 1 and 2 may be held at any time within twelve months previous to the dates at which they severally become due, and the Special Survey No. 3 may be held at any time before the date when it becomes due.

142. Attention to be called to Special Surveys shortly due.—For the assistance and convenience of Owners, the Surveyors should, on the occasion of annual, damage, or other surveys, draw attention to any Special Periodical Survey, Special Annual Boiler Survey or Screw Shaft Survey that will shortly become due, and they should point out any requirements which can on these occasions be carried out, and thus as far as possible prevent expense or inconvenience attending the completion of such special surveys.

143. Partial Surveys to be clearly defined.—In all cases where portions of the requirements of special surveys (whether in anticipation or otherwise) have been carried out, the Surveyors are to set forth clearly and in detail in their reports what part of the special survey has been covered by their examination, and every requirement necessary in order to complete it. The detailed particulars of all requirements remaining to be completed must be repeated upon each report until the survey has been fully held.

It is most important to draw attention fully to the facts in all such cases with a view to obviate a repetition of survey of the portions found on examination to have been in good condition, when the remainder of the requirements of the special survey are being fulfilled.

144. Limit for Completion.—To facilitate the arrangements of Owners, a portion only of the requirements of the special surveys may be complied with at the time they become due under the Rules, provided that the whole of the survey on ship and machinery be completed within twelve months from the date when the survey became due.

In cases in which a special survey has been partially held upon two occasions previously, the Surveyors should, as opportunity offers, impress upon Owners and their Superintendents the desirableness of having the periodical survey completed with as little delay as possible, and they should use their best endeavours to facilitate this object. In the event of the survey still remaining unfinished, the Surveyors should state in their report the reasons why they have been unable to complete it.

Where the boilers are more than six years old, the boiler survey should not be postponed, but a special annual boiler survey should be held.

145. Written Notice to Owners and to Surveyors at other ports.—In all cases in which a portion only of a special survey is held, the Surveyors are to give the Owners or their agents, *written* notice of the parts not surveyed. A copy of the written notice should be attached to the report. When the survey is to be completed at another port prompt advice should be given direct to the local Surveyors of the portions of the survey remaining to be held.

146. Renewal of Chain Cables when worn.—When any length of a chain cable is worn so that the mean diameter at its

most worn part is reduced to the size given in the following Table, it is to be renewed. (See Table 56.)

Size of Chain Cable originally.	Should be renewed when worn to	Size of Chain Cable originally.	Should be renewed when worn to	Size of Chain Cable originally.	Should be renewed when worn to
Diameter in inches.	Mean diameter in inches.	Diameter in inches.	Mean diameter in inches.	Diameter in inches.	Mean diameter in inches.
$1\frac{1}{16}$	$1\frac{0}{16}$	$1\frac{7}{16}$	$1\frac{9}{32}$	$2\frac{3}{16}$	$1\frac{31}{32}$
$1\frac{2}{16}$	$2\frac{1}{32}$	$1\frac{8}{16}$	$1\frac{11}{32}$	$2\frac{4}{16}$	2
$1\frac{3}{16}$	$2\frac{3}{32}$	$1\frac{9}{16}$	$1\frac{13}{32}$	$2\frac{5}{16}$	$2\frac{1}{16}$
$1\frac{4}{16}$	$2\frac{5}{32}$	$1\frac{10}{16}$	$1\frac{15}{32}$	$2\frac{6}{16}$	$2\frac{2}{16}$
$1\frac{5}{16}$	$2\frac{7}{32}$	$1\frac{11}{16}$	$1\frac{8}{16}$	$2\frac{7}{16}$	$2\frac{3}{16}$
1	$2\frac{9}{32}$	$1\frac{12}{16}$	$1\frac{9}{16}$	$2\frac{8}{16}$	$2\frac{4}{16}$
$1\frac{1}{16}$	$1\frac{5}{16}$	$1\frac{13}{16}$	$1\frac{10}{16}$	$2\frac{9}{16}$	$2\frac{5}{32}$
$1\frac{2}{16}$	1	$1\frac{14}{16}$	$1\frac{11}{16}$	$2\frac{10}{16}$	$2\frac{11}{32}$
$1\frac{3}{16}$	$1\frac{1}{16}$	$1\frac{15}{16}$	$1\frac{23}{32}$	$2\frac{11}{16}$	$2\frac{13}{32}$
$1\frac{4}{16}$	$1\frac{2}{16}$	2	$1\frac{25}{32}$	$2\frac{12}{16}$	$2\frac{15}{32}$
$1\frac{5}{16}$	$1\frac{3}{16}$	$2\frac{1}{16}$	$1\frac{27}{32}$	$2\frac{13}{16}$	$2\frac{17}{32}$
$1\frac{6}{16}$	$1\frac{7}{32}$	$2\frac{2}{16}$	$1\frac{29}{32}$	$2\frac{14}{16}$	$2\frac{9}{16}$

In any case, however, in which the Owner objects to renew chain cables when worn as indicated above, the Surveyors should at once submit full particulars of the worn links, for the consideration of the Committee.

147. Anchors and Cables (Renewal, &c.).—With regard to the renewal of anchors and chain cables, &c., in classed vessels, Surveyors are reminded that anchors, cables, hawsers, and warps, are approved by the Committee for the retention of the figure "1" for equipment, if they are in accordance with the Equipment Table of the Rules in force at the date when the figure "1" was originally assigned by the Committee, and provided the equipment number and letter remain unaltered.

148. Vessels with Four Bower Anchors.—In connexion with the preceding paragraph it should be noted that vessels built in

accordance with the Rules in force prior to April, 1899, and having an equipment letter "x" and above, required *four* Bower Anchors.

149. Second Special Survey, No. 3.—In the second and subsequent Special Surveys No. 3 of iron and steel ships, after the oxidation has been removed from the inside and outside surfaces of the plating, frames, &c., the Surveyors are to make a complete and careful examination of the vessel at all parts, with a view to determining where holes are to be drilled for testing the thickness of the plating, viz., at the supposed thinnest parts.

Although the *minimum* number of holes to be drilled is defined in the Rules, the Surveyors are to require drilling to be carried out to a further extent, in any part of the vessel where they may consider it to be necessary.

If, during the progress of the survey, there is reason to consider that the scantlings of the vessel at any part are seriously reduced, the Surveyors are forthwith to report the facts to the Committee.

In forwarding the usual report upon the vessel after she has been submitted to the survey referred to therein, the circumstances of the case are to be fully stated for the consideration of the Committee.

150. Drilling of Plating.—Whenever the thicknesses of the plating have to be ascertained by drilling, Surveyors should be careful that all paint and rust are entirely removed before the plates are gauged; and further, that the actual thicknesses are correctly ascertained and stated in the reports in fractions of the same denomination as the original thicknesses.

151. Drilling of Plating, deterioration in thickness.—The following information is given as a *general guide* for Surveyors in Eastern or far distant ports where there would be necessarily much loss of time in communicating with the London Office for instructions.

In the cases of home or near continental ports where such loss of time in obtaining a reply will not occur, if material deterioration in thickness of the plating is found, the results of the

drilling should be *at once* reported to the London Office before taking further action in the matter.

The remarks apply to vessels in which the shell plating is of moderate breadth, so far as regards the drilling and the subsequent action consequent thereon :—

(1) Where the results of the drillings at a section of the vessel near the middle of the length show that the wasting which has taken place in the plating above the cement is fairly uniform and the aggregate diminution of the thicknesses is approximately equal to the original thickness of *one* of the ordinary strakes of shell plating, compensation should be required by doubling the sheerstrake or the strake of plating next below it, whichever is an inside strake, for one-half or three-fourths the vessel's length amidships, the former when the drillings at the sections towards the ends of the vessel show that the plating before and abaft the half length is not so much reduced in thickness, and the latter when the wasting appears to be more general and extending practically throughout the whole length of the vessel.

(2) In cases where the wasting is general and to a greater extent than above, it may be necessary to double a second strake of plating for some part of the vessel's length. In such cases the aggregate amount of the deterioration of thickness at each drilled section and the number of strakes drilled should be cabled to the London Office and instructions asked for.

(3) Cases may also arise where the wasting, although equal in extent to that stated in clause 1, may extend only for the length of the Engine and Boiler space and bunkers, it having been ascertained by drilling additional holes clear of these spaces that the remainder of the plating is in a more satisfactory condition; and in such cases it will not be necessary for the doubling required to extend for the full half length amidships, if it is found that the fitting of a shorter length of doubling will bring the ends of that doubling well beyond the generally wasted plating.

(4) Where the wasting which may be found to have taken place is unevenly distributed and, to a considerable extent,

confined to the strakes between "wind and water," it may be necessary to renew such excessively wasted plates or, under favourable conditions, to double a strake of plating there instead of the strake higher up.

(5) Where a strake is required to be doubled, the thickness of the doubling plate should in no case be less than the original thickness of the side plating of the vessel. (In Spar Deck vessels the doubling plates should be at least equal to the original side plating below main deck sheerstrake.)

(6) Where the general structural strength of a vessel is maintained by doubling being fitted as described above, or in cases in which the original thicknesses of the plating are found to be fairly well maintained, if a plate here and there is found to be unduly wasted, it should be renewed when worn to the extent given below.

Originally $\frac{11}{16}$ "	or $\frac{11}{16}$ "	when found worn to $\frac{7}{16}$ "	or $\frac{7}{16}$ "	
" $\frac{10}{16}$ "	" $\frac{10}{16}$ "	" "	" "	to less than $\frac{7}{16}$ " or $\frac{7}{16}$ "
" $\frac{9}{16}$ "	" $\frac{9}{16}$ "	" "	" "	to $\frac{8}{16}$ " or $\frac{8}{16}$ "
" $\frac{8}{16}$ "	" $\frac{8}{16}$ "	" "	" "	to less than $\frac{8}{16}$ " or $\frac{8}{16}$ "
" $\frac{7}{16}$ "	" $\frac{7}{16}$ "	" "	" "	to less than $\frac{5}{16}$ " or $\frac{5}{16}$ "
" $\frac{6}{16}$ "	" $\frac{6}{16}$ "	" "	" "	to $\frac{4}{16}$ " or $\frac{4}{16}$ "

152. Surveys of Boilers.—With reference to the requirements of the Rules as regards the survey of boilers of classed vessels (*see* par. 135), the Engineer Surveyor must in every case, before reporting boilers to the Committee as being in good and efficient condition, make a thorough personal examination of the boilers *by going inside each of them*. Whenever the tubes are taken out of boilers or when boilers are otherwise opened out, full advantage should be taken of the opportunity afforded for making a complete internal inspection.

When, owing to the size or mode of construction of the boilers, it is impossible for the Surveyor personally to inspect the inside of the boilers and make a thorough internal examination, he must adopt other means, such as drilling, testing by hydraulic pressure, &c., to enable him to satisfy himself thoroughly of the safe condition of the boilers.

In every instance the whole facts must be set forth in the report to the Committee, showing clearly whether or not a thorough examination has been made inside and throughout the boilers; if not, what prevented such examination, also the special means adopted by the Surveyor, in the absence of complete internal examination, to satisfy himself of the efficiency of the boilers.

Attention of Surveyors is called to the importance of carefully examining the plating in way of lap joints of boiler plates.

In cases in which such joints are difficult of examination extra care must be taken in carrying out the surveys, and, if doubt exists as to the efficiency of the parts, the plating should be drilled or an hydraulic test applied to the boiler.

Donkey boilers fitted in steamers are subject to the same surveys as main boilers and are to be thoroughly examined by the Surveyor in every case, and a clear statement made as to the nature of the examination. The notations (in Red) of "L.M.C.," "B. & M.S.," or "B.S." can be made only when the survey includes that of the donkey boiler unless the latter, on account of recent renewal, is not yet due for survey.

Much inconvenience is caused both to Owners and the Society when boiler surveys are only partially held, leaving for instance the setting of the safety valves or the examination of the donkey boiler incomplete, and thus preventing the notation of "B.S." being recorded in the Register Book in due course. The Surveyors should therefore endeavour to make such arrangements as will enable them to carry out the complete examination of the main and donkey boilers and the safety valves at one survey.

153. Working Pressures of Boilers.—When surveying either main or donkey boilers, the Surveyor should make a point of referring to the Register Book to ascertain the pressures for which the boilers have previously been approved; and in all cases in which it is deemed necessary to reduce the pressure of either main or donkey boilers below that recorded in the Register Book, the reasons why such reduction is made should be clearly stated in the report. When an *increase* of pressure is requested, the facts

must be submitted to the Committee before any other steps are taken in the matter.

The records of boiler pressures in the Register Book are intended to be those for which the boilers are fit to be worked, and in reporting surveys of boilers the Surveyors should be careful to insert in the spaces provided in the upper left-hand corner of the report form, the pressures for which they consider the main and donkey boilers are fit, even although, from any cause, the safety valves of these boilers are set to a lower pressure.

154. Donkey Boilers in Sailing Vessels.—When Donkey Boilers of Sailing Vessels come under survey for the first time, the scantlings of the boilers should be ascertained from actual measurement and their condition reported upon, special attention being paid to the requirements of the Rules regarding the safety valves, &c. If possible, a plan of the boiler should be forwarded, together with full particulars on a First Entry report form. (Rept. 5a or 5b, as the case may be.)

In cases of surveys held on *Portable* Donkey Boilers of Sailing Vessels, records are made of "Portable D.B." and "D.B.S." with dates when such boilers have not had their mountings disturbed after survey, the boilers thus being ready for use at any time, although they may be stowed away in the 'tween decks. If, however, after survey the mountings are removed to facilitate stowage, no record of survey is made, but a certificate may be issued on Report Form 10, stating condition of boiler and working pressure for which it is eligible. A note is to be added on the certificate to the effect that the boiler was dismantled after survey.

155. Limits on Machinery.—In the event of either the machinery or boilers appearing to be impaired to such an extent as to render it desirable that either, or both, be again specially surveyed within a shorter time than prescribed in the Rules, a Certificate for either machinery or boilers for a limited period will be granted according to the nature of the case.

In every such instance the Surveyors are to give the *earliest possible* intimation to the Owners or their representatives that it will be necessary to recommend a further survey within a limited

period. This notice is to be given on Letter form No. 4, a copy of which (4A) is to be attached to the Report.

When a vessel is engaged trading to the port at which the limitation survey on her machinery was held, the local Surveyors should arrange if possible for the matter to be attended to at the expiration of the limit, and failing this they are to report the facts of the case to the Committee.

156. Refrigerating Machinery, Periodical Surveys.—Periodical Surveys of Vessels holding the record "Lloyd's RMC" in the Register Book should be carried out in accordance with Section 5 of the Rules for Refrigerating Machinery and Appliances. Such surveys will comprise either Complete Periodical Surveys, as described in Section 5, par. 8, of the Rules, or Modified Surveys, as described in Section 5, par. 9, of the Rules.

It should be noted that the Modified Surveys referred to will not entitle a vessel to a fresh record of "Lloyd's RMC," and that on the satisfactory conclusion of such survey, the Surveyors' recommendation should be "That the existing record in the Register Book should be retained." Upon this report the Owners will be entitled to a fresh certificate certifying that the Modified Survey of the Refrigerating Machinery and Appliances has been satisfactorily carried out and that the existing record of "Lloyd's RMC" has been retained.

Loading Port Surveys of Refrigerating Machinery and Appliances may be carried out either on vessels holding the Society's RMC record or on vessels not holding the Society's RMC record. In the former case the survey should be as described in Section 5, par. 10, the form of certificate to be used being Certificate "A" (RMC).

In the case of vessels *not* holding the Society's RMC record, exceptional care must be taken with the survey, seeing that the machinery, insulation, &c., have not been subjected to regular and systematic examination by the Society's Surveyors. In these cases Certificate "B" (RMC) should be employed. (*See also par. 9, page 10.*)

157. Masts, Spars, and Rigging.—In all cases of special periodical surveys, or surveys to ascertain and report on the condition of masts, spars, and rigging, or whenever it may be deemed necessary, the Surveyors should either make a personal inspection, or call in the services of a competent and impartial person, for the purpose of making a careful examination in their presence. The Rules require all mast and bowsprit wedging to be removed at the No. 3 and subsequent special surveys unless the plating of iron or steel masts and bowsprits is doubled in way of the same, when it will only be necessary to remove the wedging at the Special Surveys, No. 3.

Great care should in all cases be exercised to ensure the selection of an entirely impartial person, and the Surveyors should personally see that the examination is properly carried out, as the Committee will hold them responsible for the efficiency of the masts, spars, and rigging. A report (on form Report No. 14) should be obtained from the person making the examination and should be attached to the repair report.

In all such cases the bobstay pins, also the bolts or pins and fittings, the deadeyes, and rigging screws to the whole of the standing rigging should be carefully examined. When any of these parts are found to be in defective condition they must be renewed.

F.—SPECIAL PERIODICAL SURVEYS ON WOOD AND COMPOSITE SHIPS.

158. Wood Ships. Half-time Survey, when due.—All ships classed A or A in red are required to undergo a Special or Half-Time Survey within periods not exceeding four years in the case of vessels classed from 6 to 8 years inclusive, either originally, or on Continuation, or on Restoration, or A in Red, and within periods not exceeding half that assigned in vessels classed for longer terms. Vessels classed for less than 6 years will not be required to undergo such half-time survey; when the class of a ship is for an odd number of years, an exact half of the term is not taken in reckoning when the half-time survey falls due, the division being made liberally in respect of the vessel—thus in

a vessel classed for 9 years the half-time survey would not be considered compulsory until the expiration of five years from the year of build, or of Restoration or Continuation, as the case may be; the month in which the vessel was launched not being taken into account in the Half-Time Survey.

In any case in which the Continuation survey has been held after the year in which it became due, the half-time survey will be reckoned from the date when the Continuation survey was held.

159. Wood Ships and Yachts; expert assistance to be obtained.—Special steps should be taken to make all surveys of wood vessels as effective as possible, particularly with a view to the disclosure of any evidence of dry rot in the structure.

When wood or composite ships or yachts come under inspection for Half-Time, Special Periodical, Continuation, Restoration or other surveys of similar character, or in the case of Condition Surveys on wood yachts, also in the case of wood or composite ships or yachts which are being constructed with a view to classification, these surveys are to be undertaken only by Surveyors possessing knowledge and practical experience of wood vessels. Where the local Surveyor does not possess this knowledge and experience, while he will be held responsible for the efficient carrying out of the survey, arrangements are to be made for the services of an independent expert in wood construction to join the Society's Surveyor in the survey in a similar manner to that adopted at present in regard to the rigging of sailing vessels.

At periodical and similar surveys it is considered, in addition to the opening up of the air courses and the removal of the listings originally fitted, or the cutting of the fresh listings as may be considered necessary by the Surveyor, and the carrying out of the Rule requirements in other respects, that at all closed-in parts of the vessel where lining is fitted, such as peaks, store-room or other confined spaces, sufficient lining should be removed to enable the Surveyors to assure themselves that the whole of the materials in the vessel are free from dry rot.

160. Salting to be Reported.—In reporting the Half-Time Survey of salted ships the Surveyors should specify the manner in

which the Rules have been complied with, both with regard to the examination of the salting generally, and of the beams, by removal of deck planks where required under the Rules. In cases where the beams have not been salted, the record in the Register Book will stand thus, "Salted †."

161. Re-classification Surveys.—On the expiration of the term of years assigned to vessels they will be eligible for re-classification under the Rules for Continuation, Restoration, or A in Red, as the case may be (*see* Sections 54 to 60 inclusive, of the Rules for Wood Ships).

162. Application to be made by Owner.—When such re-classification is desired, the Owner is to be required to communicate his intention to the Committee by a letter addressed to the Secretary, giving timely notice when the vessel will be stripped and opened, as directed in the Rules, for the purpose of being submitted to special survey and examination. He must also state his willingness, as usual upon such occasions, to pay all the expenses attendant on the said survey. On the receipt of such communication, the Committee will give immediate directions for the appointment of such person or persons as they shall think proper, in conjunction with the Society's Surveyors, to take upon themselves the duty required. Unless such notice be given to the Committee, and the Survey in question be held, it must be clearly understood that the ship cannot be considered as entitled to the privilege of re-classification.

163. Relaxations from Rules in Restoration Surveys.—In the case of vessels coming under survey for Restoration, where relaxation from the Rules, Sections 57 and 58, is sought, on the ground that the parts to be removed are of Teak, or other high class materials, and might be replaced by low class material, full particulars of each case, together with the facilities that exist for adequately examining the condition of the timbers of the frame, beams, &c., should be submitted, with the Surveyors' opinions thereon, for the consideration of the Committee.

164. Ships not built under Survey.—As regards wood ships which have not been built under survey and for which classification

is desired, attention is called to Sections 52 and 53 of the Wood Rules.

165. Periods of Re-classification.—As the provisions of the Rules regulating the Continuation and Restoration, &c., of vessels classed A for a term of years have occasionally been misinterpreted by the Society's Officers and others, the accompanying Table has been prepared showing the several periods for which ships are eligible upon Continuation, Restoration, &c.

TABLE

Showing the several periods for which ships classed A for a term of years are eligible upon Continuation or Restoration, or survey for the character A in red.

Vessel's original term of Classi- fication.	* NUMBER OF YEARS ENTITLED TO UPON						
	† CONTINUATION. (Section 54.)			RESTORATION.		SURVEY FOR A IN RED. (Section 60.)	
	First Survey.	Second Survey.	Third Survey.	First Rule. (Sections 55 and 56.)	Second Rule. (Sections 57 and 58.)	First Survey.	Second Survey.
5 years	2	3	2			2	3
6 "	2	4	2	3	4	2	4
7 "	2	5	2	4	5	2	5
8 "	3	5	3	4	5	3	5
9 "	3	6	3	5	6	3	6
10 "	3	7	3	5	7	3	7
11 "	4	7	4	6	7	4	7
12 "	4	8	4	6	8	4	8
13 "	4	9	4	7	9	4	9
14 "	5	9	5	7	9	5	9
15 "	5	10	5	8	10	5	10
16 "	5	11	5	8	11	5	11
17 "	6	11	6	9	11	6	11
18 "	6	12	6	9	12	6	12
19 "	6	13	6	10	13	6	13
20 "	7	13	7	10	13	7	13

* The periods above set forth are exclusive of any allowance made by the Rules in respect of vessels being diagonally doubled or being salted when surveyed for Continuation, Restoration, and the character A in Red; or being copper fastened or largely repaired with wood of a higher grade than the original material when surveyed under the rules for Restoration.

† In Continuation after Restoration a vessel is entitled to the number of years that would be assigned in respect of an original term of classification equal to the period for which she has been restored.

166. Composite Ships. When to be Surveyed.—All composite vessels are to be surveyed annually if practicable; and whenever the copper, yellow metal, wood or other sheathing is stripped off, the condition of the planking, fastenings and caulking is to be ascertained.

Vessels marked CF are to be submitted to a special periodical survey every *four* years and those marked GIB and IB every *three* years.

167. Machinery Surveys.—The machinery and boilers of wood ships are to be specially surveyed every four years, and those of composite ships on the occasions of the special periodical surveys; and in addition all boilers are to be specially surveyed when six years old, and subsequently they are to be specially surveyed annually. (*See par. 135.*)

168. Masts, Spars, and Rigging.—On the occasion of all special surveys of wood and composite vessels, or whenever it may be deemed necessary, the masts, spars, and rigging are to be examined in accordance with the instructions in par. 157.

G.—DAMAGE SURVEYS AND REPORTS.

169. May be held on Classed or Unclassed Vessels.—The Surveyors are authorised, upon application, to survey ships or machinery (whether classed or unclassified) for the purpose of ascertaining any damage they may have received, and to furnish the parties interested with a report, on the form provided for the purpose (Report No. 10).

170. Must be restricted to Hulls, Machinery and Equipments.—These surveys should in all cases be restricted to the hulls or machinery of vessels, or their equipments. The Surveyors are not permitted in their official capacity to survey goods or cargo, or to make up or sign any statement of average or to undertake any other business whatsoever in connection with the damage, without the Committee's express authority. (*See Section 1, pars. 3 & 4.*)

171. Log Book and Protest to be examined for cause of Damage.—At such surveys it is necessary that the Log Book and Protest, containing particulars of the occurrence of the damage, be examined by the Surveyors, who, before issuing a damage report must satisfy themselves that the damage might have arisen from the alleged cause.

172. Damage Surveys distinct from Classification Surveys.—It should be clearly understood that damage surveys and reports are quite distinct from surveys and reports for the purposes of classification. Damage reports are required for the purpose of enabling the Shipowner to effect a settlement of his claims upon the Underwriters in respect of damage, and the Owner or his representatives may select any Surveyor they choose. The Surveyors to this Society are generally employed to make out such reports, and this is obviously the course most conducive to the interests of all concerned; but Owners are not *compelled* to engage the services of the Society's Officers for certifying to the nature and extent of damage.

173. Most convenient if held by Society's Surveyors.—When, however, Owners and Masters are given to understand that it is necessary, according to the Society's Rules under which their vessels are classed, for the Society's Surveyor to be called in to survey the *repairs* which may be executed, and that these repairs have to be done to *his* satisfaction (*see par. 108*), the Owners and their representatives usually recognise the fact that, in order to obviate any misunderstanding ultimately as to the sufficiency of the repairs, the most convenient course is to call upon the Society's Surveyor in the first instance to survey the damage and recommend such repairs as he may consider necessary, and to make out the special report or certificate of damage.

174. Surveyors should offer their Services.—It is the duty of the Surveyors to offer their services for the purpose of holding the damage survey and making the damage report in every case which comes to their notice of the arrival in their district of a classed vessel upon which a damage survey may be required.

175. Regarding Club Surveyors.—It is the practice of some Marine Insurance Clubs to employ their own Surveyors in the survey of damaged vessels insured with them. In such cases, when the vessels are classed in the Society's Register Book, *and the Society's Surveyors are called upon to make a damage report*, it is desirable that any difference of opinion which may arise as to the repairs of damage necessary to place the vessel in as good condition as she was in before having sustained the damage in question should be reconciled at an early stage in the progress of the work. *If the Society's Surveyors are not called upon to make a damage report*, it will be their duty to see that the repairs effected are such as in their opinion are required to entitle the vessel to retain her classification in the Society's Register Book.

176. Reports to be drawn up with great care.—Damage reports being used as a basis upon which to determine an equitable settlement of claims arising between Shipowners and Underwriters, the Committee attach great importance to such reports being made out in a systematic manner and with the strictest accuracy, so that they may prove completely reliable in all cases, and the Surveyors should be careful to observe the following points in drawing up documents of this kind.

177. Owner to be consenting party.—A survey requested by any other person than the Owner or his representative, should be held only upon the understanding that the Owner or his representative is a consenting party, and the words "and with the consent of the Owner," or "*Master*," or "*Owner's Agent*," as the case may be, should be inserted in the report after the name of the person requesting the survey.

178. Surveyors not to adopt statements as to Cause of Damage.—The Surveyors should not adopt as their own assertions statements made to them assigning the cause of the damage, but should describe the damage as "stated" or "alleged" to have been sustained in a certain way, making reference to the Log Book and Protest for the particulars of the occurrence.

179. Damage to be detailed.—They should then proceed to set forth, with all necessary detail and preciseness, the whole of the special damage which they find upon *personal inspection*.

180. Wear and Tear to be excluded.—The Surveyors should carefully exclude from their recital of damage whatever is clearly the effect of ordinary wear and tear or natural decay.

181. Damage from Other than Alleged Cause to be separated.—In any case also where any portion of the damage found is of such a nature that it must obviously be due to other than the alleged cause, the particulars of such portion of the damage should be dealt with separately in the Report. It is necessary to make this distinction in order to provide for cases in which the damages sustained on different occasions may be chargeable to different Underwriters.

182. Damage from Collision to be separated.—In any case where the damage is the result of collision and other causes, the portion of the damage due to collision should, if possible, be set out separately in the Report.

183. Necessary Repairs to be detailed.—Having described the damage they find, the Surveyors are to state as fully and precisely (and as far as possible in the same order) the whole of the repairs they recommend with a view to placing the vessel, or the machinery *in as good condition as it was in before having sustained the damage in question.* All numbers and sizes should be given in writing, instead of in figures.

184. How Repairs are to be determined.—In framing their recommendations for the repair of damage the Surveyors should be guided by the principle that whilst a Shipowner is entitled to have the vessel or machinery placed in the same condition as it was in previous to the damage being sustained, it does not necessarily follow that all the damaged portions should be replaced in precisely the same manner as in the original construction, as it happens frequently that a vessel or her machinery can be efficiently repaired at a great saving of expense without adopting that course, and the Owner be equally well satisfied.

185. New Material to be of same description as Original.—In Reports of Damage the Surveyors should recommend that the new work be of the same description of material as the

original ; and when dealing with fittings, such as propellers, &c., which in the Surveyors' opinion require to be renewed, they should make it clear in their reports that the new fittings provided should be of the same type and material as the ones they are intended to replace, which should be described.

186. Temporary Repairs to be clearly shown.—If, in any case, in order to meet the convenience of the parties concerned, the Surveyors are called upon to recommend repairs of a temporary nature only, the fact that such repairs are not intended to be final should be clearly shown in the report, also in any document which may be issued certifying to the execution of the repairs as recommended.

187. Postponement of Repairs.—In any case where the Owners desire to postpone repairs and the Surveyors agree that this course can be safely adopted, the fact that the repairs have been postponed at the instance of the Owners should be clearly stated in the report.

188. Losses other than Actual Equipment to be excluded.—As the Committee disapprove of the Society's support being given to claims, the accuracy of which the Society's Officers are not in a position to certify from *personal knowledge*, the Surveyors are not to enumerate articles alleged to have been lost in connection with the occurrence of the damage, except such articles as belong to the ship's actual equipment and regarding the loss of which the Surveyors may have no reasonable doubt. It is of course open to the Owners of vessels or their representatives to put forward statements of other losses upon their own responsibility, and such documents may be attached to the report ; but the Surveyors should make it quite clear that they do not certify to the accuracy of such statements.

189. Signatures on Reports.—The Society's Surveyors are not to sign any reports for which they are not themselves wholly responsible.

When the Society's Surveyors are desired to join in Consular or other surveys upon which two or more Surveyors are engaged,

they are authorised to do so, but it will, of course, be clearly understood that on no account should they agree to the inclusion in the report of any statement of damage the accuracy of which they are not in a position to certify from *personal knowledge*.

190. Fees and Expenses to be stated.—The whole amount of fees (and travelling expenses, if any) charged upon a damage survey should be set forth on the report, and the nature of the survey should be indicated on the receipt issued upon payment of the charges.

191. To be Paid before Delivery of Report.—Damage reports are not to be given up to those who requested the survey, until the fees due thereon are paid.

192. Copies of Reports to be sent to London.—A copy of the damage report is to be forwarded in every case to the London office (with the usual official report of survey in the case of classed vessels). A duplicate press copy, if clear, is quite sufficient. This copy, together with any other documents which it is important shall receive consideration with the repair report, should in all cases be firmly attached to that report.

IV.—VARIOUS REQUIREMENTS.

193. Auxiliary Machinery, Inspection and Testing of.—

(1) **Steam Engines.**—In the case of steam engines for driving auxiliary machinery, for which the Society has no specified Rules for the scantlings, the engines should be examined under working conditions after fitting on board in order to ascertain whether they are efficient for the purpose for which they are intended. Examination and testing of these engines may be undertaken at the Makers' Works, if it be so desired.

(2) **Electric Generators.**—Special tests for electric generators are specified in the Rules. If facilities do not exist for carrying out these tests on board ship, the tests should be carried out at the Makers' Works. In the latter case the generators are to be again examined under full working conditions after being fitted on board.

(3) Internal Combustion Engines.—

(a) The scantlings of internal combustion engines are specified in the Rules; but, where such engines are used for driving electric lighting sets only, these engines need not be constructed under special survey. They are, however, to be examined under full working conditions after fitting on board, but may be tested on the test bench if the dynamos be available.

(b) In the case of motor ships, all internal combustion engines used for driving air compressors or electric generators which supply power for driving the auxiliary machinery are to be constructed under special survey, and in accordance with the requirements of the Rules for Internal Combustion Engines.

194. Survey of Machinery after Casualty.—In cases of casualty in which the class of a vessel is expunged from the Register Book, the records of B.S. and L.M.C. are also expunged, and before the class is reinstated in such cases the engines and boilers must be completely surveyed, in order to bring the record of machinery up to the date of the reinstatement of the class of the hull.

195. Additional Strengthening.—In the case of iron or steel vessels under survey, where it is considered necessary by the Surveyors to recommend additional strengthening to the hull or superstructures in consequence of supposed inherent weakness, *immediate* notice should be forwarded to the Committee, so that they may order a special survey to be held, if deemed necessary, with a view to the circumstances being fully investigated for their information. (*See also par. 220.*)

196. Panting and Damage to Bottom Forward.—In cases in which it has been found desirable to make additions to the arrangements to prevent panting, or to the strengthening of the bottom forward, the Surveyors are to state in detail on their Reports the alterations made with a view to preventing a recurrence of the trouble.

197. Large Hatchways.—Instances having occurred in which ships' hatchways, which had been enlarged for the purpose of

taking on board machinery, have been stove in at sea, the Committee desire that in all cases of enlarged hatchways the Surveyors will give their utmost attention to seeing that the hatchways are made secure, reporting very fully in each case to the Committee the means taken to attain this very important object.

198. Removal of Stanchions.—Cases having occurred in which vessels loading timber cargoes have had the stanchions removed, the Surveyors should be careful in all cases of the arrival of such vessels at their port to examine them at the earliest opportunity, to ascertain whether any straining has been caused by the removal of stanchions for the stowage of the cargo. At the same time care should be taken where stanchions have been removed, that they be replaced and properly secured, and the result of the inspection should be reported to the Committee without delay.

199. Stern Frames and Rudders taken out for Repair.—In cases where stern frames or rudders are taken out of vessels to be repaired, the Surveyors should furnish full particulars of the defects observed, including a sketch showing the position and nature of the fracture on the report, for the information of the Committee, so that a record may be kept in the London office of all failures in such forgings or castings.

200. Sounding Pipes.—The Surveyors are to give particular attention, not only in the case of new iron and steel ships, but also of those already classed in the Register Book, to see that a doubling plate is fitted under all sounding pipes; and it should be stated in the report that this has been attended to.

201. Pumps.—In view of the serious consequences that have resulted in some cases from the use of inefficient pumps, the Surveyors should give this important matter their special attention in vessels coming under their survey and see that the pumps are of sufficient size, not liable to choke and can be easily worked.

202. Ceiling on Tank tops.—The Surveyors should see that where ceiling is fitted, the battens, on which the ceiling is laid, are so arranged that water may readily find its way into the bilges. Care should be taken, when a vessel comes under survey, to see that the edges of the ceiling fit close to each other.

203. Cargo Battens.—Attention having been drawn to the fact that there is a variation in the practice of different ports with regard to the fitting of cargo battens between decks, the Surveyors are reminded that the Rules require cargo battens to be fitted above the upper part of the bilge and in the 'tween decks of all types of vessels, and in permanently enclosed spaces, in bridges, poops, and other deck superstructures; and are to take steps, where necessary, to ensure uniform compliance with this requirement. (*See* Section 31, par. 2.)

204. Patent Cement replaced by Portland Cement.—In vessels coated with asphalte or patent cement, the Surveyors should see that this description of coating is thoroughly cleaned out, in cases where Portland cement is to be substituted.

205. Steel Used in Repairs to Ships and Boilers.—The Surveyors should inform Repairers of vessels at their port that, in ordering steel to be used in the repairs of vessels classed in the Society's Register Book, they should stipulate for a certificate to be furnished by the Manufacturers, setting forth that the steel has been tested under the inspection of one of the Society's Surveyors in accordance with the requirements of the Committee.

206. Deterioration of Inner Bottom.—When the inner bottom forming part of a water ballast tank of a vessel is found to have deteriorated to such an extent as to render it unfit for carrying water ballast, the Surveyor should bring the fact to the notice of the Committee without delay, stating fully his recommendations for maintaining the strength of the ship.

In all such cases, where the tank top will not withstand the pressure required by the Committee, the connections for filling the tank should be cut off, and full particulars forwarded in the repair report, so that the record in the Register Book may be amended.

207. Inner Bottom Plating under Boilers.—With reference to the subject of the repair or renewal of inner bottom plating under boilers, it should be noted that the strakes of plating may be arranged transversely, if so desired, provided the edge laps be double riveted, and the plates be made 1/20th or 1/16th of an inch

thicker than otherwise required by the Rules at that part of the vessel.

208. Bunkers of Iron and Steel Ships.—The attention of the Committee has been drawn to the case of a steel steamer, in which the framing, stringers and beam ends in the coal bunker space had almost wasted away through corrosion after a period of only 8 years, during which time, however, it would appear that the vessel, inside the bunkers, had never been painted.

It will, therefore, be seen that more than ordinary care is required in surveying bunkers; and the Surveyors are to draw the attention of Owners to the advantage of thoroughly coating these parts with some good preserving composition.

209. Pine Decks.—In some vessels where Pine decks have been fitted, damage to cargo has resulted from leakage, owing to the shrinking of the decks, and to rents and shakes. In any cases, therefore, where it is intended to fit the weather decks of Pine in vessels classed, or intended for classification in the Society's Register Book, the Surveyors are to take steps to ensure that the decks have been well seasoned after being cut, as required by the Rules, Section 13, par. 6.

Special attention should also be directed to the laying of decks of this material and to the caulking of the seams and rents.

210. Oregon Pine Decks.—It will be observed from par. 6 (e) of Section 13 that Oregon Pine of good quality will be admitted for decks, provided it be laid with the grain vertical, and the width of planks and period of seasoning be as required for Pine.

211. Sheathing of Steel and Iron Decks in Old Vessels.—A question having been raised as to the requirements of this Society's Rules respecting the sheathing of steel and iron decks in old vessels in which the decks have not previously been sheathed, it should be noted that paragraphs 6 and 7, of Section 13 of the Rules, are intended to apply not only to wood decks in new vessels, but also to new wood decks which may be laid in vessels already built.

212. Carriage of Oleum.—Cases have been reported to the Committee in which damage, in some instances serious, has been sustained to the structure of steel vessels engaged in carrying a cargo of oleum in iron drums, leakage from which has taken place into the holds.

Oleum was stated to be a solution of free sulphur trioxide in sulphuric acid, which may be stored in wrought iron vessels with very little action on the metal, provided the concentration is sufficiently high, but mingled with water, as would happen with leakage, has seriously corrosive effects upon ceiling, cement and the steel material of the structure.

In the circumstances, the Surveyors should *at once* report all cases that come to their knowledge of classed vessels arriving in their district that have been employed in the carriage of oleum, furnishing full particulars of cases in which any leakage of the acid is reported to have occurred.

213. Ventilators.—The particular attention of Surveyors is drawn to the necessity of the maintenance of ventilators and their coamings in an efficient condition. Special attention should be given to this matter on the occasion of Special Surveys Nos. 1, 2, and 3, also at Annual and Occasional Surveys, and a definite statement in this sense should be included in reports of survey.

214. Caulking.—It having been represented to the Committee that the caulking of wood ships has frequently been very carelessly and inefficiently performed, particular attention is called to this most important subject, and the Committee desire that the Surveyors will, whenever practicable, satisfy themselves, *by personal examination and testing*, that the caulking has been properly and efficiently done; *and that they will state in the report of survey that they are satisfied therewith.*

215. Fire, Repair of Steel Vessels damaged by.—The Surveyors are to exercise great care to ensure that no plates are allowed to remain in the hull and boilers of a vessel which are in a damaged condition through being chilled after being raised to a high temperature by fire on the vessel.

Further, all steel material in a vessel which has been damaged by fire, whether distorted or not, must be annealed before it can be put back in the vessel, and if this be not done such damaged material must be renewed with properly tested steel.

With regard to the distorted material the Surveyors should be most careful to ensure that, even when faired and annealed, the material has not been so stretched by distortion as to be unsuitable for going back. Material which has been heated and subsequently chilled must not be faired in place, but must be taken out of the vessel in order to undergo the process of annealing.

For the information and guidance of the Surveyors, a Report having reference to the effects of fire on steel ships is reprinted below.

REPORT ON STEEL STEAMER AFTER FIRE DAMAGE.

In submitting the accompanying report of repairs just executed on the Steel-built Screw Steamer, we beg to lay before you a historical sketch of the case, as there are several points of interest connected with it, of which we feel assured the Committee will be glad to be informed.

She was lying at the quayside when a fire broke out in the adjoining sheds, and as she was then aground and could not be moved the fire soon communicated itself to the ship, burning the rigging, spars, boats, deck, etc. The starboard side of the vessel was subjected to great heat, and at first the fire engine played on the burning deck, etc., but when the vessel floated and was moved astern and off from the quay, the marine fire engine played on the whole side of the vessel. The heating and cooling of the plates caused buckling to take place between the frames in six courses of plating, and at one part the frames were bent inwards. Two plates were at that time found broken amidships; one of them was renewed and the other temporarily repaired with a covering or doubling plate, in order to allow of the vessel's proceeding to the United Kingdom. A few cracks in the upper strake of plating of the shelter deck had also short covering pieces worked over them as a temporary repair.

Two days after the ship had left port (she plunging heavily at the time), a loud report was heard, and on an examination being made the sheerstrake and two plates immediately below were found broken. On the next day another report was heard, and then about 24 feet further aft the doubling strake at lower part of the shelter deck plating was found broken; the butt of the sheerstrake immediately below the break open; and the strake below broken at the upper edge about six inches down.

Some curious matters developed during the removal of the buckled plates. In the thin six-sixteenth inch plating of the shelter deck, three plates—6D, 12D and 14D—were found broken under the butt straps of the thick doubling strake. Two plates of the sheerstrake—13C and 18C—were discovered to be broken while in process of unriveting, no sign of a fracture being observable before the unriveting commenced.

The breaks in the plating were in immediate proximity to the butts of adjacent strakes or the butts of stringer plates.

With two exceptions the breaks in the upper course of the shelter deck plating took place at the side scuttles.

After the broken plates were removed we subjected plates 8C and 9B to tests, pieces being cut off as close as possible to the fractures.

The first piece tested was No. 7 of the sheerstrake, cut close to the fracture and annealed. This piece broke at 20 tons per square inch with no elongation—there was a flaw in it.

Second piece—No. 8—not annealed, breaking strain 30·6 tons per square inch, and the elongation 25·6 per cent.

Third piece—No. 6—annealed, breaking strain 30 tons per square inch, elongation 26·75 per cent.

Fourth piece—No. 5—also annealed, breaking strain 30·54 tons per square inch, elongation 29·6 per cent.

We next tested the plate just below the sheerstrake with the following results:—

No. 1—annealed—breaking strain 30·58 tons per square inch, elongation 26 per cent.

No. 2, close to fracture—annealed—breaking strain 30.5 tons per square inch, elongation 26 per cent.

No. 3—not annealed—breaking strain 30.66 tons per square inch, elongation 25.5 per cent.

No. 4, close to fracture—not annealed—breaking strain 30.75 tons per square inch, elongation 25.5 per cent.

No. 5—not annealed—breaking strain 30.25 tons per square inch, elongation 31 per cent.

It will here be seen that the breaking strain is practically the same in the annealed and the unannealed pieces.

The temper and cold tests have also proved satisfactory.

In conclusion, we beg to state that all the plates which have been removed and replaced have been annealed, thereby in our opinion disposing of any doubt which may have otherwise arisen as to their efficiency.

All the new plates have also been annealed after punching and countersinking.

216. Flash Point of Oil Fuel.—The Committee have had under consideration cases in which fires have occurred, accompanied by loss of life in one instance, in some vessels fitted for burning oil fuel having a flash point *above* 150° Fahrenheit, and it would appear the immediate cause of the fires was the employment of oil fuel having a flash point *lower* than 150° Fahrenheit.

In the circumstances the Committee consider it necessary to call attention to the fact that in the case of vessels in which the approval of this Society has been given to the use of high flash point oil only, the classification of the vessels is conditional upon oil fuel having a lower flash point than 150° Fahrenheit not being employed.

Serious danger is liable to arise from the use of low flash point oil fuel in vessels with arrangements approved only for the use of oil fuel with a flash point above 150° Fahrenheit, as in the event of the temperature in the stokehold becoming higher than

that of the flash point of the oil fuel, any leakage of the oil fuel into the stokehold, which is inevitable from the glands and joints of the oil fuel pumps, will cause the lighter constituents of the oil to vaporise and become an inflammable gas. This gas combined with air will form an explosive mixture and will ignite in the presence of naked lights; and in the stokehold there are always naked lights, namely, the boiler fires, also generally there are oil lamps.

217. Doubling Plates in Boilers.—The attention of the Committee has been drawn to the case of a boiler in which the lower parts of the combustion chambers, instead of having been constructed in the usual manner of one thickness of plating, were made of comparatively thin plates strengthened by doubling plates, with the result that the inner plating became bulged and the boiler was rendered leaky.

In view of the above the Surveyors' attention is drawn to the necessity of seeing that no doubling plates are fitted in any boiler in positions where they may be exposed to the action of the heat of the fires. In such positions the necessary strength should be provided for, if possible, by using a single plate of sufficient thickness, or, where this is impracticable the plates should be strengthened by stays or by **L** or **T** bars.

218. Boiler Manholes and Fittings.—Accidents have occurred to boilers of classed vessels in consequence of the bad fitting of manhole doors and of drain plugs, some of which have been attended with fatal results. The Surveyors are therefore reminded that in surveying boilers, new or otherwise, the examination should include not only the boilers, but also all the mountings and their fastenings, and the manhole doors and their fastenings, special attention being given to the fit of the spigots of the doors in the manholes. These should be so well fitted and of such a depth as to render it absolutely impossible for the jointing material to be forced out between the spigot and the boiler plate, even when the door is so placed that the clearance is all on one side.

In some accidents the amount of total clearance between the spigot of the door and the hole in the boiler shell plate has been $\frac{5}{16}$ of an inch, and in one case enquired into it was only $\frac{1}{4}$ of an inch. Although it may be difficult to make a hard and fast rule as to what constitutes a "good fit" of the spigot, the case alluded to shows that a clearance of $\frac{1}{8}$ of an inch all round proved to be too much, and this limit, therefore, should certainly not be exceeded. Attention is also drawn to the necessity of the spigots themselves being square to the surface of the door, otherwise the slackness of fit increases with the thickness of the jointing material.

219. Shafting.—In the case of new vessels engined under survey, the Surveyors should pay great attention to the line of shafting, and assure themselves, as far as possible by personal inspection, that the stern tube and shaft bearings are so placed in the vessel as to ensure the shafting being in true line throughout.

220. Repairs to New Vessels.—A few instances have occurred in which, in cases of new, or relatively new vessels, certain conditions of the structure have been wrongly attributed to structural weakness, original defects or bad workmanship, and the Owners have been put to great and unnecessary expense for repairs.

In the event of any case of this kind arising, which apparently calls for additional strengthening or extensive renewal of rivets, before recommendations are made or repairs are undertaken, the case should be referred to the Principal Surveyor, if there is one available, or to the Committee, full particulars being submitted; and if necessary this should be done by *cable* to the Committee for instructions.

It has sometimes occurred that, owing to odd rivets, on hammering, having been found apparently slack, they have been renewed. This is to be avoided unless there is a distinct necessity for it, as the tendency, due to renewal, is to slacken the adjacent rivets, thus causing more to be renewed than are required.

V.—SHIPPING LAWS OF CANADA, AND VARIOUS OTHER COUNTRIES.

221. Canadian Shipping Act.—Exemption from Survey provided by Society's Certificates.—Under the provisions of the Canadian Shipping Act (1910) cargo steamers registered elsewhere than in Canada, and trading between Canadian ports, are subject to periodical inspection by Canadian Government inspectors, but under an Order in Council issued by the Department of Marine and Fisheries of the Canadian Government, vessels holding a certificate from Lloyd's Register are exempted from such inspection during the currency of the certificate.

The exemption provided in the Order is subject to the inspection by the Surveyors to this Society being made *annually* in the United Kingdom, and to the production on demand of the Society's certificate to either the Collector of Customs or the Steamboat Inspector for the district in which the vessels concerned may be trading or plying in Canada.

It is therefore suggested that in the case of any vessels intended to trade in Canadian waters, certificates of classification based on the latest survey should be obtained before the vessels leave this country, in order to avoid the inconvenience and delay which is liable to arise if the steamers are not provided with these documents.

221*. Marine Boilers for Canadian Vessels.—In response to a request made by the Canadian Government the Committee have consented to allow the Society's Surveyors, in all cases in which they survey the construction of boilers, which it is known are intended for Canadian vessels, to request the Makers of such boilers to supply, on a form provided for the purpose, the several particulars set forth thereon—those on the back of the form being of course filled in by the Surveyor. These forms after having been duly completed are to be forwarded to the Secretary. A supply of the forms can be obtained on application to the London Office.

222. Belgian Shipping Law (1920).—By a Ministerial Decree issued by the Administration de la Marine, Brussels, Lloyd's Register of Shipping has been recognised as a Classification Society under the provisions of the Belgian Law of the 25th August, 1920, on the Safety of Vessels.

Under the Law all ships classed with a recognised Classification Society are exempted from certain surveys which would otherwise be required.

It is requisite that all Belgian vessels (classed and unclassed) obtain a permit of navigation. In the case of classed Belgian vessels, no difficulties will be experienced in Belgium or elsewhere, as this Society is recognised by the Belgian Government, and the production of the Certificate of Classification will be sufficient.

In the case of unclassed Belgian vessels in ports outside Belgium, the Law requires the Belgian Consul to issue the permit of navigation, on the recommendation of three Surveyors of recognised Classification Societies, both in the case of a vessel abroad passing under the Belgian Flag, and thus requiring a permit, also in the case of the lapsing by time of an original permit issued to a Belgian ship. In the latter case the permit may be provisionally extended to allow the vessel to proceed to a Belgian port, but such extension is not to be for a longer period than six months.

In the case of Consular surveys, the Society's Surveyors are allowed to sign reports jointly with other Surveyors, and such surveys may deal either with the condition of the vessel or damage received from some special cause, and may be held on either classed or unclassed vessels, with a view to issuing a certificate for presentation to the Consul.

223. French Shipping Law (1907-8).—According to the terms of the French Shipping Law of the 17th April, 1907, and Ministerial Decree of the 5th September, 1908, French vessels holding the highest class in Lloyd's Register are accepted without further survey as eligible to be granted the requisite "permis de navigation" so far as regards structure and condition of hull and machinery and equipment of anchors and cables. Similarly, so

long as they retain their classification with this Society, vessels sailing under the French flag are exempted from certain official periodical and other surveys in dry dock prescribed by the law.

Vessels holding Lloyd's Register classification certificates are also exempted from the "*visite de partance*" to which vessels of all countries are subject before leaving French ports.

Certificate Form F is provided for use by the Society's Surveyors under the above-mentioned regulation.

224. Norwegian Shipping Law, June, 1903.—The Norwegian Government have agreed to admit vessels classed in Lloyd's Register as fulfilling the conditions of the Norwegian Law, dated 9th June, 1903, relating to the seaworthiness of vessels, and to recognise the surveys held by the Society's Surveyors on such vessels, provided that some additional requirements set forth in the Regulations are complied with, and that the reports on these points are satisfactory.

Whenever a Norwegian vessel, or a vessel which is being transferred to the Norwegian flag, comes under inspection, the Surveyors should therefore ascertain from the Owner, Master, or Agent, whether it is desired that the survey should be of such a character as to enable the vessel to obtain or renew her certificate of seaworthiness under the Law in question. In some cases, in which only a partial survey is held on a vessel (*e.g.*, the drawing and examination of a propeller shaft), it may be to the advantage of an Owner to get an endorsement made to that effect on her certificate.

The Norwegian Government require the surveys to be reported upon special forms, which have to be signed by the Surveyor and by the Owner or Captain, and by the Captain or Chief Engineer, and they have in addition to be stamped in two places with the Society's stamp.

One of the forms, when filled up, should be handed to the Owner, Master, or Agent in each case for transmission to the proper quarter, and a copy of every such document should be sent to the London Office with the Surveyor's reports.

It will be observed that the requirements of the Government as to several details to which special attention is to be given are not precisely stated, the Instructions being so framed that the Surveyor when dealing with such matters must be mainly guided by his own experience and judgment.

In view of the responsibility which the issuing of these certificates will involve, the Committee desire that the utmost care be exercised to ensure the accuracy of each detail mentioned in the reports ; and that, particularly in those cases in which the decision as to the suitability or otherwise of any fitting is left to the Surveyor's judgment, full and clear notes be taken to which subsequent reference can be made should circumstances require it.

As these surveys will take more time and attention than those for classification only, such fees should be charged in addition to those fixed in the Rules for Classification Surveys as will cover the extra services rendered. These additional fees should be entered separately from the established classification fees, both on the accounts rendered and on Report Forms Nos. 8 and 9, under the heading of "Norwegian Government Survey Fee."

225. Norwegian Shipping Law, Copies of Certificates to be forwarded promptly.—With reference to the preceding paragraph it has been reported that inconvenience to Owners has arisen in some cases owing to the fact that information regarding surveys has not reached the Authorities until they have received the particulars through the medium of the Supplements to the Register Book in the ordinary way.

To meet the circumstances the Surveyors should, whenever a vessel under the Norwegian flag comes under survey, issue to the Master, as soon as the survey is completed, Interim Certificates (on Forms B and B1) setting forth their recommendation respecting the vessel's class, and forward copies of these Certificates *without delay* to the Society's Surveyors at Christiania as well as to the London office.

226. Spanish Shipping Law, 1909.—In the case of vessels owned in Spain the Government of that country accept the certificates of this Society for surveys held by the Society's

Surveyors in lieu of examinations prescribed by the Spanish Law for such vessels.

In some cases, however, exception has been taken by the Spanish Authorities to certificates (on Form B1) that the Boilers have alone been surveyed—the words “and machinery” having been struck out by the Surveyor—and the Authorities have contended that the Society’s Rules have not been complied with as regards the Annual Survey of the Engines prescribed “when practicable.”

In the circumstances, it is considered that when holding Boiler Surveys of Spanish vessels, Surveyors should make a point of examining the Engines generally, so as to admit of an interim certificate (B1) being issued by them in each case without any deletions.

Certificate Form F is provided for use by the Society’s Surveyors, under the above-mentioned regulations.

227. Swedish Shipping Law (1914).—The Swedish Government have agreed to admit vessels classed in Lloyd’s Register as fulfilling certain conditions of the Maritime Law (Art. 34), dated 16th October, 1914, relating to seaworthiness, and to recognise the surveys held by the Society’s Surveyors, in order to obviate the necessity of such vessels being specially drydocked for the purpose of the Law.

Whenever, therefore, a Swedish vessel has been surveyed with a view to the maintenance of her class, or for obtaining a class, the Society’s Surveyors are authorised to sign, at the desire of the Owners’ Agent, a special form of certificate required by the Swedish Government Authorities.

To avoid ambiguity in the last line of the Certificate relating to the trade in which the vessel is to be engaged, the Society’s Surveyors should confine themselves to the use of such terms as “foreign going,” “overseas,” “coasting trade (within the limits, if any, specified by the Committee),” and in no case employ an expression which would indicate the nature or the character of the cargo to be carried.

A copy of every such certificate should be sent to this Office with the usual reports to the Committee on Forms Nos. 8 and 9.

Any additional fees that may be charged in view of the extra time and attention which these surveys will occupy, as compared with surveys for classification only, should be entered separately from the classification survey fees, both on the accounts rendered and on Report Forms Nos. 8 and 9, under the heading of "Swedish Government Survey Fee."

VI.—REGISTRO ITALIANO.—AGREEMENT WITH LLOYD'S REGISTER.

228. An agreement between the Registro Italiano and Lloyd's Register, which came into operation on the 1st April, 1922, was arrived at with the object of facilitating the classification of vessels with both Societies in the interests of shipowners, shipbuilders and underwriters.

By the arrangements made, Italian shipowners, while securing the national classification for their vessels, will, at the same time, be in a position to have Lloyd's Register class with as little inconvenience and expense as possible.

With this object the Agreement provides that each Institution will give every facility for the assignment of its classification to vessels classed, or intended to be classed, by the other Society, provided the standard of strength and security is not inferior to that required by its own Rules, each Institution reserving to itself the right of confirming the class by means of surveys by its own Surveyors.

In order to obviate delays and inconvenience to shipowners and shipbuilders, arrangements are to be made as far as possible so that the surveys of the two Societies shall be held simultaneously, and the Surveyors of both Registers are required to co-operate in entire harmony, and to hold jointly the surveys which they have to carry out.

This provision in no way detracts from the personal responsibility which attaches to the Surveyors of the two Institutions, who are relied upon to ensure that the requirements of the Society which they represent are fully carried out and its standard of structural strength and efficiency maintained.

No officer of any other classification society than the Registro Italiano and Lloyd's Register shall be authorised to act in the cases of vessels which have, or are intended to have, only the dual classification of those Institutions.

For the practical working of the Agreement, which it is to be understood relates only to vessels holding, or intended to hold, the dual classification of the Registro Italiano and Lloyd's Register, the following regulations have been made:—

I. Combined Fees.—(a) The combined fees for the requisite surveys for the dual classification shall be, in all parts of the world, five-sixths of the total of the fees of the two Societies, *i.e.*, $\frac{5}{6}$ (R.I. + L.R.)

(b) The two components of the formula $\frac{5}{6}$ (R.I. + L.R.) referred to in the preceding paragraph shall be as fixed in the Rules of the two Societies, and the corresponding account shall be rendered in local currency at the rate of exchange of the day; where the amount of the fee is not fixed by the Rules, the custom of the port shall be taken as the basis for the fee of each Society.

II. Italy.—In the cases of surveys to be held in Italy:—

(a) The duty is attached to the Registro Italiano to give timely notice of the surveys to Lloyd's Register, in order that the Surveyors of the latter Society may take part in the survey.

(N.B.—If, in any instance, the Surveyor to Lloyd's Register should become aware that a survey is required before he receives advice from the Registro Italiano, he should, of course, at once inform the local Surveyor of the Registro Italiano with a view to joint and harmonious action.)

(b) The Registro Italiano shall render and collect all accounts in Italy;

(c) The combined fees shall be divided between the two Institutions as follows:—52 per cent. to the Registro Italiano; 48 per cent. to Lloyd's Register.

III. United Kingdom.—Reciprocally, in the cases of surveys to be held in the United Kingdom :—

(a) The duty is attached to Lloyd's Register to give notice of the surveys in due time to the Registro Italiano.

(N.B.—The Registro Italiano has no Surveyors in the United Kingdom, but this office should be informed immediately vessels holding, or intended to hold, the dual classification come under survey, so that prompt advice may be sent to the Registro Italiano.)

(b) Lloyd's Register shall render and collect all accounts in the United Kingdom ;

(c) The combined fees shall be divided between the two Institutions as follows :—48 per cent. to the Registro Italiano ; 52 per cent. to Lloyd's Register.

IV. Elsewhere.—In the case of surveys to be held outside Italy and the United Kingdom :—

(a) Where there are exclusive officers of both Societies, the surveys shall be held jointly, and the combined fees shall be divided equally between the two Societies.

(b) Where there are non-exclusive officers of both Societies the surveys shall be held jointly and the combined fees shall be divided equally between the two Societies.

(c) Where there is an exclusive officer of only one of the two Societies, he shall act for both Societies, except as provided in the succeeding paragraph (d), and 95 per cent. of the combined fees shall be credited to the Society which the Surveyor represents, and 5 per cent. shall be credited to the other Society.

(d) At the following ports, where there is a non-exclusive officer of the Registro Italiano of Italian nationality, surveys shall be carried out jointly even though there be an exclusive Surveyor of Lloyd's Register stationed at the port, and the combined fees shall be divided equally between the Societies :—

Alexandria	Fiume	Rio Grande
Buenos Aires	Montevideo	Santos
Constantinople	Port Said	Valparaiso

(e) Where there is a non-exclusive officer of only one of the two Societies, such officer shall carry out the survey, and 95 per cent. of the combined fees shall be credited to the Society which the Surveyor represents, and 5 per cent. to the other Society. The other Society is, however, free at its discretion to send one of its exclusive officers to join in the survey, and in such a case the combined fees shall be equally divided between the two Societies.

(f) In all these cases—IV. (a) to (e)—it shall be arranged locally, by mutual agreement, which office will render and collect accounts.

V. General.—(a) Should the Registro Italiano desire in any case to avail itself of the services of its Agents for the purposes of its classification, the fees to be paid for such services are not covered by this Agreement, and the matter shall be dealt with otherwise between the Registro Italiano and its Agents.

(b)* There shall be monthly settlements of accounts between the two Institutions.

* It is, of course, understood that at ports where there is a non-exclusive Surveyor to each Institution, the division of fees, as per paragraph IV. (b) will be effected locally between the two Surveyors.

(c) The exclusive Surveyors of the two Institutions are not permitted, without the consent of their respective administrations, to undertake other duties, nor in consequence to receive gifts, honoraria, or remuneration in addition to the salaries paid them by one or other of the Societies.

229. General Observations and Instructions arising out of the Agreement with the Registro Italiano.

(1) A List of the vessels which hold the dual classification is issued periodically, showing the dates at which the next special surveys become due for each Society.

An extract from the Rules of the Registro Italiano relating to fees is supplied to all the Society's officers.

(2) In the cases of all "dual classification" surveys, all reports and certificates should be forwarded to London in duplicate,

so that one copy may be transmitted to the head office of the Registro Italiano, unless there is stationed at the port a Surveyor to the Registro Italiano, who will, of course, himself report to his own headquarters.

(3) Expenses are not subject to the combined fee formula.

(4) The full Lloyd's Register fees in detail should be entered on reports of survey, *i.e.*, irrespective of the combined fee formula.

(5) A form ("fee slip") should be attached to the reports showing the combined fees and the amounts to be credited to the Registro Italiano and Lloyd's Register.

(6) In the United Kingdom, where accounts are rendered and fees collected by the Surveyors to Lloyd's Register, the proportion due to the Registro Italiano should be forwarded to the Head Office of Lloyd's Register as soon as the fee has been paid. The total fee received will be entered in the customary Account of Moneys Received (Form 54), and the proportions thereof due to Lloyd's Register and to the Registro Italiano will be shown and accounted for on the usual quarterly statement (Form 54a).

(7) In ports outside Italy and the United Kingdom, where there is a Surveyor to the Registro Italiano stationed, if as the result of local arrangement, the fees are collected by Lloyd's Register, the amount due to the Registro Italiano should be handed to the Surveyor to that Institution; if there is no such Surveyor it should be forwarded to the Head Office of Lloyd's Register in London.

(8) In cases in which the accounts are rendered and fees collected by the Surveyor to the Registro Italiano, the Surveyor to Lloyd's Register should keep in touch with the local Office of the Registro Italiano, so that he will be able to make out his customary Accounts of Moneys Received (Form 54).

230. Certificates of the Registro Italiano to be endorsed at surveys.—The Committee have been informed by the Registro Italiano that in order to secure recognition under the Italian Law for surveys carried out by its own Surveyors, or by the Surveyors to Lloyd's Register on its behalf, it is necessary that certificates of

classification in the Registro Italiano should be endorsed by the Surveyors each time a survey is carried out, to the effect that the class is confirmed, or, if necessary, suspended, as the result of such survey.

It will be found that on the certificates of the Registro Italiano spaces are provided for such endorsements by the Surveyors to the Registro Italiano, the wording of which is generally in the following form:—

“Surveyed again at———on the (*date and description of*) survey.
Continues in her class until the———(*or for the voyage———*)”

The Surveyors to the Registro Italiano include in their endorsement a brief description of the nature of the survey, such as “surveyed the boilers inside and out,” “screw shaft drawn and surveyed,” “surveyed bottom in dry dock,” “carried out hydraulic test of boilers,” &c., &c.

The Committee have informed the Registro Italiano that they have no objection to the same practice being followed by this Society's Surveyors when acting on behalf of the Registro Italiano, with the exception that the endorsement as to continuation or suspension of class must be prefixed by the words “Recommended that,” and the Surveyors should be guided by this intimation. Endorsements on Registro Italiano certificates will accordingly conclude as follows:—

(a) “Recommended that the vessel be continued in her present class in the Registro Italiano until the———
(or for the voyage———)”

or

(b) “Recommended that the vessel's classification in the Registro Italiano be suspended.”

The Italian equivalents of these phrases are:—

(a) “Ho raccomandato che continui nella sua classe fino al———(o per il viaggio———)”

and

(b) “Ho raccomandato che la classe della nave nel Registro Italiano venga sospesa.”

Signatures of the endorsements will be in the following form :—

Per conto del Registro Italiano

—————(*Signature.*)

For such endorsements a special fee of 25 lire is prescribed in the Rules of the Registro Italiano (paragraph 4 of the Extract from the Rules relating to fees chargeable for various Classification Surveys, which is supplied to the Society's officers. The Registro Italiano prefers, however, to settle this fee with the owners upon receipt of the survey reports, and no charge should therefore be made for such endorsements.

The precise wording of the endorsement must always be stated at the foot of the reports of survey, and on the duplicates forwarded to this office for transmission to the Registro Italiano.

An Extract from the Rules of the Registro Italiano is supplied to the Society's officers relating to the fees chargeable in respect of surveys of old vessels held on behalf of that institution.

231. New Work.—The Registro Italiano tariffs for new work are not included in the Extract, and should cases of this kind arise, Surveyors should, if there is no representative of the Registro Italiano at the port qualified to act under the Agreement, make timely inquiry of the London office in order that the question of the amount chargeable may, if needful, be taken up beforehand with the head office of the Registro Italiano.

232. Conversion of Lire into Local Currency.—In all cases of surveys on dually classed vessels outside Italy in which the Surveyors to Lloyd's Register act alone on behalf of both Institutions, the number of lire indicated in the tariffs of the Registro Italiano is to be converted at the current rate of exchange into the currency of the country in which the survey is held when calculating the combined fee.

233. Where Surveyors act jointly.—In cases in which the Surveyors of both Institutions act jointly, it is not anticipated that any difficulty will arise, as the Surveyors will, of course, advise one another of the amounts of their respective fees according to their several practices and tariffs, and the total fee will be

charged according to the combined fee formula and credited as set forth in the instructions on pages 106 & 107.

234. Notes regarding Terms in the Extract.—The following explanations of certain provisions of the Tariffs referred to in the Extract from the Rules of the Registro Italiano relating to Fees, appear to be needful :—

Paragraph 3, Section 4.—“ Surveys for special prorogation of class.” This applies to cases in which a Special Survey prescribed in the Rules of the Registro Italiano is not completed within the year of grace. On a survey being held in such circumstances, half the complete survey fee is chargeable for the continuation of class, but no additional fee is chargeable when the survey is actually completed.

Tariff G.—The entry fees indicated in this Tariff are chargeable in full on the occasion of every periodical survey.

VII.—FREEBOARD SURVEYS.

235. General.—The Surveyors are authorised, on receiving application, to hold surveys upon vessels, whether classed or unclassed, and whether British or Foreign owned, with a view to the assignment of freeboards by the Committee under the Merchant Shipping Acts, 1894–1907. In holding such surveys they should be governed by the Instructions, Tables, and Explanatory Memoranda issued by the Board of Trade from time to time. These publications may be obtained from the London Office on application.

Attention is also specially requested to the following points :—

236. Vessels Exempt from Act.—Coasting steamships under 80 tons register of the following classes, so long as they do not carry cargo, viz. :—

1. Tugs and salvage steamers ;
2. Steamers surveying harbours and approaches thereto ;
3. Steam hopper barges and dredgers ;
4. Steam pilot vessels, and
5. Passenger steamers holding Board of Trade Passenger Certificates plying in smooth water or partially smooth water limits.
6. Passenger steamers holding Board of Trade Passenger Certificates plying in excursion limits.

Sailing Vessels under 80 tons register employed solely in the coasting trade.

Vessels employed solely in fishing, and pleasure yachts, are also excluded from the operation of the Load Line requirements.

Every other British vessel is required to have an approved freeboard, determined according to the tables of the Load Line Committee.

237. Formal application.—In every case where the assignment of a freeboard is desired, the Owners must make formal application on one of the approved forms, and no survey for freeboard is to be undertaken until the Owner or his representative has made a written application on the form in question, namely: Request form No. 9 for British vessels and No. 10 for Foreign vessels.

238. New Vessels.—As regards vessels proposed to be built under the Society's survey, the Committee, upon application signed by the Builder or Owner, will be prepared to assign provisional freeboards on the particulars and dimensions furnished by the Builder, subject to their being verified by actual survey and measurement on the completion of the vessels. In such cases the Surveyors should submit the particulars in question on the prescribed freeboard report form.

239. Classed Vessels.—If the vessel for which a freeboard is sought is classed in the Society's Register Book, the Surveyors will simply be required to take the necessary measurements and report clearly on the strength and efficiency of the erections, deck openings, &c.

240. Vessels of less than Full-scantling Strength.—When forwarding freeboard reports on vessels of less than the standard full-scantling strength, the freeboards of which are greater than provided for in Table A, the Surveyors must also forward a report of the scantlings, &c., on a form "Freeboard 11d," as this is required for transmission to the Board of Trade with the copy of the freeboard report.

It will only be necessary for the particulars of the vessel as built to be given. The columns for the Rule requirements should be left blank to be filled up in the London Office.

241. Load Line Marking on Ships fitted with Belting.—In vessels fitted with belting in way of the load line marks, the marks have sometimes been found to be invisible when the vessels are loaded, and it is always very difficult to judge or measure the freeboard correctly. It has been suggested that, to meet this difficulty, suitable chocks on which to mark the lines should be fitted in all cases where the belting would otherwise interfere with the visibility of the marking; and the Surveyors should see that, so far as new assignments are concerned, this is done in all vessels so fitted in future, or that some other equally efficient method is adopted of securing that the lines shall be permanently marked so as to be at all times visible.

In the case of vessels already marked, where belting interferes with the visibility of the marks, the Surveyors should endeavour to persuade the owners to adopt such means as will secure the above-mentioned object.

242. Dis-classed Iron and Steel Vessels.—In the case of iron and steel vessels which have at some time or other been classed by this Society, but are now dis-classed, and of which a record of the original scantlings and arrangements exists in the London Office, it will be necessary to submit them to the survey prescribed in the Board of Trade Instructions (*Circ.* 1416) as to surveys for Load Line.

This survey to be reported on a Repair Report Form, and forwarded to the London Office with the Report of Survey for Freeboard.

243. Un-classed Iron and Steel Vessels.—In the case of iron and steel vessels which have never been classed by this Society, and of which no particulars of the scantlings and arrangements exist in the London Office, it will be necessary for the Surveyors to ascertain the scantlings, &c., and report the same in relation to the requirements for the 100 A grade (as in the Society's Rules).

The condition of the vessel to be described on the Report Form (Rept. 11d), which is to be forwarded to the London office, with the Report of Survey for Freeboard.

244. Dis-classed and Un-classed Wood and Composite Vessels.—In the cases of wood and composite vessels which have at some time or other been classed by this Society, but are now dis-classed, and of those which have never been classed by this Society, it will be necessary for the Surveyors to ascertain the strength of the vessels in comparison with vessels of the highest class, and submit them to the survey prescribed in the Board of Trade Instructions (*Circ.* 1416) as to surveys for Load Line

It should be noted that all unclassified vessels submitted for survey for load line must be opened up for survey.

In addition to the above survey, in the case of vessels that have never been classed in the Society's Register Book, particulars of the construction of the vessels are to be supplied.

245. Condition of Dis-classed and Un-classed Vessels.—It will thus be seen that in the cases of vessels which are dis-classed or un-classed, it will be necessary for the Surveyors to make such an examination as will enable them to ascertain the general condition of the vessels.

246. Particulars in Reports.—For every vessel for which a freeboard is sought the Surveyors are to supply all the particulars required in the Report of Survey for Freeboard, special attention being paid to the following details:—

247. Tonnage of Water Ballast Tanks.—As the Merchant Shipping (Tonnage) Act, 1889, provides for the tonnage of water ballast tanks on ordinary floors being excluded from the measurement of tonnage, the Surveyors should be careful in freeboard surveys of such vessels to state on the report whether the tonnage of the water ballast tanks is included or not in the under-deck tonnage.

248. Tonnage Co-efficient of Fineness.—As peak tanks constructed for carrying water ballast only, are in some instances

excluded from the measurement of under deck tonnage, it should be carefully noted on the freeboard reports of all vessels having peak tanks, whether the official under deck tonnage excludes these tanks, and, if so, the estimated tonnage of the same must be given, in order that the tonnage co-efficient of fineness may be correctly calculated.

249. Conditions attached to Assignment.—In all cases when reporting verification of freeboard marking the Surveyors must state whether any condition which may have been attached to the freeboard assignment has been complied with.

In cases where bridge front stiffening or increase of freeing port area is required, *details* should be given of the stiffening and of the number, size and area of the freeing ports, in order that the freeboard reports may be completed with these particulars before copies are transmitted to the Board of Trade in the usual course.

250. Statutory Deck Line.—When a vessel is surveyed for freeboard, the position of the statutory deck line should be checked, and if found to be incorrectly marked, the Owner's attention should be called thereto, in order that he may see to the line being correctly marked.

251. Statutory Deckline Correction.—In applying the rule on page 17 of the Tables of Freeboard in the case of vessels with uncovered iron or steel decks, or with wood decks which maintain a uniform thickness to the ship's sides, the assumed width of gutter waterway is in all cases to be measured from the inside of the shell plating, whether the vessel's frames do or do not extend above the upper deck at amidships.

252. Freeboard of Vessels Loading in fresh or partially fresh water.—1. Representations have been made to the Board of Trade that the reduction in freeboard in fresh water, allowed by the scale contained in paragraph 21 of the Tables of Freeboard, is in some cases insufficient, especially in modern ships; and the Board therefore desire to draw attention to the fact that it is open to the owners of any vessel to apply to the authority by whom the

freeboard certificate was issued with a view to the fresh water allowance as shown on the certificate being reconsidered. Such applications must be accompanied by a copy of the displacement scale of the vessel and the scale of tons per inch immersion, these being certified by the builders. The fee to be charged for an alteration in the fresh water mark is £1.

2. In the case of vessels loading in partially fresh water, whilst the above mentioned application is still under consideration, ship-owners and masters may apply to the local Surveyors at the port of loading for the reduction that may be allowed at that time and place for the vessel in question, but this information can only be given on authentic particulars of the vessel's displacement and tons per inch immersion being supplied to the Surveyors, and in no case must the reduction in freeboard so authorised exceed that already shown upon the certificate, *i.e.* the fresh water mark on the vessel's sides must not be submerged.

3. For the purpose of computing the reduction in freeboard granted in accordance with the foregoing paragraph, the Surveyors should use the following formula :—

$$\text{reduction} = \frac{D \times d}{T \times 1000} \text{ inches, where}$$

D.=displacement in salt water up to the centre of the disc ;

T.=tons per inch immersion in salt water at the centre of the disc ; and

d.=difference between densities of salt water and the water at the place of loading.

253. Awning or Shelter Decks.—In the cases of vessels having an awning deck, a part awning deck, or a shelter deck, the freeboard measurements from the centre of the disc to the awning, part awning, or shelter deck, must be clearly reported in the freeboard report and on the verification form.

254. Particulars to be taken from Ship's Register.—With a view to obtaining correct information for use in the assignment of freeboards, in each case when a vessel is surveyed for freeboard,

the Surveyors should ascertain the tonnage and registered dimensions from the ship's register, and any difference that may exist between such particulars and those recorded in the Register Book should be reported to the Committee without delay.

255. Prompt despatch of Reports.—Under the provisions of the Merchant Shipping Acts, 1894–1907, no British or Foreign vessel can be entered outwards at the Customs House without the production of a freeboard certificate. The Surveyors should, therefore, make arrangements to ensure that in the cases of all vessels coming under survey with a view to the assignment of freeboard, the freeboard reports containing all necessary measurements and particulars are sent to the London office at the *earliest possible moment*, and that the freeboard, when assigned, is at once correctly marked on the vessel's sides, and the verification reported, in order that the freeboard certificate in such cases may be issued in good time before the vessel is intended to sail, and thus preclude the possibility of any vessel which has been assigned a freeboard by the Committee of this Society being detained by the Customs Authorities for want of a freeboard certificate.

In the case of vessels built under survey, the reports of freeboard and verification must not be kept back in any case for the first entry report.

The fees for the assignment of freeboards should be collected without delay, as the freeboard certificates cannot be issued until the freeboard fees are paid.

In the cases of new vessels which have been surveyed during construction, freeboard certificates will be issued as soon as the approved freeboard has been verified, and quite regardless of the payment of the fees for the survey and classification of the vessel.

256. Freeboards Assigned as Condition of Class.—With reference to the cases of vessels classed "with freeboard," which is required to be marked on the vessels and recorded in the Register Book, Surveyors should use their opportunities to ascertain whether such vessels as may trade to or belong to the port are at all times properly marked, and they should at once report to the Committee

the particulars of any case in which the marks may be observed to be altered from their correct position or obliterated.

Any cases that may come under observation of vessels to which a Freeboard has been assigned by the Committee at the Owner's request, but which are no longer marked with such freeboard, should also be reported to the Committee.

257. Freeboard of Well Deck Vessels.—When holding special periodical surveys on classed vessels of the well-deck type, to which freeboards have been assigned by the Committee of this Society, Surveyors should, in all cases, be careful to see that satisfactory facilities are provided to enable the crew to get to and from their quarters without descending into the "well."

The removal of such arrangements, when required by the Regulations to be fitted, affects the validity of the load line certificate, and in the case of vessels of this type (except when the "well" is 80 feet or more in length or the vessels are under 150 feet in length) when Surveyors find no bridge fitted for the crew to get to and from their quarters, they should at once communicate with this office in order that the case may be dealt with as may be necessary.

258. Record of Draught in the Register Book.—The General Committee have determined that the information on which the draughts of iron and steel vessels to which freeboards have been assigned by this Society are based, should be obtained from the respective shipbuilders instead of being calculated independently by the Surveyors, in order that there may be no discrepancy between the records in the Register Book and the particulars shown on the displacement scales supplied to the owners by the builders.

Surveyors should, therefore, when forwarding verification of marking forms (Report 12), state the maximum summer draught corresponding to the freeboard assigned, as shown on the builders' displacement scales.

259. Marks to be Punched or Cut.—All the marks should be clearly indicated either by permanent lines cut into the plating, or

by a series of centre punch marks not more than three inches apart, so as clearly to indicate the top and bottom of each line.

260. Marks to be Examined at Surveys.—At all periodical surveys, the Surveyor should carefully examine the marking, and any alteration in the position of the lines, or failure to comply with the regulations, should be promptly reported.

261. Freeboards assigned by other Bodies.—The Surveyors should report to the London office any case which may come under their notice where a freeboard is assigned by any Body other than this Society, under the Load Line requirements, to a vessel which has previously been assigned a freeboard by this Society, or to any vessel the sister ship of which has been so assigned a freeboard.

262. Expired Freeboard Certificates.—Attention has been called to the fact that when a new load line certificate is issued to a vessel, the old certificate is not always delivered up for cancellation, with the result that vessels are sometimes found to be sailing with two load line certificates, each assigning a different freeboard.

It is, therefore, considered a matter of some importance that expired certificates should, whenever practicable, be obtained from the Owners before new certificates are issued.

263. Freeboard for Foreign Owned Vessels.—The Committee have received a communication from the Board of Trade, requesting that, as under Section 1 of the Merchant Shipping Act, 1906, the provisions of the Acts relating to load line apply to Foreign ships trading with the United Kingdom in the same manner as they apply to British ships, the same form of load line certificate should be used for both British and Foreign vessels.

A number of Foreign vessels are still sailing with load line certificates on the special forms formerly issued for such vessels; and, with respect to these cases, the Board desire that the existing certificates should be exchanged for certificates in the statutory form as and when opportunities present themselves.

In the circumstances, when a Foreign vessel trading to the United Kingdom, and having freeboards assigned by the

Committee and recorded in the Register Book, comes under survey, the Surveyors should take the opportunity to verify the marking and forward to the London Office the usual verification form, together with the old load line certificate, in order that the old certificate may be exchanged for one on the statutory form.

The instructions contained in the preceding paragraph are not, however, applicable to French, Dutch, or Danish vessels to which freeboards have been assigned by the Committee of this Society. For French vessels, the Society issues a special certificate under the French Shipping Law, while Dutch and Danish vessels are provided with national certificates issued by the respective Governments.

264. Freeboard for French Vessels.—The Society has been empowered by the French Government to assign Freeboards to French vessels under the “Loi relative à la Sécurité de la Navigation et à la Réglementation du Travail à bord des Navires de Commerce” of the 17th April, 1907.

The following printed forms have been prepared in connection with the matter, viz :—

Application form (Demande de Certificat de Franc-Bord);

Report form (Report 11—French);

Verification forms for Steamers and Sailing Vessels (Reports 12 & 12a—French);

Diagrams showing marking required (French and English).

In reporting French vessels for Freeboard assignment, it will be sufficient if all the measurements and particulars specified on pages 1 and 4 of the Report form are furnished, leaving the computation of pages 2 and 3 to be made in the London Office. Should it be found inconvenient to furnish the measurements in the metric system, there will be no objection to their being given in English measure, on the usual British forms (11a, 11b, 11c), so that there may be no delay in the forwarding of the reports.

It should be noted that the position of the statutory deck line under the French law is different from that prescribed by

the British Freeboard Tables, the French regulations requiring the deck line to be placed at the intersection of the deck at side, as shown on the illustrative diagrams.

The Scale of Fees to be charged for Freeboard surveys is identical with that followed in the cases of surveys under the British law, as printed in Section 32 of the Rules. The fee for the inspection of minor alterations involving an alteration of freeboard in a vessel having a valid load line certificate is two-fifths the full fee chargeable.

A supply of forms, &c., will be sent on application.

265. Freeboard of Vessels Classed with Germanischer Lloyd and with Norske Veritas.—With reference to Board of Trade Circular No. 1416 (Instructions as to Surveys for Load Line), Section 2, paragraph 1, the Board have decided to accept as classed vessels, within the meaning of the circular, vessels of all nationalities classed with the Germanischer Lloyd, and Norwegian vessels classed with the Norske Veritas.

The Surveyors should therefore be guided in the cases of vessels so classed, by the regulations contained in paragraph 4 of the circular referred to, from which, *inter alia*, it will be seen that a survey in dry dock will not be necessary except in special cases.

In the circumstances the fees charged for freeboard surveys in such cases should be the same as those which would be charged if the vessels were classed in Lloyd's Register Book.

266. Freeboard for Swedish Vessels.—The Society has been empowered by the Swedish Government to assign freeboards and issue freeboard certificates to Swedish vessels under the Swedish Royal Ordinance of the 21st May, 1910.

The following printed forms have been prepared in connexion with the matter, viz. :—

Application form ;

Diagrams showing marking required.

In reporting Swedish vessels for freeboard assignment under the Swedish Regulations and with a view to the issue of Swedish

Certificates, the French report forms (Report 11—French) and verification forms for steamers and sailing vessels (Reports 12 and 12a—French) should be used.

As in the case of French vessels, it will be sufficient if all the measurements and particulars specified on pages 1 and 4 of the Report form are furnished, leaving the computation of pages 2 and 3 to be made in the London Office. Should it be found inconvenient to furnish the measurements in the metric system, there will be no objection to their being given in English measure, on the usual British forms, so that there may be no delay in the forwarding of the reports.

The Swedish Freeboard Regulations are identical with the French Regulations, and in consequence the position of the statutory deck line under the Swedish Regulations is different from that prescribed by the British Freeboard Regulations, the Swedish Regulations requiring the deck line to be placed at the intersection of the deck at side, as shown on the illustrative diagrams.

The Scale of Fees to be charged for Freeboard surveys is identical with that followed in the cases of surveys under the British Law, as printed in Section 32 of the Rules. In the cases, however, of vessels which have had revised Freeboards assigned to them by the Committee under the new Tables, and for which the Owners desire the marking to be altered for the issue of the Swedish certificates, complete measurement and survey will not be necessary; and in view of the more limited services which will consequently have to be rendered, only one-half the fees quoted in Section 32 should be charged in such instances, with a minimum charge of £1 1s. 0d.

In connexion with this matter it is important to note that, although the Royal Ordinance makes provision for a Swedish Owner to obtain freeboards assigned in accordance with the Swedish Regulations, he is not prevented from having his vessel marked, if he so prefers, with other freeboard marks approved in the several maritime countries and assigned by an authorized Classification Society. An Owner is therefore at liberty to have

his vessel marked in accordance with the British Regulations, and in any cases of this kind, the British forms of report, &c., should be made use of.

Nearly all Swedish vessels which are classed in this Society's Register Book have freeboards assigned by the Committee and marked in accordance with the British Regulations, and it will not be necessary to alter these marks unless the Owner in any case desires to obtain a Swedish certificate.

A supply of forms, &c., will be sent on application.

267. Norwegian Freeboard Tables Not Recognised.—The Society's Surveyors at various ports having been requested by the Norwegian Consuls to carry out freeboard surveys with a view to the assignment of load lines under the Norwegian Freeboard Regulations, it should be noted that the Norwegian Freeboard Tables and Rules are not recognised by the British Government as being equally effective with the British Tables and Rules, and that the Committee have decided not to assign freeboards under the Norwegian Tables, or to allow the Society's Surveyors to undertake surveys with a view to assignments being made under those Tables.

In cases in which the Owners of Norwegian vessels, whether classed or unclassed, apply to the Committee for freeboard assignments, such applications will be dealt with under the British Tables, as hitherto, and the Surveyors must only attend to the marking of freeboards assigned by the Committee.

VIII.—SURVEYS ON YACHTS.

268. Surveys Required by Rules.—Yachts classed in the Society's Yacht Register require to be submitted to annual and special periodical surveys as set forth in detail in the Rules for Yachts. In carrying out these and other surveys on yachts and their machinery the Surveyors should be guided by the instructions given as to the course to be followed in the survey and repair of merchant ships.

269. Surveys of Wood Yachts, Second Surveyor to be Employed.—With the object of making all surveys of wood

yachts as effective as possible, it is specially to be noted that when wood or composite yachts come under inspection for Half-Time, Special Periodical, Continuation, Restoration or other surveys of similar character, or in the case of Condition Surveys on wood yachts, also in the case of wood yachts which are being constructed with a view to classification, these surveys are to be undertaken only by Surveyors possessing knowledge and practical experience of wood vessels. Where the local Surveyor does not possess this knowledge and experience, while he will be held responsible for the efficient carrying out of the survey, arrangements are to be made for the services of an independent expert in wood construction to join the Society's Surveyor in the survey in a similar manner to that adopted at present in regard to the rigging of sailing vessels.

At periodical and similar surveys it is considered, in addition to the opening up of the air courses and the removal of the listings originally fitted, or the cutting of the fresh listings as may be considered necessary by the Surveyor, and the carrying out of the Rule requirements in other respects, that at all closed-in parts of the vessel where lining is fitted, such as peaks, store-room, or other confined spaces, sufficient lining should be removed to enable the Surveyors to assure themselves that the whole of the materials in the vessel are free from dry rot.

270. International Rating Classes.—When a Builder receives an order for a yacht to be built to one of the International Rating Classes, the survey of which is to be undertaken by this Society, he should forward an application for survey signed either by himself or the Owner. (Req. 2a.)

As the submission of sketches of midship section and profile of a yacht intended for racing, exposes to some extent the design of the boat, the Builders in place of submitting the usual plans may fill in a specification form (Spec. form 1 and 2) stating the rating class and particulars of the scantlings proposed to be adopted. The requirements for each rating class are clearly shown in the Rules for Yachts of the International Rating Classes.

The wood materials intended to be used for the various parts of the structure should be specified, together with the term

of years desired for classification. A Builder may, however, forward the usual plans with the necessary information noted thereon should he prefer to do so, in place of filling in a specification form.

The Surveyor is to submit the specification or plans for the consideration of the Committee, with any remarks he may have to make regarding the proposal.

Should the Builder, when forwarding the specification or at any time during the building of the yacht contemplate making slight deviations from the requirements of the Tables, such deviations are to be submitted through the local Surveyor for the Committee's approval, and in these cases sketches are to be forwarded showing clearly the details of the proposed equivalent arrangements, in order that similarity of practice may so far as is practicable be ensured in the various districts, and uniformity maintained in yachts of the same rating class.

The scantlings given in the Tables for Wood and Composite Yachts are (except in the case of decks) intended for oak and other standard woods. Other woods require to have the scantlings decreased or increased beyond the Table sizes. The percentage decrease or increase for different woods are stated in the Rules.

It should be observed that the scantlings given in the Tables are minimum scantlings; the Surveyors should therefore satisfy themselves that the finished sizes are not reduced below the Rule requirements in the fitting together of the various parts, and the fairing and finishing off of a yacht.

In any case wherein it may appear to the Surveyors that a yacht is of a type or description, or possesses features, which are not contemplated by these Rules, they should forward full particulars of the same together with their remarks thereon, for the consideration of the Committee.

The Committee rely upon the Surveyors giving any advice and assistance which may be required, and generally carrying out their duties with every consideration for the Designers

and Builders whilst seeing that the Rules are properly complied with.

The measurement of yachts for the determination of the rating will be made by official measurers appointed by the yachting associations.

271. Condition Surveys.—The Surveyors are authorised upon application by intending purchasers to hold surveys on yachts and their machinery or boilers, *whether classed in the Yacht Register or not*, for the purpose of reporting on their condition previous to purchase. In all such cases the written consent of the actual Owners or their agents must be obtained before the survey is undertaken, and Request Form 2b must be filled in by the intending purchaser or his Agent, and forwarded to the London Office.

As it is important that the reports issued by the Surveyors should prove thoroughly trustworthy to parties seeking the guidance of the Surveyors in purchasing property of this description, the surveys of condition are throughout to be of such a character, governed by the age of the vessels, as will enable the Surveyor to form an opinion of their condition generally. (*See par. 269.*)

These surveys are *not* to be undertaken without the express sanction of the Committee, when the following requirements are to be carried out.

272. Condition Surveys, Unclassed Wood Yachts.—Unclassed wood yachts must be submitted to a survey at least equal to the Special Survey prescribed in the Society's Rules, viz. :—

The yacht to be placed in dry dock, or on ways, so that the keel and bottom may be examined, the interior—and if ceiling be fitted in the hold—the limber and air courses to be cleared sufficiently to enable a thorough examination to be made.

Where considered necessary from any apparent defect, the outside planking to be scraped bright and examined, and if there are treenail fastenings, a sufficient number, at the

discretion of the surveyor, are to be driven out on each side at various parts of the yacht according to its size to ascertain the general condition of the fastenings and of the yacht.

The Surveyor is to satisfy himself as to the condition of the upper deck, covering board and coamings, the outside planking and the bolt fastenings, and all other parts of the yacht as far as practicable.

The Surveyor must carefully ascertain to his satisfaction the general condition of the structural parts, especially in way of confined spaces.

The bolt fastenings are to be tested to ascertain their soundness, and where a ballast keel is fitted the bolts are to be carefully tested and drawn for examination at the discretion of the Surveyor.

The condition of the caulking is to be ascertained.

The mast, spars, rigging, sails and windlass are to be examined.

The chain cables to be ranged for inspection and the anchors and general equipment examined.

In Steam Yachts, the bunkers must be cleared for the examination of the vessel in way.

273. Condition Surveys, Unclassed Iron or Steel Yachts.—Unclassed iron or steel yachts must undergo a survey equal at least to the Special Survey No. 1 prescribed in the Society's Rules for Yachts.

The yacht is to be placed on blocks of sufficient height in a dry dock or on a slipway; proper stages are to be made; and the holds and peaks are to be cleared for examination.

The limber boards and ceiling on each side are to be removed sufficiently to enable a thorough examination to be made. Where the ceiling in the flat of bottom is fitted in hatches, the whole of the hatches and one strake of ceiling at the bilges are to be removed.

The coal bunkers of steam yachts are to be cleared for examination, and ceiling is to be removed as in the holds. The

bilges and limbers in the engine and boiler spaces are to be cleaned out, so as to allow these parts being properly examined.

The framing and both surfaces of outside plating are to be exposed, and cleaned and coated where necessary.

In cases in which the inner surface of the bottom plating is coated with cement or asphalt, the removal of this coating may be dispensed with provided it be carefully inspected, tested by beating or chipping, and found sound and adhering satisfactorily to the steel.

If the yacht has a double bottom, the ceiling is to be removed therefrom and the efficiency of the tanks tested by a head of water to the height of the light water-line. All water ballast tanks are to be cleaned out, to admit of their being properly examined inside.

The decks are to be examined, and their condition reported upon.

The masts, spars and general equipment of steam and sailing yachts must be examined and found, or placed, in good and efficient condition.

The steam steering engine and its connections, the steering rods, chains, blocks, rudder quadrant, tillers, steering gear, windlass, pumps, sluice valves, watertight doors, and air and sounding pipes are to be carefully examined, and the condition of the same is to be stated on the Surveyor's report. The Surveyor must see that doubling plates are fitted under all sounding pipes.

274. Condition Surveys, Unclassed Composite Yachts.—Unclassed composite yachts must undergo a survey equal at least to the special surveys prescribed in the Society's Rules for Wood Yachts in respect of those parts of the vessel which are of wood, and to the Special Survey No. 1 prescribed in the Society's Rules for Steel Yachts with regard to those parts of the yacht which are of steel. (*See par. 269*).

275. Condition Surveys, Machinery of Unclassed Steam Yachts.—The machinery of unclassified steam yachts must be surveyed as required by the Rules at Special Surveys, and the

survey must always include a thorough examination of the boiler, safety valves, crank shaft, cylinders, slides, pumps, and fastenings of propeller and sea connections.

If the survey does not include an examination of the screw shaft or the setting of the safety valves to a safe working pressure, these facts must be clearly stated on the survey report.

Yachts fitted with Internal Combustion Engines should undergo the complete Periodical Survey required by the Rules for these engines.

276. Condition Surveys, Yachts holding the Society's Class.—Yachts holding the Society's Class must be submitted to a condition survey, the extent of which should be governed by the circumstances of the vessel's class, and the date on which the last survey was held.

277. Reports of Condition Surveys.—In the case of unclassified yachts the Surveyors should be careful to confine themselves in their reports of such surveys (on Report No. 10) to a statement of the actual condition of the yacht, as far as ascertained by them at the time of survey, and not make any recommendations of what they may consider necessary repairs.

IX.—REPORTS.

278. To be on prescribed Forms.—The Surveyors, in making out their reports, are to attend carefully to the prescribed forms which are hereinafter mentioned. The reports are to be numbered consecutively as they are from time to time transmitted, and in the event of a change of Surveyors, no break is to be made in the continuity of the numbers.

279. First Entry Report on Ships and Yachts.—This form of report is to be used in reporting vessels for the first time for classification by the Society, whether built at some previous time or just completed. The several forms provided for this purpose are as follows:—

First Entry Report for Steel Steamers or Motorships	Rpt. 1
Do. do. Supplement for particulars of Longitudinal Framing	Rpt. 1*
Do. do. Sailing Ship	Rpt. 1c

First Entry Report for Ferro-Concrete Vessel	...	Rpt. 1d
Do. do. Steel Yacht	... ..	Rpt. 1e
Do. do. Wood Ship...	... ..	Rpt. 2
Do. do. Wood Yacht	... ..	Rpt. 2a
Do. do. Composite Ship	... ..	Rpt. 3
Do. do. Composite Yacht	... ..	Rpt. 3a
Do. do. Steel Yacht of the Inter- national Rating Classes...		Rpt. R1
Do. do. Wood do. do.		Rpt. R2
Do. do. Composite do. do.		Rpt. R3

280. First Entry Report on Machinery.—The forms to be used for this purpose are as follows :—

First Entry Report for Reciprocating Machinery	Rpt. 4
Do. do. Steam Turbine Machinery	Rpt. 4a
Do. do. Oil Engine	... .. Rpt. 4b

These forms are to be used in reporting machinery for the first time for classification by the Society whether of new vessels or those built at some previous time.

The Surveyors are required to state, as therein provided for, all the particulars for the information and guidance of the Committee. In order to furnish the Committee with a correct and ample record of the details of the machinery reported, the Surveyors are required personally to take all the requisite particulars.

281. First Entry Report on Boilers.—These forms are to be used for reporting replace boilers on old classed vessels and all other boilers built under special survey whether for shipment abroad or for unclassed vessels; the suitable form is also to be used for all new donkey boilers not built by the firms making the main boilers.

The following forms are to be employed :—

First Entry Report for Multitubular Boilers (Main, Auxiliary or Donkey)	... .. Rpt. 5a
Do. do. Vertical Donkey Boilers	... .. Rpt. 5b
Do. do. Water Tube Boilers	... .. Rpt. 5c

In the case of ordinary donkey boilers built under special survey, the Surveyors should furnish particulars of their scantlings on the proper form for *each* donkey boiler when completed, such report to be numbered in the same manner as other reports.

In cases of new vessels which may be fitted with main or auxiliary boilers of different sizes, or with a multitubular donkey boiler, the appropriate form is to be used for reporting the scantlings as supplementary to the ordinary first entry machinery report.

282. Report of Survey for Repairs, &c. FORM No. 8.—This is to be used in reporting all surveys held on hulls of vessels, whether wood, composite, iron or steel, which are already classed or having been previously classed are submitted for re-classification ; that is to say, all annual or occasional surveys and special periodical and re-classification surveys, with or without repairs, also all surveys of repairs whether due to wear and tear, or damage, or any other cause.

283. Report of Survey for Repairs, &c., of Engines and Boilers. FORM No. 9.—This is to be similarly used in reporting all surveys of a corresponding nature held on the machinery or boilers of vessels.

284. Reports to be in Exact Terms of Rules.—In reporting special periodical or re-classification surveys on vessels or machinery the Surveyors are to be careful to commence their reports by stating *seriatim, in the exact terms* of the Rules, that the vessels or machinery have been opened, or stripped, or scraped, &c., &c., as prescribed in the Rules applicable to each case, to show that the Rules have been fully complied with. (As regards Reports of Boiler surveys, *see* also under the heading of PERIODICAL SURVEYS, paragraph 152).

285. Actual Condition to be Specified.—The Surveyors are to specify distinctly the actual state in which they find those parts of ships, for the examination of which particular steps are directed by the Rules to be taken : such as the condition of the plates, frames, &c., in iron and steel vessels, when scraped clean for examination, &c., the condition in which timbers are found where planks

are required to be taken out for examination; that of treenails when driven out for ascertaining their state, and that of the timbers through which they pass.

286. Condition of the Several Parts to be Stated.—The Committee require the reports, in each case, to be a full and faithful record of the survey to which a vessel or machinery has been subjected. The Surveyors must, therefore, be very particular to state the real condition of the ship or machinery *against the several printed heads provided for that purpose in the report form.*

287. "Good where Seen," not to be used.—The vague statement *good where seen* written against the various parts of the ship named in the report form must not be used.

288. Partial Surveys to be Clearly Described.—In reporting partial surveys, it should be distinctly stated what parts have been seen, and whether the several parts reported upon are in good condition. The Surveyors should also state in detail on reports of partial periodical surveys every requirement necessary to complete the survey, and these particulars should be repeated upon each report until the survey is finally completed.

289. Nature and Extent of Repairs to be Clearly Shown.—The Surveyors are to set out clearly and fully in their reports of surveys and particularly in the cases of special periodical surveys, the *whole* of the repairs which have been carried out, whether stated to have been on account of damage or of wear and tear, and whether done at the instance of the owners themselves or in consequence of the Surveyors' own recommendations.

Repairs due to damage (the alleged cause of which should be stated) are to be distinguished clearly from those which are the result of wear and tear, and other causes; and besides being detailed in the body of the report, are to be summarised in the space provided for the purpose. The description of materials used in the repairs is also to be given.

To the end that reports may be as complete as possible, the Surveyors should avail themselves of the earliest opportunity of

visiting vessels which have sustained damage and on which surveys are required, so that they may be able to note the state of a vessel and her equipment before any repairs are effected. By visiting a vessel at an early date the Surveyors will also be able probably to learn the reason of repairs which may be carried out on the recommendation of outside Surveyors engaged to make a damage report. This knowledge will assist in discriminating in the reports between repairs attributable to damage and those consequent on wear and tear.

290. Place of Stranding to be Stated.—In reporting to the Committee surveys held on vessels after stranding, the Surveyors should be careful, when the fact is known to them, to state in the report where the stranding is alleged to have taken place.

291. Replacement of Anchors and Chains, &c.—Whenever the replacement of anchors, chains, or hawsers is reported, the particulars of weight or size and test of the articles, and Proving House where tested, should be clearly stated, also the weight or size, &c., required by the Rules, together with the vessel's equipment letter, if any.

292. General Condition and Opinion as to Class.—The Surveyors are to state the general condition of the vessel or machinery, and *whether in their opinion the vessel is worthy of being continued in her character* with the records attached thereto, also what alteration, if any, is suggested to be made in the existing classification and notification of the vessel in the Register Book consequent upon their survey.

Whether a continuance of character or otherwise is recommended, the Surveyors are to state clearly the facts of the case, and the grounds for their recommendation. In cases in which it is thought right to recommend that the character of a vessel be modified or expunged, *written* notice should be given at an early date to the owner or his agent, and a copy of the notice attached to the report.

293. Documentary Evidence.—The Surveyors are to forward any documentary evidence bearing on the case that may be offered

to them, as essential for the information of the Committee. The *originals* of letters, &c., should always be forwarded, when possible, copies being retained at the local office.

294. Particulars in Report Headings.—The Committee desire the Surveyors to pay special attention to the accuracy of the particulars in the heading of their repair reports.

As such particulars have, in some instances, been copied from an old edition of the Register Book and serious mistakes inserted in the Book in consequence, on no account should any but the current edition of the work be used for this purpose.

Corrections of any kind given on repair reports should always be underlined in red ink.

295. Ship's Register to be Seen.—The Surveyors are to require to see the ship's register, as the only authentic document for ascertaining the tonnage, dimensions, date of build, owner's name, and port to which she belongs.

296. Record of Ownership.—With regard to the question of ownership, in no case should the Surveyors enter on their reports a change in the ownership of a vessel, until they have fully satisfied themselves that the name of the new Owner, or in the case of firms, that of a partner therein, appears on the ship's official register as an actual *shareholder*. The name of the Manager of a vessel can always be inserted in the Register Book, if desired, under that of the registered Owner.

297. Dates of Survey and Voyage to be Inserted.—The dates of the first and last surveys, and the number of visits paid to the vessel, also the intended voyage, should be inserted in the reports.

298. Record of Metalling.—The date of metalling to be recorded in the Register Book and Yacht Register is that of the month and year in which the metalling is actually completed, provided this date is not prior to the date of launching of the vessel; and the Surveyors should be governed accordingly in making out their reports.

299. Every Survey held to be Reported.—Care must be taken to see that every survey that is held either on ship or machinery is duly reported.

300. Vessels laid up after Partial Survey.—In any case in which a survey is partially held and the vessel is then laid up for an indefinite time, a report of such partial survey should be made out and forwarded to the London Office.

301. Reports on Hull and Machinery of same Vessel.—In all cases where surveys have been held, both on the hull and machinery of steam vessels, the two reports should be *despatched together*, and a notation made in the margin of each report stating this has been done. In no case, however, is any report, whether on hull or machinery, to be retained for the accompanying report on machinery or hull *beyond a few days*, when it is to be sent to the London Office with an explanation of the cause of the delay of the other report. In any case in which a report on machinery is sent separately, the Engineer Surveyor should apprise the Ship Surveyor for the district of the circumstance.

The respective reports of surveys held on the same occasion on the hulls and the machinery of steam vessels should bear the same numbers; and the numbers given to the reports whether on hulls or machinery should be in one series, that is, not one set of numbers for the hulls and another for the machinery.

302. Transmission of Reports.—Reports of survey made out on the foregoing forms are to be forwarded to the London Office for the consideration of the Committee *immediately* upon the completion of the survey, as the Committee attach the greatest importance to the prompt despatch of Reports.

The Envelopes containing the Reports should be boldly marked in the top left hand corner with the word "REPORTS."

Reports must not be forwarded direct to other ports for completion in place of sending them to the London Office.

303. Reports not to be kept back for Fees.—The Surveyors are not in any case to omit to forward a report, because the fees

due are not paid, but are to enter on the report a full statement of the fees corresponding with the account rendered to the owner or his agent.

In ordinary cases the report may be retained for two or three days at the most if there is a probability of the fees being paid within that time; but in any case of urgency the report must be forwarded at once.

304. If not sent within a week.—In any case in which the report is not forwarded within one week from the completion of the survey, a statement explaining the cause of delay must accompany the report.

305. Advising Reports.—The transmission of all reports of survey to the London Office should be advised on the printed forms provided for the purpose (Letter form No. 5).

306. Reports Printed in Copyable Ink.—The forms of report of survey on ships and machinery are printed in copyable ink, in order that a complete press copy of every report forwarded to London may be taken in lieu of the written copies which were formerly required to be made and retained at the local offices.

In order to obtain a good impression, the tissue paper should be moistened to a much greater extent than is usual in copying letters written in copying ink, and the forms should be allowed to remain longer in the press. As this extra moisture and pressure would blur strong copying ink, the reports should be written in a weaker fluid, unless written some time before being copied. In the case of those offices where there is not a copying press as large as the report forms, the copy may be taken at one impression by doubling up the report forms; or the forms may be placed between mill boards, the pressure being applied first to one half and then to the other. Both sides of a report if written upon should be copied at the same time.

In the event of the impression failing in any case it will of course be necessary to make a written copy of the report.

As the special properties of copyable ink are liable to be affected by continued exposure to the light, the report forms

should be kept under cover while not in actual use ; and after a copy has been obtained the impression should be placed under cover until dry.

A large number of forms should not be kept in stock at the local offices, and in applying for supplies the Surveyors should limit their application to such number as will serve them *for about six months*.

307. Reports Confidential.—It must be clearly understood that the foregoing forms of report are intended to be used *exclusively* for reporting surveys to the Committee, and must not be used for any other purpose whatsoever. Such reports are to be treated as confidential documents between the Surveyors and the Committee, *and the Surveyors must not therefore exhibit their reports to any person, or furnish copies without the express sanction of the Committee.*

The copies of Reports retained at the local offices are to be considered the property of the Committee.

308. Certificates of Classification.—As the preparation of certificates entails considerable work in the Society's London Office it is not intended to issue these documents on Surveyors' reports except in the case of the special periodical surveys, Nos. 1, 2 and 3 on hulls and machinery, unless it be made clear that Owners or their agents have specially requested them.

309. Form No. 10—Damage Reports.—This form is to be employed primarily for reports of survey on damage to Hull, or Machinery, or Boilers, and is intended for issue to Owners or their representatives, whether Lloyd's agents or other interested parties.

The form is also to be used for reporting any other services performed by the Surveyors in their capacity of Surveyor to Lloyd's Register, such as Special Tests of Material, examination of Deep Tanks prior to carrying bean or other oil, and all reports intended for issue to the parties requesting the service.

An explanation of the special circumstances should be forwarded to the London Office in every instance.

The form in question reads as follows :—

LLOYD'S REGISTER OF SHIPPING.

(Insert Name of Port here.)

(Insert the Date here.)

This is to certify that

(Insert the name of the Surveyor or Surveyors here.)

the undersigned Surveyor to this Society did at the request of

(Here insert the Name of the Person or Firm requesting the Survey.)

310. Form No. 10—Condition Reports on Yachts.—Reports of surveys held on the condition of yachts or their machinery or boilers, other than those held for classification purposes, are to be made out on Form No. 10 (*see par. 277*).

311. Copies of Reports on Form No. 10 to accompany Repair Reports.—The Surveyors are to forward to the London Office a copy of every report that may be issued by them on Form No. 10, and in the case of classed vessels these copies should accompany the report on the Repair Report form, and not be sent separately, unless this is for any reason unavoidable. A duplicate press copy if clear is sufficient for this purpose.

312. Freeboard Reports.—The following forms are to be used in reporting surveys of freeboard :—

FORM No. 11a.—Report of Survey for Freeboard—Sailing Ships, either Flush-decked or with Top-Gallant Fore-castles, Short Poops and Bridge Houses disconnected, or with Top-Gallant Fore-castles having Long Poops, or Raised Quarter Decks connected with Bridge Houses or otherwise.

FORM No. 11b.—Report of Survey for Freeboard—Steam Ships.

FORM No. 11c.—Report of Survey for Freeboard—Steam Ships having Spar or Awning Deck.

FORM No. 11d.—Report of Survey for Freeboard—for comparison of scantlings of unclassified iron and steel vessels with the Rules of Lloyd's Register.

FORM No. 12.—For reporting verification of freeboard marking on steam vessels.

FORM No. 12a.—For reporting verification of freeboard marking on sailing ships.

313. Electric Lighting Reports.—Form No. 13 is to be used in reporting particulars of the installation of electric lighting in vessels.

314. Mast, Spar and Rigging Reports.—Form No. 14 is to be filled up by the person whom the Surveyor calls in to make the examination.

315. Results of Tests of Steel.—FORM No. 15.

316. Reports on Refrigerating Machinery and Insulation.—

FORM No. 16.—First Entry Report of Survey for the first time for Classification of Refrigerating Machinery and Appliances. (Dry Air System)

FORM No. 17. Do. do. (Other Systems)

FORM No. 18.—Report of Periodical Survey or Repairs of Refrigerating Machinery.

FORM No. 19.—Report of Loading Port Survey on Refrigerating Machinery and Insulation.

X.—FEES AND EXPENSES.

317. Division of Fees:—

(a) **Fees for the Survey of New Ships and Machinery.**—

In cases of new vessels built under the Special Survey of the Society's Non-Exclusive Surveyors, with a view to classification, the fees payable for Special Survey during construction (Section 29 of the Rules) are to be equally divided between the Surveyors and the Society, unless there be good reasons shown to the contrary.

NOTE.—The Entry Fees chargeable under Section 28 are to be credited wholly to the Society.

(b) **Fees for all other Surveys.**—For all other Surveys (including Steel Testing) carried out by Non-Exclusive Surveyors in their capacity of Surveyors to Lloyd's Register of Shipping, the Society is to be credited with a contribution arrived at in accordance with the following arrangement:—

In cases in which the total amount of fees received by the Non-Exclusive Surveyors does not exceed £600, the Society is to be credited with 10 per cent. of the fees.

In cases in which the total amount of such fees exceeds £600, the Society is to be credited with 10 per cent. of the first £600 and 25 per cent. of any amount beyond £600 per annum.

318. Fees to be Stated on Reports.—All fees and travelling or other expenses, if any, charged in connection with surveys are to be entered in the reports of survey.

319. Fees Chargeable.—The fees to be charged are as follow:—

(a) **For the First Entry of classification** and survey of new vessels and new machinery, and for the survey of new donkey boilers, as per Sections 28 and 29 of the Rules.

(b) **For the special periodical surveys of iron and steel vessels and their machinery and boilers**, charges are to be made in accordance with the nature and extent of the services rendered and the custom of the port. It will be noted that the fees chargeable for special periodical surveys *when held entirely by the Society's Exclusive Surveyors in Great Britain and Ireland*, are set forth in Section 29, paragraph 5 of the Rules.

(c) **For the Survey of Damage Repairs** essential to the continuation of class (whether a special damage report be required or not), for the survey of repairs due to wear and tear, when they are of an extensive character, for surveys with a view to the re-instatement of class and for the survey of alterations in the structure of a vessel, a fee is to be charged according to the nature and extent of the services performed and the custom of the port.

(d) **For Freeboard Surveys.**—The scale of fees in Section 32 of the Rules is for the survey for Certificate of approval of Loadline and Assignment of Freeboard in Great Britain and Ireland.

In all cases these fees should be charged on the completion of new vessels at the same time as the accounts for the classification survey fees are rendered, *but on a separate form*. The amount of the fee should be noted on the final freeboard report.

Verification of Freeboard Marking.—In all cases in which Surveyors are called upon to verify the freeboard marking of a vessel with a view to the issue of new certificates, and the vessel is not under survey for any other purpose a small fee should be charged.

(e) **For the Survey and Classification of New Yachts** and their machinery constructed in Great Britain and Ireland as per approved scale of fees, Section 2 of the Rules for Yachts.

For ports abroad fees are to be charged according to the nature and extent of the services rendered in each case and the custom of the port.

(f) **For all other Surveys held on Yachts** or their machinery or boilers, the amount of the fee should be regulated according to the nature and extent of the services performed in each case and the custom of the port.

320. Docking Surveys.—All Annual Surveys on ships are held by the Society's Surveyors in this country *entirely free of charge*. It is therefore necessary that the Surveyors at Ports abroad should be careful to make *only a strictly moderate charge* when Annual Surveys may have to be held by them, in order to avoid complaints from Owners who, in some cases, have strongly objected to the amount of the fees charged for such surveys.

321. Travelling Expenses.—Travelling expenses, incurred by the Surveyors in connexion with the above services, are to be defrayed by the parties interested.

322. Expenses, when to be allowed.—If at any time the Surveyors shall be employed, by direction of the Committee, out of

the limits of the district for which they are appointed, or upon surveys held at distant parts of the district, expenses, which are to be charged to the parties on whose behalf the Surveyors are so employed, will be allowed in accordance with the custom of the port.

323. Commission on Subscriptions to the Register Book.—The Committee allow the Society's Non-Exclusive Surveyors a commission of 5 per cent. on subscriptions to the Register Book which may be collected by them.

XI.—BOOKS AND ACCOUNTS.

324. Official Journals to be Written up Daily.—The Surveyors are required to keep a record of their proceedings in the official journal provided for the purpose, which is to be considered as the property of the Society. This journal is to be written up *daily* in a manner similar to that shown in the sample pages inserted in each book.

325. Entries in Journals to be Detailed.—Attention is called to the necessity of recording in the Journal particulars of the visits paid to vessels and/or machinery under survey in a clear and explicit manner.

326. Note Books.—Note Books have been prepared for the use of the Surveyors as follow :

Note Book of First Entry Reports for Iron and Steel Steamers.

Do.	Do.	Sailing Vessels.
Do.	Do.	Wood Ships.
Do.	Do.	Machinery.
Do.	Do.	Donkey Boilers.

327. Account Forms.—All accounts are to be rendered upon the forms supplied for the purpose from the London Office.

328. Receipts.—The official receipt forms only (O.F.R.—A/c 18 & O.R.B.—A/c 20) should be used in giving receipts for monies received on behalf of the Society.

329. Return of Monies Received.—The Surveyors are to furnish the Committee at the end of each of the four quarters ending on the 30th September, 31st December, 31st March, and

30th June, which make up the Society's financial year, on the forms provided for the purpose, returns of all fees received in their capacity of Surveyor to the Society, and of Register Book subscriptions, and any other monies collected by them on the Society's behalf, together with a summarised statement of their account, on Form 54a, and a remittance for the amount due to the Society as shown thereon. In addition, a return should be made (on the Form Non-Ex.) for the same periods of all monies received or charged for surveys held or services rendered in other capacities than that of Surveyor to Lloyd's Register of Shipping.

330. Remittances to the London Office.—In the event of remittances to the London office not being acknowledged by the following mail attention should be drawn to the omission at once.

Remittances must in every case be sent in ordinary envelopes and not in those used for Reports and Returns.

XII.—PARTICULARS FOR THE REGISTER BOOK AND RETURNS.

331. Corrections for Register Book.—The Committee are very desirous that, as far as possible, the Register Book should be correct in the information it contains, much effort being constantly made to effect this object, and it is considered that important service may be rendered in this direction by co-operation on the part of the Surveyors. They are, therefore, requested, so far as may lie in their power, to supply from time to time information needful for the correction of the Register Book; such request (although of general import) applying more especially to the ships hailing from their respective districts.

Printed forms adapted for the purpose are supplied. (Return No. 2.)

332. Corrections to be pointed out early.—The Surveyors should give early intimation of any errors or omissions which may come under their observation in order that the same may be duly corrected.

333. Supplements to be Examined.—In particular the Surveyors should carefully examine the particulars inserted in each

supplement to the Register Book for the vessels built or surveyed at their port, and report to the London office any errors found.

334. Record of New Ships.—The Committee require particulars to be recorded in the Register Book of new ships, *as soon as they are launched*, whether they are intended for classification or not.

With a view to the adoption of despatch in the records the Surveyors should furnish to the London Office without delay all the particulars they may be able to obtain, as indicated in the Return No. 1, provided for the purpose. The particulars required should be forwarded at the earliest possible date, provided a name has been decided on for the ship. In the event of the name being changed, an immediate intimation thereof should be made to the Secretary.

It will not be necessary to await the launching of the ship, if the requisite information has been obtained prior thereto, but it should be stated when the vessel will be launched; and in the event of her not being launched as intended, the Secretary should be informed accordingly.

335. Record of Restricted Classes.—In all cases where the plans of the vessels have been approved for a restricted class such as “for river purposes”—“for channel purposes,” &c., the Surveyors should be careful in filling up Return No. 1 to state the *whole* of the particulars of the contemplated class.

336. Record of Oil-Carrying Vessels, Cable Vessels, &c.—In the case of vessels constructed to carry oil in bulk, or cable vessels, &c., whether for classification by this Society or not, the fact that they are so constructed should be stated, in order that the necessary record may be made in the Register Book as required by the Committee.

Vessels to be fitted with Refrigerating Machinery, or with engines aft, should also be so recorded in Return 1.

In the event of the Surveyors observing that any vessels of this description which have been built at, or which trade to, their port, are not so noted in the Register Book, attention should at once be drawn to the fact.

337. Record of Special Types, &c.—The Return No. 1 should show whether the vessel described is of any special type of construction, such as Trawler, &c.

338. Record of Decks, &c., in the Register Book.—The Surveyors should check, as far as practicable, the particulars given in the Register Book for each vessel that comes under their survey; especially as regards the record of the number of laid decks. The necessary corrections should be clearly defined on the reports of survey in order that the record in the Register Book may be amended.

RETURNS.

339. Transmission of Reports and Returns.—All Reports and Returns should be sent, not in envelopes containing correspondence, but in separate envelopes clearly marked on the top left hand corner with the word REPORTS or RETURNS.

340. Returns of Vessels Coming under Survey.—Where instructed to do so from the London office the Surveyors should furnish on Return No. 3, a weekly return of vessels that have come under survey during the week. This return is to reach the London Office on Saturday morning. In addition to the weekly list, the Surveyors should make a return at the end of each quarter on Returns Nos. 4 & 4a, of all vessels (other than new ships) under survey at that time.

341. Monthly Returns of Unreported Surveys.—The Surveyors are required to furnish on the Return 5b a monthly return of surveys which have been held but have not yet been reported (including new vessels and machinery but excluding all surveys actually in hand.) If there should be no unreported surveys, other than those still being held, a notation of the fact should be made on the return and it should be forwarded in the ordinary course.

342. Quarterly Returns of Ships, Engines and Boilers under Construction.—The Surveyors are required to furnish the above returns every quarter. These returns are to be made out on the proper forms (Returns 6, 6a, 7 7a and 8), and are to be

forwarded so as to be received in the London Office at least seven days before the close of the quarter.

343. Shipbuilding Returns.—With a view to accuracy and consistency of practice in the compilation of these returns, the Surveyors should be guided by the following instructions:—

The shipbuilding returns should include all vessels to be classed in Lloyd's Register Book of whatever tonnage; and all unclassed vessels of 100 tons gross and upwards. Against each vessel should be indicated the class (if any) in this Society's Register Book for which she is intended, also any other Classification Registry or Registries (if any) in which she is likewise, or exclusively, to be classed.

An asterisk is to be placed against all vessels on which no progress has been made during the quarter; and a dagger against all vessels of which the construction has been commenced during the quarter.

Special attention is drawn to the note (a) at foot of return. The words "Steel Sc." or "Steel Tw. Sc." are only to be used for steamers of ordinary type to be fitted with reciprocating engines.

Vessels intended for classification with Lloyd's Register are to be kept separate from the others, and vessels which builders are preparing to construct are to be kept separate from vessels actually under construction. The term "preparing" is to be understood to include only (i) vessels intended to be classed by this Society for which plans have been submitted to the Committee, and (ii) vessels not intended to be so classed for which the material has actually been ordered. A vessel is not to be considered as "commenced" until work is commenced on the material in the yard.

The *gross* tonnage is to be given for both sailing and steam vessels. The tonnage of a vessel is to be given approximately in any case where it cannot be ascertained exactly.

As regards the column headed "Nationality of Owners," it is thought that Shipbuilders will furnish the desired information, even if they are disinclined to give the Owners' names; but should it be refused in any instance, the circumstances

should at once be reported to the Secretary. In this column, "Br." should be entered against vessels intended to belong to ports of Great Britain and Ireland; "Dom." against vessels intended to belong to ports in British Colonies; and the name of the country in other cases.

The returns are to be summarised on the form prepared for the purpose (Return No. 6a).

The shipbuilding returns in question are to be accompanied by returns, on the proper forms, of vessels launched and vessels completed during the quarter (Return Nos. 7 & 7a respectively).

344. Returns of Engines and Boilers under Construction.—

The returns should include all main engines and boilers, of whatever size, to be classed with Lloyd's Register, and other main engines and boilers if intended for vessels of 100 tons gross and upwards.

The horse-power of each complete set of engines is to be obtained from the engine-makers and the horse-power required is, without exception, the *Indicated* horse-power for reciprocating steam and oil engines and the *Shaft* horse-power for turbines.

Main engines built for stock are not to be retained in the returns after completion, although such engines may still be at the works.

Auxiliary engines (not intended for the propulsion of vessels) are not to be included in the returns.

The return is to be divided into three parts:—

PART 1. Engines under construction at the works.

PART 2. Engines being fitted on board vessels under construction in your district, whether such engines have been made in your district or not.

PART 3. Engines, the construction of which is "Preparing." In this case the word "Preparing" is to be inserted in the Progress column.

At the end of each part of the return, figures are to be inserted showing the *total* number and horse-power of the complete engines sets included in such part of the return.

Special attention is drawn to the notes at the foot of the return.

All the previously mentioned returns, 6, 6a, 7, 7a & 8, are to be sent every quarter. Should there be nothing to report on any of them, the usual form should nevertheless be sent and marked "NONE."

345. Quarterly Returns of Wrecks, &c.—The Surveyors are required to furnish every quarter, on the proper form (Return No. 10), a return of all vessels, whether classed or unclassed, which have been wrecked, condemned, broken up, lost, &c. This should include all such casualties, &c., *occurring* in the district, also as far as possible those affecting vessels *owned* therein.

The quarterly list of total losses which is issued by this Society is partly based on the returns which are received quarterly from the Society's Surveyors, and this will show the nature and extent of the information which the Committee desire to receive as regards each casualty, condemnation, &c.

The Surveyors should endeavour to make the returns as complete as possible. Particular attention is drawn to the circumstance that the dismantling or breaking up of vessels, and the loss of vessels of small tonnage (say 100 to 400 tons) are frequently not reported in shipping papers. Such cases, especially, are therefore very likely to escape early attention, and to be omitted from the quarterly list, unless they are reported to the Committee by the Society's Surveyors. The returns should give the dates of dismantling, condemnation, &c., as in the case of wrecks.

346. Returns of Vessels Re-metalled.—At convenient intervals returns should be made on the proper form (Return No. 11) of all cases of the re-metalling of vessels (not classed in the Register Book) which the Surveyors can report as the result of their own personal observation or from their examination of vouchers.

347. Copies of Documents to be Kept.—The Surveyors are to keep copies of all documents (including reports, letters, returns, &c.), transmitted by them to the Society; and are to give the Secretary timely notice when in want of any printed forms or other official documents, which will be immediately forwarded.

348. Supply of Forms.—When requesting a supply of any forms, the Surveyors should be careful to quote the name and number of each form as given in the List appended hereto.

LIST OF FORMS & BOOKS PROVIDED FOR THE USE OF SURVEYORS.

NOTE BOOKS.

Note Book of First Entry Reports for Iron and Steel Steamers.

Do.	Do.	Sailing Vessels.
Do.	Do.	Wood Ships.
Do.	Do.	Machinery.
Do.	Do.	Donkey Boilers.

Surveyor's Journal.

N.B.—A supply of Forms for not more than six months should be requested, and it is important that the precise term by which the forms are known shall be used.

REQUEST FORMS.

In ordering
to be
quoted as

Request for the Special Survey while building of Ships and Machinery, bound in books of 10, 25, and 50 forms (<i>also printed in French</i>)						Req. 1
Request for the Special Survey while building of Yachts and Machinery, bound in books of 10 and 25 forms						Req. 2
Request for the Special Survey while building of Yachts for the International Rating Classes, bound in books of 25 forms						Req. 2a
Request for a Condition Survey on Yachts						Req. 2b
Do.	Re-classification Surveys					Req. 3
Do.	other Surveys					Req. 4
Do.	Testing Ship Steel, under constant attendance					Req. 5
Do.	Do.	during the year				Req. 5*
Do.	Testing Ship Steel under occasional attendance (<i>also printed in French</i>)					Req. 6
Do.	Testing Ship Steel under occasional attendance <u>during the year</u>					Req. 6*

REQUEST FORMS *(continued)*.In ordering
to be
quoted as

Request for Testing Boiler Steel under constant atten-							
dance						Req. 7	
Do. Do. during the year						Req. 7*	
Do. Testing Boiler Steel under occasional atten-							
dance <i>(also printed in French)</i> ...						Req. 8.	
Do. Request for testing Boiler Steel under							
occasional attendance during the year ...						Req. 8*	
Do. the Examination of Surfaces of Plates, or							
other special work <i>(also printed in</i>							
<i>French)</i>						Req. 8a	
Do. Survey for assignment of Freeboard							
(British Vessels)						Req. 9	
Do. Survey for assignment of Freeboard							
(Vessels other than British)						Req. 10	
Do. Survey for assignment of Freeboard						Req. 10	
(Swedish Vessels)						(Swd.)	
Do. the Special Survey while building of							
Refrigerating Machinery and Appliances						Req. 13	
Do. the Special Survey of Refrigerating							
Machinery and Appliances already built						Req. 13a	
Do. the Special Survey while building of Boilers						Req. 14	
Do. do. during the year						Req. 14*	

SPECIFICATION FORMS FOR INTERNATIONAL RACING YACHTS.

Specification form for Wood Yachts						Spec. 2	
Do. do. Composite Yachts						Spec. 3	

SURVEY LETTER FORMS, &c.

Letter to Owners <i>re</i> Repairs to Vessel						Ltr. 3	
Do. <i>re</i> Limit on Machinery						Ltr. 4	
Copy of above for attaching to Report... ..						Ltr. 4a	
Forms advising transmission of Reports						Ltr. 5	

REPORT FORMS.

In ordering
to be
quoted as

First Entry Report for Steel Steamers or Motorships ...	Rpt. 1
Do. do. —Supplement for particulars of Longitudinal Framing ...	Rpt. 1*
First Entry Report for Steel Sailing Ship ...	Rpt. 1c
Do. do. Ferro-Concrete Vessel...	Rpt. 1d
Do. do. Steel Yacht ...	Rpt. 1e
Do. do. Wood Ship ...	Rpt. 2
Do. do. Wood Yacht ...	Rpt. 2a
Do. do. Composite Vessel ...	Rpt. 3
Do. do. Composite Yacht ...	Rpt. 3a
Do. do. Wood Racing Yacht ...	Rpt. R2
Do. do. Composite do. ...	Rpt. R3
Do. do. Reciprocating Engine Machinery	Rpt. 4
Do. do. Steam Turbine Machinery ...	Rpt. 4a
Do. do. Oil Engine Machinery...	Rpt. 4b
Do. do. Multitubular Boiler (main, auxiliary or donkey) ...	Rpt. 5a
First Entry Report for Vertical Donkey Boiler ...	Rpt. 5b
Do. do. Water Tube Boiler ...	Rpt. 5c
Report of Ship Forgings or Castings ...	Rpt. 6
Do. Engine do. do. ...	Rpt. 7
Do. Survey for Repairs, &c. (Hull) ...	Rpt. 8
Do. do. do. (Eng.&B.)...	Rpt. 9
Following sheets to Repair Reports ...	Rpt. 9a
Report of Survey for Damage—Ship or Machinery; also for condition of Yachts or Machinery (<i>also in French, Italian & Spanish</i>) ...	Rpt. 10
Following sheets to above ...	Rpt. 10a
Report of Survey for Freeboard—Sailing Ships, either Flush-decked or with Top-Gallant Forecastles, Short Poops and Bridge Houses disconnected, or with Top-Gallant Forecastles having Long Poops, or Raised Quarter Decks connected with Bridge Houses or otherwise ...	Rpt. 11a

REPORT FORMS (<i>continued</i>).				In ordering to be quoted as
Report of Survey for Freeboard—Steam Ships	...			Rpt. 11b
Do. do. Steam Ships having				
Spar or Awning Deck	...	...	...	Rpt. 11c
Report of Survey for Freeboard—for comparison of scantlings of unclassified iron and steel ships with the Rules of Lloyd's Register	...	...	...	Rpt. 11d
Freeboard Verification form for Steamers	...	...		Rpt. 12
Do. do. French Steamers	...			Rpt. 12 (Fr.)
Do. do. Sailing Vessels	...	...		Rpt. 12a
Do. do. French Sailing Vessels	...			Rpt. 12a (Fr.)
Report on Electric Fittings (other than for propulsion)				Rpt. 13
Report on Masts, Spars, and Rigging	...	...	...	Rpt. 14
Results of Tests of Steel	...	...	...	Rpt. 15
First Entry Report of Refrigerating Machinery and Insulation (Dry Air System)	...	...	...	Rpt. 16
First Entry Report of Refrigerating Machinery and Appliances (.....System)	...	...	...	Rpt. 17
Report of Survey or Repairs of Refrigerating Machinery				Rpt. 18
Report of Survey on Refrigerating Machinery and Insulation before loading	...	...	...	Rpt. 19

CERTIFICATE FORMS.

Certificate of Test of Boiler (<i>also in French</i>)	...	Cert. 1
Interim Certificate.—Hull (<i>also in French, Italian and Spanish</i>). With copies for London Office	...	Cert. B
Interim Certificate.—Machinery (<i>also in French, Italian and Spanish</i>). With copies for London Office	...	Cert. B1
Interim Certificate.—Unclassed Vessels. Hull. With copies for London Office	...	Cert. C
Interim Certificate.—Unclassed Vessels. Machinery. With copies for London Office	...	Cert. C1
"Loading" Certificate for vessels holding Lloyd's RMO.	}	Cert. A
With copies for London Office		(RMC)

CERTIFICATE FORMS *(continued)*.In ordering
to be
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"Loading" Certificate for vessels the Refrigerating Machinery of which is not classed. With copies for London Office...	Cert. B (RMC)
Interim Certificate.—Periodical survey of Refrigerating Machinery (<i>also in French</i>). With copies for London Office ...	Cert. C (RMC)
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PRINTS OF EXTRACTS FROM THE
RULES.

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* Periodical Surveys of Iron and Steel Vessels and Machinery, s.s. No. 2...	...	Ex. 3b
* Periodical Surveys of Iron and Steel Vessels and Machinery, s.s. No. 3 and 2nd No. 3	Ex. 3c
Periodical Surveys of Machinery (detailed print for handing to Masters, Chief Engineers and others) ...		Ex. 4a

* And in French, German, Italian, Portuguese, and Spanish.

Periodical Surveys of Iron and Steel Vessels classed in late Underwriters' Registry	Ex. 5
Half Time Survey of Wood Ships (Section 34)	Ex. 6
Refrigerating Machinery and Appliances	Ex. 12
Quality and Testing of Materials	Ex. 13
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