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"SHIP CLASSIFICATION"
by
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The definition of Classification can be taken literally as a forming into groups, in relation to a criterion or standard. When related to ships the highest standard is that of a ship capable of carrying its cargo, in sound condition, to any part of the world in any season of the year.

In the case of Lloyd's Register of Shipping this standard is now denoted by the symbols of ✠100A1 for hull and equipment, and ✠LMC for machinery.

This society publishes separate Books of Rules for the construction of Steel Ships, Trawlers, and Yachts respectively. The Book by which the Society is known throughout the world is the Register Book which is published annually, and about which a few brief remarks will be made at the end of this Paper.

Since the inception of Lloyd's Register of Shipping other Classification Societies have come into being. These are Bureau Veritas (French), Germanischer Lloyd (German), American Bureau of Shipping (American), Registro Italiano (Italian), and Det Norske Veritas (Norwegian).

Lloyd's Register has no Constitution, nor any Articles of Association. The Society has no shareholders and is run on a non-profit-making basis, any excess revenue being devoted to research and to the development of the many services which are available to all engaged in shipping. Its affairs are controlled by a General Committee representative of Shipowners, Underwriters, Ship, and Engine Builders etc.

Historical.

The early history of ship classification is veiled in some obscurity, and little is known of the remote beginnings of Marine Insurance. It is stated that the Greeks, the Phoenicians, the Rhodians and other ancient peoples had various forms of Marine Insurance. There is no evidence, however, that Marine Insurance

existed commercially before A.D. 1000.

The Italian Republics of the Middle Ages developed the practice of Marine Insurance considerably - the Venetians even going so far as to regulate by law the maximum depth to which a vessel might be loaded, according to her age and limits of trading.

Coming now to Northern Europe in the early fourteenth century, Bruges was the Capital of the Hanseatic League, and it is known that in the year 1310 there was a Chamber of Assurance in that City. The Hanseatic League was the great trading corporation which controlled the trade of the north of Europe. It must be remembered that, in those days, England, the great naval power, had no foreign trade or merchantile marine. All her trade was in the hands of the Hanseatic League and the Lombards. The Representatives, in England, of the Hanseatic League, known as the Members of the Steelyard, lived on a monastic plan and had no interest except commerce. Among the business methods which they introduced was insurance.

It may be of interest to Australians to note that England's greatest product was then wool, and these Members of the Steelyard had the monopoly of the wool trade.

Now it would seem that the people concerned would hardly insure a vessel and its cargo without knowing the condition, age, and equipment of the ship. To employ an expert to inspect and report upon every ship when proposed for freight would only be practicable when few ships existed. Someone must have made it his business to collect the necessary information and grade them according to his estimate of their efficiency. It is therefore assumed that such information was compiled in the form of shipping lists for the use of Merchants and Underwriters, thereby giving them a reasonable idea of a ship's capabilities without the necessity of a personal inspection.

It is believed by some Writers that documents of this nature were kept for their own guidance by the early frequenters of Lloyds Coffeehouse. Finding his house much patronised by Underwriters and Shipowners, Lloyd made it his practice to collect and circulate

among his clients all the shipping intelligence, and, in 1696, he set up a printed news letter which he called "Lloyd's News". This chronicle, which was issued three times a week, was succeeded in 1734 by the world famous "Lloyd's List".

In 1760 the first Register of Shipping came into being and this subsequently became known as the Underwriters Green Book, but no copies of this early Register have been preserved. The oldest copy of a Register of Shipping in the Library of Lloyd's Register in Fenchurch Street is dated 1764-5-6. The classes assigned to the vessels were designated by the letters A, E, I, O, and U, which referred to the vessels hulls, whilst the attached letters G, M, and B, meaning Good, Middling, and Bad, related to the equipment. Thus the class AG would denote a first class ship with good outfit, whilst UB would indicate a ship of the lowest class with bad outfit.

Registers for 1768-9 and 1775-6 are in existence and, in each, a change in the symbols of classification occurs. It is in the latter book that the first record of the world renowned "A1" appears. There is a complete record of Registers from 1775 onward.

In 1769 the principal Underwriters and Brokers formed themselves into an association which was called "New Lloyds". After a few years they went to the Royal Exchange where they established the foundation of the great Institution which has made Lloyd's a household word all over the world.

From the most reliable sources of information available it is evident that the Register was established and supported exclusively by Underwriters for their sole use as "Members of the Society" as the Subscribers were then called.

The small band of Underwriters issuing their Register Book of Ships depended upon the few surveyors they employed to "classify" the ships they surveyed. As there were no Rules or standards to guide them the first classes G, M, and B were inserted solely at the dictates of the Surveyors. In 1797-8 the system of classification was altered so as to depend not upon the actual condition of the vessel but upon its age and place of build. Ships built on the

Thames were entitled to rank in the first class for a longer period than similar ships built in northern yards. Shipbuilders and Shipowners of the northern ports were penalised by a system of classification which placed them under a perpetual stigma, lowered the public confidence in their ships, and caused them to pay higher rates of insurance than their London rivals.

This situation resulted in the Shipowners starting a Register Book of their own. This rivalbook, called the "New Register of Shipping", became commonly known as the Shipowners Register or Red Book. There were four classes represented by A, E, I, &O, ~~xxxxEx~~ Classification depended only on place of build and there were no rules regarding scantlings or construction.

As an example, Thames built ships if entirely of British Oak and well fastened were classed A1 for 12 years, while "country-built" ships on the same conditions were classed A1 for 10 years.

The second class, marked E, included all ships kept in perfect repair, that appeared, on survey, to have no defects, and to be fit to carry a dry cargo safely.

The third class marked I, was composed of ships which, upon survey, did not appear perfectly safe to carry dry goods, though deemed seaworthy for carrying goods not liable to sea damage.

The fourth class, marked O, was composed of ships out of repair which were not deemed safe and seaworthy for a foreign voyage.

The letters were followed by the numerals 1 and 2 and these related to the ship's materials or outfit.

Thus at the beginning of the nineteenth century there were two Register Books in operation, one supported by the Underwriters and the other by the Shipowners. Neither was complete, each overlapped the other and the competition for patronage which ensued soon brought both books into disrepute.

The Committee of Lloyd's, fearing that the shipping community might be left without a Register Book at all, called together the two managing Committees in an effort to effect a union. The quarrel

was finally resolved in 1834, the Society was re-organised on the basis of giving representation to the several interests concerned, namely, the Merchant, the Underwriter, and the Shipowner.

The new Society became Lloyd's Register of British and Foreign Shipping. The assignment of classification was placed in the hands of a Committee of Management to whom the Surveyors, appointed by the Committee in exclusive service, were required to forward reports of ships they surveyed. Thus was laid the foundation of the democratic self-government of the merchant marine which is still carried on by Lloyd's Register at the present day.

In those early days there were very few rules governing either construction or maintenance. Shipbuilders were, in the main, left to their own devices and Special Survey during construction was still to come.

From the reports of the exclusive surveyors the Committee was able to grade vessels into various categories of merit so that Shipowners, Merchants, and Underwriters knew everything about the ships in which they were interested. Shipbuilders carried on in their established ways with the ships they built.

It soon became apparent that a Shipowner did not wish to order a ship if on completion it would be placed by the Classification Society in a low category. It was seen that matters would be simplified if the Society specified, in advance, the requirements for a particular class.

At this time iron was in its infancy as a material for shipbuilding purposes. The Committee hesitated to lay down hard and fast rules for the construction of iron ships without experience of their performance in service. Shipbuilders, consulted in the matter, decided it was impossible to make rules to suit the different cases. Thus the early attempts to formulate Rules for Construction were not successful and it was not until 1855 that the first "Rules for Iron Ships" were issued.

These early iron ships were classed with a term of years (6, 9, or 12) but none of these remain in the Register Book.

The Rules were revised in 1863 and 1870 and in the latter year the class 100 A1 was introduced to denote a full scantling ship.

At about the same time that iron was replacing wood, engines began to replace sails.

There were no classification requirements for machinery in the early days. The Rules merely required that the machinery should be examined twice yearly by a competent master engineer. If satisfactory the notation M.C. (Machinery Certified) was made in the Register Book. The public mind became agitated by the serious loss of life which, not infrequently, occurred in connection with boiler explosions on board ship. In view of their experience Shipowners asked Lloyd's to undertake the survey of Boilers. The Society, at first, was reluctant to do this and it was not until the 1870's that Rules for Machinery were formulated. At first engines and boilers were included as part of the equipment, and the assignment of the figure 1 was made conditional upon a satisfactory report of the engines and boilers.

The transition from wood to iron brought many problems, the principal one being the fouling of the underwater parts. To counteract this ships were built ofcomposite construction, the internal structure being of iron, and the outside of wood planking attached to the iron frames. These ships were more costly than those entirely of wood and created their own individual problems, but the system was eminently suitable for the clippers and was used for such famous ships as "CUTTY SARK", "THERMOPYLAE", "TORRENS" etc.

Experiments were being made at this timewith steel but it was not until about 1875, with the introduction of the Siemans Martin open hearth process that a reliable mild steel was produced.

Consequent on the improvement in this material, approval was sought to build ships of steel. At first, the "Rules for Iron Ships" were used but a reduction of 20% in scantlings was permitted because of the better properties of the new material.

The first "Rules for Steel Ships" were introduced in 1888. In addition to these Rules, Regulations were included for the

inspection and testing of the steel material, together with a list of Steel Works recognised by the Committee. These Regulations provided for a rigid supervision, by the Society, of the manufacture and procedure of testing at all steelworks, foundries, etc., producing material for use in classed vessels or machinery.

The Rules were revised in 1909 and 1922 and led to the developement of two main types of ship namely, a full-scantling vessel which loaded to the maximum draught related to the dimensions and characteristics of the ship, and a second type which did not require so much draught and which in time, became the shelter--decker.

The latest revision was carried out in 1949 and the class is now related to the draught directly. Thus a ship is built to standards to secure a definite draught and is classed 100A1.

As with the hull of the ship, the introduction of mild steel into the construction of engines and boilers led to far-reaching developements. Higher steam pressures were now possible and towards the close of the nineteenth century the steam turbine was successfully applied to ship propulsion. While the steam reciprocating engine was at first, popular, it was had to give way to the steam turbine for large powers. In the past fifty years the developement of the Diesel engine has been phenomenal. The first Rules for this type of engine were published in 1914 yet by 1954 54% of the world's tonnage building (75% by numbers) is to be motor-driven.

The Rules for Burning and Carriage of Liquid Fuel were published in 1902, by 1914 3% of new tonnage burned O.F., in 1939, 55% burned O.F. and by 1954, 89% of the tonnage burned O.F.

REFRIGERATION.

In the middle of the last century the increase in the population of Great Britain caused some anxiety regarding the country's food supply.

At the same time Australia and New Zealand were producing an enormous supply of sheep whilst a surplus of cattle existed in the Argentine.

Various icemaking machines had been patented in the first half of the nineteenth century and Thomas Mort had established the first freezing works in the world at Sydney.

Early attempts to use freezing machines in overseas transport were not, at first, successful, and it was not until 1880 that the economic beginning of the overseas frozen meat trade was marked by the voyage of the "STRATHLEVEN" which delivered a cargo of frozen meat from Australia to London. Two years later the pioneer shipment of frozen meat was brought from New Zealand to London.

This business developed rapidly and the values of cargoes grew so enormously that any failure of the plant occasioned very heavy losses on the Underwriters. As the result of joint representations from Owners, Underwriters and Shippers, the Committee of Lloyd's Register published the first Rules for refrigerating appliances on board ship. Vessels complying with the requirements, and whose refrigerating machinery and appliances have been built under special survey receive the notation Lloyd's R.E.C.

It should be noted that at the special request of Owners, the Society's Refrigerating Machinery Certificate was made available to unclassed ships provided the requirements of the Rules for their installations be satisfactorily carried out.

FREEBOARD.

The main purpose of the Freeboard Regulations is to provide each ship with a determined reserve of Buoyancy and at the same time to ensure that the height of the working platform (the deck) is sufficiently above the water for purposes of navigation.

For the period of about 60 years from 1774 until 1835 a record of load draught was made in the Register Book. As there are no records of how this draught was determined it is assumed that it was a draught decided by the Owner as being suitable for the vessel and the trade for which it was intended. In 1835 a freeboard of three inches per foot depth of hold was assigned by the Society. This was known as "Lloyd's Rule" and was in force until 1880.

As the result of representations made by Samuel Plimsoll, the

Goverment, in 1871 passed a Merchant Shipping Act. Under this Act the Captain was required to record the ship's draught when leaving the dock or harbour for the purpose of proceeding to sea. Further, any person sending a vessel to sea in an unseaworthy condition was guilty of a misdemeanour and could be punished in accordance with the law. Plimsoll agitated further with the result that a subsequent Act was passed in 1876 by which it was made compulsory for all foreign-going ships to have freeboard marks painted on both sides. Whilst the marking was made compulsory no attempt was made to formulate Rules to determine a definite position.

In 1883 a Committee was appointed by the President of the Board of Trade to consider the question of the determination of load lines for merchant ships. This Committee in its report in 1885 included tables for the determination of freeboards. It was stated in the Report that the tables were suitable for vessels of the highest class in Lloyd's Register, or of strength equivalent thereto, and should be increased for ships of inferior strength.

The recommendations were published as "Instructions to Surveyors" in 1886 but there was no legal obligation upon Owners other than that imposed under the 1876 Act. In consequence freeboards assigned under the new Regulations were only assigned on the voluntary application of the Owners. Generally speaking the tables met with ready support and were applied for and assigned to the majority of British vessels. After five years of voluntary application the tables were given the full backing of the law by the Merchant Shipping Act of 1890.

Further Acts were passed in 1894, 1898 and 1900 but these did not effect any change in relation to freeboard.

In 1906 a further Act was passed consolidating the various Acts and Orders. This Act made drastic revisions in freeboard assignments. One of the reasons for the revisions was that the German freeboard regulations required smaller freeboards in Awning Deck steamers but greater freeboards in flush deck ships.

In 1907 the British and German Governments reached agreement at a conference to bring agreement between the two sets of

Government Freeboard Regulations.

Representations to other maritime Nations resulted in Holland, Denmark and Sweden adopting the British Regulations.

In 1913 the Board of Trade appointed a Committee to examine the Regulations then in force and to formulate proposals to be placed before a projected International Conference in London. On account of the Great War the Conference was not held. The Committee however continued its work and reported in 1916. A subsequent Committee was appointed in 1927 and reported in 1929. At the conclusion of this Committee's deliberations, an International Load Line Conference was convened in 1930.

This conference was attended by Representatives of 29 nations and they agreed to adopte the Report of the British 1927-29 Load Line Committee as a basis for discussion.

Most of the Signatories of the Convention ratified it, and, in addition, a number of non-signatory States acceded to the Convention. The results of the Convention are embodied in the Merchant Shipping (Safety and Load Line Conventions) Act 1932 and is in force at the present time.

It has now ratified by 54 Nations and States whilst other Nations, although they have not ratified the Convention, in general, apply the Rules.

It might be noted here that the 1913-15 Committee recommended the adoption of a Standard of transverse and longitudinal strength. The 1927-29 Committee rejected this proposal, on the grounds that classed ships built to the highest standards of the Classification Rules of the Assigning Authority approved by the Board of Trade should be regarded as having sufficient strength for the minimum freeboard given in the Freeboard Tables.

Such a clause is embodied in the 1932 Act, and, in general, ships which are not built to the highest class of the Classification Societies approved by the Board of Trade must comply with the strength requirements of the Act. The Rules of Lloyd's Register provide a standard of strength in excess of minimum laid down under these Regulations.

The freeboards are determined mathematically by direct relation to the size and form of the ship, but it is permissible to design a ship for a draught less than the maximum. It should be noted that when more than twelve passengers are carried the freeboards are governed by the terms of the Passenger and Safety Certificates.

The assigned marks are transmitted to the Shipbuilder or Shipowner as the case may be, who is responsible for their correct marking on the ship's sides. After the marks are cut in they are verified by the Surveyors, and a Freeboard Certificate is issued by the Assigning Authority. In the Merchant Shipping Act, 1890, the Board of Trade was required to appoint Lloyds Register to assign freeboards in accordance with the Tables and Regulations. The Society now has the necessary authority to act on behalf of 38 other Governments.

The Regulations require that a Freeboard Survey is to be held annually and the Certificate is endorsed on completion of the Survey.

Before a ship is permitted to clear from any port the Certificate must be produced to the Authorities who check its validity.

PRESENT DAY CLASSIFICATION.

The definition of classification as stated in Lloyds Rules is as follows.

Steel shipsbuilt in accordance with the Society's Rules and Regulations, or with equivalent alternative arrangements, will be assigned a class in the Register Book and will continue to be classed so long as they are found, upon examination at the prescribed and other periodical surveys, to be maintained in such fit and efficient condition as is prescribed by the Society's Rules for the safe carriage of dry and perishable cargoes.

Classification will be conditional upon compliance with the Society's requirements in respect of both hull and machinery (i.e. main and auxiliary engines, essential appliances, pumping arrangements, and electrical equipment).

The scantlings and arrangements prescribed in the construction Rules do not provide for any special distribution or concentration of loading. When it is desired to make provision for exceptional loaded or ballasted conditions, the necessary particulars are to be submitted for consideration, in such cases additional strengthening may be required. The Committee may also require additional strengthening to be fitted in any ship, which, in their opinion, may be subjected to severe stresses due to particular features in her design

In cases where the scantlings and arrangements have been approved by the Committee for stipulated cargoes of a special nature, a class notation indicating the nature of such cargoes may be entered in the Register Book.

The Rules are framed on the understanding that ships will be properly loaded and handled.

The responsibility for ensuring sufficient stability and suitable trim does not rest on the Committee.

It must be pointed out here that the classification of ships is entirely voluntary and some owners, for example semi-Government Departments, Harbour Boards etc., do not class their ships.

Under the 1949 revision to the Rules the 100A class is assigned to sea-going ships only.

The principal classes can be divided into the following sections.

100A1.

100A1 "For Special Services" e.g. Dredger, Hopper Barge
"For Towing Services"

100A1 "For Restricted Service" e.g. For Coasting Service, For Channel Service,

100A1 "Carrying Petroleum in Bulk"- Tankers.

100A1 "Ore Carriers"

100A1 "Trawler"

A1 "For Restricted Service"- Harbours, rivers or estuaries.

In the above classes the 100A and A relate to the hull while the figure 1 relates to the equipment of anchors, chain cables and hawsers. In the case of sea-going ships intended for unrestricted service the equipment will be in accordance with, or equivalent to, the requirements

set forth in the Rules.

In the remaining cases the equipment is to a standard acceptable to the Committee for the intended service.

It may be mentioned here that, under the Anchors and Chain Cables Act 1899, all anchors and cables supplied to British ships must be tested at a public proving establishment licensed by the Board of Trade. The Act does not specify the size and quantity of Anchors and Cables but the Rules of the various Classification Societies do so. There are six Public Proving Houses in the United Kingdom and all are under the superintendance of Lloyd's Register of Shipping.

Machines in other countries are approved by the Committee of Lloyd's Register for the testing of Anchors and Chain Cables of ships of other than British Registry.

The remaining characteristic of the classification symbols is the Maltese Cross. This distinguishing mark was instituted in 1853, it is highly coveted throughout the Shipping Industry and the Committee jealously guard its assignment.

The Maltese Cross indicates that:-

1. the plans of the ship were submitted to, amended if required and approved by the Society.
2. the steel used in the construction has been tested in the Maker's works by the Society's Surveyors.
3. large forgings or castings such as sternframe, shafting etc. have been examined during manufacture and tested by the Surveyors.
4. the construction of the hull, machinery, boilers, etc. has been under the inspection of the Society's Surveyors from keel laying to completion.
5. when the ship was completed the reports of the Surveyors, which record details of all principal parts of the ship have been checked and submitted to the Committee who assigned the class.

The black Maltese Cross refers to the hull items while a red

Maltese Cross indicates that the machinery, engines, boilers or refrigerating machinery, as the case may be, has been specially surveyed during construction.

If a ship does not undergo all the foregoing processes the Maltese Cross is not assigned. Thus, in the case of a ship which is proposed for classification after it is built, a special survey is carried out which involves the checking of the plans and the ship's scantlings to ensure that they comply with the Rule requirements. However, as the supervision during construction was not carried out the Maltese Cross is not assigned.

MAINTENANCE OF CLASS.

After an Owner has taken delivery of his new ship he has of necessity spent a lot of money. To ensure classification the ship is built under Special Survey and to retain that classification he must comply with the Rules and Regulations for the maintenance of class. Here I would refer to the latter half of the first paragraph regarding Classification which states --- "... and will ~~xx~~ continue to be classed so long as they are found, upon examination at the prescribed annual and other periodical surveys, to be mainatained in such fit and efficient condition as is prescribed by the Society's Rules for the safe carriage of dry and perishable cargoes."

Lloyds Register has often been described as the Medical Adviser of Lloyd's, but, in general, we are advisers to all the Shipping Community - Owners, Builders, Underwriters, Government Departments &c. Modern classification implies responsibility from berth (spelt with an "e") to the shipbreakers yard.

The requirements for Periodical Surveys, which grow in severity with age, are as follows.

ANNUAL SURVEYS.

All steel ships are subject to survey, including examination in dry dock or on a slipway, at intervals of approximately one year. On the occasion of these surveys the propellers, stern bushes, and sea-connection fastenings are examined.

SPECIAL SURVEYS.

At four yearly intervals ships are subjected to Special Survey. At these surveys the ship is placed in dry dock or on a slipway and parts of the structure are laid bare as necessary for the Surveyor to ascertain her condition.

Minimum requirements for opening up are set out in the Rules for ships (A) under five years old (B) between five and ten years old (C) over ten years old and (D) at first Special Survey held after the ship is twentyfour years old and at every twelve years thereafter.

In the case of tankers the survey under item (D) above becomes due after twelve years old and thereafter every eight years.

MACHINERY.

Steam engines and internal combustion engines are subject to survey at the same due dates as the hull.

In addition internal combustion engines are subject to modified surveys at two years from the last recorded complete survey of machinery.

BOILERS

Water tube boilers are to be examined annually, while other boilers are to be surveyed when they are four years old, six years old and thereafter annually.

ELECTRICAL EQUIPMENT.

At each Special Survey the electrical equipment is to be examined and tested.

SCREW SHAFTS AND TUBE SHAFTS.

Shafts with continuous liners or approved oil glands normally become due for survey at intervals of three years for single screw ships and four years for ships having two or more screws. All other shafts are to be drawn at intervals of two years.

It may be noted that provision is made in the Rules for alternative surveys of machinery known as Continuous Surveys whereby approximately 25% of the machinery is opened up for survey every year, so that the complete cycle of survey is completed in the 4 year period

and so that the interval between consecutive examinations of each item does not exceed the same period.

A similar provision for Progressive Surveys is made for the hull examinations of Passenger Ships and Oil Tankers.

FREEBOARD.

A freeboard survey is held annually. At this survey the closing appliances of all openings which prevent the admission of water to the ship are examined and made good as necessary, and the position of the load-line marks on the ship's side are verified.

REFRIGERATED CARGO INSTALLATIONS.

LOADING PORT SURVEY.

In the case of ships engaged on voyages of more than two months duration this survey is to be held at the loading port every voyage. Whilst the chambers are empty they are examined to ascertain that they as clean and free from odour, that the insulation and grids etc. are in good order and the spaces are in a fit condition for the carriage of refrigerated cargoes.

SPECIAL SURVEYS.

Special Surveys are due at four yearly intervals and the Rules specify the detailed requirements for these Surveys which ensure that the installation is maintained in good condition.

A Biennial Survey is to be held at intervals of two years and an intermediate survey is to be held about twelve months after the classification survey and thereafter about twelve months after each Biennial Survey.

If desired by the Owners, running surveys may be held at intervals not exceeding twelve months in lieu of the Intermediate and Biennial Surveys.

REPAIRS.

All repairs to the hull, equipment, or machinery which may be required are to be carried out under the inspection of, and to the satisfaction of the Society's Surveyors.

WITHDRAWAL OF CLASS.

The class of a ship may be withdrawn from the Register Book at the request of the Owner, provided the survey on hull, equipment and machinery have been complied with.

The class of a ship will be expunged from the Register Book (a) when the Regulations as regards surveys on the hull, equipment or machinery have not been complied with and the ship is thereby not entitled to retain her class.

(b) when it is found that the ship is not entitled to retain her class because of reported defects in the hull or machinery or equipment and the Owner fails to repair such defects in accordance with the Society's requirements.

In each of the above cases the date of deletion is recorded.

When a classed ship suffers a temporary deficiency in quantity or quality of equipment which cannot be restored in a reasonable time, the Committee may, at their discretion, amend the class by deleting the figure 1 and inserting a dash in lieu. Should the deficiency be so serious as to impair the safety or efficiency of the ship the class will be liable to be expunged from the Register Book.

Should there be any infringement of the freeboard conditions as, for example, overloading, the class is also liable to be expunged.

MINISTRY OF TRANSPORT AND CIVIL AVIATION.
NAVIGATION DEPARTMENT IN AUSTRALIA.

In the U.K. the Ministry of Transport and Civil Aviation is responsible for the Merchant Shipping Acts.

All British ships are measured for tonnage by the Ministry's Surveyors and, in the case of passenger ships, these Surveyors carry out similar surveys to the Classification Surveyors.

In addition, on all ships, the Ministry's Surveyors are responsible for the enforcement of all Regulations which govern the safety and comfort of passengers or crew.

Other Government Regulations, such as Factory Acts etc., so far as they apply to ships, come within the province of the Ministry's

Surveyors.

Before a Freeboard Certificate can be granted a ship must be built to the standards of a Classification Society or to the standards set out in the Load Line Regulations. In the case of a ship which is not classed the Government Authority must therefore be satisfied as to its stregth before issuing or endorsing the Certificate and it is the Ministry's Surveyors who carry out the necessary surveys in such cases.

In Australia when interstate or foreign going ships are concerned the Navigation Department is the responsible Authority. In the case of intra-state ships the corresponding Department of the State Government is concerned, and in N.S.W. this is the Maritime Services Board.

REPORTING.

When each survey is completed, the respective Surveyors send reports to London, for the information of the Committee, which give details of the Survey carried out.

Between 30 - 40,000 of these Reports are dealt with at Headquarters every year. After being checked, as necessary, the Reports come before the Sub-Committee of Classification. After being settled by the Committee which assigns or continues the class as the case may be, the Report passes to the Department which arranges publication.

THE REGISTER BOOK.

The Register Book printed by the Society at its own Printing House is published annually in July. This is the only comprehensive Register Book inthe World and contains particulars, so far as can be ascertained, of all ships of 100 tons and over.

At the present time particulars of some 33,250 ships are recorded. In a publication of this size it is obviously impossible to include all the information which might be of use to every section of the shipping community.

This year the Register Book has gndergone a major revision in

layout and content, the first since 1890. Every endeavour has been made to include all information which is generally useful. This has involved the removal of a number of items no longer of any great significance and the inclusion of a number of others now regarded as important.

It should be noted that, under the re-arrangement, the date of the latest Special Survey is recorded AT THE TIME OF GOING TO PRESS in Volume I, but unless this date is comparatively recent, it may have been superceeded in the Supplement. In any event, the Supplement should always be consulted in the case of a classed ship to ascertain whether, by any chance, the class has been altered, suspended, withdrawn or expunged.

In future the Supplements are to be published monthly, in cumulative form, and each Supplement will contain complete records of all the most recent periodical surveys held on ships classed with the Society. Information regarding all ships, classed or unclassed, will also be included.

Volume II contains a variety of technical particulars regarding the ships together with other information which previously appeared in the Appendix.

There is a third Volume, smaller than the others, containing the names of all Owners recorded in the Register of Ships with lists of their fleets.

The particulars regarding Surveys are amended as necessary when the Reports of the Surveyors have been dealt with by the Committee.

There are some 850 Surveyors maintained by the Society in, or within reach of every Port in the world (except behind the 'Iron Curtain').

In addition, the Surveyors collect any facts relative to shipping in their districts, and this is forwarded regularly to London to enable the information and statistics in the Register Book to be kept accurate.

CONCLUSION.

The Rules have been prepared to provide a definite standard of strength for those desirous of classing their ships with Lloyd's Register. These Rules are continually under review and amendments, based upon experience of ships in service, are made as required. Thus we strive to maintain the universal confidence in the Society. The measure of our success will be understood when it is stated that 61% of the tonnage under construction throughout the world is to be classed with Lloyd's Register.

When unclassed ships are deducted from the remainder and those finally left are divided among the other classification Societys the pre-eminent position of Lloyds Register is seen.

In view of these facts I feel that no apology is necessary for my references throughout to Lloyd's Register, as the history of Lloyd's Register is the history of modern ship classification. I would like to express my appreciation to the Committee of Lloyd's Register and to Mr. R.J. Sladden, our Clerk to the Sub-Committee for Classification, for permission to use the information given.

NOTES ON DISCUSSION

"SHIP CLASSIFICATION"

BY

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MR. GRANT. You mentioned in the Paper that 55 countries sent representatives to the International Loadline Conference. Do these representatives meet regularly to bring agreement in the rules?

Answer. As stated on page 10 the International Loadline Conference of 1930 was attended by 29 Nations, the Convention was signed unanimously by all those Countries and subsequently ratified by most of them. At the present time it has been ratified by 55 nations and states.

I do not know of regular meetings but a close liaisson is maintained between Assigning Authorities to ensure uniform interpretation of the Rules.

MR. ELLIS. In regard to the ruling Committee of Lloyd's Register I note that Australia is not represented on this Committee. A body such as the I.N.A. could place a member on this committee, the member to have the right to put forward the views of the shipbuilders here. Can you tell me how the members of this Committee are elected?

Answer. It should be noted that there is an Australian Committee of Lloyd's Register and this Committee is in regular contact with the General Committee in London. With regard to the election of Members this is entirely a Committee matter and, as a Surveyor, I am not able to give any information in this matter.

MR. ELLIS. In regard to classification. Is it possible for an owner to voluntarily accept a restricted class? This may assist the shipowner to reduce the first cost of the ship, particularly as regards the use of the steel required under Rule P403.

Answer. All restricted classes emanate from the Owner. He naturally knows the proposed services of his ship(s) and hence it is his prerogative to state his requirement. The Committee is then able to advise the standards necessary for the restricted service. A vessel having a restricted class can only be operated on a service comparable to that for which she was originally intended. Naturally, this would appear to reduce her flexability as a commercial venture and would probably reduce her resale value. It should be noted that any ship engaged on a sea service must comply with the Load Line Rules.

It can be stated, therefore, that the reduction in scantlings is generally small and, in the case of Australia, where costs of materials are secondary to labour costs, it would seem that very little reduction in initial cost would be achieved by accepting a limited class.

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MR. TUFT. What is the position regarding the classification Rules for vessels carrying more than 12 passengers?

Answer. The classification requirements stated in the Rules apply to cargo ships and are the minimum requirements. If more than 12 passengers are carried, a ship becomes a passenger ship and comes under additional Regulations laid down by the National Authorities. Generally these are the International Regulations and include Sub-division, Fire-resistance, etc.

MR. A.H. MORGAN. Are there not similar provisions for the continuous survey of passenger ships and tankers?

Answer. Yes. The Owner may apply for a continuous survey.

MR. WESTHORP. (SNR.) When a passenger ship is under consideration Lloyd's have no connection with it, for a passenger ship's plans must go to the M.O.T. for approval of hull, bulkheads, freeboard, etc. However, the Rules of Lloyd's Register may be applied for scantlings of framing etc. Is this not correct?

Answer. It cannot be agreed that Lloyd's have no connection with a passenger ship. A passenger ship is only a special type of cargo ship and, in fact, gets the freeboard assignment laid down in the Rules. The Load Line Certificate is, however, suitably endorsed to state that the marks do not apply when she is carrying more than 12 passengers.

It is agreed that the plans for a passenger ship must go to the National Authority for approval. It should be noted however that, in the case of British ships, the M.O.T. do not have detailed construction Rules, but merely the standards laid down in the Government Regulations. As these are already incorporated in Lloyd's Rules, it follows that a ship built to these Rules will be to the standard of strength required by the Government Regulations. The additional requirements such as standard of Sub-division etc. are primarily the concern of the M.O.T. It can be stated that most passenger ships are classed with a Classification Society.

MR. WESTHORP. (JNR.) Who fixes the positions of the C1 and C2 lines for a passenger ship?

Answer. The positions of the C1 and C2 lines are fixed by the National Authority, but, as Lloyd's Register administer some of the Passenger Ship Surveys on behalf of some Foreign Governments, I assume they can assign these marks for such Authorities.

MR. MILLER. The M.O.T. fix them for British ships.

MR. WALSH. Why do Lloyd's disclaim all responsibility for stability?

Answer. It is the practice of the Committee to disclaim responsibility for all items over which they have no control. In the case of stability, a ship may be unstable on account of bad design or on account of injudicious loading, both items with which the Committee can have no possible connection.

In this regard it will be noted that the Rules are framed on the understanding that ships will be properly loaded and handled. The M.O.T. require that an inclining experiment be carried out on all ships. ::Sister ships, however, are not inclined, after satisfactory results have been obtained on one.

MR. WALSH. Why dont Lloyd's do the inclining?

Answer. The inclining experiment is bound up with stability and therefore comes under the National Authority.

MR ANDERSON. In that case could a ship be classed and then capsize due to lack of stability?

Answer. A ship can only be classed when the Committee have received satisfactory reports from the Surveyor confirming that the scantlings are in accordance with the Rules.
Under certain conditions classed ships can capsize, but the cause is outside the control of the Committee.

MR. ANDERSON. I have seen cases where classed vessels have proved to be lacking in stability.

Answer. That is not our responsibility.

MR. ELLIS. Lloyd's are authorised to assign freeboards. How does this fit in with the powers of the M.O.T. or the Navigation Department in Australia?
I cannot see why there should be two authorities concerned with this question of freeboards. Could this not be made a matter purely for the Navigation Department?

MR. ASTHORP. (SNR.) We are a Sovereign Nation here. Under the Statute of Westminster the Australian Government could delegate this power to the Navigation Department.

Answer. These questions can best be summarised by reference to the Load Line Rules Nos. 44(a) and (b), briefly....
44(a) Ships which ~~classed~~ comply with the highest standards of the rules of a Classification Society....shall be regarded as having strength..... etc.

44(b) Ships which do not comply with the highest standards of the Rules of a Classification Society..... complies with the following strength moduli....etc.

.... Hence it follows that before a Load Line Certificate can be issued, the standard of strength of the ship must conform to the Rules of the Classification Society concerned or, to the minimum standards laid down in the Regulations.
Assuming only one Authority is authorised to assign Load Lines, then, under the Act, the Assigning Authority must be satisfied with the standard of strength.
Obviously the only way to be sure that the standard of strength is maintained is from a survey by the Authority. Therefore, assuming an Owner desires classification there would still be two bodies interested in Surveys - the Classification Society and the National Authority. Under the the Regulations, the Classification Societies are authorised to assign Load Lines and this would appear to be intthe best interests of the shipping community. It will be seen from the above answer that if the power of assignment is confined to the National Authority only, then that Body would require a large increase in staff to cope with the extra work involved. At the same time the work of the Classificatio Societies would be little diminished, hence there would be duplication of surveys, to the great disadvantage of the ship owners.
As a matter of interest it can be pointed out that investigations into methods of assigning freeboards were carried out by many people. The Tables published in 1890 were developed from two sources, the work of Sir Digby Murray and of Mr. B. Martell, a Principal Surveyor to Lloyd's Register. Under the Merchant Shipping Act 1890, the Board of Trade was specifically REQUIRED to appoint the Committee of Lloyd's Register to assign freeboards in accordance with the tables and regulations. In addition other Associations for the survey or registry of shipping approved by the Board of Trade could be appointed. Under this section of the Act the British Corporation and the British Committee of Bureau Veritas were appointed as Assigning Authorities.

MR. WESTHORP. (SNR.) Australia has its own Navigation Act. Under this act they could say that the Navigation Department shall assign the load lines.

Answer. In the case of unclassed ships it is the Navigation Authority which assigns the freeboards, so that it can be assumed the Navigation Department has the necessary authority.

MR. OKEN. I have observed that Lloyd's are consulted much more here than overseas. Why is this ?

Answer. I do not know. It can be stated, however, that the Society's staff never refuses help or advice if it can be given.

MR. GRANT. Are there any recognised testing houses here?

Answer. Yes, but at present, cable over 2" diameter cannot be tested as it is outside the capabilities of available testing machines.

MR. ELLIS. To enlarge on that answer. Garden Island used to test merchant ship anchors and cables but that was discontinued about seven years ago. Now all cables over 1½" must be brought in tested.

MR OKEN. Do Lloyd's make any provisions for temporary bulkheads in grain carriers?

Answer. No.

There being no further discussion the President called upon Mr. D.S. Carment to propose a vote of thanks to Mr. Nell.

Moving the vote of thanks Mr. Carment said that the Paper was entirely different to the one which he had expected, but that he was sure, and the lively discussion had confirmed his belief, that everyone present had gained something from this Paper. He therefore had much pleasure in asking the members present to convey to Mr. Nell their thanks for the work which he had put into the preparation of the Paper, and for the information given.

The vote was seconded by Mr. Miller, and was carried by acclamation.

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