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## THE INTERNATIONAL EIGHT METRE ASSOCIATION

GASTHUISSTRAAT 4 – 4161CC HEUKELUM – HOLLAND

### The First International Rule 1908 – 1919

#### THE FIRST INTERNATIONAL RULE AS IN FORCE FROM 1908 – 1917 (1919)

##### Rule 51. - Fees for Measurement.

The owner of a yacht shall pay all fees and expenses for measuring such yacht, previous to the yacht being measured. A yacht shall not be measured until all arrears of subscription and fees, due from the owner to the National Authority, have been paid.

##### Rule 52. - Re-measurement by Order of National Authority.

Where a re-measurement is made at the instance of the National Authority, the expenses and fees of such re-measurement shall be paid by the National Authority if the certificate is upheld.

##### Rule 53. – Publication of Certificates.

The figures for the Formula, the rating, and rig, with the dates of the certificates, shall be periodically published.

### INTERNATIONAL RULE OF MEASUREMENT

#### (i) Rule and Duration.

The rule of measurement is “The International Rule for Yacht Measurement and Rating.” It is to be in force for ten years, from January 1, 1908, that is to say, until December 31, 1917.

#### (ii) Formula.

The formula is: -

$$\frac{L + B + \frac{1}{2}G + 3d + \frac{1}{3}\sqrt{S} - F}{2} = \text{Rating in linear units,}$$

i.e., either feet or metres.

Where L = Length in linear units.

“ B = Beam in linear units.

“ G = Girth in linear units.

“ d = Girth difference in linear units.

“ S = Sail area in square units.

“ F = Freeboard in linear units.

#### (iii) Length.

The length, L, for the formula is to be the length on the waterline (recorded as specified in paragraph 24 of the Instructions to Measures), with the addition (1) of the difference between the girth, covering board to covering board, at the bow water-line ending, and twice the freeboard at that point, and (2) one-fifth of the difference between the girth, covering board to covering board, at the stern water-line ending, and twice the freeboard at that point.

#### (iv) Beam.

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The beam, B, is to be taken from outside to outside of the planking, at the broadest place, including wales, doubling planks, and mouldings of any kind.

**(v) Girth.**

The girth, G, is to be the chain girth measured from the upper side of the covering board round the keel to the upper side of the covering board again, at that part of the yacht at which the measurement is greatest, less twice the freeboard at the same station. This station is to be indicated on the covering board by an official mark [G]. Should the chain girth be the same at several stations, that which is nearest to the greatest beam shall be adopted for subsequent measurements. But if the keel underside line abaft the girth station is straight, except for a reasonable round at the extreme after end, the station for the girth measurement may be fixed by the designer anywhere abaft 0°55 of the L.W.L. length from its fore end, provided that the maximum chain girth, covering board to covering board, does not exceed that at the station so fixed, anywhere forward of that station, or by more than 3 per cent anywhere abaft of that station.

Should there be any hollow in the fore and aft underwater profile, the girth and difference measurements shall be taken under an imaginary keel line, excluding such hollow.

**(vi) Girth Difference.**

The girth difference, *d*, in the formula, is to be the difference between the chain girth, measured as above described, from covering board to covering board, and the skin girth between the same points, measured along the actual outline of the cross section.

**(vii) Sail Area.**

The sail area, S, is to be measured as stated in paragraph 31 of the Instructions to Measurers.

**(viii) Freeboard.**

The freeboard for the formula is to be twice the freeboard at the girth station, plus once the freeboard measured at the bow waterline ending for length measurement (see above), plus once the freeboard measured at the stern waterline ending, the sum to be divided by four.

**(ix) Crew.**

All measurements to be taken without crew on board.

**(x) Marks.**

Visible measurement marks on the hull must be in accordance with paragraph 13 of the Instructions to Measurers.

**(xi) Immersion.**

That the certificated rating be for the immersion of the yacht in water of the specific gravity of open seawater. Allowance is to be made in the case of vessels measured in fresh water, as prescribed in the Instructions to Measurers.

**(xii) Cabin Dimensions and Fittings.**

The restrictions as to cabin specifications to be in accordance with the annexed table.

**(xiii) Masts.**

Hollow wooden masts are prohibited in the classes above 32°8ft. (10 metres), and also hollow metal masts in all classes up to 75°4ft. (23 metres) inclusive.

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(xiv)

#### Classification.

The classes will be as follows:-

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International

23 metres	75°46	no limit
19 "	62°33	20
15 "	49°21	14
12 "	39°37	10
10 "	32°80	8
9 "	29°52	6
8* "	26°24	5
7 "	22°96	4
6* "	19°68	3
5* "	16°40	2

Among the classes of 10 metres and under, the classes\* thus marked to be styled the principal classes, which clubs are specially recommended to encourage.

Class "A," above 23 metres, is for schooners, yawls, ketches, and luggers, and the yachts in this class must be classed A at Lloyd's Register or by the German Lloyd or Bureau Veritas. The other classes are for cutters; yachts of other rigs might compete, but they would not receive any allowance for inferiority of rig. These classes are called the "R" classes because all the new vessels competing therein must be Classes "R" by one of the three Societies.

**(xv) Amalgamation to be Avoided.**

The International classes, when separately advertised, must never be amalgamated.

**(xvi) Scantlings.**

All yachts will have to be classed with one of the three classification societies, viz., Lloyd's Register of British and Foreign Shipping, Germanischer Lloyd, or Bureau Veritas; and yachts of the International classes so built will be Classed "R", denoting that their scantlings are as required for their respective rating classes. The tables of scantlings may be obtained on application from the Secretary of Lloyd's Register of British and Foreign Shipping, 71, Fenchurch-street, E.C.; or of the Germanischer Lloyd, Reichstags Ufer 16, Berlin N.W.; or the Administration of the Bureau Veritas, 8, Place de la Bourse, Paris.

In respect to this clause it should be noticed that certificates of classification issued by the Norsk veritas Society are also accepted by the International Yacht Racing Union.

It was decided by the Permanent Committee in 1910 that a yacht with an "R" Class Classification Society's Certificate is not available for obtaining an "A" Class Rating Certificate.

The Permanent Committee has decided in 1911 that if the classification certificate of a yacht classed "R" is cancelled by a Classification Society, the certificate of rating held by the yacht shall cease to be valid.

**(xvii) Time Allowance.**

The allowance to be made between the old boats of each of the existing classes of the several countries and the corresponding new International class is to be assessed by the National Authorities of the several countries, and to be the same for all the old yachts of each class, which must maintain their certificate of rating by measurement under the rule for which they were built.

*Clause (xvii) ceased to operate on December 31, 1909.*

**(xviii) Old Yachts.**

Old yachts will be allowed to race under special conditions until December 31, 1909. For the purpose of this rule an old yacht may be considered as a yacht which commenced building before June 13, 1906. If any old yacht conforms

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with the scantling regulations and the accommodation rules, she may be regarded as a new yacht for the purposes of the rule, and compete in her corresponding class.

*Clause (xviii) ceased to operate on December 31, 1909.*

#### (xix) **Weight.**

The minimum displacement in the 5, 6 and 7 metre classes to be as follows:-

Class.	Displacement.
5.0	750 kilos. (14 cwt. 85lb.)
6.0	1.200 kilos. (1 ton 3cwt. 70lb.)
7.0	1.800 kilos. (1 ton 15cwt. 48lb.)

#### (xx) **Special Rules for Centre-board Yachts.**

- I. Boats weighing less than 750 kilos shall be excluded from International Regattas.
- II. In centre-board yachts.
  - (1) A. If the draught without the c – b at the girth station is equal to  $\frac{1}{3} B$ , or more, the measurement for  $d$  and  $G$  shall be taken under the bottom of the keel without regard to the c – b, or with c – b hoisted.  
B. If the draught without the c – b at the girth station is less than  $\frac{1}{3} B$ , the girth measurement for  $d$  and  $G$  shall be taken to a point distant below the bottom of the keel by twice the difference between the actual draught without c – b and  $\frac{1}{3} B$ .
  - (2) In order to give  $G$  for the formula, one-half of the greatest depth of the c – b from the underside of the keel shall be added to  $G$ , taken as above.
- III. Centre-board yachts are not allowed to race either with keel yachts or alone, unless expressly so stated in the announcement of the race.

IV. The minimum displacement of centre-board yachts to be as follows:-

Class.	Displacement.
5.0	750 kilos. (14 cwt. 85lb.)
6.0	1.200 kilos. (1 ton 3 cwt. 48lb.)
7.0	1.800 kilos. (1 ton 15cwt. 48lb.)
8.0	2.600 kilos. (2 tons 11cwt. 20lb.)
9.0	3.700 kilos. (3 tons 12 cwt. 93lb.)
10.0	5.000 kilos. (4 tons 18cwt. 47lb.)

In order to avoid ballasted centre boards, the maximum weight of the centre-board in each class to be as follows:-

Class.	Weight.
5.0	50 kilos. (110 lb.)
6.0	75 kilos. (1cwt. 53lb.)
7.0	125 kilos. (2cwt. 51lb.)
8.0	200 kilos. (3cwt. 105lb.)
9.0	300 kilos. (5cwt. 101lb.)

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10.0	400 kilos. (7cwt. 98lb.)
12.0	700 kilos. (13cwt. 87lb.)
15.0	1.300 kilos. (1 ton 5cwt. 66lb.)

#### **(xxi) Certificate of Rating.**

As soon as a Yacht has been measured, the measurer shall forward the measurements (with the sail-maker's diagram, if necessary) to the Secretary of the National Authority, who shall in due course, and after receipt of the Classification Society's certificate, issue a certificate of rating, which shall be in force from the date of the completion of the measurement. If from any peculiarity in the build of the Yacht, or other cause, the measurer shall be of opinion that the rule will not rate the Yacht fairly, or that in any respect she does not comply with the requirements of these rules, he shall report the circumstances to the National Authority, who, after due inquiry, shall award such certificate of rating as they may consider equitable, and the measurement shall be deemed incomplete until this has been done.

#### **(xxii) Errors in Certificates.**

Should the certificate under which a Yacht has sailed in any race or races be proved to have been incorrect for any reason, the National Authority may, after inquiry, correct such certificate as they may deem proper, and may revise the claim of the Yacht to the prizes which she may have been awarded in such race or races.

#### **(xxiii) Certificate not to be Granted to Yachts under Weight named in Rule.**

No certificate of rating shall be granted to any yacht weighing less than the minimum weight prescribed in the rule, nor having a centre-board of greater weight than prescribed by the rule.

#### **(xxiv) Obligation of Owner respecting Certificate.**

The certificate of rating shall cease to be valid under any of the following contingencies:-

- (a) If any dimension measured for rating, except freeboard, is found to exceed the measurement stated on the certificate.
- (b) If one or both of the length marks fall within the length immersed when the yacht is lying in smooth water in measurement trim.
- (c) If any alteration is made so as to increase the beam or girth or girth difference, or the length of any spar or spars, or the sail area, as respectively measured for rating.
- (d) If any length or girth or immersion mark is moved from its position.
- (e) If the weight is reduced to less than the weight prescribed by the rule.
- (f) If the fittings do not comply with the tables.
- (g) At the expiration of two years from the date of the certificate.

In such case the owner or his representative shall forthwith notify in writing the invalidity of the certificate to the Secretary of the National Authority. A fresh or re-dated certificate will afterwards be issued, to be in force from the completion of re-measurement, or from the date the certificate expires under Clause (g).

It is especially incumbent on the owner, or his representative, to ascertain from time to time, by inspection of the marks, whether the immersion of the yacht has from any cause whatever become such as to render the certificate invalid.

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**(xxv) Penalty for Infringement of Provisions relating to Certificate.**

If an infringement of any of the foregoing provisions in respect of the validity of the certificate of a Yacht should, in the opinion of the National Authority, be proved against any Yacht, such Yacht shall be liable to be disqualified by the National Authority from starting in any race sailed under Rules for the remainder of the current year, or such period as the National Authority may direct, reckoning from the date at which her certificate is proved to have become invalid.

**(xxvi) Inspection to be permitted by Owner.**

Every owner sailing under these Rules shall permit all reasonable inspection by or on behalf of the National Authority, and shall afford all reasonable facility to carry out such inspection in regard to measurements, marks, fittings, and such other matters as fall within the scope of a measurer's duty.

**(xxvii) Fees for Measurement.**

The owner of a yacht shall pay all fees and expenses for measurement.

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#### INSTRUCTIONS TO MEASURERS.

##### 1. - Translations.

Each National Authority may issue a translation of these instruction for the use of the Measurers.

##### 2. - Personal Disabilities of Measurers.

Measurers of any National Authority shall not measure: -

- (a) Yachts which they have themselves designed or built or in the construction or alteration of which they have in any respect taken part.
- (b) Yachts which have been built by firms in which they have a business interest.
- (c) Yachts of which they are themselves the owners or part owners.

If necessary, in such cases a special Measurer may be appointed for the purpose by the National Authority.

##### 3. – Extra Measurements Forbidden.

The Measurers are not allowed to take other measurements than those necessary for determining the rating, except as may be expressly enjoined by the National Authority.

##### 4. – Displacement and Weight in Keel and Centre-Board Yachts.

The owner must furnish the Measurer with a certificate from the designer or builder, stating that the displacement of the yacht and the weight of the centre-board are according to the rule. Should the certificates referred to above prove to be false the National Authority may exclude the vessel and all later ones of the owner, designer, or builder in question from all races.

##### 5. – Cabin Fittings, Etc.

The Measurer, before certifying the measurement as complete (see paragraph 7), must satisfy himself that the cabin dimensions and fittings comply with the table in the International Rule.

##### 6. – Doubtful Cases.

If from any peculiarity of build, construction, or fittings of any yacht, the National Authority, on the report of the Measurer, are in doubt as to the application of the rules or instructions, or the calculation of the rating, they shall report the case to the International Committee of Referees, who after due inquiry shall award such certificate of rating as they may deem equitable; and the measurement shall be deemed incomplete (see paragraph 7) until this has been done.

##### 7. – Certificate of Rating.

Immediately the measurements are complete, the measurer shall forward the same to the National Authority and shall hand the owner or his representative an intimation in the following form: *I beg to inform you that the measurement ) or re-measurement) of the Yacht . . . . . is complete and that the yacht now holds a valid certificate. The certificate, stating the rating of the yacht, will follow in due course.*

*Signed, this . . . day of . . . . .*

*. . . . . Official Measurer.*

##### 8. – Measurements and Calculations.

Metres- All decimals beyond the 3rd place shall be disregarded.

Feet- All decimals beyond the 2nd place shall be disregarded.

##### 9. – Measuring Instruments.

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All measurements must be taken with a steel tape or with rods (or an ordinary measuring rule may be used in case of measurements of less than one metre); and all such instruments must be approved by the National Authority.

#### 10. – Measurement Books.

The measurements are to be entered in a book with printed measurement forms approved or supplied by the Council of the National Authority, and such books, as entered up, must be at all times open to inspection by the Secretary or Council of the National Authority, or by the Committee of Referees if required. All measurements must be taken twice and a third time if there is material disagreement, and recorded in the measurement book.

#### 11. – Marks to be of Standard Pattern.

The measurement marks are to be of the standard pattern sanctioned by the Committee of Referees, and are to be supplied to yachts through the Executive of the National Authorities. The several marks will be referred to in these instructions by the letters by which they are denoted in the enumeration below.

#### 12. – Verification of Marks.

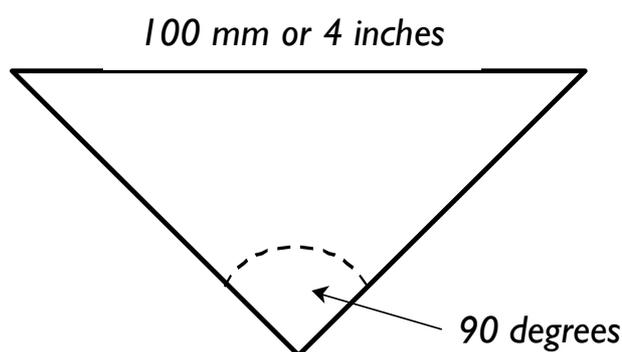
The marks are to be affixed at the expense of the owner and their positions verified by the measurer.

#### 13. – Enumeration of Marks.

The requisite marks are as follows:-

- Length marks, L.
- Mid-girth marks, G.
- Overhang girth marks, O.
- Immersion marks, I.

The length mark L is a rectangular mark not less than 12 mm. or  $\frac{1}{2}$  inch in width and 150 mm. or 6 inches in length. The girth and overhang marks, G and O, are square marks of 20 mm. or  $\frac{3}{4}$  inch in size, respectively marked with the letters G and O. The immersion mark I is a triangular mark thus: -



**The First International Rule 1908 – 1919****14. – No Definite Covering-Board Line.**

Where the yacht has no clearly defined line of upper edge of covering-board, the owner must define by a paint line the line which has to be taken for the purposes of measurement. The Measurer must satisfy himself that such paint line shows a fair sheer profile, and is not higher than is fairly equivalent to the deck edge. Such line must not be painted over, and any alteration of it will *ipso facto* cancel the certificate of rating.

**15. – Beam.**

For measuring the beam, B, a plumb-line must be suspended on each side of the yacht from a transverse batten, so that both hang just clear of the side when the yacht is upright, and the distance must be measured between the line. The lines must hang clear of any mouldings, wales, or doubling planks, but not of channels, unless in the opinion of the Measurer they are larger than necessary, so as to add materially to the stability, in which case they must be reported and the matter dealt with as provided under paragraph 6. The measurement must be tried in several places, and finally taken where found greatest. The beam measurement may be made with the yacht either afloat or ashore.

**16. – Mid-Girths and Girth Difference.**

For these measurements, the yacht must be on shore, suitably blocked up at the expense of the owner; and the marks L, G, and O must have been provisionally fixed on. The marks G and O must be fixed on the edge of, or close below, the covering-board, one on each side of the yacht.

**17. – Chain Girth.**

- I. The Measurer has first to ascertain if the G mark is fixed at or abaft 0.55 from the fore end of the L.W.L., if so, he next has to ascertain if the keel underside line abaft that station is straight (except for a reasonable round up at the extreme after end), in this case the greatest girth abaft G may exceed the girth at G by no more than 3 per cent.
- II. In all other cases he has to test that the girth mark G is fixed to that part of the yacht where the girth measurement is greatest. Should the girth measurement be the same at several stations, that which is nearest to the greatest beam shall be adopted.
- III. The chain girth G<sub>c</sub> is to be measured through the centre of the marks G from the upper side of covering-board round the keel to the upper side of the covering-board again, perpendicular to the waterline. The measurement must be taken outside any mouldings but not channels as provided in respect of beam measurement in par.15.
- IV. Should there be any hollow in the fore and aft under water-profile tending to reduce the girth measurement, the girth and difference measurements shall be taken under a keel line of the same thickness, excluding such hollows.

**18. – Skin Girth.**

The skin girth G<sub>s</sub> is to be measured between the same points as the chain girth G<sub>c</sub>, and along precisely the same track, only following the surface of the skin in all hollows except such as are caused by projecting mouldings or the edges of the planks in a clinch built boat. The girth difference *d* is to be obtained by deducting G<sub>c</sub> from G<sub>s</sub>.

**19. – Overhang Girths and Marks.**

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For these measurements, the yacht may be either afloat or ashore and the marks O and L must have been fixed on. The mark O must be fixed on the edge of or close below the covering-board, one on each side of the yacht, at both ends vertically above the outer edges of the L marks.

The overhang girth at each end must be measured as the shortest chain girth from the upper edge of the covering-board on one side to that on the other directly above, and through the centre of the marks O, passing under the fore and aft profile line in the plane of the outer edges of the marks L.

#### **20. – Yachts of Peculiar Construction.**

If the water-line ending be at the stern-post so that the tape measure cannot be laid round from gunwale to gunwale, the girth of each side is to be taken separately, and the two measurements are then to be added together; and the thickness of the stern-post is to be added.

If from any form of construction the mark O cannot be placed on the covering-boards in a vertical line above the L marks they shall be placed as near thereto as possible and the overhang girth shall be measured at the points indicated by the marks as placed.

If for any reason there is placed any contrivance at the stem or stern in order to avoid the measuring of the overhang such contrivance shall be disregarded in measuring the overhang girth.

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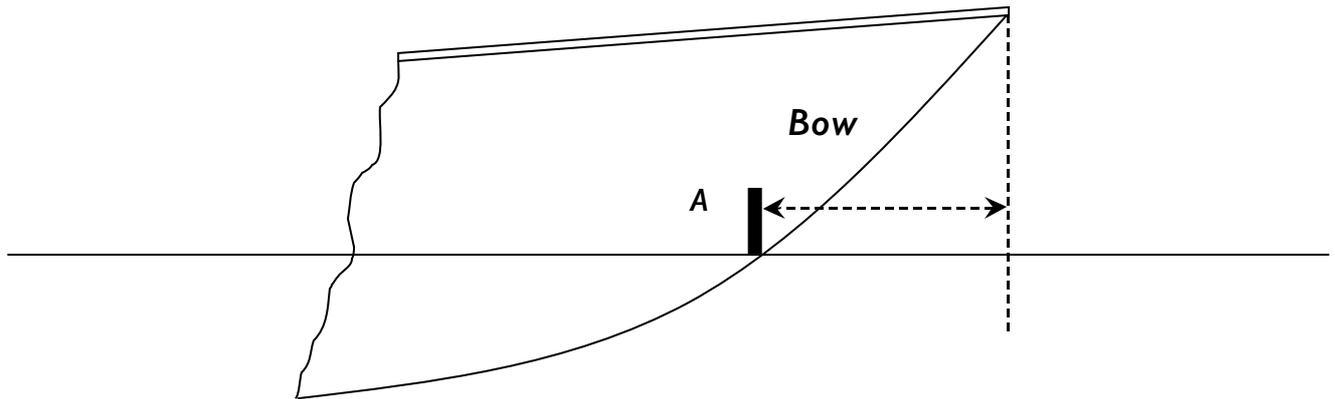
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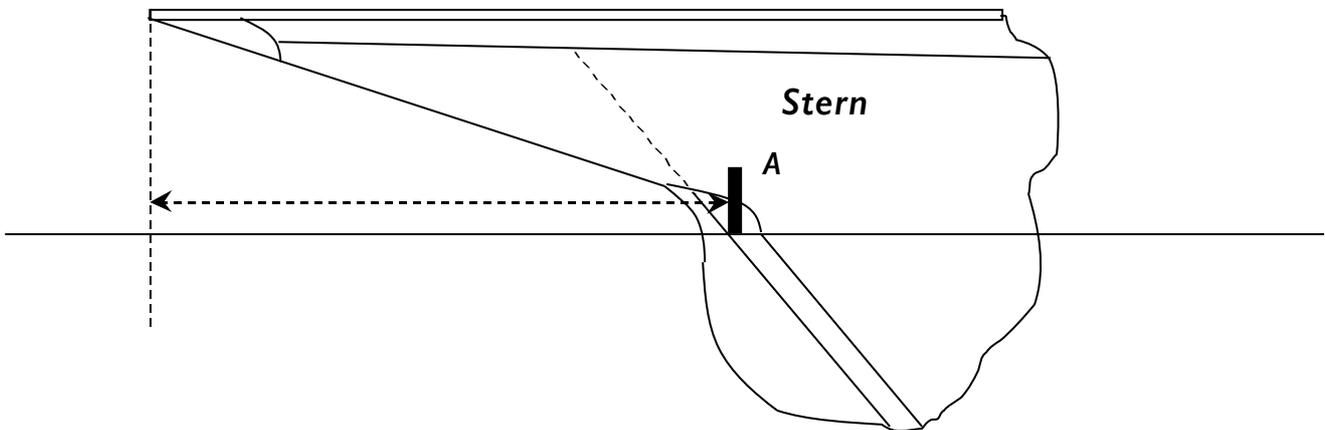
#### 21. – Length Marks.

For length measurement, the marks L must have been fixed on, in a transverse plane, at a right angle to the water-line, thus: -

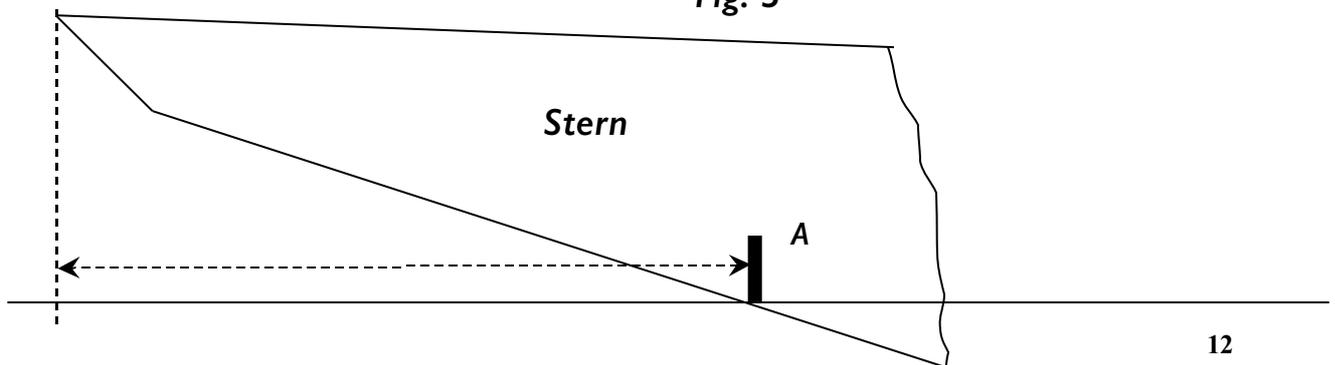
*Fig. 1*



*Fig. 2*



*Fig. 3*



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### 22. – Overall Length.

The overall length must be measured along a level line above the deck, from the plumb of the foremost point of the hull to that of the aftermost point, exclusive of rudder. Should there be any doubt as to the precise point to which the measurement should be taken, the point actually taken for measurement must be clearly described in the measurement book.

### 23. – Overhang Deductions.

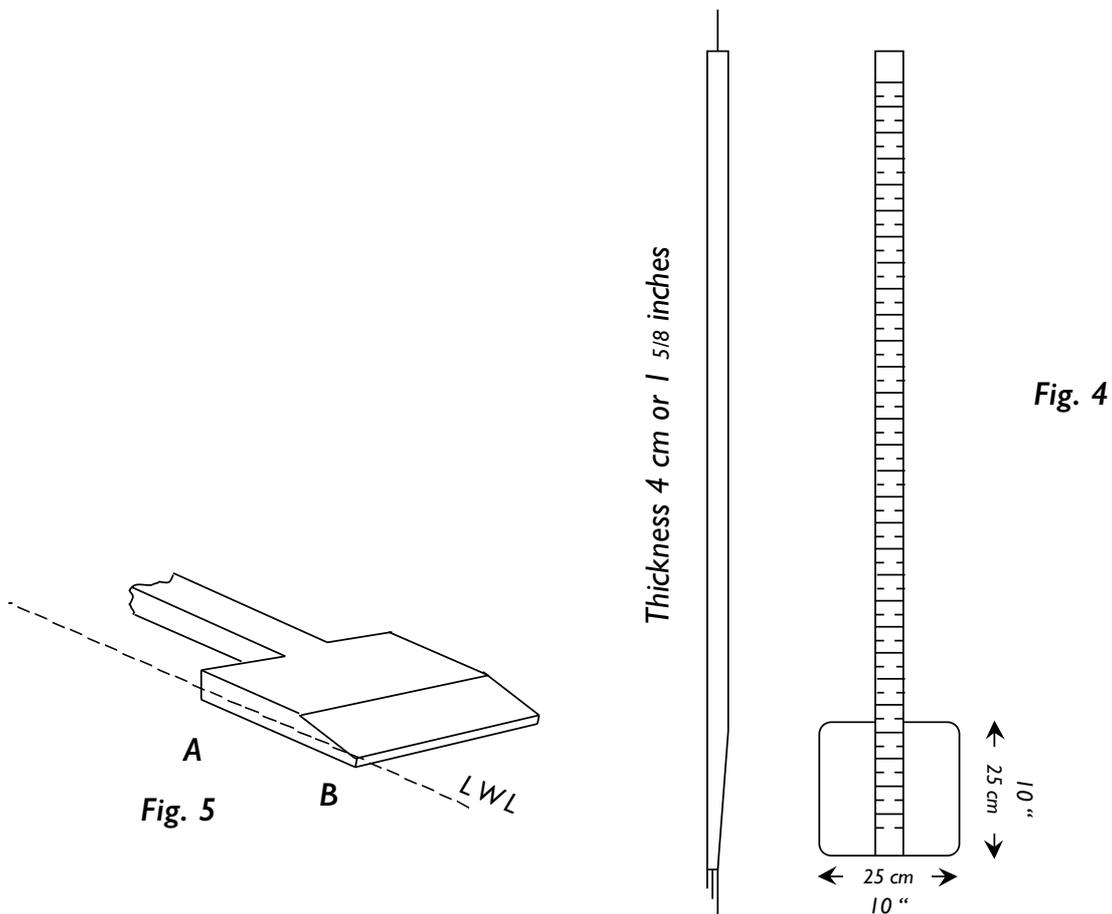
The overhang length deductions must be measured by a wooden instrument (*see* below), or a suitable plank, in a fore and aft direction, from the plumb-lines of the respective ends of the overall length, as just specified, to the edges, furthest from midship of the respective marks L.

#### MEASURING INSTRUMENT.

A wooden measuring batten made according to Fig. 4 serves to determine the length of the fore and after overhangs of the yacht. The batten must be well varnished in order to prevent alterations in its specific gravity caused by its absorption of water. The batten is broadened out at its ribbed end in order that, by reason of its greater buoyancy, it may not sink when held against stems having considerable rake. The broadened part of the batten A B should be made thinner at the end B in order that it may float just on the surface of the water (*see* Fig. 5). The batten may be provided with a metric scale, beginning at the ribbed end, and may be arranged to fold together.

### 24. – Water-line Length.

The length to be recorded as the “water-line length” is the overall length as specified in paragraph 22, minus the sum of the overhang deductions at the two ends as specified in paragraph 23.



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#### 25. – Projections, Notches, or Hollows.

When the length of the yacht below the water-line is longer than on the line of measurement, such longest length is to be taken as the length-for-measurement.

Should there be any notches or hollows in the stem, stern-post, or stern of the yacht intended to reduce the length-for-measurement, these are to be taken into account by bridging, in the determining of the length, when they are within a vertical distance of 15 cm. above or below the measurement water-line.

Such notches or hollows shall not affect the placing of the length marks L or the overhang marks O or the measuring of the overhang girths.

#### 26. – Immersion Marks.

The immersion marks I on both sides must be plumb under the marks G and the bottom corners just touching the water-line.

#### 27. – Freeboard.

The freeboard is the vertical distance from the water level to the upper edge of covering-board through the centres of the marks O, G, and O, forward, amidships, and aft, and on both sides of the yacht.

#### 28. – Afloat Test and Measurement.

For the purpose of the afloat test and measurement all the official marks enumerated must have been fixed on. The yacht must be lying in smooth and still water in her usual racing trim, and with her anchors, chains, and warps on board, but without any persons on board, to enable the Measurer to test that the length marks, L, do not fall within the length immersed, and to measure the freeboards.

*In the event of it being necessary to measure a yacht in fresh water, the Measurer shall require the designer or builder to furnish him with a certificate showing the difference in the line of immersion in water of a specific gravity of 1/55th less than open sea water, and the rating shall be calculated with an allowance according thereto, in the manner prescribed by the National Authority, with the concurrence of the Permanent Committee. The marks shall be fixed for the immersion in fresh water, with an additional immersion mark I for the immersion in salt water. The Certificate of Rating of a yacht so measured shall be endorsed "Fresh Water Certificate."*

### CENTRE-BOARD YACHTS.

#### 29. – Conditions for Girth Measurements and Measurement of Draught.

The yacht must be prepared at the expense of the owner for girth measurement as specified in paragraph 16, above, with the addition that the yacht must be so blocked up as to admit of the greatest depth of the centre-board below the keel-line being correctly measured. The Measurer must first measure the vertical depth from upper edge of covering-board at the marks G, to the underside of keel, by measuring down on both sides to a straight batten passed under the keel; and he must deduct from this the mean freeboard at girth station to give the draught of the yacht, in order to find if the draught is more or less than one-third of the beam according to the rule for centre-board yachts. If the draught is more than one-third of the beam the measurement of the girth and of the girth difference to be taken as in keel yachts.

If, on the contrary, the draught is less than one-third of the beam the measurement of the girth and of the girth difference is to be taken round an artificial keel-line distant below the bottom of the actual keel by twice the

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difference between the actual draught and one-third of the beam. The chain girth for use in paragraph 32 is in both cases the chain girth taken as above plus one-half of the greatest depth of the centre-board from the underside of the keel. All other measurements to be taken as in keel yachts.

#### 30. – Lowest Position of Centre-Board.

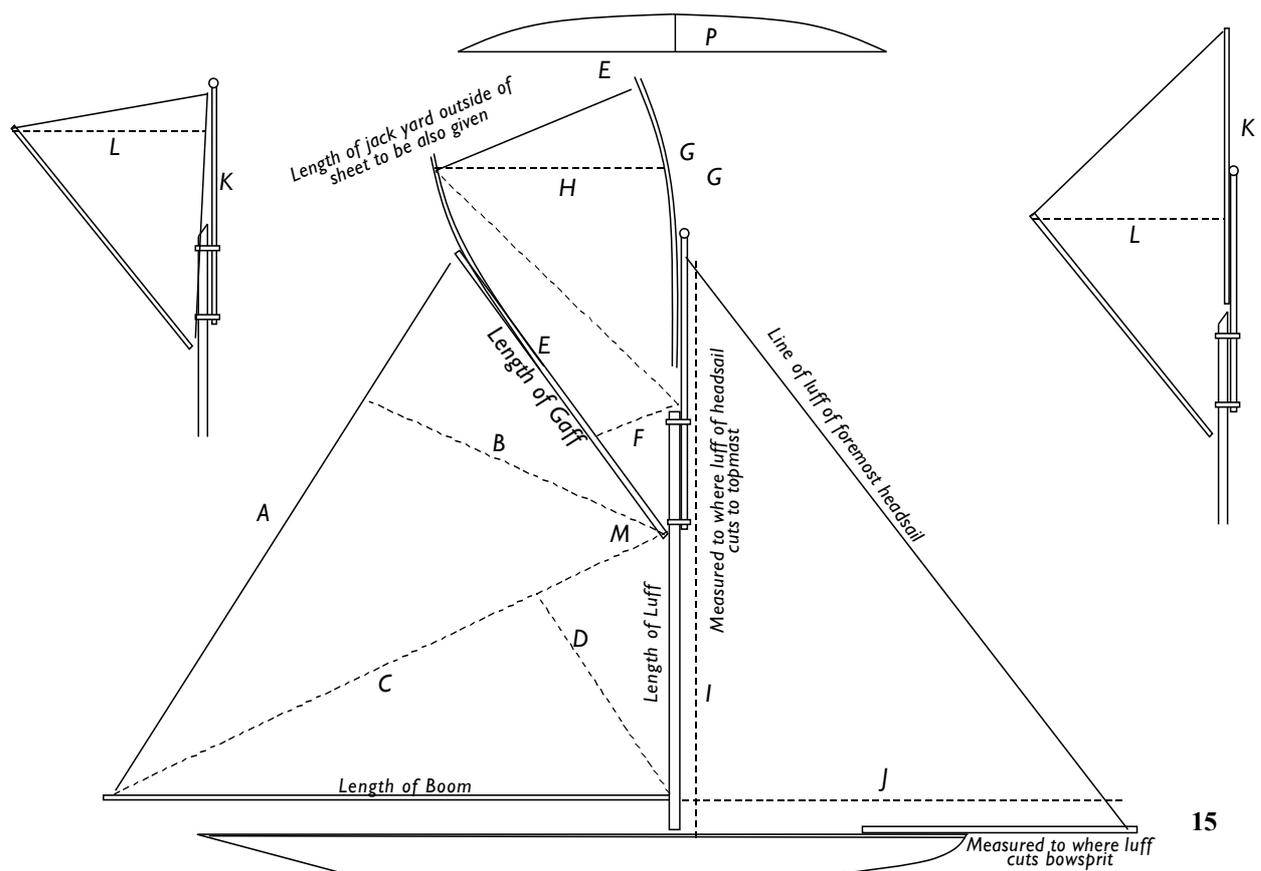
The position of the centre-board of a yacht is to be accounted the lowest which such centre-board assumes when let down to the utmost degree of which its construction or that of its lowering gear will admit. A simple knot in a hempen or wire rope is not admissible as a stopping appliance for the lowering gear. In the case of older yachts a large hard-soldered knot in a steel wire rope may be looked upon as a suitable stopping-appliance. In the case of new yachts it is the duty of the Measurer to require the construction of the centre-board to be such that its position for measurement is the lowest one to which it can be let down. The stopping-appliance for the centre-board must consist of a bolt, or suchlike object, fitted in suitable manner in the centre-board casing.

#### 31. – Sail Area.

(a)

##### Measurements.

The Secretary of the National Authority shall supply sail-makers, upon request, with diagrams in accordance with the subjoined sketch, and the measurements shall be taken as follows:



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#### Mainsail.

- A.- Measured from the top of the extreme out-board end of the boom to the underside of the extreme out-board end of the gaff.
- B.- Perpendicular to A, measured to the lower edge of a black band or other distinctive mark on the mast (hereinafter described as M), above which mark the throat cringle of the mainsail shall not be hoisted.
- C.- Measured from top of boom at the lower end of A, to the mark M on the mast.
- D.- Perpendicular to C, measured in to the mast, in a line with the top of the boom, or to tack cringle of mainsail, if below top of boom.

#### Yard Topsail.

- E.- Measured from the mark M on the mast to extreme out-board end of gaff; or extreme out-board end of jackyard.
- F.- Perpendicular to E, measured to lower end of yard.
- G.- Extreme length of yard.
- H.- Perpendicular to G, measured to extreme out-board end of gaff; or extreme out-board end of jackyard.

#### Jib Header.

- K.- Measured from the mark M to top of topmast.
- L.- Perpendicular to K, measured to extreme out-board end of gaff; or extreme out-board end of jackyard.

#### Lugsail.

To be measured as mainsail except as follows:

B + C. - Forward end measured to lower end of yard.

D. - Lower end measured to tack cringle of mainsail, if below top of boom, or forward of mast.

#### Points of Measurement which may be defined by Black Bands.

At the option of the owner the outer points of measurement on the boom, gaff or yard, topsail yard, jackyard, and topmast, namely, the extremities of the lines A, E, G, and K, may be black bands, beyond the inner edges of which the sail must not be extended.

#### Head Sails.

- I.- The perpendicular I to be measured from the deck of the foreside of the mast to where the line of the luff of the foremost head sail or of the spinnaker halyard, as the case may be, when extended, cuts such perpendicular. In the case of a schooner the perpendicular I shall be measured from the foremast, unless she has a main-spinnaker the height of which exceeds the perpendicular upon the foremast, in which case the excess shall be added to the perpendicular I.
- J.- The base J to be measured from the foreside of the mast to where the line of the luff of the foremost head sail when extended cuts the bowsprit, other spar, hull, etc., as the case may be. In all cases, if the distance from the centre fore and aft line of the mast to the outer end of the spinnaker boom exceeds the distance from the foreside of the mast to the bowsprit end (where cut by the line of the luff of the foremost head sail), the excess shall be added to the base of the fore-triangle. In the case of a schooner, the base J shall be measured from the foremast, but if the main or longest spinnaker boom exceeds the before-mentioned distance, the excess shall be added to the base J.  
In the case of a yacht having no head-sail, but carrying a spinnaker, the area for head-sail shall be computed from the length of spinnaker boom, and the height from deck to where the line of the halyard of the spinnaker when extended cuts the mast.  
A spinnaker may have a head-stick or board not longer than one-twentieth the length of the spinnaker boom, but not a foot yard, or more than one sheet, or any other contrivance for extending the sail to other than a triangular shape.

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In the case of a yacht carrying a square sail, or square topsail, or raffee (together or separately), the actual area of the same shall be computed; and if such area exceed the area of the fore triangle, the excess shall be used in the total area for determining the rating.

#### Foresail of Schooners.

To be measured as mainsail, except that the lower end of A is to be taken at foreside of mainmast, in a line with main boom goose-neck.

#### (b) Directions for Measuring Sails.

The measurer shall himself take measurements I and J for fore-triangle, G and E for yard topsail, and the length of spinnaker boom. If the other measurements are supplied by the sailmaker, the Measurer shall check them himself by measuring the following :

Mast : from line of top of boom to mark M.  
Boom : from lower end of A to lower end of D.  
Gaff, or lug yard : from upper end of A to forward end of B.  
Jackyard topsail : sheet to outer end of jack or band.

In cases where it is necessary for the measurer to measure the sails, he shall do so in the following manner: - Take the extreme length of the boom and gaff, or the length to the inner edges of the black bands thereon as the case may be; then hoist the sail with the tack fast and set the peak and luff up taut, and let go the topping lifts so that the weight of the boom comes on the leach of the sail. When properly set the mainsail must not extend beyond the inner edges of the black bands on the boom and gaff, nor must the throat cringle of the mainsail be above the lower edge of the black band M on the mast. With a line and tape, measure the leach and luff and the diagonal C. For the headsail measure the height I and the distance J, as provided for in the section dealing with headsail. For topsail the sail should be hoisted and marked in a line with the gaff, then lowered and the other dimensions taken. From the measurements so taken a sail plan should be drawn to scale and the other above specified measurements obtained therefrom. The National Authority, however, shall have power to vary the details of the above mode of measurement in any way which, in their opinion, may promote greater accuracy.

(c)

#### Calculation of Sail Areas.

##### Mainsail.

Multiply A by B and C by D, and add the two products together and divide by 2.

##### Yard Topsail.

Multiply E by F and G by H, and add the two products together and divide by 2.

##### Jib Header.

Multiply K by L and divide the product by 2.

##### Head Sails.

Multiply I by J and divide by 2.

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#### Lug Sails and Head Sails.

No deduction is to be made from headsail area on the score of any portion of the lug sail area ahead of the mast.

#### Sails Bounded by Curved Edges.

Any increase in the area of sails due to curved edges, extended by battens or otherwise beyond the line between the points for measurement, shall be computed as follows: Multiply the base, E, by two-thirds of the perpendicular, P. (see page 176).

#### 32. – Determination of Rating.

-L- for the formula.

To determine L for the formula add to the water-line length (paragraph 24) the difference between the overhang girth (paragraph 19) and the freeboard, measured on both sides forward (paragraph 27), and one-fifth of the difference between the overhang girth and the freeboard, measured on both sides aft (paragraph 27).

-B- for the formula.

B is measured as described in paragraph 16.

-G- for the formula.

To determine G for the formula deduct from chain girth (paragraph 17) the freeboard measured on both sides at the girth station (paragraph 27). In the case of a centre-board yacht the freeboard measured on both sides at the girth station (paragraph 27) is to be deducted from the chain girth determined as stated in paragraph 29.

-d- for the formula.

d For the formula is the difference between the chain (paragraph 17) and the skin girth (paragraph 18).

-√S- for the formula.

√S is the square root of the sail area calculated according to paragraph 31.

-F- for the formula.

To determine F take the two freeboards at the girth station G, and the mean between the two freeboards at the overhang girth O forward, and the mean between the two freeboards at the overhang girth O aft. Add these together and divide by 4.

The rating : -

$$\frac{\mathbf{L + B + \frac{1}{2} G + 3d + \frac{1}{3}\sqrt{S} - F}{2}} = \mathbf{Rating}$$

#### 33. – Certificate of Rating.

As soon as a yacht has been measured, the Measurer shall forward the measurements (with the sailmaker's diagram, if necessary) to the Secretary of the National Authority, who shall in due course, and after receipt of the Classification Society's certificate, issue a Certificate of Rating, which shall be in force from the date of the completion of the measurement. If from any peculiarity in the build of the yacht, or other cause, the measurer shall be of opinion that the rule will not rate the yacht fairly, or that in any respect she does not comply with the requirements of these rules, he shall report the circumstances to the National Authority, who, after due inquiry, shall award such certificate of rating as they may consider equitable, and the measurement shall be deemed incomplete until this has been done.

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#### MEASURING A YACHT.

##### Measurement of the Hull.

Having carefully read the text of the Measurement Rules and Instructions to Measurers in the previous chapters, we now arrive at the practical measurement of a yacht in order to find her rating by the International Rule. This is a simple matter. The measurements should be taken with a steel tape measure that will not stretch, marked on one side in feet and decimal feet, and on the other in metres. The yacht should be blocked up on the shore. The size of the vessel is of no importance, all yachts being measured in the same manner. We will consider in the present case we are measuring a yacht of the 6-metre class. Her shape can be seen in the annexed drawing (see plan of 6-metre yacht). The designer should first fix on the official marks L, G, and O, as near as he can to the positions described in the Instructions to Measurers (clauses 16, 19, and 21). The immersion marks I (clause 26) can be conveniently put on afterwards.

Whilst the yacht is ashore measure the Beam (clause 15), the Chain Girth (clause 17), the Skin Girth (clause 18), the Overhang Girths at each end (clause 19), and the Overall Length (clause 22). The two last-named may be taken afloat and of course the beam also if this is preferred, but the boat is steadier ashore.

When taking the measurements, proceed *exactly* as described in the clauses of the instructions named, and record each measurement upon a sheet of paper which should have previously been marked out in three columns with the particulars set down according to the Measurement Book shown on page 185.

Take each measurement twice to make quite sure (see clause 10).

Now launch the yacht. Before any further measurements can be taken, the yacht must be put in proper racing trim with all her ordinary sails, not the trysail or trysail gaff, and the fittings mentioned in the Table of Cabin Fittings facing page 152 on board. The tanks or water vessels, if the yacht is of 9 metres or over, must be *full* to the capacity named in the Table. All the anchors and chains specified in table 22 must be on board and stowed in the manner they would be when racing. No persons must be on board when the boat is measured afloat. We can now test the yacht's flotation (clause 28). This means the length marks must be at the ends of the water-line. If they are immersed or nearer to midships than the ends of the water-line they must be shifted outwards and the Overhang Girths will have to be re-measured, and, if necessary, the fore-and-aft positions of the mid-girth marks readjusted. On the other hand, if the length marks are much too near to the bow and stern, the owner had better shift them in his own interest; otherwise, he will be the loser because the measured water-line of his boat will be more than the real water-line. It is as well, however, for the owner to allow a little margin, to be on the safe side. We will now assume the length marks to have been found to be correctly placed. The yacht is now floating correctly, where the dotted lines are shown on the drawing with the O marks vertically above them. In practice it is rather difficult to stretch a steel tape round the curve of the hull to measure the Overhang Girths. It will not sit nicely against the side of the yacht owing to its width. A thin twisted steel or copper wire will be found to pull taut easily, and can be used to measure the end girths with accuracy. Fix on the immersion mark I on each side as described in clause 26, and shown at the 16th station on the drawing vertically under the G marks. In putting on the I marks the point of the angle of 90 degrees should be just touching the water's edge.

Now we can proceed with the afloat measurements. First take the overhang deductions at each end (clause 23). You need not use the instrument shown in the picture, a good wide plank that floats evenly and steadily is just as good. Mark it carefully with a knife where the plumb-line intersects it, and measure the distance on the plank itself so found with your steel tape or other measure. Lastly, measure the freeboards (clause 27), record each of these measurements as before described on the Measurement Sheet, and it will be found you have filled up every space (not including those left for the additions and subtractions) except that opposite  $1/3\sqrt{S}$ .

##### The Sail Measurements.

The principle of measuring the sails is extremely simple.

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The fore-triangle is always I multiplied by J (taken as described on pages 177, 178), and divided by 2.

A very good system of finding the area of the other sails is given in clause 31, pages 176-180, but it is as well to remember one is not obliged to adhere to this system. The principle is as follows: the fore-triangle is invariably :

$$\frac{I \times J}{2}$$

but the area of the other sails is their actual area as nearly as you can get it. The method described in clause 31, pages 176-180, is a good and simple method, but, if a Measurer (with the approval of his National Authority) prefers any other system as insuring greater accuracy, he is at liberty to adopt it.

In the present case we, let us suppose, have found our boat's sail area to be 507 sq. Ft.,  $\frac{1}{2}$  of the square root of which is 7.51. This is the last figure to be filled up in the Measurement Sheet. Now make the additions and subtractions, and divide the total by 2. The result will be 19.7 ft., or six metres, the rating of the yacht.

**MEASUREMENT SHEET OR BOOK.**

**Measurements for Rating in Feet.**

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	Overall Length		29.97
Add	{ Overhang Forward	4.28	
	{ Overhang Aft	<u>5.97</u>	
Subtract	Total Overhang		<u>10.25</u>
	Water-line Length	19.72	
Subtract	{ Girth at Bow	5.38	
	{ Twice Freeboard at Bow	<u>4.08</u>	
	O at Bow		1.30
Subtract	{ Girth at Stern	6.18	
	{ Twice Freeboard at Stern	<u>3.08</u>	
	O at Stern	3.10	
Add	1/5 O at Stern		<u>.62</u>
	Correct Length, L		21.64
	Beam, B		6.03
	Girth Gc		12.00
Add	{ Freeboard Port at G	1.55	
	{ Freeboard Starboard at C	<u>1.55</u>	
Subtract	Twice Freeboard at G		<u>3.10</u>
	Girth G		8.90
	½ Girth, G		4.45
Subtract	{ Girth Gs	12.48	
	{ Girth Gc	<u>12.00</u>	
	d	.48	
	3d		1.44
	1/3 √S		<u>7.51</u>
			41.07
Add to find Sum of the Measurements			
	{ Freeboard Port at G	1.55	
Add	{ Freeboard Starboard at G	1.55	
	{ Mean Freeboard at Bow O	2.04	
	{ Mean Freeboard at Stern O	<u>1.54</u>	
	Sum of Freeboards	6.68	
Subtract	(¼ sum) Freeboard, F		<u>1.67</u>
Divide by 2			39.40

Rating = 19.7 feet, or 6 metres.

The following measurements of spars and the other remarks should also be recorded by the Measurer: Height from the deck to where the line of luff of foremost head sail cuts the mast or topmast (I, in the sail diagram). Foreside mast to where the line of luff of foremast head sail cuts the bowsprit or hull (J, in the sail diagram). Main boom extreme. Main boom from aft side of mast to the inner edge of black band at boom end. Gaff extreme. Gaff (underside) from mast to the inner edges of black band at gaff end. Yard (topsail or lugsail) extreme. Yard (topsail or lugsail) length between inner edges of bands. Length of jackyard sheet to outer end. Length of spinnaker boom over all, including gooseneck, from centre fore and aft line of mast. Mizzen boom. Mizzen gaff or yard. The Measurer should also take note of the approximate weight of, and fore and aft position of, ballast, if any, inside; he should note the condition of water when the yacht was measured, *i.e.*, whether fresh or salt; and finally he should look round the yacht and see if the cabin fittings comply with the “Table of Cabin Fittings” facing page 152.

#### THE INTERNATIONAL EIGHT METRE ASSOCIATION

John Lammerts van Bueren (Secretary)

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