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TRAVELLING PALACES



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*The P. & O. Steam Navigation Co.*

BOAT DECK OF A P. & O. LINER



# TRAVELLING PALACES

LUXURY IN  
PASSENGER STEAMSHIPS

BY

R. A. FLETCHER

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## PREFACE

As I have in a previous volume endeavoured to sketch the development of the steamship commercially from the earliest mechanically propelled vehicles to the great Cunarders and White Star boats, it occurred to me that an account of the development of the passenger accommodation of the steamship, from the early days of steam navigation to the present time, might be of even greater interest to the general public. For the assistance I have had from friends and strangers alike I must express my most sincere thanks ; considerations of space prevent me mentioning all who have volunteered valuable suggestions. In order that the details may be accurate I have appealed to leading firms in their respective branches of trade for information ; to all of whom I am indebted for much valuable assistance. The material offered by the steamship companies would not have been too much for half a dozen volumes. I must specially thank Mr. A. J. Dudgeon, M.I.N.A., etc., for once more placing his scrap-books at my service, and Mr. James A. Smith, M.I.N.A.; for again revising some of the proofs where technical considerations have arisen. My thanks are also due to *Syren and Shipping* and the *Financial Times* for the loan of certain of the blocks ; nor in regard to America must I omit acknowledgment of the help given by my old friend, Mr. H. W. Palmer of Jersey City. Acknowledgment also is due to Messrs. J. Stone & Co., Ltd., for information regarding watertight doors, the Clayton Fire Extinguishing Co., Ltd., concerning the means of extinguishing fires at sea ; and Messrs. J. & E. Hall, Ltd., and the Haslam Engineering Co., Ltd., for particulars of refrigerating apparatus.

R. A. FLETCHER.



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## INTRODUCTION

THE steps by which the most conspicuous examples of passenger steamship accommodation have developed from the conditions prevailing in the early days of the steamship industry have appeared to me of scarcely less importance than those marking the progress of steamship construction and steam navigation ; for that reason I have endeavoured in this volume to indicate in some measure the nature of those steps, to trace the application of one improvement after another, and to present, without using technicalities, some details of that marvellous triumph of engineering skill, inventiveness of design, application of wonderful mechanical contrivances, and bewildering luxury, which go to make up the almost miraculous evidence of the conception of which the human mind is capable : the travelling palace.

If we look back and examine the conditions in which passengers travelled by steamships less than three-quarters of a century ago, we can only regard them as painful compared with the conditions which are regarded as the natural order of things to-day and are so common as to excite little remark. Then the steamships were small, the engines weak and cumbersome, the propeller was the paddle-wheel, and the accommodation was execrable ; and as the hulls were built of wood the dangers of fire at sea were ever present.

The evolution of the travelling palace is marked by at least five notable changes. The first of these was the adoption of iron as the material of which the ship should be built, in substitution for wood, and this not only added to the strength of the hull but permitted

of far greater space being available, and also lessened the risk of fire. The second was the adoption of the screw propeller. The third was the series of improvements in the propelling machinery which resulted in the compound type of engines and the saving of space. The fourth was the introduction of the new type of steamship of which the first White Star liner was the pioneer. The fifth was the adoption of steel, with its greater strength and lightness, as the material of which the ship should be constructed. All these have helped to make possible the vast steamships of to-day.

Is there any other branch of industry in which there has been as much progress in man's allotted span of years? Many persons, hundreds even, are living who can remember the wooden steamships with their ungainly paddle-wheels. These were thought, and justly so, wonderful in their day, but their supersession was even swifter than their growth. Invention has been added to invention, mechanical contrivance to mechanical contrivance, and always there has been a saving of power, or more work has been got out of the power developed. But the public has not been satisfied. The cry has been "Give us speed, more speed," and when the demand has been met, the public has still been unsatisfied and has repeated the demand. The progress of demand and supply has gone on and still the public clamours. The cry is still for speed. The liners which are to be launched in this year of grace are to be larger and faster than anything the world has yet seen, and even before these liners have left their cradles the public has begun to speculate whether larger and faster boats will not follow them at no distant date.

The dominant notes of the modern steamship are speed, size, and luxury. To these the capitalist organisations which own them would add cost, about which, however,

the public does not trouble itself. The appetite grows by what it is fed on, and the appetite of the public for larger, speedier, and more luxurious steamships has been stimulated by the competitive efforts of steamship owners, until that appetite is now insatiable. Where will it all end? Already the authorities of many of the ports are crying "Halt" to the steamship owners and designers, not that they do not like large liners, because they do, especially when port revenues are derived from tonnage dues, but because the liners have begun to outstrip the ability of the ports to accommodate them. The Ports of New York, Liverpool, and Southampton have to be continually dredged deeper to enable the greatest ships to come and go; the Clyde has to be widened to permit one of them to be launched. The accommodation on the great steamships is unrivalled by nineteen out of twenty first-class hotels ashore, whether in the gorgeousness of the surroundings which are characteristic of some steamships, the culinary delicacies supplied at their tables, the thousand and one little details introduced to add to the comfort of the passengers and the luxury of the furnishings, or the attendance. In the North Atlantic trade the conditions have fostered the development of the largest and fastest of the travelling palaces; but in every ocean magnificent steamships are now so frequently met with as to excite little or no comment, but which twenty years ago would have been regarded as marvels approaching the utmost attainable. They come and go with the regularity of a railway train according to their time-table; their power of travelling and their facilities for handling cargo are so carefully estimated that their movements are regulated for months ahead.

I have not attempted a history of the construction of the steamship, nor an outline of the rise of steam

navigation and modern steamship-owning. What I have sought to do is to set before my readers, before all who are interested as possible or actual travellers, some particulars of the latest types of passenger steamships and the course by which their present extraordinary dimensions, luxury and speed have been attained. I have sought to contrast the conditions that were with the conditions that are, in order the better to show the progress made in everything that makes for comfort on board ship; and the further precautions taken in the light of recent events for the safety of the ship and passengers have not been forgotten.

Everyone travels by sea in these times who can do so. The average number of persons afloat at any time is greater than at any other period in the world's history, and the inducements to live afloat are certainly greater and more alluring than anything that has ever been known. Nor is it necessary to cease communication with the shore. It is possible now to send a wireless message from any ocean to England and receive an answer in a day or two, though until the number of wireless stations is increased and the ships installed with this invention are more numerous, communications will depend upon fortunate circumstances, such as the position and number of the vessels which receive the communication and re-transmit it. When wireless telegraphy is perfected we may find the millionaire conducting his business from mid-ocean, and a steadily growing population which lives habitually afloat, passing a life of greater ease than is possible ashore, and, with travelling from place to place included, spending less than corresponding accommodation on land would require. The Floating City of Jules Verne is not half so wonderful as an effort of the imagination as the mammoth liner is as a tangible reality. Yet there is no finality in

invention. We may yet see the liner propelled across the Atlantic by electric engines deriving their power from the movement caused by the swell of the ocean, if the dreams of certain engineers are realised. Others hope to see the steam-engine superseded by the internal combustion engine, the progress of which in recent years has been remarkable, or by the internal combustion turbine engine.

A few years ago the White Star liner *Adriatic* was considered unsurpassable. She was soon eclipsed in size by the Cunarders *Mauretania* and *Lusitania*, which were superior to every mercantile vessel afloat in size and speed, surpassing in the latter respect even the German *Deutschland*. Now they are surpassed in size by the *Olympic*, which in turn is eclipsed by the German *Imperator*. All that is known at the moment of writing of the new Cunarder *Aquitania* is that she is larger and expected to prove faster than the *Imperator*, but whether the *Aquitania* will be larger and faster than the *Imperator's* sister the *Vaterland*, some 5,000 tons more than the *Imperator*, is at present undivulged. These largest steamers will have a population, including crew and passengers, of between 5,000 and 6,000 persons. Ships of twice the size, and more, are no longer impossible to designers and constructors if someone will undertake to pay for them and find ports between which they can trade profitably. That they will find passengers is a foregone conclusion; the difficulty is that the ships may be too big for the ports. In the ships of the future will still more attractions be included for the benefit of the passengers? Probably, but it must not be forgotten that the expense of running still larger ships will increase enormously, and for that reason it is permissible to conjecture that though other comforts and luxurious superfluities may be installed the greater

portion of the increased dimensions will be devoted to sleeping quarters. The floating population—in both senses of the term—ten years hence may regard a trip ashore of two or three weeks' duration as a pleasurable change, much as people now take a short voyage for a like reason.

Within the memory of living man the little sailing ship with an engine amidships has developed into the passenger steamer, the latter into the sail-less steamer, the latter into the floating hotel, that into the Travelling Palace, and already there are signs of the coming of the Travelling City.

# TRAVELLING PALACES

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## CHAPTER I

### SOME EARLY LINERS

IN order that we may appreciate the comfort by which we may travel by land and sea at the present time, when everything that is done for us is taken as a matter of course, it is necessary to look back a few years and see what were the conditions under which our parents and grandparents undertook sea voyages. If we find ourselves dissatisfied in these modern pampered times with all the luxury provided, we may thank our lucky stars we have escaped the conditions which were thought so wonderful then. And when you come to think of it, you must admit, if you consider all the details of construction and equipment and all the problems involved, that the passenger steamship has always been a wonderful thing, and that the modern steamship with its multitude of mechanical complexities is the most wonderful thing that the human mind has yet been able to conceive.

Let the present chapter be retrospective ; subsequent chapters will set before the reader the comforts he may expect to-day. The floating palaces which now cross the Atlantic are supplied not only with every luxury, but with suggestions also for inventing fancied necessities and the opportunities of gratifying supposed desires which are really efforts to pass the time away as quickly and agreeably as possible.

Whatever may have been the actual discomforts

of some of those early steamers, it must be conceded that a great deal of ingenuity was expended in making them as comfortable as possible with the experience then gained ; for, be it remembered, the only comparisons which could be made were with the accommodation provided in the sailing ships, to which indeed the steamships were much superior. As a typical specimen of the sea-going steamships of the first half of the last century—some old survivors of that era are still in existence—may be mentioned the *Liverpool*, which was specially built on the Mersey for the Transatlantic trade. A great deal was thought of her accommodation, and the *Liverpool Mercury* in October, 1838, published a long and glowing description. It stated that :—

“The ‘main or after cabin’ is a splendid apartment of 58 feet in length, and 28 feet 9 inches in width at one end, slightly narrowing to 22 feet 4 inches at the stern ; it is 8 feet in height to the beams, and 8½ feet between them. . . . The state-rooms are exceedingly handsome and commodious. There are in this cabin, sixteen in number, each with two berths or beds, with the exception of two, which are each fitted, for the peculiar accommodation of a party, with three beds. They are well lighted from the roofs and sides by patent lights, those on the sides serving also, on being opened, as ventilators. The colouring of these rooms is a warm delicate pink, with gorgeous damask silk hangings to correspond, of French white, with crimson satin stripes. At the broadest or midship end of this main cabin is the ladies’ retiring or private room, where several beds are also elegantly fitted up, and every convenience for the comfort and adornment of ‘the fair’ is provided. . . . There are tanks in abundance, in addition to which water will be daily and hourly distilled by an apparatus fixed for the purpose, and will undergo filtration, so as to be



equal in purity and coolness to that of the 'crystal well' of the hermit. It may be added that in the main cabin, including the ladies' state-rooms, and the sofas, no fewer than fifty beds are provided.

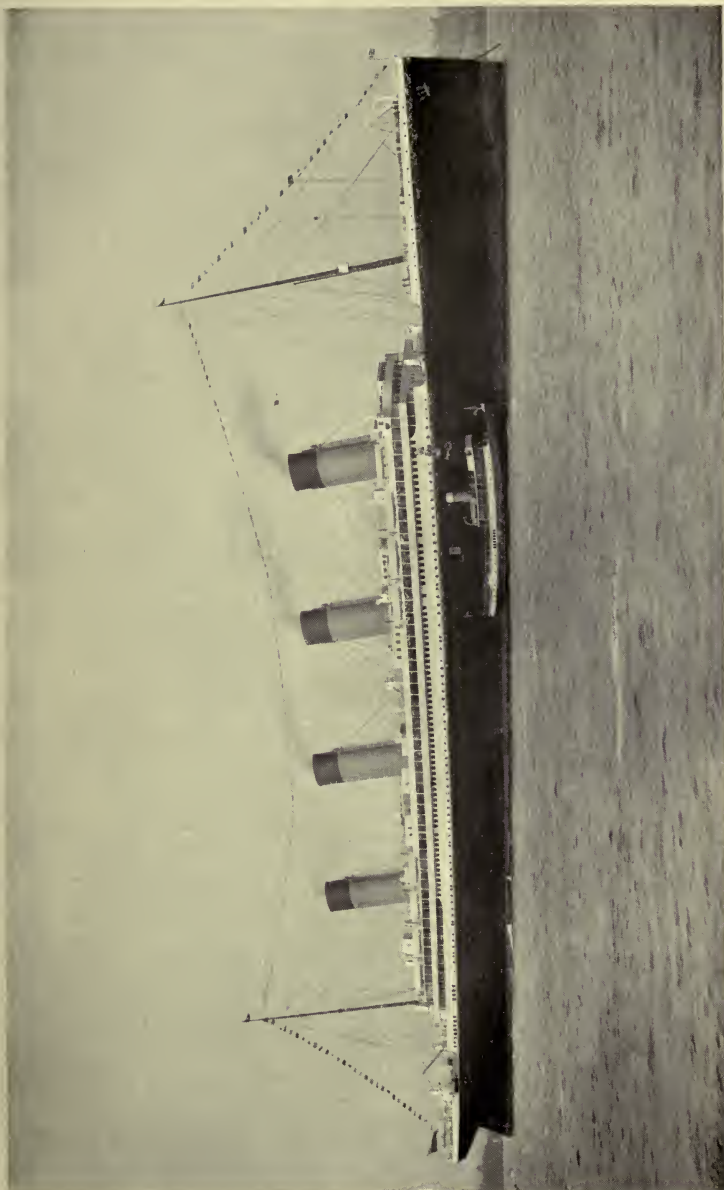
"The 'fore cabin' is 45 feet in length, by from 29 feet 4 inches to 23 feet 10 inches in width, and has eight dormitories or state-rooms on each side. This room is fitted in a style somewhat different to the other, but scarcely less beautiful or costly. The walls are empanelled in rosewood and other woods, with rich style, and separated by circular-topped pilasters."

Let us, however, turn our attention to the famous steamers with which the Atlantic ferry was inaugurated, leaving out of consideration those vessels whose experimental voyages showed that steam communication between England and America was possible. When it was proved that steamship voyages could be undertaken at all times of the year, the "British Queen" Steamship Company was formed to build the steamer of that name and a similar vessel called the *President*, and a rival company at once set to work to bring out the *Great Western*. The latter was ready first, so the former company chartered from the St. George Steamship Company a little coasting steamer the *Sirius*, and sent her from Cork to New York in April, 1838. She arrived there on April 22, followed the next day by the *Great Western*. Both steamed all the way, besides using their sails as much as possible. The *Sirius* took seventeen days for the voyage and the *Great Western* fifteen days. The *British Queen* was not ready till the following year, and the *President* came soon after. The *Great Western* people replied to the competition by ordering the *Great Britain*.

The *Great Western*, then the largest steamer in the world, was regarded as of unsurpassable magnitude, and her

internal fittings were such as had never been placed in a sea-going vessel before. The saloon was 75 feet long, and 21 feet broad, and it had the unusual height of nine feet. Some steamers then, and since, had head-room in the cabins of less than seven feet, and when from this the depth of the beams was deducted, it will be seen that a tall passenger had many opportunities of bumping his hat and probably his head. Like all the steamers of that period, and for many years afterwards, the sleeping cabins were arranged on either side of the dining-saloon. This certainly gave some measure of privacy, but it left much to be desired in the matter of the comfort of the passengers. Some of them might be what an early historian of one of the coasting lines called "uncomfortable," and with this arrangement of the interior of the ship the evidences of discomfort were audible and might even be distressing, especially at meal times. As to interior decoration, the saloon of the *Great Western* had a number of panels representing scenery, arts and sciences, and, according to a description published at the time, "parties grouped, or engaged in elegant sports and amusements."

The sleeping-cabins also were furnished with every convenience which the mechanical arts or the ingenuity of her proprietary company could devise. A special feature was made of the fact that the cabins were provided with bells. A card bearing an elaborate description of the arrangement with instructions how to pull the bell-rope, an explanation of the result, and a detailed account of the system of indicators, which rendered only two bells necessary, instead of an indicator and bell for every cabin, was placed in all sleeping apartments. In most modern steamers electric bells are to be found in the cabin and a sufficient staff of stewards is carried to attend to everyone's comfort. Following the



*The White-Star Line*

THE S.S. "OLYMPIC"

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*Great Western*, many steamers were equipped with bell-pulls.

How the experienced voyagers of the period must have appreciated the contrivance, supplementing as it did the established custom of bawling continuously for the steward, until that most harassed and over-worked functionary, who had to be at the beck and call of everyone, had the time or the inclination to respond. Those passengers whose lungs were strongest, or whose purses were longest, may be presumed to have received the most attention; for the strong-lunged man could lie in his bunk and shout, in the certainty of being heard; while one whose voice was far removed from any similarity to that of the Boanerges might have to make his way to the curtains at the end of the little passage communicating with the sleeping-cabins, and, exposing a trowsled head and an unnaturally pale countenance to the view of all and sundry, wait in more or less incomplete attire, until he succeeded, by calling his loudest, in attracting the steward's attention. Some of these little passages were fitted, like the sides of the saloon, with substantial handrails, by which passengers and stewards could steady themselves against the motion of the vessel; but passengers who have not acquired their sea-legs will catch hold of anybody or anything in their desperation, and I have a vivid recollection of seeing a suffering passenger on one of the Australian coasting steamers swing by the curtains when his head appeared preparatory to calling the steward; the curtains gave way and he shot right across the floor of the dining saloon clad only in his nightshirt.

The *British Queen* was a somewhat larger vessel, and if anything rather faster—at least, that was the opinion of her entertained by Lieutenant Roberts, her commander, and he did not hesitate in a letter, which is still in

existence, to give particulars of one of the runs of the *British Queen*, and to challenge the *Great Western* to do as well if she could.

The next notable vessel was the *Great Britain*, which, being built of iron, and fitted with a screw propeller, marked the first great advance in the revolution in the design of ocean steamships which was then beginning.

A description of her construction would be out of place in this book, but it may be stated that in the system in which her framing was arranged she was the forerunner of the *Great Eastern*, which in its turn, although greatly derided, embodied several further structural developments which showed the way to the designers of the steamers of to-day such as the travelling palaces which are now to be found in all the main trade routes of the world.

The *Great Britain* was the first ocean-going steamer which had a dining-saloon extending completely from side to side of the vessel, and it was furnished and decorated in a manner surpassing anything which had gone before, and was not exceeded by any steamers afloat for many years afterwards. Its sleeping-rooms, opening off passages running in the modern style in the length of the vessel, were superior to those provided in other ships. Her internal arrangements were even said to be better than those of the four steamers which inaugurated the Cunard line's service to America.

Many years later, when the *Great Britain* was engaged as a regular trader between London and Australia, and was regarded as a show ship to demonstrate the luxury with which passengers between the two countries could travel, I visited her on two occasions at Sandridge, as the port of Melbourne was then called, and I remember well how the spaciousness of her saloons and cabins and the sumptuousness of her apartments impressed me, especially as I could only compare them with the coasting



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**TWO-BEDDED ROOM, R.M.S.P. "ARCADIAN"**

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steamers with which alone at that time I had been privileged to make acquaintance. Yet all of those coasters had made ocean voyages and were typical of hundreds of others in many parts of the world.

Charles Dickens, who went to New York in the Cunarder *Britannia* in 1842, was evidently not enamoured of England's premier steamship line. He much preferred the comforts attainable on shore, and the ship and her accommodation did not impress him favourably. Describing the state-room which he and his wife used on that trip, he says that the room was so small that it would hardly hold his baggage and had a hard slab-like seat covered with hair, while the bunks, of which there were two, boasted a very flat quilt, covering a very thin mattress, spread like a surgical plaster on a most inaccessible shelf.

He compares the dining-room to "a long narrow apartment not unlike a gigantic hearse with windows at the side, having at the upper end a melancholy stove at which three or four chilly stewards were warming their hands, while on either side, extending down its whole dreary length, was a long, long table, over each of which a rack, fixed to the low roof and stuck full of drinking-glasses and cruet-stands, hinted dismally at rolling seas and heavy weather."

He came home by sailing-ship, which took longer than he liked for the journey.

The success of the *Great Western* and of the *British Queen* and *President* as regular traders, until the last named disappeared with all on board, and the company owning her and the *British Queen* came to grief in consequence, induced the British Government to call for tenders for the carriage of the mails by steamships in place of the slow and not very sure Government sailing brigs or "coffin brigs," which had hitherto been thought

good enough ; and Mr. Samuel Cunard, a merchant at Halifax, Nova Scotia, came to this country, and, having secured the necessary financial support at Glasgow, sent in a tender which was accepted, and thus founded the famous Cunard line. Four steamers, the *Britannia*, *Arcadia*, *Caledonia*, and *Columbia* were launched in 1840 for the line, and the *Britannia* made the first sailing from Liverpool on July 4th of that year. These vessels were each of about 207 feet in length and of 1,154 tons and could carry 115 saloon passengers. The first steamer of this famous organisation to carry the mails, the *Britannia*, was regarded in her time as a wonderful vessel, though it may be doubtful if she would be considered in these days as much superior in the comfort of her arrangements to the *Great Western* and the *Great Britain* after all.

The larger vessels had their sleeping accommodation extended, so that roomy cabins were built at the stern. In place of the cushioned shelves for passengers, lockers or cupboards were provided in the large cabins or for the stowage of spare-cabin necessities or various toilet requisites ; and the spaces immediately next to the stern-post were fitted up as bath-rooms.

All the larger vessels of that time had their deck space encroached upon by a number of deck-houses which were used as smoking-rooms and sitting-rooms, in addition to the skylights and the hatch-ways which protected the stairs leading from the decks to the saloons. Although steamers increased in size until long after the Cunard line was established, they were all marked by much the same characteristics.

Compare those with the great floating palaces like the modern steamships of this line—the *Mauretania* and *Lusitania* are two of the largest vessels afloat—and you will be able to get some idea of the progress of this one



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*The Cunard S.S. Co., Ltd.*

**CHARLES DICKENS'S CABIN**



line in seventy years, and even they do not mark the limit of its enterprise, as will be seen in another chapter. More recent than those vessels are the *Franconia* and *Laconia*; the *Aquitania*, launched in April of this year, is even greater than these two mammoths.

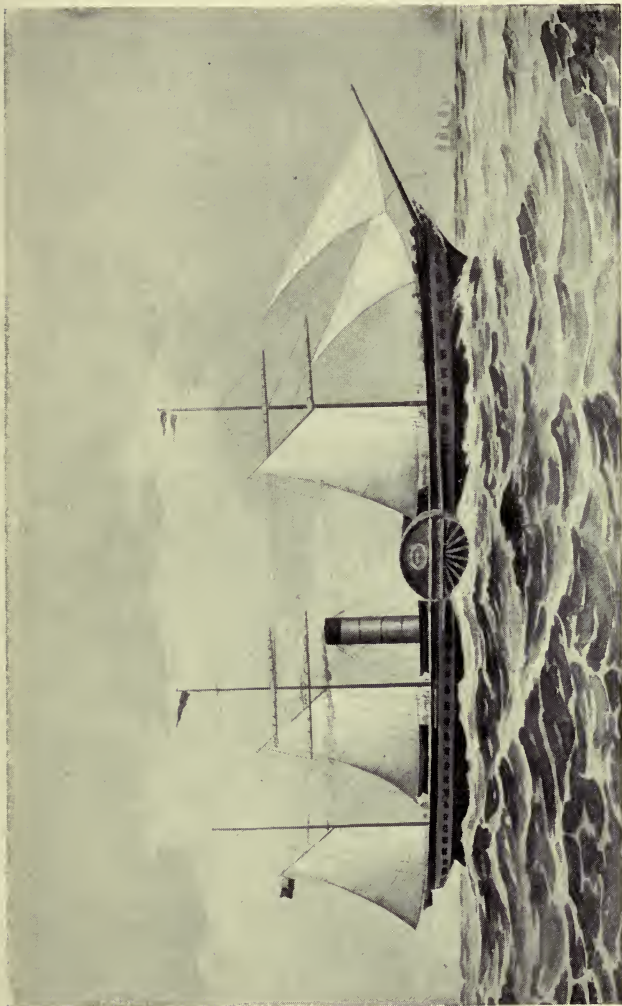
The Cunard line has had a great deal of opposition at one time and another. The Americans have promoted several lines, among the adventurers being Commodore Vanderbilt. The most serious American attempt to beat the early Cunarders was that of the Collins line which had some splendid vessels, superior in some respects to their English competitors, but the American enterprise soon came to grief as the result of extravagant management, two terrible disasters, and the withdrawal of the American Government's subsidy.

While the Collins line was running, however, it certainly achieved the proud position of being the premier line on the North Atlantic. Never up to that time had such luxurious quarters been provided for any passengers. The sleeping-cabins were carpeted, and all sorts of little comforts were provided, there being a definite attempt to approximate the conditions of life aboard these splendid vessels to that obtainable in first-class hotels ashore. The American fondness for travelling in the utmost attainable comfort was certainly gratified in the Collins liners, and then, as now, called forth protests from those who were staying at home, against the extravagance and luxury of the fittings. Some critics even objected to the saloons being fitted with numerous mirrors, as tending to create and gratify feelings of vanity; they must have been advocates of the vicarious living of the simple life, yet if there be a place where the simple life is rendered impossible it is the saloon accommodation of a well-appointed liner. The simple life is out of place at sea; long may it remain so! The

*Adriatic* was the last and finest of the Collins liners ; she was in existence until a few years ago—and may be still, for all I know—fulfilling an inglorious destiny as a hulk on the west coast of Africa.

Sometimes before the vessel sailed, intending passengers would go on board to inspect the accommodation, much as they do now. Then they found the floors nicely carpeted, and perhaps brocade curtains at the port-holes and at the entrances to the passages leading to the cabins, and also shutting off the improvised sleeping quarters at the extreme end. But these evidences of luxury were intended for port use only, and for show, and after the vessel sailed it was the custom to roll up the nice carpets and put down cocoanut matting or other carpets which had long since seen their best days, while the brocade curtains disappeared, and were replaced by others of inferior quality or some which were no longer thought good enough for port use. It was not long before the passengers understood the reason for this economical change. A departure from the dining-table too long postponed would have unpleasant results so far as the carpet was concerned, and an occasional heavy sea sweeping over the deck might send some of its water below ; in the case of the old carpets and curtains this mattered but very little.

Such accommodation as was given in the sleeping cabins in the early steamers, whether on the North Atlantic or any other route, cannot have been very comfortable. It was by no means uncommon for a tall passenger to complain that the berth in which he had to sleep was not long enough to allow him to stretch at full length ; indeed, only last summer I visited an old stager of a vessel in one of the English ports, and was shown a cabin in which the sleeping berth was 5 feet 6 inches long, and the last occupant of that stood 6 feet 2 inches in



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THE "BRITANNIA" (1840)

*The Cunard S.S. Co., Ltd.*

BRITANNIA

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AND ANATOMY  
HARVARD UNIVERSITY  
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his stockings. He told me afterwards that he had cultivated the knack of folding himself up like a two foot rule. This berth may have been exceptionally small, but it was not the only berth on that vessel of these restricted dimensions.

The saloon accommodation was then always placed in the after part of the vessel. The dining-saloon generally had to do duty as drawing-room and music-room and ladies' room, or if the ladies wanted a private room they could retire to their sleeping cabin. Some saloons had no stove, whatever the weather; others may have been heated by a stove at one end, with the result that in cold weather one end at least of the saloon was warm. If the weather were sufficiently rough that the skylights and ventilators had to be closed to prevent the sea from coming through them, the stuffiness of the atmosphere may be better imagined than described. From each side of the saloon there extended a series of little passages which had one or two doors at each side, communicating with the sleeping-cabins. Most of these cabins had four, six, or eight berths, according to the size of the cabin. Family cabins were then almost unknown, and even in the two-berth cabins carried on a few ships, married couples were seldom allowed to travel together. One large cabin was usually devoted to the ladies, and it was frequently overcrowded, unless there was a sufficient number to justify one of the other cabins being placed at their disposal. It was seldom that more than one stewardess was provided; so it will be seen that she had plenty of work to do, especially in the early stages of the voyage, when, if the weather were at all rough, and the vessel lively, it was by no means uncommon for all of the passengers to be most hopelessly sea-sick.

The sanitary arrangements were very indifferent

compared with what they are now, and in many vessels there was only one wash-hand basin, one waterbottle, and one drinking-glass in each sleeping-cabin, no matter how many passengers might have to occupy it at once. When, therefore, some steamship companies now claim that the steerage accommodation at present is superior to the saloon accommodation of fifty years ago, or less, it will be seen that they have every reason for making this statement. In a subsequent chapter you will find descriptions and illustrations of third-class accommodation in modern steamers engaged in different trades, and these will show you that the claim is fully justified. The sleeping-cabins were each illuminated, if the word be permitted, with a solitary candle, stuck in a swinging candlestick, and in the daytime by a small port-hole, and for toilet purposes one small mirror fastened to the wall was considered sufficient. Some vessels had the added convenience of a couple of coat-hooks for each passenger.

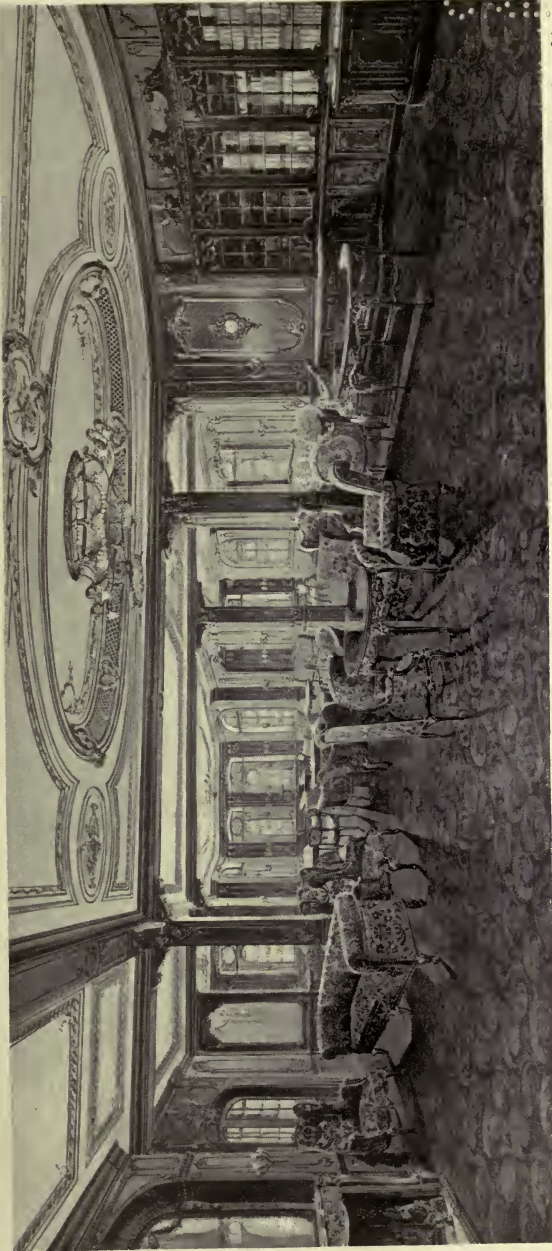
In many of the early steamers, the after end of the saloon was fitted with a number of couches, as they were termed by courtesy ; really they were shelves built upon the slanting stern of the vessel, and as they were covered with cushions, they served to swell the saloon accommodation, and when there was an extra demand for sleeping quarters, these berths were pressed into service. They were screened off at night by swinging curtains from the saloon itself, but those who were unfortunate enough to have to travel by them had to get up every morning early and make their toilets before the stewards set the breakfasts. Sleep on these couches was almost impossible when the weather was rough, for, as the vessel's stern lifted, her screw propeller would rise partly out of the water and race round at a tremendous speed, and shake the ship from end to end, and of course, those on the

couches only a few feet above the propeller received the full force of the vibration. On short voyages, a night or two of that sort of thing was not of great consequence, but to longer voyages it was a most serious drawback.

In the dining-saloons there was usually one long table with a form on each side. This form had a reversible back, and it was generally placed at such a distance from the table as to allow of anyone being able to reach his place without difficulty, irrespective of the size of his waist. This arrangement meant that there was a considerable space between the passengers and the table. This had the doubtful merit of allowing a passenger who might be late to squeeze past the seated passengers in order to reach his allotted place. When all were duly at table the wide space did not matter in fine weather, but if the vessel were rolling or heeling over considerably, it caused those at the upper side for the time being to lean well back to preserve their balance and those at the lower side to lean forward. The inconvenience of dining under this condition was only excelled by that of taking meals when the vessel was rolling heavily. As the vessel rolled from side to side, so had the passengers to move. At first it was considered amusing to watch their see-saw behaviour in their efforts to accommodate themselves to the motion of the vessel, but passengers soon became used to it and developed no little skill in the art of feeding quickly while the ship was in a fairly comfortable position. The seats were generally covered with leather or American cloth, the surface of which was slippery, and occasionally a passenger who had neglected for the moment to balance himself properly, would slide suddenly from his seat and under the table. In all but the finest weather wooden grids or frames, technically known as fiddles, were fastened on the tables at meal times in order to hold the plates, cups and saucers, and

glasses in their places ; this was the theory, but it frequently happened that an extra swing or more violent roll of the vessel than usual sent much of the crockery flying, and spilt soup was the order of the first course of the dinner. Children were the worst and most frequent sufferers by these mishaps, for their feet often did not reach the floor and consequently they could not steady themselves. Otherwise, these were incidents which only served to add to the amusement of the passengers, and as everyone took these little accidents in good part they were looked upon rather as a joke. Fiddles, by the way, are by no means obsolete, and are in frequent evidence on every ocean-going steamer, except perhaps in the saloons of the largest floating palaces, which are so great that they do not feel the motion of the sea as much as other vessels do. Even on these vessels, however, the long tables of the second saloon and the third-class accommodation are decorated with the fiddles in dirty weather.

It is impossible to compare the cooking arrangements on the earlier steamers with those of the modern liners. The latter mostly set before their patrons as good a dinner as can be obtained at any hotel ashore. When the prices charged are taken into consideration, and it is remembered also that the steamship fares include travelling, it will not be disputed that the best steamship rather beats the best hotel in the matter of a return for the money spent by the public. A description of the cooking arrangements on modern liners will be found in a subsequent chapter. Among the discomforts of the old days was the cooking. The galley was as much inferior to the modern ship's kitchen, as the old-time cook is to the modern sea-going chef. In the old steamers the galley was usually situated rather far forward and in a house on the deck. The position was somewhat



*The White Star Line.*

S.S. "OLYMPIC" —FIRST-CLASS LOUNGE

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exposed. So long as the weather was fine, or fairly so, the dishes could be carried to the saloon from the galley without mishap; but in very rough weather it was not unknown for a sea to go over the bulwarks and drench the steward who was conveying the dish, and possibly send the dinner flying all over the deck. Many and many a time has the tureen left the galley full of hot soup, and arrived at the saloon entrance full of cold salt water. The capacities of the galley were limited, and a large number of courses could not be served. Preserved foods were few in number and often of indifferent quality, and refrigerating chambers had not been invented. Usually, three courses were attempted, and occasionally four. The soup was generally pea-soup. Sometimes fresh fish was included on the day of sailing, otherwise salt fish was the rule. A joint or stew followed, after which puddings or pies appeared. The cheese was generally strong and conducive to the development of a thirst; while the dessert after a week or two took the form of almonds and raisins. When the weather was very rough, the cooks fell back upon the mysterious preparation, known as sea-pie, which was made up from a recipe which varied with every cook. Nowadays every would-be sea cook has to learn at a cookery school to make sea-pie properly. When the vessel was taking green seas over the bulwarks, and the cook had to keep his weather door shut, it will be easily understood that the passengers had to be grateful for what they could get, and the marvel was, that, under the circumstances, the cook was able to prepare a hot meal at all, and that the stewards, waiting favourable moments between the seas, were able to rush with the tureens or dishes from the galley to the saloon doors. All things considered, the sea cooks of the old liners did wonders when it is remembered how small was their assistance, the long hours they

worked, and the indifference of the cooking arrangements for the results expected. It sometimes happened that there were only three or four cooks for a vessel carrying at least a couple of hundred passengers, in three different classes, each of which had to have its own food specially prepared, and that the crew as well had to be catered for.



THE  
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S.S. "LUSITANIA"

*The Cunard S.S. Co., Ltd.*



## CHAPTER II

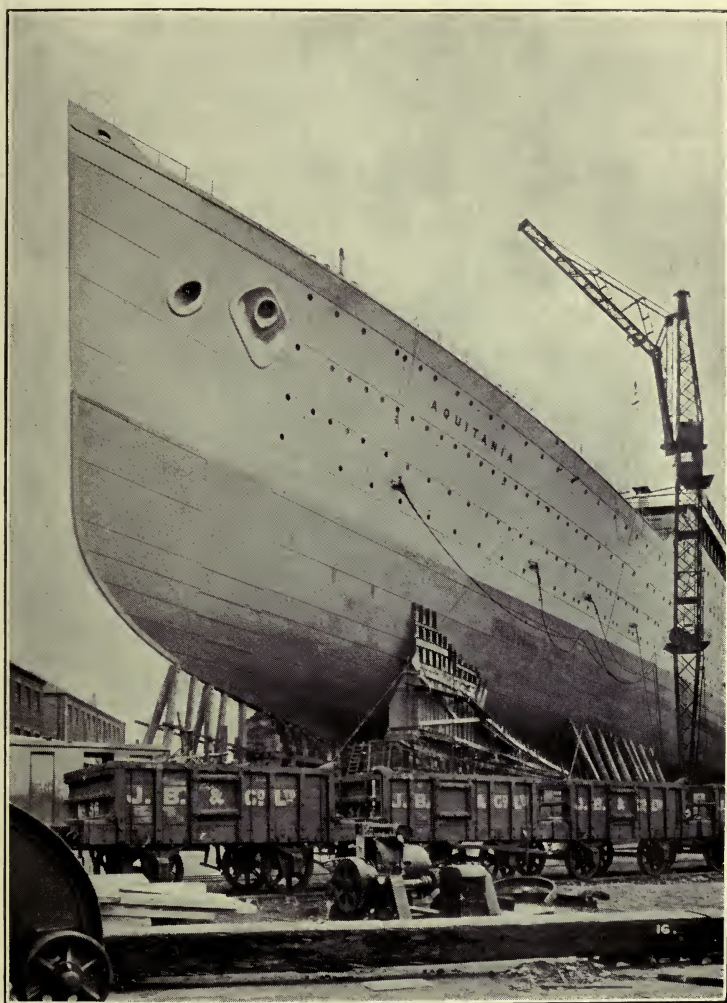
### THE INTRODUCTION OF THE MODERN STEAMSHIP

THE intense rivalry between the Cunard and Inman lines caused every succeeding vessel to be given some improvement upon its predecessors. In their larger vessels in the '60's the cabin accommodation was very good of its kind, but the old plan was adhered to of placing the dining saloon at the stern, or at all events abaft the engine-room casing, and when the dining-saloon extended right across the ship the sleeping accommodation was situated either on the same deck as the saloon, but off passages running on either side of the engine-room casing, or on the deck next below. In all these vessels, also, the second saloon was carried immediately before the engine-room casing, and on those on which third-class passengers were carried the steerage accommodation was in the fore part of the ship. The first saloon dining-rooms were lighted both by portholes and skylights, and were large, roomy, airy apartments, though not particularly attractive, as they had the inevitable two long tables with the benches at either side, revolving chairs not then having been adopted for use on ship board. The second-class accommodation was modelled on what the first class used to be and the third class was plainer still.

The Cunarder *Britannia* appears from her plans to have carried her saloon on the main deck, while on the deck beneath were the state-rooms and the ladies' cabin. The state-rooms were arranged on either side of the ship as far as the casing of the engine-room, and the centre of this deck was arranged to accommodate a further number of state-rooms. As the ladies' saloon, which was

also their sleeping apartment, was only divided by the casings of a hatchway from the boiler-room it cannot have been very comfortable in hot weather, while the noise of the engines and their vibration must have been unpleasantly perceptible.

While the Cunard was still faithful to wooden steamers and paddle engines, Mr. William Inman, in 1850, started the Inman line as a development of the Liverpool and Philadelphia Steamship Company, with iron screw steamers. The Cunard line for many years carried only saloon passengers, and emigrants and those who wished to travel cheaply had to put up with such accommodation as sailing ships provided. These, too, were of wood, and the vessels engaged in the emigrant trade were generally small, many of them being less than 600 tons. Many of these ships earned an unenviable reputation for the mortality among their passengers, while their passenger accommodation was everything that it should not be and nothing that it should be. Mr. Inman undertook to remedy this disgraceful state of things by establishing a line which should cater for third-class and second-class passengers, besides carrying a number in the saloon also. His experiment, undertaken mostly from philanthropic motives, proved a financial success, and thenceforward every passenger ship added to the Atlantic trade has carried steerage passengers. The accommodation then was nothing to compare with what it is now, and was not very comfortable, but it was paradise compared with the emigrants' quarters on some of the sailing ships, and another advantage was that the steamers seldom took more than two weeks while the sailers prolonged their voyages to two months or more and were hardly ever under a month. The first Inman steamer, *The City of Glasgow*, sailed from Liverpool for New York on 17th December, 1850.



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*The Cunard S.S. Co., Ltd.*

S.S. "AQUITANIA"

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*The City of Glasgow*, which inaugurated the first great departure from established custom in the transatlantic navigation, though the *Great Britain* has the honour of being the first iron screw steamer to cross the Atlantic, had her machinery placed low in the vessel in order to give as much accommodation to the passengers as possible. A contemporary account of her says :—

“The spar-deck will form a magnificent promenade in fine weather, and in foul weather the main-deck affords ample space for recreation, perfectly lighted and ventilated, and protected from rain or spray. The total length of the main-deck is 237 feet, and the breadth, 34 feet. On each side are ranged the state-rooms, leaving 16 feet clear in the centre. The height between decks is seven feet.

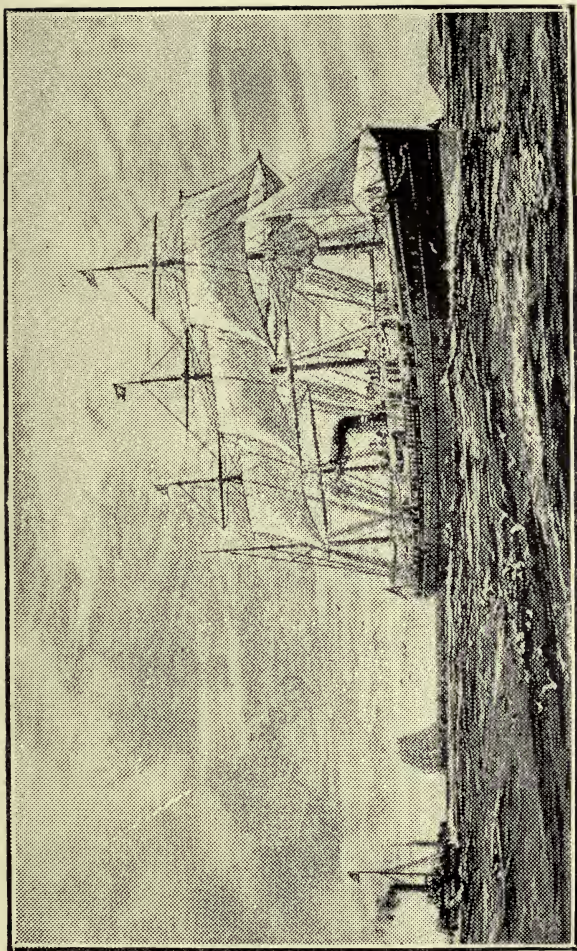
“The accommodation for each class of passengers is admirable and most complete. She will carry fifty-two cabin, or first-class, passengers, eighty-five second-class, and 400 steerage emigrants. The crew, including officers, engineers, firemen, stewards, sailors, etc., will probably number about seventy, so that she will carry a total living cargo of upwards of 600. Two of the state-rooms for first-class passengers have four berths in each, all the others have only two. The state-rooms for second-class passengers have four and eight berths in each. The state-rooms for ladies are so capacious that they may be used as sitting-rooms, should they choose to retire from the main-cabin. The latter is an apartment of noble dimensions, and will be elegantly fitted up, and furnished with a well-assorted library. The walls will be decorated with panellings representing views of places of interest on both sides of the Atlantic. One room is being fitted up as an apothecary’s shop, from which the surgeon will dispense his medicines. Near this is the bath-room, with apparatus for pumping up the salt water from the

Atlantic. In fact, nothing has been left undone which science and ingenuity can suggest to add to the comfort and convenience of the passengers."

All the steamers of the old type had a row of deck-houses extending from near the fore side of the engine-house to near the stern. These houses, especially those abaft the engine-house, were part of the saloon passenger accommodation and consisted of smoking-rooms, some private cabins, the entrances to the "companions" or stairways leading from the deck to the dining-saloon beneath, and the skylights for lighting and ventilating the dining-room. Every deck-house meant an encroachment upon the deck space, and if they were given generous proportions the deck between the houses and the bulwarks was narrowed to such an extent as to be in places little better than a wide passage. Of course, the larger the steamer the better was the quality of its accommodation, and in the last of the Inman and Cunard vessels of that type the decks were more spacious than in any of their predecessors.

It was not, however, until the White Star line of steamers appeared in 1871, that the great departure was made in the interior design of steamers which has continued until the present day, and without which it would have been impossible to construct the great floating hotels which now mark the enterprise of the leading shipping companies. It would have been impossible to construct these towering structures and give them the strength and seaworthiness they possess if the principal features of the old designs had been adhered to. The necessities of modern commerce would have rendered the change imperative sooner or later, and it says much for the intelligent appreciation of the coming change in the conditions of travel that the White Star line should have inaugurated its steamship service with a fleet of





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*The White Star Line and the "Financial Times."*

S.S. "OCEANIC," BUILT IN 1871

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six vessels which were destined to give the lead to the ocean-going steam mercantile marine of the world. Mr. Thomas H. Ismay, who was already well known as one of the owners of the famous White Star line of sailing ships, decided to enter the North Atlantic steam trade and in consultation with Messrs. Harland and Wolff, the shipbuilders of Belfast, who were not then very long established but had already earned the reputation for excellence of workmanship and satisfactory ship design, the type of vessel introduced by the White Star line was decided upon. Thus began the connection between the world-famous builders and the line which has endured to this day. All the White Star line steamers in the North Atlantic trade have been constructed by this firm.

The White Star line determined from the first to give the passengers as great comfort as possible. The travelling public dislikes the motion of a ship; therefore the passengers must be placed where the motion is least, and that is in the middle of the ship. The travelling public also dislikes the vibration of the engines, and did not take long to discover that less vibration was felt in that part of the ship between the engines and the bows than in the part between the engine and the stern; therefore the passenger accommodation must be placed in the forward part of the vessel, or at all events forward of the engines. Present-day travellers, who are accustomed to the luxuries of the modern steamers, have little idea of the discomforts of travelling in a steamer with its best accommodation abaft the engines. Nowadays a barely perceptible vibration is complained about, even if it be experienced only in really rough weather. Then, passengers thought they had little to grumble at if the vibration did no more than set the glasses and cutlery rattling in fine weather. The great drawbacks in all the

early steamers, whether paddle or screw, were the vibration felt in that part of the vessel aft of the engines, and the excessive motion of the ends of the vessel. The vibration was the more noticeable in screw vessels because of the propeller shaft extending from the engines to the sternpost.

The changes which were made in the passenger accommodation of the White Star line were rendered the more easy of accomplishment because of the greater dimensions of the vessel compared with any of the ships of the Cunard and Inman companies. The *Oceanic*, the first White Star steamer, had her accommodation arranged on a plan which had not been tried before. Her whole interior arrangements consisted of a series of surprises and innovations. One remarkable innovation was the extension of the roofs of the deck-houses so as to be in line with the sides of the vessel and to join all these roofs so as to make a continuous deck over the deck-houses. This deck, now built of iron and wood sheathed, was supported by stanchions, and not only sheltered the deck beneath but formed another deck which was railed all round to afford convenience for promenading, and by the utilisation of most of the spaces between the deck-houses further passenger accommodation could be provided. The solid bulwarks, which surrounded the topmost decks of all the older vessels, were done away with entirely in the White Star steamers, and in their place a railing was fitted, such as is common on all steamers to-day. This was objected to very strongly by the adherents of the old school. They urged that when the bulwarks were built solid they were able to keep out the seas, which the rails could never do, and that the scuppers fitted at intervals in the bulwarks on a level with the deck were amply sufficient to allow of the escape of any water which might flow over the bulwarks upon the vessel. So, indeed,



*By permission of*

**FIRST-CLASS LOUNGE, S.S. VICTORIA-LUISE**

*The Hamburg-America Line*

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they might have been if Father Neptune had been considerate enough to allow a ship to free her decks of water before sending another green sea over the bulwarks. As, however, no scuppers were able to cope satisfactorily with green seas, the bulwarks retained many scores of tons of water on the deck for some minutes.

On behalf of the new system, it was pointed out that although the rails might not keep the water off the decks, they certainly would not keep the water on the decks, and that as fast as the sea might flow on at one side, it would flow away at the other, and the vessel would not bear the extra load of water for more than a few seconds at the outside. Her engines were placed further aft than had been customary, but owing to the great length of the vessel their weight did not cause any undue depression at the stern, and she could be given a beautiful trim by means of the cargo in her holds forward of the engine space. The additional space thus obtained in front of the engine-rooms was utilised for the saloon passenger accommodation, which was on the two upper decks; and at once the almost entire absence of vibration and the less motion felt were recognised as giving an amount of comfort to passengers far beyond what was possible hitherto. The journey across the Atlantic was now robbed of half its terrors. The dining-saloon extended entirely from one side of the vessel to the other, and was lighted not only by large and airy skylights, but the sidelights were very much larger than had been fitted in any steamer yet built.

The sleeping-cabins were on the same deck as the saloon, and were extended aft on either side of the engine-room casing, and forwards on either side of the cargo hatches. A handsome stairway communicated from the promenade deck above with the saloon, and the pantry was situated immediately abaft the stairway. The saloon at either

side was furnished with cushioned settees, by each of which two dining-tables were situated, and there were also two large tables in the middle of the saloon. This was practically the beginning of the modern method of placing the passengers at small tables ; at all events, it was a conspicuous exception to the usual practice of placing the passengers at two long tables only.

The second-class accommodation was placed immediately after the engine-room compartment, and on the same deck as that of the first class, and the third-class accommodation was divided between the two ends of the ship, the married couples and families and single women being placed aft, in the position hitherto devoted to the first class, while the single men were placed in quarters at the fore end beneath the crew's forecabin. From the point of view of sanitation, also, many improvements were made. In the *Britannia* the conveniences were placed in deck-houses near the paddle-boxes ; but in the *Oceanic* they were situated in a special compartment on the same deck as the sleeping accommodation, so as to be accessible at all times without the necessity of going on deck in rough weather.

The structural innovations introduced in the *Oceanic* effectually prevented a wave sweeping a vessel from end to end, as frequently occurred on vessels of the preceding type ; they also rendered impossible the recurrence of any disaster arising through a sea washing over a ship and smashing in the engine-room skylight, a misadventure which was responsible for the loss of more than one steamship of the older design, and may possibly be the explanation of the disappearance at sea of the *President*, a sister ship to the *British Queen*, the Collins' liner *Pacific*, and one or two of the early Inman line steamers. The extension of the roofs of the deck-houses, already referred to, and the formation of the deck-houses into one or two





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DINING SALOON AND DOME, S.S. "LUSITANIA"

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ABSTRACT

long houses, led to the introduction of the modern plan of building up the sides of the vessel thereby completely enclosing the engine space. The navigating bridge is situated above this house and the space immediately in front of this house, technically known as the fore well, plays an important part in contributing to the seaworthiness of the ship. The front of the deck-house is always very strongly built in order to resist the seas which may be shipped in rough weather.

Even the biggest steamer may have a sea come over her bows, though unless the waves are running very high this is unlikely; but smaller vessels, such as carry the great majority of sea-going passengers and the bulk of the world's merchandise, often take a sea over the bows and are none the worse for the experience. The well certainly holds a lot of water for a few seconds, but were it not there a sea sweeping over the bows would hurl itself with all its force along the fore-castle deck and against the deck-house, which might possibly be smashed to pieces in a few minutes. The well breaks the flow of the sea sufficiently to prevent such a mishap. The water, on flowing over the fore-castle head, falls into the well and passes back to the sea through the scuppers, being aided materially in doing so by the buoyancy of the fore-castle which helps the ship to rise and throw off the water. Unless a large passenger steamer is "rushed" by a sea which fairly buries her, much as the *Narrung* was last December, she is not likely to come to much harm. If the *Narrung* had been a vessel of the old type she would have had her deck-houses carried away and her skylights stove in, and would have gone straight to the bottom. She, like many another before her, was saved from final disaster by the method, no less than by the excellence, of her construction. The method was the outcome of the system introduced by Messrs. Harland and Wolff,

and adopted by the late Mr. Ismay, when the White Star line was founded. In the *Oceanic* the engines were placed aft of amidships and low down in the ship; the engine compartment was therefore completely protected both at the sides, which were higher than in preceding vessels, and above by the deck-houses and decks.

Another peculiarity of the White Star steamers was that on them the straight stem was adopted, which was first tried on ocean-going steamers in all the vessels of the unfortunate Collins line. Hitherto the graceful schooner bows and overhanging cutwater had been the rule in nearly all steamships. The advantages of the old form were very many, while for picturesque beauty the clipper, or schooner, or overhanging, or ogee, bows, all of which terms mean much the same thing, were far in advance of the straight cutwater of modern commerce. One advantage claimed for the old bows was that in the event of the steamer equipped with them running into another vessel the damage to the latter would be confined principally to the part of the ship above the water-line, and in recent years this theory has been revived in consequence of the incidents attaching to certain collisions; those who do not accept the theory of the advisability of re-adopting schooner bows for this reason urge that steamers should be navigated so as to avoid collisions, and that the gracefulness of overhanging bows can be well compensated for by the fineness of the lines of a vessel's bows even if she has a straight stem, and that the old advantages, so great in the days of sail and high freights, would be drawbacks in these days of immense steam vessels and freights at a fraction of what they used to be in what have been called "The good old days of shipping." With the clipper bows a bowsprit was carried which enabled several head sails to be set, whereas with the straight stem and no bowsprit, two head-sails were the



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S. S. "FRANCONIA" —SECOND CABIN DINING-ROOM

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maximum ; and be it remembered this was an important consideration in days when sails were depended upon almost as much as the engines to give steamships a good speed. At that time there were many vessels described as auxiliary steamships, but it would be hard to tell whether the engines were to be auxiliary to the sails, or the sails to be auxiliary to the engines. The term "auxiliary steamships" was a concession to the prejudices of those people who held that the steamship as such could never be a success, and that the sails must always be the general means of propulsion at sea. The term "auxiliary steamship" was applied to vessels long after it was found that their engines were mainly relied upon and that their sails were provided simply that they should be used if thought worth while. All the early Cunard liners and White Star boats, and also those of the Collins line, and a score or so of enterprises which hastened into the transatlantic trade, and soon left it, carried a large spread of canvas. Nor did their captains hesitate to take full advantage of all that they had learned in their training on sailing ships, and not only would every stitch of canvas be set, but stunsails were also fitted for use when necessary, and more than one Cunarder has crossed the Atlantic with her engines working their hardest, every sail set she could carry, and her yards carrying on their stunsail booms as many stunsails as it was possible to set from the deck to the topgallant yard. It is little wonder that these vessels made some extraordinarily rapid passages, and it only shows the skill, no less than the intrepidity, with which the commanders of all these steamers took their vessels eastward and westward over the Atlantic, whatever the weather and at all seasons of the year.

Of course, as a precaution against accident, racing between the steamers of rival lines was strictly forbidden.

All the shipping companies have a series of regulations which are issued in book form to their commanders and other officers; the regulations of the White Star line include the following passage:—

“Whilst they,” *i.e.*, the commanders, “are expected to use every diligence to secure a speedy voyage, they must run no risk which might by any possibility result in accident to their ships. It is to be hoped that they will ever bear in mind that the safety of the lives and property entrusted to their care is the ruling principle that should govern them in the navigation of their ships, and no supposed gain in expedition or saving of time on the voyage is to be purchased at the risk of accident.”

The White Star company also issued a letter to its commanders, stating, “We invite you to dismiss from your mind all idea of competitive passages with other vessels.”

Similar rules apply in all the big companies. Although racing is forbidden, and for that matter is as extinct as the dodo so far as the large passenger liners are concerned, it does not tell in a captain’s favour, either with the owners of his steamer or with the travelling public, if his boat is passed without good reason by another steamer of about the same power and possessing the same average speed. The passengers, of course, always imagine if they sight another vessel that a race is the natural result. They forget that their steamer, like the other, is travelling at a rate which will enable her to adhere to a time table, which in the case of a voyage across the North Atlantic may be calculated in fine weather to an hour or two; a steamer from New York to Liverpool, for instance, is timed to enter the Mersey on a certain tide, and her speed is regulated accordingly. Nothing is gained by arriving too soon and having to wait outside the bar until the tide serves, which sometimes happened



before the recent dredging of the Mersey entrance was undertaken.

In the early days of the transatlantic rivalry some remarkably close voyages were made by the steamers of the competing lines. The captains were not racing in the ordinary acceptance of the term, but there was nothing they knew that was omitted in their efforts to gain and keep the lead; in an event of this nature seamanship is everything, and only those acquainted with the practical side of the work can form a just idea of the sensitiveness of a ship, even a large steamer, to the efforts made to increase her speed. Then, sail power was depended upon a great deal as well as engine-power; now, engine-power alone is used. It is on record, however, that on one occasion a Cunarder and an Inman steamer were in sight of each other nearly all the way across the Atlantic, and sometimes one and sometimes the other held the lead. For the crack steamers in the North Atlantic trade the captains have always been the best men obtainable, and the same is true of the Pacific Steam Navigation Company, the Peninsular and Oriental Steam Navigation Company, and one or two other of the leading companies of those days. But some of the minor companies whose steamers undertook long ocean voyages, especially those vessels which were regarded as depending chiefly on their sails, were obliged to select as captains men who had little or no opportunity of acquiring experience in steamships, and some amusing stories are told of them. One is to the effect that a splendid seaman of the old school, who could handle a sailing ship with a precision his brother salts envied, was so overjoyed on getting back to a Channel port that he forgot to stop his engines when he brought his ship to the anchorage, and though the sails were manipulated with the ability that only a first-class seaman and a

well trained and smart crew could attain, the vessel headed for the open sea again until she was pulled up short by her anchor holding. Then the "old man" remembered, and expressed opinions which were not favourable to the new order of things.

So evident was the superiority of the rearrangement of the passenger accommodation introduced on the *Oceanic* and her sister ships that the other companies lost little time in bringing their fleets up to the new standard. The Inman liner *City of Brussels* was the last of the old type of steamship built for that company, and in 1872 her long deck-house was removed and she was given another deck, and was otherwise refitted in order to enable her to compete with the new White Star boats. It was the Inman line, also, which first tried the lighting of its vessels with electric light, the experiment being made in 1879 on the *City of Berlin*; and the same company afterwards owned the *City of New York* and the *City of Paris*, which were given several innovations, among them being twin screws. They were the first steamers in the North Atlantic express traffic to be thus fitted, though now twin screws are common enough and some of the latest and largest and fastest have three and even four propellers. The adoption of twin screws allowed of the introduction of a more complicated system of water-tight compartments, as it permitted the introduction of longitudinal bulkheads; indeed, an accident which befell the *City of Paris* a few years later, when she had both her engines disabled and the dividing bulkhead damaged, proved the value of her bulkhead system as an aid to safety.

Reference has already been made to the indifferent lighting equipment of the early steamships. The candles which did duty were able to do little more than make the darkness visible, and such oil lamps as had been



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The Hamburg-America Line  
THE WINTER GARDEN ON THE S.S. 'IMPERATOR'

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tried on shipboard had not given very great satisfaction. The White Star line, true to its plan of making the passengers as comfortable as possible, set about improving the lighting of its steamers. In 1872 the *Adriatic*, and in 1873 the *Celtic*, were lighted by gas derived from vaporized oil, much as railway carriages are lighted. However suitable the system might be on shore, it was not a great success on either steamer, one reason being that on a steamer it was not considered advisable to carry flexible pipes, and another being that in the event of leakage in the interior of the ship the escaped gas might easily cause an explosion under circumstances which were impossible on land. It was also found that the bending movements which every ship undergoes, in spite of her apparent rigidity, affected the pipes and had a tendency to cause a leakage, and for these and other reasons the experiment was not repeated. Instead of returning to candles, however, the White Star turned its attention to oil lamps, and adopted a new kind of lamp which gave excellent results with sperm oil.

There have been several designs of oil lamps for burning sperm oil or paraffin ; for the sleeping cabins the general rule was to use a candle in a bracket which swung with the motion of the vessel, though in some of the larger vessels small lamps replaced the candles. In the saloons, there were generally several bracket lamps besides a number of large lamps hung from the ceiling and provided with springs or india-rubber stays to minimise the effect of the movement of the vessel. These precautions were very necessary, for an extra heavy roll of the ship might easily swing the lamp with such force as to break it against the ceiling were the stays not there to reduce the effect of the roll and restrain the lamp. More than one fire at sea has been attributed to lamp accidents of this character.

The White Star took the first step towards the introduction of the system of small tables at which the passengers could take their meals, by dispensing with the pair of long tables and replacing them with a greater number of shorter tables, which not only added to the convenience of the passengers but enabled the attendance to be improved. Another comfort for which travellers are indebted to the same company, is the introduction of revolving chairs and providing one for each saloon passenger. The White Star steamers, also, were the first to provide an electric bell in every sleeping-cabin.

The Peninsular and Oriental services to Australia and the Far East, the Royal Mail Steam Packet Company's services to the West Indies and Brazil, and the Pacific Steam Navigation Company's service to the West Coast of South America were maintained with steamers of the old type, and the same applies to the other lines then in the ocean trade. The Royal Mail Steam Packet Company was hampered by its connection with the Government, which was exceedingly conservative in its ideas as to the advantage of the innovations which were continually brought forward for the improvement of the efficiency of steamships, or it might have taken a leading place. Screw steamships were substituted for paddle steamers in the fleets of these lines in due course, and the increasing size of the vessels made possible the introduction of much more comfortable accommodation. Many of the steamers were given large saloons extending from side to side of the vessels; the sleeping accommodation was greatly improved and family cabins were provided, and the cooking and other service arrangements were remodelled in accordance with the latest modes. Practically all these steamers were of the graceful clipper-bows type, carrying three or four masts and barque rigged. After the advent of the *Oceanic*, however, all the large ocean

companies saw the advantages of the new design, alike from the points of view of the safety of the vessels, the comfort of the passengers, and the greater cargo-carrying space available, and all the steamers they ordered afterwards were copies of the *Oceanic*, but modified to suit the trades for which they were intended.

Equally important improvements had been made in the machinery for propelling the vessels, and helped in no small degree to render possible the success achieved by the new style of steamship.

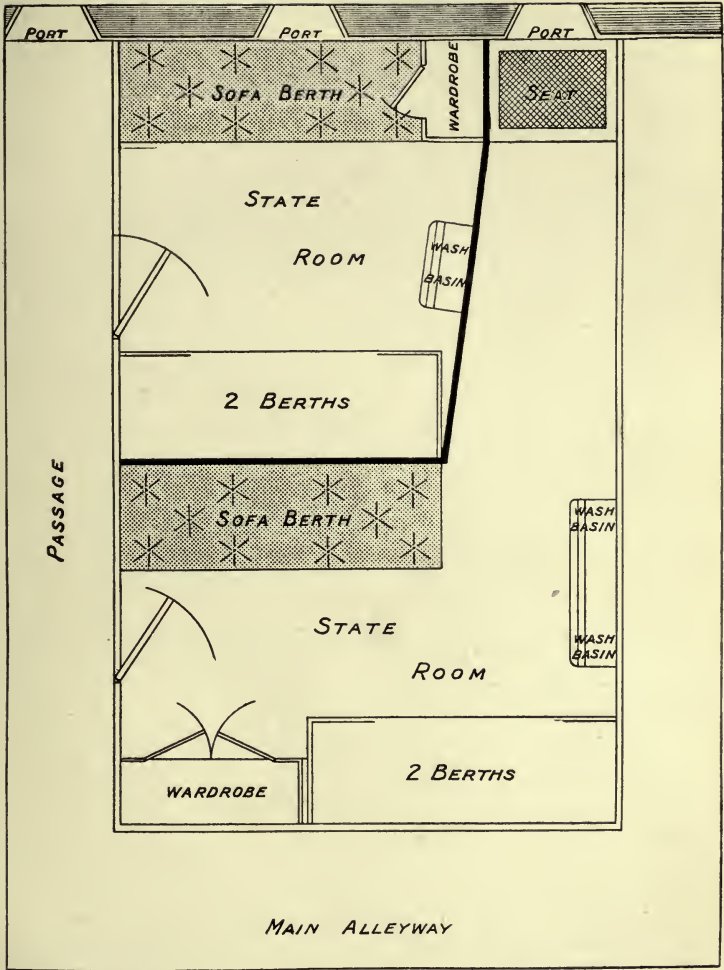
Up to a certain point, which varies with the vessel and the trade for which she is intended, an increased speed may make for economy. The *Oceanic* also proved the efficacy in this respect of a type of hull which was much narrower in proportion to its length than any sea-going vessels then existing. The best Cunarders at that time were about nine times as long as they were broad, and even this proportion had not been attained without many misgivings and much head-shaking on the part of the older school of shipowners and designers, who were convinced from their experiences of the sailing-ship days that a ship should not be more in length than four or five times her breadth, while a length of six times the breadth was held to be the maximum. The Inman line, in forcing the adoption of iron screw steamships upon the Atlantic trade, was responsible for a reduction of the amount of beam in proportion to length, and a greater reduction was made with subsequent vessels, until, as stated, the proportion of nine to one was reached. The first White Star boat, the *Oceanic*, was ten times as long as she was broad, and many were the jeremiads to which this gave rise. Her seaworthiness proved, however, to be extraordinary, and in speed she was able to eclipse all her competitors, with the further advantage of a less consumption of coal. She demonstrated once for all

that the safest vessel is not necessarily the beamiest, and that proportions such as hers are compatible with the best seaworthiness and at the same time conduce to extra speed. Had she been of less length in proportion to her beam she would not have been any more seaworthy, and would certainly not have been so fast. Many vessels have been built with a greater length in proportion, but few of them have been found to give such excellent results when stability, steadiness, and seaworthiness are considered.

The *Britannic*, which was launched three years later, and her sister ship the *Germanic*, were 468 feet in length over all compared with 45 feet breadth, this marking a step farther in the proportion of length and breadth, and in 1875 the Inman line produced the *City of Berlin*, 520 feet in length, over all, 489 feet between perpendiculars, and nearly 44 feet broad. In the *Aurania* a return to a greater beam in proportion to length was noted, she being only about eight times as long as she was broad. In subsequent vessels the proportion has varied, and though there has been a tendency to return to the greater length in proportion to beam, it being known that this contributed both to the speed and safety of the vessel, the greater disproportion in length which some persons advocated has not been adopted in the most modern liners, increased speed and equal seaworthiness having been attained by other means.

It is to one of the oldest shipping firms in the country that the public owes the comfort of the present system of arrangement of the saloon sleeping-quarters. The Bibby line dates back to 1807, when John Bibby went into ship-owning with a number of small sailing vessels. In 1821 a regular line to the East Indies was established, and in 1851 the firm adopted steamships. Eight years later, when Messrs. Harland and Wolff were establishing





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Messrs. Bibby Brothers & Co.

PLAN OF BIBBY TANDEM CABINS



themselves at Belfast, they received their first order from Messrs. Bibby, who ordered three steamers. The connection thus begun in personal friendship has endured to the present day, and all the Bibby steamers have been launched from the famous yard at Belfast. In 1867 Mr. Bibby gave an order for three steamers having straight stems instead of the clipper bows, which at that time were the rule. His innovation was recognised as excellent, and Messrs. Harland and Wolff set about improving the designs of ships until they evolved the type of which the White Star *Oceanic* was the first. Many improvements were made in the firm's steamers, but it was not until 1902, by which time it was thought that every improvement that could possibly be invented in ocean steamers had been applied, that the Bibby line "went one better" than other owners by introducing a system of sleeping-cabins by which every state-room has a port-hole or window opening to the outside of the ship. In the generally adopted arrangement the inner cabins are indifferently lighted, so far as natural light is concerned, though in the best steamers the ventilation is excellently managed by means of inlet and exhaust pipes and a system of electric fans. The Bibby line introduced what is known as the tandem cabin. The actual floor space of the inner and outer cabin is increased, but the two cabins are of different size, the outer cabin, or that nearer the ship's side, being the smaller of the two. It is, however, amply large enough to have two berths and a sofa berth, and a wardrobe. A narrow space is cut off and added to the inner cabin which has what may be called a passage to the side of the ship where the port is situated. This space has a comfortable seat at the end near the port, and anyone who wishes to be alone to read or write can make himself comfortable there. The space is also available for storing extra luggage

which the passenger may want on the voyage. The arrangement of the cabins on the "tandem" method is shown on the accompanying plan.

It is impossible to indicate every improvement in every steamer, but enough has been said to show the steady improvement which has been made in the conditions of ocean travel, and how the steamship companies are always on the look-out for every innovation which tends to the comfort of passengers and makes the steamers more attractive. How the old conditions have passed away, and luxury has been added to luxury, will be described in subsequent chapters.

## CHAPTER III

### THE THEORY OF THE UNSINKABLE SHIP

As we have seen how the modern methods of passenger accommodation were brought about, we may now consider in a general way how the modern type of steamship was developed. Its outstanding features are extraordinary size, extraordinary lightness, and extraordinary strength, to which may be added for the benefit of the public who patronise them, extraordinary luxury. The most important consideration of all is that of the safety of the vessel, its passengers, and its cargo, and to this all the other conditions are subordinated. Yet such is the skill of ship designers, naval architects, and shipbuilders that all these conditions are dependent upon one another, and none of them could be eliminated from a modern liner without impairing the others. How has this been brought about ?

The safety of a ship at sea depends very largely upon her construction and her loading. These embody two entirely separate sets of conditions which are at the same time very closely connected. In regard to the former, the ideal has always been the unsinkable ship. No vessel has been, and none ever will be, designed which will be absolutely seaworthy and absolutely proof against collisions, strandings, storms, heavy seas, fires, and explosions, separately or in combination. Ship after ship has been built, with every arrangement the nautical constructional science of her time could devise for her safety, and has been declared to be unsinkable ; but in more than one instance some previously unknown combination of natural phenomena has arisen and has proved that the vessel was not all that she was claimed

to be. When naval architects and shipbuilders speak of an unsinkable ship, they mean one that can perform the work required of it, and yet be able to meet successfully the everyday or occasional dangers which experience has shown may be encountered in the performance of the work.

Great strength in the method of construction, combined with the adoption of the best available material were put into the *Great Britain* and *Garry Owen*, and proved the value of iron shipbuilding. The *Great Britain*, as already stated, heralded the *Great Eastern*, which is said by many to be the nearest approach to the unsinkable ship yet planned. Working only with heavy iron, Brunel and Scott Russell yet ventured to produce that wonderful creation; we can only conjecture what their inventive genius and power of conception would have attempted, had they had mild steel for the material and all modern engineering facilities at their disposal. But Bessemer and Whitworth had not then revolutionised the metal industry. From a description published of the *Great Eastern* in 1857, the following is taken:—

“Up to the water-mark the hull is constructed with an inner and outer skin, 2 feet 6 inches apart, each of equal firmness and solidarity: and between these at intervals of six feet run horizontal webs of iron plates, which materially increase the power of resistance both of the inner and outer skin. In fact, the construction consists of two ships—a large one and a still larger. . . . By this mode of construction it is calculated that danger of a collision is very much lessened, for, though the outer skin might be pierced, the inner one remaining intact, as it would, except under most extraordinary circumstances, the safety of the vessel would be in no wise endangered. Again, should she be short of ballast, the space between the inner and outer skin can be filled with water, and 2,500 tons of ballast in this way are at once obtained.

“ Besides the principal bulkheads there is in each compartment a second intermediate bulkhead, forming a coal bunker, and carried up to the main deck, which can on an emergency be closed. There are no openings under the deep-water line through the principal bulkheads, except two continuous tunnels, near the water-line, through which the steam pipes pass, and which are so constructed as to remain closed—the opening being the exception, and the closing again being easy, and the height being such that, under the most improbable circumstance of damage to the ship, ample time would be afforded to close them leisurely and to make them perfectly watertight.”

This foreshadows in a remarkable degree the development of the various mechanisms and contrivances which have been introduced to render modern ships as safe and strong as modern science can make them.

The complexity of the subject of constructional safety, however, is much greater than many people imagine, and this is abundantly demonstrated by the number of extraordinary recommendations which the public invariably make whenever there is any great ship disaster; particularly was this the case when the *Titanic* was lost. Of the majority of these suggestions, it can only be said that they are absolutely impossible of application in vessels designed to withstand such variations of weather as are met with in ocean voyages. There is no denying the anxiety of their proposers to minimize the risk to human life at sea, or that under one limited set of circumstances each proposal might be efficient; but it is a pity that before rushing forward to give their ideas publicity, they did not spend a little time in ascertaining whether there was the germ of general usefulness or the probability of wide application in their propositions.

The dangers to which ships are liable may be divided

roughly into three classes. The first class embraces all those risks which arise from faulty design or faulty construction. No builder likes to turn out vessels which do not last long, for a succession of losses of the ships coming from his yard will not enhance his reputation. The best material and the best talent in shipbuilding, as in everything else, cost money. A shipowner may find himself in the position of being compelled to order a new vessel out of comparatively slender resources, and in that case he has to stipulate for the maximum carrying power which can be given for the money, and he may be disposed, therefore, to insist upon a comparatively cheaply built vessel of greater capacity, and consequently higher earning power, in place of a slightly smaller vessel of less earning power, but costing as much. The survey and inspection are so strict that very little scamped or indifferent work is ever attempted. The rules of Lloyd's Register of British Foreign Shipping and the British Corporation, under which nearly all the vessels are built in the United Kingdom, are very stringently drawn up, and are to be regarded as embodying the minimum measurements or scantlings permissible for all parts in all types and sizes of vessels classified by those societies. In the great liner companies, it is the custom to exceed the measurements stipulated for by either of the registration societies, and as these vessels are very expensive to build and equip, and are seldom insured to their full value outside the owning firms, the owners find it to their advantage to have the ships as well constructed as possible, so as to leave a comfortable margin over and above the classification societies' requirements, in order that their vessels may meet any undue or unforeseen strain without being the worse. The number of vessels which come to grief through insufficient care in the construction is fortunately very small, which speaks well for the skill and thoroughness



displayed in the shipbuilding industry, and disasters of this kind are practically unknown among passenger vessels. Disasters due to faulty design, as apart from workmanship, are also very rare, and though they may be suspected, it is virtually impossible to say that any such disaster is the result of the adoption of a design which is blameworthy on the face of it. A tendency to pile up a great many decks has been condemned in some quarters, and, of course, there is a calculable limit to the number which can be provided with safety ; but, on the other hand, any possible "tenderness" which may result from this practice should be overcome in the loading of the vessel, and in the regulation of the number of ballast-tanks to be filled with water.

Structurally, everything that can be done is done to ensure the safety of the ship in the event of collision or other mishap injuring its skin. The first and foremost of these means is the double bottom. The frames of all modern steamers are made exceptionally deep for those parts which have to form the bottom of the ship, and still greater depth is added to increase the strength of that part which has to support the weight of the engines and boilers. To the outer side of these frames the outer skin is attached, the plates forming it being of special thickness ; and to the inner side of the frames another watertight skin is fastened, so that the vessel has for all its length a complete double bottom, extending from the keel, on either side, as far as the turn of the bilge, that is to say, from the keel to where the sides of the ship begin. The space between these two skins is subdivided into a number of watertight compartments. These sections, when empty, can be entered by means of watertight manholes ; any one or more of them can be filled with sea-water when water-ballast is required to cause the ship to float with that trim and degree of immersion which are most suitable

to her form and comfort. If a steamer having a double bottom strikes a rock, the probability is that only the outer skin will be pierced badly, and that the inner skin will receive comparatively little injury or none at all. Hundreds of instances in which this has happened might be quoted. The inner skin is seldom taken higher than the turn of the bilge, and it is only in very few vessels such as the *Mauretania* and the *Lusitania*, which were built under special arrangements with the Government, that the inner skin is carried some distance up the side. The *Titanic* had only a double bottom and not a double skin at the sides. The point was raised at the enquiry into the loss of that vessel whether she might not have remained afloat longer had she been provided with an inner skin at the sides. Be that as it may, as the exact nature of the injury she sustained from the iceberg was unknown, the value of the double sides in her case is conjectural. The fact remains, however, that double sides do give a greater strength to the hull structurally, besides adding to the safety of the vessel in the event of the outer skin being perforated. For this reason, therefore, the *Olympic* has, during last winter, been fitted with an inner skin from the double bottom to above the water-line. The space between the two skins is available for water-ballast, or if necessary, can be arranged as additional bunker space. Certain types of large steamers have two skins on each side, but they are a class by themselves and do not come within the scope of this book. The spaces in the double bottom, if not used for water-ballast or for storing fresh water, may be utilised for carrying oil fuel, when the latter is used.

A certain number of transverse bulkheads is compulsory in every vessel; that is to say, every steamer's hull must be divided into a certain number of compartments

which are, or can be, rendered watertight, for a certain height above the keel, the distance varying according to the type and size of steamer. There must be one transverse bulkhead near the stem, and extending from the keel to the upper deck except in the largest vessels. This is known as the collision bulkhead. In its lower part it is not permitted to have any openings, and there is no possibility, if the bulkhead is properly constructed, of water which enters the foremost compartment gaining access to the adjoining part of the ship, except under most extraordinary conditions. As its name implies, the duty of the collision bulkhead is to render the rest of the ship watertight and buoyant, even if the damage to the bows be sufficiently great to give the outside water free access to the interior of this compartment. By free access is meant the power of the water to flow in and out through the injury with the motion of the waves or of the vessel, at the level of the sea outside. Where a horizontal watertight flat or skin prevents the water rising further, the water is said to have only a limited access. This explains the special value of a double bottom, besides the additional strength it gives to the ship's structure. The portion of the ship between the stem and the collision bulkhead is generally divided laterally by a strongly constructed deck or flat, or more than one. This arrangement adds greatly to the strength of the fore part of the ship, and also serves to limit the extent of injury to the upper part of the bows in the event of collision with another vessel. In vessels which have their engines amidships, the whole of the engine and boiler space has to be confined between not less than two watertight bulkheads. The fourth compulsory bulkhead is placed near the stern, and is intended to prevent any large quantity of water obtaining access to the interior of the ship should, by any misadventure,

a leak be caused in the stern plating through accident to the screw, screw-shafting, or rudder.

The *Arizona* was among the first of the big passenger liners to be equipped with a number of bulkheads ; fortunately for her they were strongly built, for when she ran end-on against an iceberg and smashed in her bows and flooded her fore compartment her collision bulkhead kept her afloat and she managed to reach port. This led to the increased adoption of bulkheads.

Thus two of the considerations which have to be taken into account are the provision of an inside bottom in case the outside bottom should admit water, and the construction of a number of walls or bulkheads in the ship itself, each being of sufficient strength to resist the pressure of as much water as the injured compartment it helps to form will hold, and to prevent the water gaining access to adjoining compartments and thence to other parts of the ship. In this connection it is too often forgotten by those not accustomed to shipping that any water which enters a ship adds to the weight she has to carry and consequently to her immersion, and reduces her buoyancy correspondingly. It is manifestly impossible in large passenger vessels, where the accommodation extends to several decks, to have all the vertical bulkheads absolutely watertight, that is, with no openings in them ; as far as practicable, however, they are made to do duty in the manner desired by giving the minimum number of openings without interfering with the comfort of passengers and by a system of watertight doors in the main transverse bulkheads which can be closed when necessary.

The loss of the Cunarder *Oregon*, in 1885, through collision with a schooner off the Banks of Newfoundland in foggy weather, raised the question of the adequate subdivision of these immense vessels in order to render

them really safe at sea. It was evident that if a steamer were provided with more watertight bulkheads, her chances of receiving sufficient water to sink her were more remote, and naval architects and marine engineers watched with great interest the experiment tried in the Inman and International liners, *City of New York* and *City of Paris*, of giving their bulkheads no doors whatever besides increasing the subdivision of their hulls. The method of their construction was such that it was contended that an accident like that which sent the *Oregon* to the bottom could not possibly have had a similar result with either of them. Yet in 1899 the French liner *La Bourgogne*, whose system of bulkheads was considered to be unsurpassed by that of any vessel afloat, sank with some hundreds of her passengers and crew after being in collision with the sailing ship *Cromartyshire* in a fog off the Banks of Newfoundland.

Besides the transverse bulkheads some vessels are given longitudinal bulkheads also. These are generally confined to the inner walls of the coal bunkers, and to the dividing partition in those twin-screw vessels, in which the port and starboard engines are separated. Naval architects and shipping men generally have very little faith in longitudinal bulkheads at the best of times, apart from the uses just indicated. When the *Titanic* was lost, several well-meaning people jumped to the conclusion that the safety of all vessels would be greatly increased, if they were provided with watertight longitudinal bulkheads running from end to end from the keel to the deck above the water-line. Possibly circumstances might be conceived in which such a partition would be of value, provided also that the number of transverse bulkheads was very greatly increased. But all these bulkheads mean so much more dead weight to carry, and so much less space available for earning power. As a vessel's

stability may be said to depend on her ability to maintain an upright position, it is manifest that anything which detracts from that ability must affect her stability.

Therefore, if a few tons, or a few hundred tons, of water, according to the size of the vessel, are admitted to one side of the ship only, she is weighted down on that side, her stability is interfered with, and there would be in certain circumstances a possibility of her rolling over. In the case of a compartment extending right across the ship and being filled with water, the vessel's reserve buoyancy will be lessened by the amount of water admitted, but as long as she remains upright, her stability will not be interfered with, and provided that the water cannot roll from side to side with the motion of the vessel, she is in no danger of capsizing. The subject was discussed at some length at a meeting of the Institution of Naval Architects a few years ago, and it was pointed out by an eminent authority that a longitudinal bulkhead might be useful in some circumstances and in a vessel in which it was possible to admit a certain amount of water to the ballast tanks in the other side of the vessel to counteract the water admitted through the supposed injury, presuming, of course, that there were empty ballast tanks available for the purpose. The admission of water, however, at sea, into the ballast tanks or other compartments is, as has been pointed out elsewhere, a very risky proceeding, and only justifiable under exceptional conditions. The question of the value of longitudinal bulkheads still remains in the controversial stage.

In some of the latest vessels added to the South American trade, such as the British and Argentine Steam Navigation Company's steamer *La Negra*, to mention one of the most modern examples of the fast combined passenger and cargo steamer, nine steel watertight

transverse bulkheads extend to the shelter deck, and with the various decks divide the interior of the vessel into twenty-six compartments. If we compare her with the German liner *Kronprinzessin Cecilie*, an excellent idea may be obtained of the care taken to ensure the safety and strength of these floating palaces. This liner's double bottom is divided into twenty-six compartments to begin with; further, the steamer is divided by seventeen watertight transverse bulkheads and one longitudinal bulkhead in the engine-room into nineteen compartments, and their size has been calculated that if two adjoining compartments should be filled with water the buoyancy of the vessel would still be assured; to this provision of a means of safety must be added the use of her decks for additional subdivision and their use as horizontal bulkheads to restrict the possible inflow of water.

The *Titanic* had a cellular double bottom carried her full length and extending to the ship's side, with floors on every frame. This double bottom was 5 feet 3 inches deep except under the room containing the reciprocating engine where the depth was increased by a foot. Besides the long centre keelson extending from one end of the ship to the other, there were two other keelsons 30 feet on either side of the centre one, all three being watertight, and in addition there were several intercostal girders. Her bottom was thus divided into four main compartments, every one of which was minutely subdivided by the closely-spaced frames of the ship, the total number of cells forming her double bottom thus amounting to some hundreds, which were further strengthened with watertight floors. Her ribs, as some people still prefer to call a ship's frames, were three feet apart amidships, two feet apart forward, and 2 feet 3 inches aft. Most of the frames were of 10-inch channel sections, which gives great strength without excessive weight;

every third frame also was specially fitted with web frames 2 feet 6 inches deep. These frames extended from the tank top to the bridge deck. The beams, or supports for the decks, were built equally strongly, and were further supported by pillars and girders, and the frames themselves were still further strengthened by a number of stringers or steel plates rivetted to them and extending the whole length of the ship. Practically all modern ocean-going steamships are put together in this manner, though individual builders each have their own special features. It will thus be seen that the *Titanic* was one of the strongest merchant ships ever launched. It should be added that the whole structure was also greatly strengthened by the thick steel plating of her sides and decks. The *Titanic* had fifteen transverse watertight bulkheads, which were arranged so that any two main compartments could have been flooded without endangering the safety of the ship. This is not a matter of speculation, as many people suppose, judging from the correspondence in the papers after her loss, but of calculation; and any one can make the estimate who cares to calculate the ship's weight and dimensions and ascertain her displacement. The weight of an amount of water which can be admitted to a compartment of given dimensions is known, and thereafter it is a question of not very advanced arithmetic. Her watertight bulkheads reached from the double bottom to a considerable distance above the water-line: those forward to the upper deck, and those aft to the saloon deck.

The question of bulkheads, both vertical and lateral, and of their positions and number, is one which is very keenly debated among naval architects, shipbuilders, and shipowners. Where the greatest experts in the profession of naval architecture differ, it would ill become me to express opinions one way or the other. In the earlier



part of this chapter I have endeavoured to set forth the views which are generally accepted, and if these views are wrong I sin in good company.

Without touching upon the controversy as to the bulkheads to be placed in steamers of the more ordinary types, it may be taken for granted that minute subdivision is regarded as essential to the safety of the modern liner carrying a large number of passengers. Differences of opinion at once appear when the method of the subdivision has to be considered. In the following paragraphs a number of opinions are reproduced without comment, which have been advanced from time to time ; and the most that can be said for some of them is that the contentions are plausible, and that as anything may happen at sea it is conceivable that within limited circumstances incidents may occur which would render them feasible.

It has been contended that all decks below the water-line, or even below the shelter deck, should be constructed so that the openings in them can be fitted with watertight covers or that sliding hatches might be arranged which should work in grooves below the deck, and that these decks, covers, or hatches, should be of sufficient strength to resist the pressure of the water either from below or from above. In the event of a vessel with several decks receiving an injury, even a serious injury, in the side below the lowest deck, the water there would not rise above the level of that deck so long as the latter resisted the upward pressure. If the decks above that were also watertight, and the injury to her side was inflicted rather higher she might remain afloat for many hours, which should give ample time for vessels summoned by wireless telegraphy to hasten to her assistance.

Another frequent contention is that if through collision a hole were knocked in her side at or but little below the

water-line, she might still be able to remain afloat for a very long time, especially if the water could not penetrate into the lower holds, and was confined to the compartments which had actually sustained the injury. The answer given to this is that water is heavy and unstable, that its entry would at once cause the ship to list, and that the higher it is in the ship the more dangerous would be its effect, especially when the ship rolled. More than one instance has occurred of a vessel which has only settled very slowly in the water, through injury to her hull, suddenly having her hatches blown off by the air pressure underneath; afterwards she has sunk rapidly. If a vessel on which this has occurred had been fitted with hatch-coverings which could not blow off, she would probably not have sunk at all, and might even have reached port under her own steam, weather conditions permitting, or have signalled for assistance to some other vessel and been towed to the nearest port. This, it is pointed out on the other hand, is conceivable with some steamers, but not with the modern many-decked passenger steamers.

The passenger accommodation on all large steamers affords a great reserve of buoyancy, provided it can remain intact. It has been proposed that the deck-houses of modern vessels should be constructed so that they can be released from a damaged and sinking ship to float like rafts, and afford a measure of safety and hope of rescue to those on board; but this is one of those ideas which sound well in theory, and are almost impossible of realisation in practice. Shipping disasters, nineteen times out of twenty, occur in rough weather or on rocky coasts, and generally both these conditions are present. Large deck-houses, under these circumstances, would have to be hermetically sealed to enable them to remain afloat, and even when they were afloat, they would be swept

by every sea. A small wooden deck-house, by reason of the buoyancy of the material of which it is constructed, might float, and enable a few people to cling to it with hope of rescue. A steel deck-house is constructed of heavier material, and when it is no longer watertight will go down like any other piece of metal.

Touching the question of bulkheads, it may be noted that the *Olympic* has had the height of certain of her bulkheads increased since the loss of her sister. It has been contended that had the *Titanic's* bulkheads been carried to the highest continuous deck, which was 30 feet above the water-line, she would have remained afloat, and that the same happy result would have been achieved had the decks at the top of the bulkheads and all the hatches also been made watertight. It is easy to be wise after the event ; for the fact remains that the vessel was lost through a hitherto unknown combination of conditions. Certainly, the court of enquiry decided that she was navigated at too high a speed, and that the look-out ought to have seen the iceberg in time to have avoided the blow, but these views are not unanimously endorsed by men who have had great experience in the navigation of the North Atlantic in all seasons of the year and in all conditions of weather. The main lessons to be derived from the loss of the *Titanic* are that a passenger vessel of this very exceptional type must be capable of great watertight subdivision in order to increase its safety, and must carry enough boats in order to save all persons on board, if possible, when they are no longer safe on board the vessel. The question of a ship's look-out belongs to the department of her navigation, and its efficacy depends entirely upon the watchfulness of the officers and men entrusted with this duty and the discipline enforced by the captain.

One objection which has often been raised to the

introduction of a number of watertight bulkheads, is the hindrance it places in the way of communication between the different parts of the ship. If the watertight bulkheads are to be made entirely watertight and extend from the bottom of the ship to a deck above the water-line, it is evident that there must be a great deal of inconvenience and loss of time in passing from one portion of the vessel to another. In the case of very large vessels where there is subdivision, even of the engine and boiler space, this drawback would be very great, and it has been overcome by the introduction of a system of watertight doors in the bulkheads, so that access is possible between the compartments, without having to go up and down several flights of stairs.

In order to give access between the various compartments in the lower part of a ship openings are provided in the bulkheads, and to close them when desired various devices have been invented, and there are several types of watertight doors for the purpose. In this, as in all other appliances, invention never stands still, and the types which a few years ago were thought to be the best conceivable are now superseded by others in which advantage is taken of the latest methods of applying power to actuate the doors and the latest appliances to render them fool-proof. The old-fashioned door opening down the middle and hinging back on its two sides was impossible to be made watertight, for though the amount of water that would go past one of these doors might not be very great at the time, the continued stream would soon have a serious effect, increasing steadily the amount of water in the compartment which it was desired to keep free. Another drawback to this, was the difficulty of shutting them thoroughly, if by any mischance the framing of the ship was strained, and yet another drawback, and a most serious one, was

that the doors of this type had to be shut separately by hand. It was also difficult to make them strong enough to stand the pressure of water. A rush of water going through an injured skin would easily be so strong as to render it impossible to shut the door against the pressure of the flow. For these reasons doors of this variety were quickly abandoned. Another type proposed was that of doors operating vertically, and sliding in a grooved framework, and actuated by means of a hand-turned windlass. This was right in theory to a certain extent, and was better for the desired purpose than the type of door just described, but as with all doors which have to be moved separately by hand power, there was a great loss of time between giving the signal for them to be closed when danger threatened, and the time when the operation could be completed.

That this is by no means an imaginary contingency was shown on the Admiralty report on the loss of the battleship *Victoria* in the Mediterranean some years ago after collision with the *Camperdown*. Many of the ports, watertight doors, and hatches in the fore part of the doomed ship could not be closed owing to the rush of water; but it was stated afterwards that had they been closed, the ship, though badly crippled, would have remained afloat and able to reach port under her own steam.

What was wanted was a system of several doors, that is to say, one or two in every vertical bulkhead, which could be closed automatically from the bridge of the steamer, or other controlling centre directly the danger was threatened or anticipated.

A vertical door which descends to its closed position by weight alone can never be depended upon to give the required results. There is always a possibility that it will jamb in some way, or that something will get under

the door and prevent it closing. This is especially the case with such doors in coal bunkers.

The inventors of the generally accepted best type of modern watertight doors had reason to be convinced of the truth of the old saying that a prophet is without honour in his own country, for no British steamship line tried them in its ships until their efficacy had been demonstrated by a German company. This was the *Nord Deutscher Lloyd*. As previously stated, power must be used to render the doors effective, and no power yet experimented with is equal to the hydraulic. At the ordinary general meeting of the shareholders of that company in April, 1902, the directors reported, "Now that the hydraulic door-closing arrangement, fitted by way of trial on the ss. *Konigin Luise*, some years since, by which it is possible to close all doors simultaneously from the order bridge, by the turning of a lever, has proved so entirely satisfactory, we have decided to adopt the door-closing arrangement for all doors below the water-line, both on all our transatlantic passenger steamers now building, as well as gradually on our large passenger steamers already in service. Six of our transatlantic steamers have already been equipped with this arrangement during the year."

Before making this experiment, however, the Germans, with their characteristic caution, conducted an exhaustive enquiry and came to these conclusions as to the motive power: steam is dangerous, owing to the possibility of a pipe bursting and filling a compartment with steam; electricity is unreliable and has been known to be a source of danger; and compressed air is too expensive. Hydraulic power was considered to meet all objections.

The adoption of the power-actuated doors by the North German Lloyd was followed by the Hamburg

Amerika line in their magnificent liner the *Deutschland*. The French company, the Compagnie Transatlantique, also adopted the hydraulically-operated watertight doors. The Cunard Company tried them experimentally in the *Caronia* for about a twelvemonth, and then on the *Carmania*, with such satisfactory results that they are now installed on the *Lusitania* and *Mauretania*, and are being fitted in the new monster ship *Aquitania*.

The merits of the Stone-Lloyd system, which we have been describing, are so widely recognised that the number of vessels carrying this world-wide method now amounts to some hundreds.

The accompanying illustration shows what a watertight door is like in a bulkhead and the mechanism for operating it.

As a great deal of misconception exists as to the situation and use of these doors, it may be stated that they are placed in such positions as to give access to passages in the holds. They are not placed so that they can be opened to give access to any merchandise which may happen to be placed against them. The lower part of a modern passenger steamer has a great number of passages which run through the watertight bulkheads, and some of these doors are so placed as to cut the passages into sections. If, for instance, the firemen's quarters are in the fore part of the ship, and it is necessary for them to go from the furnace rooms to their quarters, or vice versa, they will not go by the various stairs to the decks and descend by other stairs to the stokehole, but will go through the passage constructed to give the necessary communication. Under ordinary circumstances these doors may be left open, and there is no additional risk in doing so, and no one is any the worse. But at night, when objects are less distinctly seen at sea, or are distinguishable with such difficulty as not to be visible at all until it is

too late to avoid them, the bulkhead doors are shut and are only opened at such times as are necessary to allow of the passage of the firemen, to and from their quarters, when changing watch. There must thus be a great number of watertight doors in the bulkheads, and under the most widely adopted system, namely, that known as the Stone-Lloyd, every watertight door in the ship can be closed in a second or two, by hydraulic power, by means of a lever operated by the officer on the bridge.

The drop system of doors, that is, those which depend solely upon weight and gravity for their closing, has the drawback that in the absence of applied power it may be almost impossible to close them after a collision, owing to the derangement of gearing and the warping of bulkheads and door frames, which are almost invariably caused by such a disaster. The construction of the Stone-Lloyd system of installation is so simple that it is easily understood by every one of the crew; it has also the further advantage that the closing of the doors at any time in no way interrupts the working of the ship, so that upon the slightest approach of danger, or when travelling in dangerous waters, every bulkhead is, to all intents and purposes, made absolutely watertight by the closing pressure being kept on from the bridge.

It may here be explained that a ship's watertight doors and bulkheads are tested before the ship is completed to ascertain that they really are what they are claimed to be. The method of testing is simple. As they are designed to keep out water, water is admitted to the different compartments singly and pumped out again. The *Imperator* had a powerful steam fire engine hoisted into its holds with which to make the necessary tests. The hydraulic pipes are controlled from the captain's bridge, where there is an appliance called the pedestal



which, to the uninitiated appears to consist of little more than a metal post with a lever attached to it. Let us suppose that all the watertight bulkhead doors of the ship are open and that the captain or officer in charge sees some danger approaching. He simply pushes the lever firmly over to the other side, which does not take more than a couple of seconds. Now let us suppose that you are standing by one of the watertight doors in, say, the most forward part of the ship. Directly the lever is pushed over a bell attached to the door begins to ring and continues to do so for ten to twenty seconds, and does not cease until the door is closed. By that time you will have had ample time to pass along the passage to the nearest stairs and reach a higher deck, or you may have ascended by the stairs of the compartment in which you happen to be.

But the efficacy of the look-out is not solely depended upon. It has happened before now that a vessel has struck a submerged object, the presence of which could not be detected from the deck, such as a rock or a slowly-sinking derelict, and had a hole knocked in her bottom. Even the results of this danger are guarded against in this system, and the method of doing so is equally effective should the vessel spring a leak. As the water enters a compartment it comes in contact with a float arrangement in the bilge ; this float rises with the water and automatically releases the gear for shutting the door. Accidents of this nature, however, so seldom occur that this attachment is not fitted in vessels unless specially ordered. It may be explained that directly a vessel strikes an immovable object, such as a rock, she will probably remain fast, and that there is time to close the doors in any case ; if she strikes a derelict, which will give way under the blow, the impact may be less serious and the damage comparatively slight ; and that if she springs

a leak the presence of the incoming water will soon be made known in other ways and the usual steps taken to close the faulty compartment and pump out the water.

Presuming that a vessel has received damage, it does not take long to locate the damaged compartment; the doors communicating with it can, when closed, be rendered immovable by merely screwing up a valve attached to the door—there is one on either side of every watertight door—which detaches these doors from the system. When this is done, the officer on the bridge can open all the other doors by means of the lever on the pedestal. He knows what doors are open or closed, for there is an electric indicator in the bridge-house which shows the position of every one of these doors, and not one of them can be opened or shut at any time without the tell-tale on the bridge making known the fact. Should it be desired that certain doors should, for reasons of general convenience, remain closed, or only partially open when the opening pressure is being applied from the bridge—as in the case of doors to refrigerator rooms or to coal bunkers where the coal is piled against the door—the system can be adjusted at each door to meet these requirements, and it can be arranged for them to be opened locally as desired. Under no circumstances, however, can any doors remain open, or partly open, when the closing pressure is applied from the bridge. These doors are not light thin pieces of steel, but are rather thicker than the steel plating which forms the skin of the hull. The power exerted to raise them is the same as that required to lower them in order that when being lowered under power they may force their way through any obstruction, such as coal, which may have inadvertently got in the way.

Perhaps, however, the greatest feature of the system lies in the fact that it enables the Commander to feel that

when running through fog-banks, when navigating dangerous channels, or when traversing routes of frequent traffic, his vessel enjoys all the additional security of the solid bulkhead without its inconveniences. For days together, when steaming in such conditions, he has but to leave the handle on the dial-plate turned down, when the closing pressure is maintained constantly, all doors remain closed, and he has the conditions of the solid bulkhead and yet the advantage of intercommunication is not interrupted. By depressing the lever which is placed on each side of the bulkhead adjacent to each door, a man may open that door and pass through, but the instant he releases the lever the constant closing pressure again asserts itself and the door closes automatically.

This local operation of each door has, moreover, been all important in securing towards the system the goodwill and co-operation of the entire crew, since they recognise that under no circumstances can they be caught like rats in a trap. There is, therefore, no inducement whatever for them to tamper with the doors or to shore them up with timbers, as there would certainly be in any system where this local temporary operation is not provided.

By reason of the system being devised to open as well as to close the doors, regular and frequent testing of the system is a matter of the greatest facility, and the whole operation can be performed in the space of a minute or two. This is a great factor in ensuring that an installation is kept in a high state of efficiency.

The system is hydraulic. It is charged with a special oil to obviate any possibility of freezing, which is the only danger which hydraulics have to fear. A prominent advantage of the hydraulic system is that apart from the practice of testing the system at regular intervals,

such as daily or bi-daily, any leakage at once reveals itself by the escape of the fluid, and can instantly be repaired. The hydraulic power system is equally applicable to horizontal watertight bulkhead doors or to the pattern which operates from one corner and lifts and descends diagonally.

Now let us see what is the method by which this system is worked. In a modern liner a constant pressure of 700 lbs. to the square inch is maintained by means of two double-acting pressure pumps which are continually under steam. When any of the doors are being operated the pumps move at the rate of about twenty strokes per minute, which closes the doors in about twenty seconds; but otherwise three strokes per minute are sufficient to keep a constant flow of water through the mains. Two main pipes are laid round the ship past all doors and a branch from each main passes through a controlling valve at every door to the ends of a cylinder operating that door. By the operation of the bridge valve, which, however, is placed in the engine-room though controlled from the bridge, one main conveys the pressure from the pumps and the other is connected to the exhaust tank. The reversal of the bridge valve, by means of the lever in the pedestal already referred to, reverses the condition of pressure and exhaust in the two mains, and controls the raising or lowering of the doors. There are also modifications of the system by which it is possible to control any door or any group of doors, either locally or from the bridge. This means that after any damage has been located and the doors of the damaged compartment are fastened the doors of the next compartments can be opened and the compartments entered by the engineers to inspect the watertight bulkheads or walls of the damaged compartment.

In regard to the *Titanic*, it should be explained that the watertight doors were operated electrically, and were of a special design of the builders, Messrs. Harland and Wolff, all the objections which had been raised in other quarters to the employment of electricity for this purpose having, it was believed, been overcome.

To sum up : every vessel specially built for the carriage of a large number of passengers is to all intents and purposes as safe as science and practical experience and knowledge can make her. But human nature is not infallible, and it is not until the totally unexpected happens that a new condition arises which has to be met. Apart from this inability to attain perfection, the modern passenger steamer can seldom be found fault with on the score of the means provided for the safety of all on board.

## CHAPTER IV

### ENGINES AND ENGINEERS

FEW, probably, of the many thousands of persons who in the course of a year cross the ocean on one of the latest sea-going hotels give more than a passing thought to the machinery by which they are surrounded, did they only know it. Speak to the majority about the ship's engines, and they admit that somewhere in the vast steel fabric of their temporary floating home there is a machine that somehow, by means of two or three propellers, drives the ship along ; but what the machine is, or how it does it, and what the propellers are, are to them unfathomable mysteries. If the information be volunteered that the vessel contains a hundred or more of other engines, every one deemed of particular importance and performing duties no other can undertake, the listener may raise his or her—generally the latter—eyebrows and affect an interest combined with boredom, and touch the electric button which summons the steward, and having instructed him to bring a cup of tea or coffee—"with cream, mind"—or to switch on or off the electric heater, or regulate the electric ventilator which is giving too much or too little air, may intimate that the subject is not fascinating : in delightful indifference to the fact that every one of these simple desires to be more comfortable has proved the utility of some of the unattractive auxiliary machinery.

Most passengers of an enquiring turn of mind, when the voyage is a day or two old, visit the great compartment containing the propelling machinery. With the directions of a friendly steward they find their way through the labyrinthine passages until they stop at one or other of the main entrances to the engine-room. Here, perhaps,

they may make the acquaintance of one or another of the engineers who, if they have time, are always glad to expatiate on the beauties of their charges. This, however, by one of the unwritten laws of the sea, is a duty which is always allotted to the chief engineer who may delegate it if he chooses, as he mostly does, to one of his assistants. No chief engineer will ever admit that any other chief engineer afloat can get as much work out of his engines as he can, and with so small a consumption of coal and so little wear and tear.

“But, mind you, she needs humouring. She has her little ways and has to be coaxed to do her best, but when you get to know her and she gets to know who is looking after her, she does her best. Just listen to her now. Isn't she making heavenly music? Just humming beautiful, and that quiet you could hear a pin drop.” So used one engineer of my acquaintance to say enthusiastically, and having delivered himself of this sentiment he would be off on his round of inspection of all the parts again, wiping here and there with an oily rag or a handful of cotton waste, or with his inseparable companion the spanner tapping all sorts of odd places and trying to adjust nuts and bolt heads that already seemed so firm that no power in the ship could move them. But smoothly and quietly as that vast and complicated pair of triple expansion engines worked, it was an exaggeration to say that one could hear a pin drop. Nevertheless, in the passage between the two engines and within a few feet of the masses of whirling machinery, conversation could be carried on without difficulty. The balancing of these great engines to ensure easy running is an art in itself. Every engineer on duty is perpetually inspecting and listening. Sounds indistinguishable to untrained ears are full of meaning to him, and so carefully are his ears attuned to the different noises of the engines, through

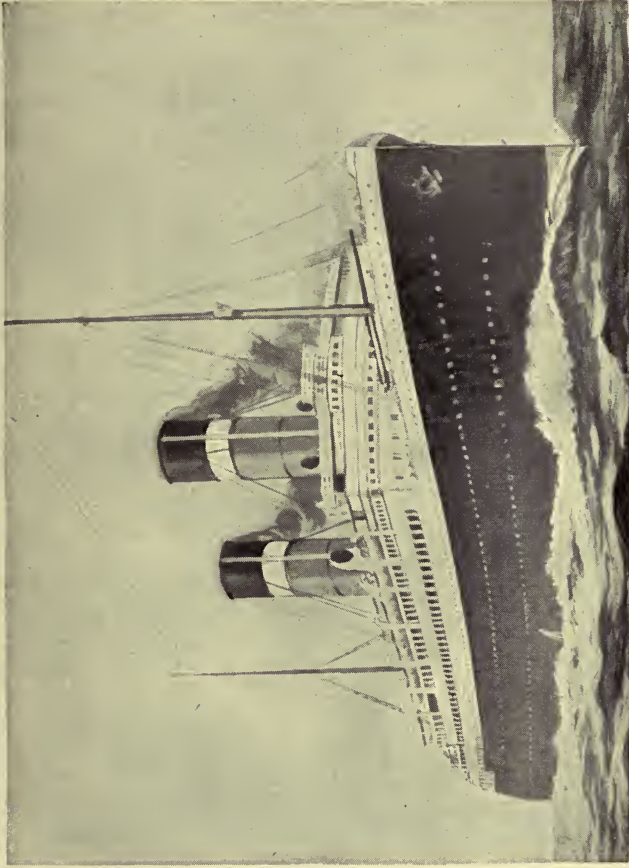
long practice and association, that they can tell in a second the cause of any sound, however slight, and its significance. However carefully the engines are overhauled in port, the first two or three days at sea are always a more or less anxious time for the engineers, and not until everything is running with unsurpassable smoothness will they declare themselves satisfied, and then only in a careful Scottish way, for nineteen engineers out of every twenty are Scots and trained on the Clyde or thereabouts. Then your chief or one of his assistants will have time to tell you more about the engines than at your first visit. He may invite you, as a special honour, to step upon the gallery of the engine-room, and from that favourable position for watching the great machines he will give you an object lesson on a subject which a master mind can make both instructive and fascinating.

To me, at any rate, there is something fascinating in the spectacle of these great machines at work. They seem endowed with almost more than human intelligence, so forcefully and with such precision do they perform their task, and so obediently. To my engineering friend alluded to I remarked that they could do everything but talk.

“Talk!” he replied; “they are talking right enough, it’s you that don’t know their language. Just stand with your head so. Do you hear a wee little hum, very faint, but a trifle different from the rest?” Being assured the hum seemed audible, now that he pointed it out, he was mollified. “That’s the way the little pump over there is telling me she’s doing her best.”

He will explain how many tons of coal are burnt per hour in the furnaces to produce the steam which is necessary to drive the engines; the disadvantages of saturated or wet steam, and the advantages of dried





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and superheated steam ; and how many boilers stand a pressure of 180 lbs., or 200 lbs., or 230 lbs., or more if need be in fighting dirty weather or working up lost time, to the square inch above the pressure of the atmosphere. He will point out that as his vessel has twin screws all the machinery is in duplicate, so that there is an engine for each propeller, and that if one engine or propeller should cease to work properly until he could get it going again—"not that anything of the sort can possibly happen with *my* engines"—the other is available, and that the only difference to the passengers is that the reduced speed may make the voyage a day or two longer. He may be induced, when in a communicative mood, to describe the development of the main engine. He will tell you how the old side-lever engines worked and were modified into the "grasshopper"—so called because certain of its long rods stuck up like the jumping legs of that lively insect—and "steeple" types ; how the steam passed from a low pressure boiler—probably a "haystack" because of its shape—into the cylinder, and by the combined action of steam pressure and a vacuum forced the piston from end to end of the cylinder ; how the piston rod, then as now, conveyed motion from the piston to other parts ; how when the "steeple" was laid flat a beginning was made with one of the present types of engines ; how it was found that the steam had not given up all its power in one cylinder and so another was added, thus "compounding" the engines, and how as boilers and furnaces were improved, and more heat and consequently more work, under improved combustion, could be got from the coal, with the result of greater steam pressure in the boiler, the number of cylinders was increased to three. Another improvement was made when the three-cylinder engines were arranged to work upside down—this arrangement

being known technically as the inverted triple expansion direct-acting type,—so that still more power was developed to drive the propeller. Then he will explain that each of his pair of engines consists of three or four cylinders—the addition of the fourth cylinder being distinguished, when further expansion takes place, by describing the engines as quadruple expansion—and that as there is very little power left in the steam by now it is passed into the condenser whence it returns as water to the boilers.

His listeners will next be asked to grasp the mysteries of evaporators and feed heaters, numerous pumps and condensers. The number of pumps of one sort and another on a large passenger steamer is considerable. Sometimes the steam for the winches is supplied from the main boiler in the ordinary way, but when a prolonged stay in port is made a donkey boiler may be used. At sea the steam for the pumps of whatever nature is derived from the main boilers, and in regard to the steering engines an important innovation is that compressed air may be used. In some steering gears hydraulic machinery is introduced. Then, returning to the engines, he will point out that there is a crank or bend in the crank-shaft for every cylinder and that the piston rod is connected by another rod to the crank thereby turning direct action into circular motion, and that the cranks are arranged so that no two of them are exactly opposite one another and therefore cannot combine to negative the other's work even for a fraction of a second. All this and much more may be revealed, until under your engineer's skilful guidance you wonder how simple it all is and how people can imagine that engineering is difficult to study and requires so much training. You may hazard some such remark to him, to which he will reply that "it's all right so long as you

don't get a tough job, but that if you do you've got to know how to set things right again." If you are very much in his good graces you will be shown where the crank shaft is joined to the propeller shaft, and the means by which the connection is made will be explained.

By this time the subject of the boilers will have claimed his attention. You will be told that they are of the wet-bottom type, which means that they are circular and that there is water under the furnace, so as to use as much as possible of the heat there which otherwise would be wasted. This may appear a small matter, but heat is only another name for combustion of the coal which has to be carried, and engineers have not yet solved all the problems connected with the utilisation of the heat generated. The boilers, too, have numerous tubes through which the flames and heat pass, and as these tubes are surrounded by the water the latter is kept at its required steam pressure with less waste than would be possible were there no tubes; also, steam can be got up much more quickly. In some vessels water-tube boilers are fitted. These consist of a series of tubes which contain the water and are connected with a header, or hollow chamber, at their ends and a drum above, the whole arrangement acting on the principle of the circulating hot water heater which is common for providing hot water for sculleries and bathrooms ashore. In these the tubes are surrounded by the flames. If your vessel has triple screws the engineer will tell you that the steam at high pressure is used to drive the wing screws, as the two outside propellers are called, and that the rest of its energy is employed at low pressure in driving the centre screw. Many three-screw vessels have the centre screw driven by a low pressure turbine, this method being rather favoured for triple-screw steamers. Some, however, have all three screws driven

by turbines only, and the two great Cunarders, *Lusitania* and *Mauretania*, each have four screws driven by turbines.

The Allan line was the first to try turbine engines for a large liner, making the experiment with the *Virginian* and *Victorian* which were placed in the firm's Canadian traffic from Liverpool in 1904-5. The experiment was successful; it certainly upset the predictions that after a voyage or two the turbines would be replaced by reciprocating engines, for the turbines are still in those two steamers. The Allan line has so much faith in the turbine that it has had turbines installed in its two new quadruple screw steamers, *Alsatian* and *Calgarian*, which are to be added to its Canadian fleet this summer, and are expected to prove themselves the fastest and most comfortable vessels of the line plying between the Mersey and the St. Lawrence.

The propelling machinery of the *Calgarian* and *Alsatian* consists of Parsons turbines driving four shafts, and of sufficient power to give a speed in service on the Atlantic of  $18\frac{1}{2}$  knots. The Parsons turbines consist of one high-pressure ahead, one intermediate pressure ahead, and two low-pressure ahead turbines, while two astern turbines are incorporated with the low-pressure ahead turbines. The high pressure and intermediate-pressure turbines drive the two wing shafts, and the two low-pressure turbines the two inner shafts. The machinery is installed in three separate engine-rooms divided by watertight bulkheads. All four shafts give approximately the same horse-power, the total shaft horse-power being 19,000. The steam is generated in ten boilers—six double-ended 16 feet 9 inches diameter by 22 feet long, and four single-ended, all working under forced draught, and the furnaces are arranged to burn oil fuel if desired, the oil being carried either in special bunkers or in the cells of the double-bottom.



*By permission of*

*The Allan Line*

S.S. "VIRGINIAN" ON THE STOCKS AT GLASGOW





These liners are built to the highest class of the British Corporation Registry, and are said to have cost approximately a million sterling each.

After the Allan line's turbine experiment another stage in marine engineering was reached when an attempt was made to combine the reciprocating engine with the turbine in the New Zealand Shipping Company's triple screw steamer *Otaki*, in 1908, the centre screw being driven by a low pressure turbine. In that year, also, the White Star Line having decided to enter the Canadian trade, received the *Laurentic*, 14,800 tons odd, from the builders and the following year the *Megantic*. Special interest attached to these two vessels because they were more or less sister ships in everything but their propelling machinery. The *Laurentic* was given three screws, with the centre driven by a turbine, and the *Megantic* was fitted with twin screws driven by quadruple expansion engines. The importance of this lay in the comparison that could be made between the two systems under conditions which were practically identical. One result was that when the *Olympic* and *Titanic* were built they were given engines of the combination type. An immense amount of space in a ship of these vast dimensions has to be devoted to machinery. Nearly all the space below the E deck is reserved for boilers, furnaces, engines, and coal bunkers. The boiler-rooms and bunkers occupy six watertight compartments of a total of 320 feet of the length, besides which the engine-rooms are 123 feet long, and nearly all the rest of the ship below what is known as the orlop deck is set apart for the electric engine-room and the shaft tunnels. The turbine engine is in a compartment by itself, separated from that of the reciprocating engines by a watertight bulkhead.

The *Olympic* has twenty-nine boilers for generating the steam which rushes the mighty construction across

the ocean. All but five have three furnaces at each end, and are what is known as double-ended boilers. This gives a grand total of 159 furnaces to be fed with coal night and day, and as the boilers have a working pressure of about 215 lbs. to the square inch under natural draught, and more under forced draught, it will be readily understood why the vessel consumes 6,000 tons each way on her Atlantic voyage. The funnels are oval shaped and measure 24 feet 6 inches by 19 feet, or big enough to run a couple of double-deck tramcars through at once. All the chief parts of the engines themselves are on the same gigantic scale, and electric machines have been installed for use when any of these immense parts have to be lifted. The turbine develops about 16,000 shaft horse-power and weighs about 420 tons, of which 130 tons are accounted for by the rotor. The three propellers are not of the same size, the outer ones measuring 23 feet 6 inches in diameter and the centre one 16 feet 6 inches; the last is four-bladed but the others are three-bladed.

There is no denying, however, that turbines are expensive, particularly at comparatively low speeds, and that the best results as judged by the number of revolutions of the rotor in relation to coal and steam consumption are obtained when the highest speed is given. But a new factor entirely has to be taken into consideration, and that is that by means of the turbine it is possible to revolve a screw propeller too quickly and thus diminish the speed of the vessel. In order, therefore, to obtain the best results from both turbine and propeller the turbine is driven at its utmost economical speed and a system of gearing is introduced which gives the screw propellers a less number of revolutions per minute, the most suitable number being a matter of careful calculation and experiment with models and verified later by actual experience.

Geared turbines, therefore, have come into use in recent years, and the appliance has won such favour that in the latter part of last year some fifteen or sixteen large liners were under construction in which geared turbines are to be fitted.

While on the subject of the propeller the engineer may enlighten you as to the mysteries of negative slip or positive slip, which have nothing to do with slips in photography, but are terms referring to the work of the propeller in the water. From the vantage position of the gallery in the engine-room he may point out the reversing gear and explain how by this simple appliance an apparently insuperable difficulty was overcome.

One chief engineer was delighted at the show of interest a lady passenger displayed in the engines, and some of the questions she asked convinced him that "even a woman" could understand something about them. She paid several visits to the gallery, to the evident personal gratification of the "chief," who had never had such an attentive listener before and did not hesitate to express his admiration for her when she was not there. He even began to wonder whether the celibacy on which he had hitherto prided himself should be terminated. But the reversing gear spoilt his romance. It was also too much for the lady. He waxed eloquent on the subject of his engines and she listened seemingly enraptured.

"I see now," she said; "when you reverse you pump the steam the other way through the cylinders and back to the boilers. Isn't it wonderful what science will do."

"By the Lord Harry, ma'am, it is," he answered; and when narrating the incident afterwards to his colleagues added, "How could I think of marrying a woman like that."

There is more to catch the eye of the uninitiated in

the reciprocating engine than in the turbine engine. In the former he can see the position of the cylinders and watch the connecting rod turning the crank shaft as it transmits the power from the piston rod to the latter and converts direct motion into circular motion—no mean achievement in the early days of marine engineering—while the motion of the pumps and eccentrics seems to exercise an irresistible fascination for many; but in the turbine there is little to see except an immense cylindrical vessel at rest, and you have to content yourself with the knowledge that inside it is a mass of steel bearing many hundreds of small steel blades against which the steam impinges with great force, causing the mass to rotate at enormous speed.

The designing of the two great Cunarders and their equipment was a comparatively simple matter for skilled naval architects, but the question of their propulsion bristled with difficulties. For one thing there was less than usual in the way of data to go upon. As it is always said that the last knot is the most expensive in the matter of coal, it was feared that with reciprocating engines the weight and the space occupied would be so great, and the coal consumption so enormous to attain the desired speed, that the vessels might not be profitable.

The turbine machinery on the Parsons principle was attracting a great deal of attention, and the Cunard Company appointed a special commission of expert engineers, marine engineers, and shipbuilders to examine carefully the whole question of turbine propulsion as it might be applied to these immense vessels. Designs of Parsons turbines were submitted to the commission with the result that the commission unanimously reported in favour of the adoption of marine steam turbines on the Parsons principle. When this decision became known, there were not wanting many to prophesy the

absolute failure of the experiment, and some even went so far as to assert that turbine engines were incapable of being used for giving a large vessel so high a speed for several days in succession in rough weather and fine alike. The short-sightedness of this view somewhat reminds one of the extraordinary prophecy many years before, of Dr. Lardner of Liverpool, that one might as well expect to go to the moon as to cross the Atlantic by means of a steamboat ; yet the worthy doctor found the steamer a great convenience when he went with a lady to America.

Your engineer may take you into the stokehold, if you don't mind your clothes getting dirty. There you will see men, if it's hot weather, stripped to the waist, shovelling the coal from the bunker doors to the furnaces. For a few seconds the doors are open while the coal is shot in, but in that few seconds you feel a rush of heat. There are a number of appliances for feeding the furnaces with fuel, some of which save a great deal of labour ; and there are other contrivances for relieving the furnaces of their superfluous ashes which are shovelled down a grid, and by means of a machine, called an ash ejector, are shot up a tube and overboard by a jet of steam. Here and there in the bunkers beside you a constant rumbling of coal goes on, for the trimmers are at work shovelling the coal to the bunker doors for the firemen. Some stokeholds are most oppressively hot, and it is by no means unknown for a stoker to faint ; a bucket of water over him generally brings him round, and by the time you've done pitying him for having to undergo the rough and ready treatment his few clothes have almost dried on him and he is getting ready to resume his work. In an obstinate case his mates may carry him up to the fresh air ; if he does not soon come round the doctor is sent for.

The price of speed is not only payable in money ; some

flesh and blood have to be included when the passenger makes up his balance. The fireman works tremendously hard and is not overpaid, and no one grudges him his little joke when he chalks a visitor's boots in the grimy stokehold in token of the fact that the payment of toll is expected. Really the success of a steamer's run depends in no small degree upon the skill with which her furnaces are stoked. If stokers have a grievance they can reduce the ship's mileage very greatly by careless or negligent stoking; there is an art in the work, simple as it may seem, for it is not everyone who can supply the furnaces with coal in such a manner as to give the best results attainable from the combustion of the fuel.

It is not so long since that a certain American millionaire was in a hurry to reach New York, and took a passage on a vessel whose stokers thought the moment of sailing was propitious for having some fancied grievance righted. Their demands were not refused, but consideration was postponed until they came back. This did not suit them, so they stoked indifferently and the speed of the ship fell in consequence. This in turn did not suit the American millionaire, so he ascertained the reason of the reduced speed, and having made his way to the stokehold promised every stoker and trimmer a bottle of beer at the end of the voyage if he got to New York by the desired time. The steamer came near making a record trip that voyage, and as it was she set up a record for her own mileage which she has not beaten since. The men received their promised refreshment, and the next time he crossed the Atlantic, which he did in one of the big Cunarders, she made one of her fastest passages, for his fame had spread to other ships.

The stokehold is often called the "stokehole" or the "glory hole" by the firemen and stokers. One when

asked for an explanation of the latter name replied that it was because it was not like it.

“Not like it?” said the questioner, a lady.

“No mum, its hot and smelly. And it does give us a thirst what we can’t satisfy.”

The lady took the hint, to his evident temporary satisfaction.

Messrs. Swan, Hunter & Wigham Richardson, who built the *Mauretania*, constructed first an experimental launch one sixteenth the size of the ship itself. This launch was propelled by electric motors, and a remarkable series of experiments, lasting fully nine months, was made with it to test its behaviour in different weather conditions and to allow comparisons to be made with the known results of previous experiments. The question of the number and type of screw propellers to be fitted was one of the most difficult which the builders had to solve, and accordingly this model was tried with twin screws, triple screws, and quadruple screws, and with propellers of different dimensions, pitch and shape, and with three and four blades, and all these different types of propellers were also tried in different positions.

The precise value of a propeller to any ship depends considerably on the shape of the vessel as well as on the shape of the propeller itself, and it has happened many times that when a steamer has been able only with difficulty to attain her expected speed, she has been fitted with a propeller of a different shape and has attained that speed easily. In vessels of such dimensions as these two Cunarders, and the speed at which they had to travel, the suitability of the propellers was most important; an entirely new set of problematical conditions had to be dealt with, and the value of the experiments with the launch was accordingly very great.

As these experiments are expensive to conduct and the

knowledge attained is a trade secret with the experimenting firm, little information is available concerning them, and that little is essentially technical in its character, and is therefore uninteresting to the layman.

The outer propellers of the *Lusitania* are about 70 feet ahead of the inner propellers, and the blade discs in no case overlap. The distance in the *Mauretania* is somewhat greater and there is a slight overlapping. The latter ship's blades are more elliptical, but their diameter is slightly less.

Though these two ships are nominally sister ships, there are certain other differences between them. They are both 762.2 feet in length and the *Mauretania* has an extreme breadth of 88 feet. The *Mauretania's* depth is somewhat greater by the matter of a few inches, which gives her a gross tonnage of 31,938 tons, or about 300 tons more than her Clyde-built sister. In the construction of the *Mauretania* there has been a greater use of high tensile steel, this having given her a slight reduction of weight, and a corresponding increase in capacity for carrying fuel and cargo.

The auxiliary engines vary greatly in number according to the size of the vessel. It is impossible to say that one is more important than another where each has its own special functions. In arranging the installation of the auxiliary machinery care is always taken to provide against breakdowns, though these occur so seldom that the precautions adopted seem almost superfluous; risks, however, cannot be run, and therefore the precautions are taken. From the point of view of the passengers' comfort the most important auxiliaries on board are the engines which minister to their personal comfort and well-being.

Besides the numerous auxiliaries in connection with the main engines, one of exceptional importance is the steam



steering gear. It would be impossible to steer any of these immense liners by hand power in the old-fashioned way, for not only has the rudder, weighing several tons, to be moved in either direction as desired, but it often has to be maintained in a position in which a great strain is put upon it, while at all times it has to withstand sudden pressures such as blows from waves. On comparatively small vessels the steam steering gear is situated close to the wheel on the bridge, with connecting rods and chains to the tiller, but in large vessels it is placed at the after end of the vessel over the rudder head where it is controlled from the navigating bridge by an ingenious contrivance known as a telemotor. There is also a contrivance for steering by steam or hand power by means of ropes from the tiller to certain windlasses, in case the steam steering gear should be disabled entirely. Steam and electricity are used in revolving the capstans for mooring and working large steamers, and both steam and electric cranes are installed for lifting the anchors and mooring ropes. These anchors are no slight weight ; two of those of the *Olympic* weigh between 7 and 8 tons, and the largest  $15\frac{1}{2}$  tons, the steel wire hawser used for the last being  $9\frac{1}{2}$  inches round, 1,050 feet in length and calculated to withstand a breaking strain of over 280 tons.

Every large steamer now has both electric and steam cranes and winches. Noiseless steam winches have taken the place of most of the old-fashioned clattering variety, and the passenger whose state-room is near a hatchway is seldom disturbed by the noiseless winch even when cargo and baggage are being transferred into or from the hold.

One of the first requirements for the comfort of passengers is the steadiness of the vessel. This is attained, as explained elsewhere, partly by the shape of the vessel and partly by the way in which she has her cargo stowed. Recent experiments have been tried with various devices

to prevent, or at least reduce, a ship's rolling, even in a heavy sea, and such success attended the experiments that an anti-rolling device may in a year or two be a recognised feature of every new liner, while not a few existing boats may be altered accordingly. In interfering with the tendency every vessel has to roll the usual plan is to fit bilge keels, but with the large vessels now being built for the conveyance of passengers it was found that these keels would have to be made much bigger to give the same result as was possible on a smaller vessel.

If science has not been able to meet the wishes of the uncomfortable passenger who wished that when Britannia ruled the waves she had ruled them flat, it has at least been able to minimise the motion to a remarkable extent, which might satisfy even the passenger referred to.

The first great experiment in this direction was made by Mr. Bessemer many years ago in the *Bessemer* steamer intended to travel between England and France. It had a gyroscope which was to operate the valves of a hydraulic apparatus controlling the movement of the swinging saloon. The experiment and the boat were both failures.

An improved gyroscope was brought out by Dr. Schlick, who tried it a few years ago with apparently great success in a small vessel called the *Seebar*. When the gyroscope was out of action, a roll of 30 degrees was observed, which was reduced to two degrees when the apparatus was allowed to exert its full force. Sir William H. White, at a lecture before the Institution of Naval Architects, described several experiments with the instrument, and spoke very highly of it.

Preference, however, seems to be extended to the anti-rolling tanks. There are several varieties of these, the Frahm being probably the most popular. The arrangement consists of a large tank on each side of the vessel, with a communicating pipe between their bottoms.

The tanks, which are situated a few feet above the water line, are not quite filled with water, and as the vessel heels over, the water naturally flows through the communicating pipe from the one tank to the other, and it is because the flow continues after the roll has ceased, and even after the roll has begun in the other direction, that the tank operates to prevent the excessive rolling of the ship. One great drawback to most anti-rolling tanks was the great noise made by the water in the communicating pipe. In some of the later designs this drawback has been to a great extent overcome, and if it can be eliminated entirely, the adoption of the tanks will become much more extensive.

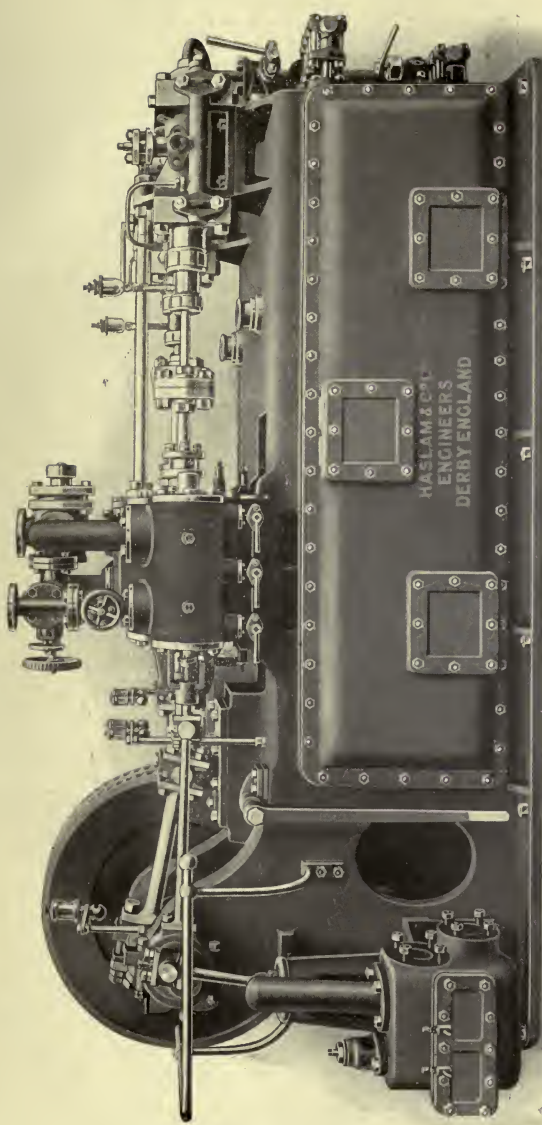
Shipowners were interested, and as usual, each waited to see how the tanks worked in someone else's ship. The Cunard line led the way by placing anti-rolling tanks in the *Laconia*, thereby forestalling its great German rival the Hamburg-Amerika line which announced they would be fitted in the *Imperator*. When the reputation of the Allan line for enterprise in the adoption of innovations is remembered it is not surprising that it should be the first to instal anti-rolling tanks in its vessels in the Canadian trade, its new liners *Calgarian* and *Alsatian* being fitted with them.

A great many of the engines of a modern travelling palace are electrical. It is customary to have two or three dynamos on board, which may be driven by steam from the main engines or each by its own steam engine, and all or any of them may each have a separate motor engine in reserve. In some of the latest vessels, particularly of the two great German companies, an extra dynamo and motor are carried on one of the highest decks to ensure that the electric light supply shall be maintained up to the last in case of disaster. A similar

arrangement has lately been introduced on several British liners. The provision of ample light up to the last minute may mean the saving of many lives if the safety of the vessel should be endangered. As to the part electricity plays in a liner the generalisation may be accepted that what is not done by steam is done by electricity. Much also that used to be performed by hand is executed satisfactorily and instantly by the same mysterious agency. The work of the stewards is lightened and the attendance is vastly improved, and the comfort of the passengers increased correspondingly. Some of the details of the application of electricity are referred to in other chapters dealing with the different departments of the ships.

As to food, most of that consumed on board a modern steamer is fresh and is carried in refrigerated chambers. These are generally situated near or below the water-line where they are out of the way. The method employed for cooling the chambers and keeping them at the necessary temperatures is known as the CO<sub>2</sub> system. All the chambers are not kept at the same temperature, for what will suit one class of provisions will not be of much use for another. Meat, fish, vegetables, and fruit all require to be kept at different temperatures if they are to be retained at their best. The differences are not great, merely a few degrees by a Fahrenheit thermometer ; but the passengers would soon detect meat that had been carried in a temperature a few degrees too high, or vegetables, potatoes, for instance, that had been allowed to get a touch of frost in them. Certain types of machines using anhydrous ammonia were employed in days gone by, but though the requisite low temperature could be obtained a possible slight leakage of ammonia might have unpleasant results and a serious leakage might be dangerous to human life. With ammonia machines as

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REFRIGERATING MACHINE FOR COLD STORAGE ROOMS

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now constructed this risk has disappeared. The chief mail steamships and many of those carrying large cargoes of chilled or frozen produce are therefore fitted with the  $\text{CO}_2$  or carbonic anhydride machine.

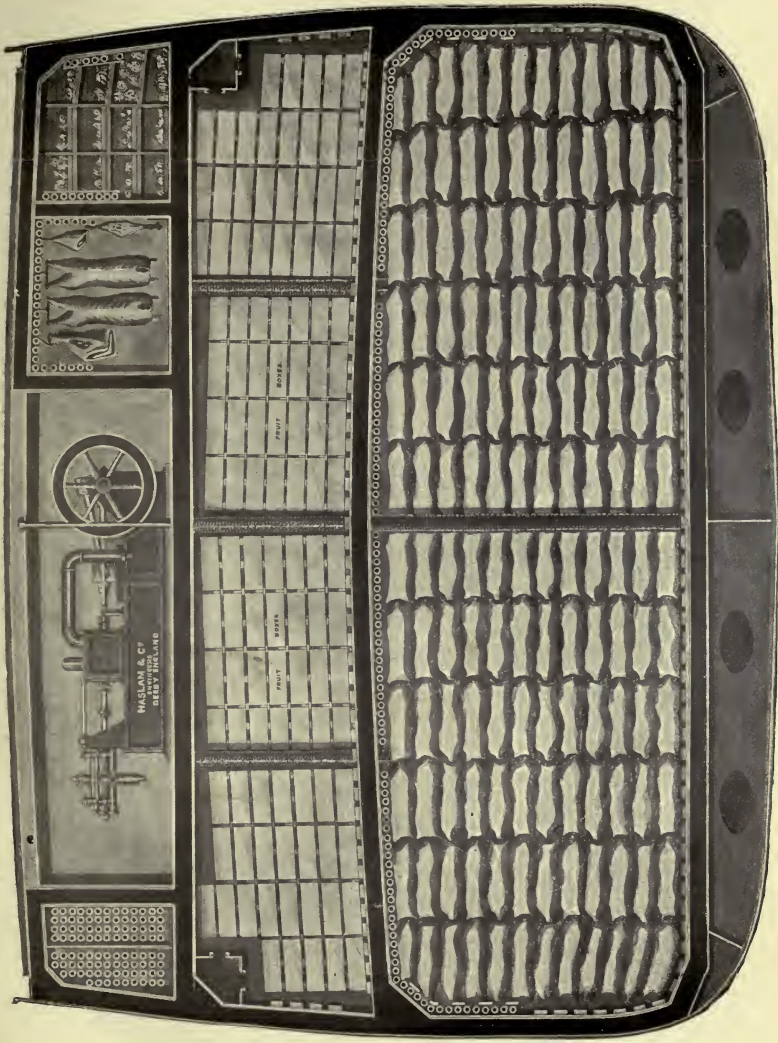
The machines on the ammonia compression system have been so much improved of recent years that many of the drawbacks which formerly attended them are no longer to be found, and as ammonia compression machines work more economically in hot climates than those on the  $\text{CO}_2$  system they are often fitted in carriers of large cargoes of frozen meat.

As a refrigerating agent, liquefied carbonic anhydride is second to none. Under atmospheric pressure it evaporates from the solid state at the low temperature of 120 degrees Fahrenheit below zero, or 152 below the freezing point of water. Evaporation in the refrigerating machine, however, is permitted at only a few degrees below the temperature of the material it is proposed to cool. The accompanying illustration of a cross section through a ship shows the arrangement of a refrigerating plant on the  $\text{CO}_2$  system. The ships are so arranged that they are capable of carrying a mixed cargo, such as frozen meat in the holds, and fruit in the 'tween decks, or a general cargo such as butter, eggs, cheese, poultry, fish, etc. The holds are fitted with brine pipes, either on the roof, or roof and sides, for maintaining a low temperature. The 'tween decks are fitted with collapsible air trunks through which cold dry air is circulated at a suitable temperature for preserving fruit. The air is drawn through the suction trunks by means of a steam-driven fan; it is then passed through the air-cooler, consisting of a nest of pipes through which cold brine is circulated. The air is thus cooled to any desired temperature, all moisture being deposited on the pipes in the form of snow. The trunks are so designed that the foul air

can be discharged into the atmosphere and fresh dry air supplied as required. The 'tween decks can be fitted with brine pipes. When they are not in use the collapsible air trunks are hinged up out of the way. The two small chambers which are intended for holding passengers' provisions are fitted with brine pipes, the larger one being maintained at a temperature of 20 degrees Fahrenheit for meat, and the other at a temperature of 35 degrees Fahrenheit for vegetables. There are also a small ice tank for producing about 3 to 4 cwts. of ice for table use, and water and wine-coolers.

The machine can be fitted in the tunnel of a twin screw ship or in a corner of the main engine-room, or on one of the upper decks, thus taking up little or no valuable space.

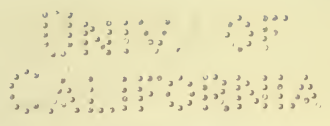




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FOOD CARGO IN REFRIGERATED HOLDS



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## CHAPTER V

### STEAMSHIP COMPANIES—THEIR ORGANISATION AND SHORE STAFF

THE tendency of modern steamship-owning is to centralisation of control. The old-fashioned type of owner who, as like as not, took a personal interest in the building and equipment of every one of his vessels, and possibly commanded one or more of them before settling down to a shore life, has almost passed away ; a few such may be still found among the owners of the sailing vessels engaged in the coasting trade, but so far as large modern steamship fleets are concerned the type is nearly extinct. The individual owner has given place to the financier and the limited liability company. To the shipping financier the steamship is a travelling hotel and warehouse with definite expenses for a certain number of days and definite earning power for precisely the same time. He is faced by two problems : how to reduce expenses, and how to maintain or increase the earning power, not of his fleet as a whole, but of his ships singly. Applying the proverb that if the pence be taken care of the pounds will take care of themselves, he sees to it that every ship shall, if possible, earn a required percentage of net profits per voyage, well knowing that if this be done the net profits of the fleet at the end of the financial year will be but the aggregate of the net profits of the individual ships.

Ships that cannot be run profitably in the firm's trade are sold to another firm whose requirements are different, and frequently prove very profitable vessels under different conditions. One of the chief causes of the relative deterioration and lack of profit-earning power is the fierce competition of the shipping industry, for the firm owning the most luxurious vessels can depend on securing the

most passengers, and the vessels whose appliances permit of the most rapid and safe handling of cargo and consequently can shorten the expenses of a stay in port, can reduce the working costs in relation to the earnings and show a better profit on the year's working. The advantages provided by the limited liability company laws for introducing new capital have been recognised, and ownership after ownership has been turned into a limited liability company with the former owners as managers or managing owners at a salary and usually entitled to a percentage as well on the earnings of every vessel belonging to the company. Some such step as this has been necessary to meet increasing competition under modern conditions. Not a few old-established lines have been absorbed by rival undertakings or by companies whose managers have seen it to be to their own advantage to increase their trade connections.

Were it not for the amalgamation of interests, and scores of such amalgamations have occurred in the history of the steamship industry, and the financial strength thereby secured, the immense modern fleets of floating palaces would have been impossible of formation. No living capitalist is able to pay for the construction of the large vessels which are now employed, and it is only through the amalgamation of financial resources that the great floating palaces of the present day have become possible and that one controlling ownership may have the management of such gigantic amalgamations as those grouped round the Royal Mail Steam Packet Company, the International Company, generally called the Morgan Combine, the P. and O. Company, Sir John Ellerman's lines, the Hamburg-Amerika line and the North German Lloyd.

Modern steamship-owning may be divided into three categories: those who constitute the large lines and

dispatch their steamers with passengers and cargo at regular intervals, to regular ports of call; those who confine their attention to freight carriage principally, and whose steamers carry few if any passengers; and those who charter or load vessels to any place which they think offers a prospect of remunerative employment. To the last section belongs the class of steamer known as the "tramp," and in spite of its somewhat uncomplimentary nickname, the fact remains that tramp steamers carry nearly one-half of British oversea commerce.

The liner companies may be either a mail service, a passenger and cargo service combined, or a cargo service pure and simple. In any one of these three sections, a first consideration in deciding upon a steamer is the type of vessel which is most suitable for the trade in which it is to be engaged. Size and speed have to be duly considered, and in estimating the size of the vessel, another point arises, namely, where the passengers are to be carried, and the number and classes of passengers for whom she is to cater. To meet modern demands, luxurious accommodation usually goes with speed, for the simple reason that passengers who can afford to pay for speed will not do so unless their surroundings are comfortable, not to say luxurious.

The conditions peculiar to the high-class shipping in the North Atlantic have been responsible for a curious development, the causes of which are worth some little attention. A few years ago there was an intense rivalry between the chief British and German companies in the passenger trade to New York in the matter of fast steamers. The time had to come quickly when one rival or the other was obliged, if not to say "halt," at least to leave the supremacy of the other unchallenged. The German *Deutschland* could show a clean pair of heels to her British rivals, but not profitably; accordingly she was altered

to a yachting steamer and given another name and is paying better. Then came the Cunard with the extraordinary large and unprecedentedly fast steamers, and immediately the rivalry developed into a contest between the big boats of comparatively moderate speed, such as the *Olympic*, *Adriatic* and *Oceanic* and the German lines, and the big boats of extraordinary speed.

The question is sometimes raised whether this tremendous speed is worth the financial sacrifice entailed, but when all the circumstances are considered the answer must be in the affirmative. It has been pointed out many times that the first Cunarder, the *Britannia*, only burnt thirty-eight tons of coal a day to obtain her speed of  $8\frac{1}{2}$  knots, and that the *Lusitania* and *Mauretania* use up about 1,000 tons a day for their 27 knots. That is to say that the consumption of coal is thirty times as great to attain little more than three times the speed. The public, which has to pay for the additional speed, is of opinion that value is given for its money; in other words, that speed pays both the shipowner and his patron. The comparison between these two vessels, however, is to some extent incomplete on account of the differences in the material and manner of construction, their size, and the relative power of their engines in regard to size and weight. But allowing for these differences, the comparison serves to indicate the enormous sacrifice at which this high speed is obtained. Were the two latest Cunarders of only 23 knots speed they would each burn about 200 tons of coal a day less, and would require a less numerous staff of firemen, coal trimmers, etc., and save their wages.

Passengers who care less for speed or who cannot afford to pay for that of the "big" boats will find accommodation exceedingly comfortable on other vessels, though it may be less luxurious in some details than that of the fast liners.

When owners have decided upon the type of vessel they will add to their fleet the design for its construction is generally left to the builders, and it is as well that this should be so, for the steamship manager should recognise that the designing and building of ships is a totally different profession from that of managing them commercially. The builder settles the details with results that are almost always satisfactory, for he has accumulated a vast amount of information and experience which are outside the province of the owner. All that need be given to him is an indication of the size of the vessel, the number of passengers she is to carry, the tonnage capacity of her holds, and the average speed at which she is to travel. This rule is followed by nearly all the large proprietories. The White Star line, for instance, has all its boats built by Messrs. Harland and Wolff, at Belfast, to whom it gives *carte blanche*, not only as to cost, but as to the turning out of the vessel fit for the route and trade in which it is to serve.

It is not every line, however, that can afford to do things in this grand manner ; some owners are obliged to aim at the maximum earning capacity of a vessel, and stipulate for the minimum expenditure upon it.

The plans, when prepared, are submitted to the owners for them to suggest any modification they may think desirable to make the vessel more suitable for the occupation for which it is intended. Detailed consideration is always given to the plans by the manager, the heads of departments, the marine superintendent, and the superintendent engineer, as upon the plans as endorsed by them the vessel must be built ; and it depends upon the united efforts of the designers and the managers whether the vessel will prove, other things being equal, a financial success.

In order that the managers may be able to come to a

satisfactory decision, very full information is required as to the financial condition and prospects of the trade in which the ship is to be placed. As all trades have a tendency to expand, and the volume of commerce to increase, allowance is made for this in deciding upon the ship.

In determining the quality of the passenger accommodation, all the large companies nowadays prefer to have several vessels resembling one another, and thus their fleets are divided into classes.

The P. & O. Company has its famous M class, which includes all its latest and most palatial vessels. All the vessels of the modern Orient fleet, which are almost a class of steamship by themselves, are known as the "O" vessels because all the names of the ships begin with that letter. The Royal Mail Steam Packet Company has its no less famous "A" and "D" ships; the initials both indicate the classes of these lines, and also serve as the first letter of the names of the vessels, and thus help to keep the vessels prominently before the public as representing classes specially designed for definite work.

The chief reason why a certain similarity of equipment in class is maintained is that every vessel of the class shall be an advertisement for all the other vessels of that class; thus a passenger travelling by one of the "M" or "A" or "D" or "O" ships will naturally speak well of the accommodation, equipment and food, and every one of his friends intending to travel will be influenced greatly in their choice by his reports as to the treatment he has received. In like manner the White Star has the termination "ic" to the names of all the vessels of that line, but not of all the vessels in which the White Star line has a share holding. The supply of suitable adjectives ending with the two favourite letters being limited, the White Star adopted the names of two



Canadian lakes for the two steamers with which it entered the Canadian trade; hence the *Laurentic* and *Megantic*. The Cunard line, with one or two exceptions in its Mediterranean service, uses the termination "ia" for all its vessels. Though in these two companies the ship names may express little indication of the class of vessel, the ships themselves are such wonderful creations and the lines so well known that the idea of "class" becomes less prominent, although the policy of sister ships is adhered to. The Cunard line has the *Lusitania* and *Mauretania* for its New York express service, besides the *Franconia* and *Laconia* in its intermediate service. The Pacific Steam Navigation Company has some eight or ten vessels having similar characteristics in the South American trade, many of its ships being named after Andean mountains. The Booth line has a fancy for saints and hermits, due regard being paid to the habits of the originals before perpetuating the names; and Thompson's Aberdeen line mostly favours Greek heroes.

The management of a steamship company is divided into two sections, one of which is concerned with its relationship to the public and shippers, and the other is confined entirely to meeting trade competition. The latter duty, although it bulks less largely in the public eye, is probably that which causes the greater anxiety to the management of the company. In the first place, passengers have to be given large and airy sleeping-cabins and well-fitted bath-rooms, and luxurious dining and sitting-room accommodation, together with a supply of food which both in quantity and quality must be fully equal to that of a first-class hotel ashore.

Again, regular sailings are necessary, and both passengers and merchants stipulate for fast passages and regular arrivals, and merchants, in addition, require careful handling of cargoes. The last is a point upon which the

managers themselves are no less insistent. Finally, charges, whether in the nature of passenger fares or for the carriage of goods, must be profitable without being too high. It is only on a few of the very large vessels in the transatlantic trade that fancy prices can be charged, and this only to a limited extent, because in that trade there is a certain public, mainly consisting of American millionaires, which does not mind paying fancy prices for special accommodation.

On the other side, the commercial aspect of the undertaking has to be considered, and profits must be earned, if possible, for from them the dividends are derived for the shareholders. In estimating the cost of a ship and its earning power, consideration has to be given to the ship's ability to earn sufficient for a sum to be placed every year to reserve account, in order to provide for fresh tonnage, either to replace the ship itself when it is not equal to the requirements of the trade, or towards the acquisition of new steamers at as early a date as possible; the reserve account is also useful to enable the company to maintain its services in the event of trade depression or a dispute with its competitors; naturally, these conflicting interests can only be met by most careful organisation. The better the organisation, the more economically and therefore profitably is the company managed. The question of the reserve account is of the greatest importance, as upon the company's financial resources its existence depends, and it has been found necessary not once, but hundreds of times, for as much as three-fourths of the profits to be retained in the business, leaving only one-fourth available for dividends and other purposes. Steamships, even in first-class order, may have to be withdrawn and sold, and their place taken by new vessels fitted with the latest modern appliances. The

older steamers are not unseaworthy, but are simply out of date, and are no longer profit-earning under the latest conditions, or their owners consider that a more modern steamer will prove a more remunerative investment.

Since wireless and ocean cable telegraphy has made it possible for owners to continue in touch with their vessels in most parts of the world, with the exception, perhaps, of a few places which are outside the range of the installations of either system, the control of all steamship organisation is centred in the head office. This permits of all business arrangements being made and carried out with the utmost precision, which was impossible in those days before wireless and cable telegraphy had come into vogue. Very little, indeed, is left now to the discretion of a ship-master, apart from the actual navigation of the vessel and the routine duties which he has to perform when arriving at or departing from any port. Even in this also much of the responsibility is taken from him and placed in the hands of the local agents. The latter know almost within a few hours the time of any steamer's arrival, and in the case of the regular liners, the time of arrival can be calculated to within an hour or two, and arrangements are made accordingly.

These enormous vessels are expensive to run, and consequently every hour which can be saved at a port of call means not only an hour's time gained but also the expense saved of running the ship for that hour.

If a vessel calls at several ports in the course of her voyage, and her total expenses are, say, about £10 per hour, it will be readily understood that the saving of a couple of hours at a dozen ports will amount to a very considerable sum by the time the voyage is concluded. Nor is the estimate of £10 per hour by any means excessive, although it may appear so to those who have not estimated the total expenses of a large steamer. The

expenses include coal, wages, wear and tear, and food. The coal alone, on one of the big Australian liners, will work out at about £5 per hour at the least. On the very fast vessels plying between Europe and New York a coal expenditure of £20 per hour is not uncommon; nor is this to be wondered at when it is remembered that some of these large vessels, to attain their great speed, consume something like 700 to 800 tons per twenty-four hours.

With the known speed of a vessel her arrival at any given port is anticipated always by the head office and the local agent; in most instances the latter has already been supplied with the necessary documents and other information which enable him, immediately upon the vessel's arrival, to carry out the arrangements with the shore authorities and facilitate the dispatch of the vessel to her next port. Thus, if a cargo has to be landed while the vessel is anchored in the fairway, he can have his lighters and steam-tugs ready to be put alongside directly the anchor is dropped, while if mails are to be landed, it is no uncommon thing for the work of transshipment to be begun, even before the liner has come to a standstill. Where passengers have to be landed, steam launches are in attendance as soon as it is safe for the passengers to be transferred.

The arrival and departure of every vessel is notified by cable to the owners, either by their own agent or by Lloyd's agent.

The management itself has to take a large variety of circumstances into consideration. Any given trade is liable to undergo great changes, much greater, indeed, than are supposed by those who are not concerned directly in that trade.

Steamship companies would fare ill were it not for the publicity department. The manager of this department

is responsible for keeping the attractions of his line continually before the public. He must understand the ever-varying standards of the public taste; must understand that the public, whether right or wrong, believes that it is always right and that the old adage of *vox populi vox Dei* applies to it invariably; he must understand that the public is unforgiving and that if he once lets it become known that he is trying to create a public preference for his line, instead of merely convincing the public that its choice of his line shows commendable and natural intelligence, the public will not fail to remind him of the fact that it knows its own business, and his too, for that matter, better than he does. Therefore the wise publicity manager never tries to tell the public what it should do. He prepares his advertisements for the magazines and newspapers with due regard to the class of reader of each publication, and whether its readers are likely to include many who may be induced to travel by his line. A bare announcement of sailing dates is usually considered sufficient in the daily papers; but these announcements have the added advantage of stimulating the curiosity of a large number of persons, not a few of whom will write to the company for an illustrated leaflet describing the accommodation of the class on board in which they would like to travel.

No one dreams of showing newspaper advertisements to his friends, but an illustrated booklet or pamphlet will be shown to dozens, and the pictured details of the accommodation will be discussed, and, if the Dominions be the objective, other information sought from the Australian or Canadian Government offices, with the result that a group of families will ultimately decide to make the plunge and sail for some distant part of the empire where the labour conditions are better and the prospects of a comfortable life are superior.

The illustrations of the ship have to be accurate, for upon this depends whether the travellers influenced by them recommend the line to their friends. Once let the line obtain a reputation for flowery and picturesque exaggeration of the beauties of the accommodation on its ships, and a season or two may elapse before the mischief is undone and confidence restored. Particularly is this the case with the third-class passengers. They form their conclusions by the illustrations supplied them, and if they cannot identify their unaccustomed surroundings afterwards they do not hesitate to say so.

As a rule, the lower the social status of the travellers the more particular they are in this respect and the more suspicious that they are being cheated in some way. An amusing instance of this occurred in 1911. One of the principal lines advertised that a steamer would sail from a certain continental port for the United States, and the posters were ornamented by a representation of a large two-masted steamer with three large red funnels. When the emigrants, who were mostly of the poorest classes from Central Europe, arrived at the quay and saw a three-masted steamer with only two funnels, and those black, they came to the far-fetched conclusion that they were being defrauded. They objected that they had been induced to pay for their passages on a different steamer altogether; they questioned whether a two-funnelled boat was as safe as a three-funnelled boat, and contended that in any case it must have been cheaper to build. One of the company's staff had an inspiration. He suggested that the malcontents should appoint two representatives who should confer with the steamship officials, both sides to be bound by their decision. The emigrants agreed; the conference took place. By the time it was over some refreshments and extra pocket money were in the custody of the delegates. Then, by

dint of coaxing and promises that extra good food would be supplied to make up the deficiency in funnels the emigrants were persuaded to embark. One result of this incident was that the company changed its posters with as little delay as possible.

The old style of pictorial advertisement which represented a clipper-bowed vessel under an immense spread of canvas is as dead as a doornail so far as the modern passenger liner companies are concerned, though it may still be seen at some third-rate watering-place in the summer. Generally these pictures appear in the advertisements of some tub-like little tug which, having had a new coat of paint, is prepared to masquerade as an excursion steamer for hourly trips during the season. But the difference between the representation and the reality is so great that no one can be deceived.

The preparation of the publications showing the saloon and second-class accommodation on the modern liners is a task demanding some artistic taste and a keen appreciation of just those special features on which the lines pride themselves and their value as attractions when advertised. Again, the publications have to be produced to please all tastes. For this reason, not only is the ship herself represented, but all classes of her apartments, from social halls and magnificent dining-rooms, to private parlours and cosy corners ; from public promenade decks to the reserved decks for millionaires or other important and exclusive personages, with, perhaps, a millionaire taking exercise ; from snowy decks outside to well-warmed palm and winter gardens inside, so that the traveller in evening dress for dinner can look upon the wintry scene from a comfortable and tropical standpoint ; and any other contrasts or entertaining features which may occur to the publicity manager or his assistants. His illustrations and letterpress must

tell the public what it is to the advantage of his line that they should know, and the many attractions provided to induce them to travel by this or that ship. Scenes *en route*, places of call, and incidents of the life on board during the voyage are all pourtrayed in the publications. Other publications give details as to the arrival and departure of the vessels at the ports of call and of the facilities for changing to branch or associated lines if it be desired to break or extend the journey.

But the whole ship's company itself is only a part of the vast organisation which goes to make up a modern shipping company running a fleet of thoroughly equipped liners. Some of the duties of the shore staff are referred to in a later chapter. Apart from the commercial and administrative staffs, all the large companies have a great number of employés ashore whose work is connected directly with the ship itself.

Before the stores can be put on board there must be places in which to keep them. So extensive are these warehouses that they contain enough provisions to stock fully three or four liners simultaneously. The Cunard provision stores, for instance, contain on an average, enough provisions to feed for a week the inhabitants of a town of ten thousand persons. With one or two large steamers requiring to be revictualled every week even this enormous reserve would not last more than a week or two, and it has, therefore, to be replenished as fast as it is drawn upon. Moreover, care has to be seen that everything is of the best quality. The tobacco department usually has about a hundred thousand cigars carefully maturing besides a ton or two of choice brands of cigarettes and pipe tobacco. Of the 20,000 square feet of floor space which the Cunard stores embrace, 4,000 square feet are set apart for liquid refreshments. The latest electrical devices for perfect bottling and quick





By permission of

S.S. "OSTERLEY"

The Orient Line of R.M.S.

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dispatch are installed. Besides beer and stout in barrels and bottles, there are all sorts of wines and spirits in what is called the wet bonded warehouse where all the operations are carried on under the watchful eye of a Customs officer.

Elsewhere details are given of the quantities of some of the provisions carried on board a great Cunarder and White Star liner ; and vast as the quantities are it may be taken for granted that when the new and greater steamers being built for these lines are added to the fleet even greater quantities will be prepared and sent on board by the section of the shore staff whose duty it is to attend to this matter. Contracts for food are made like those for coal, for six months at a time, and by the ton. You may go to the Cunard stores or the White Star stores, or those of any other great fleet to-day, and see some hundreds of hams hanging ready for shipment ; in twenty-four hours a few scores are gone, for a ship or two has had to be revictualled, and their places are being taken by another lot which are being hung to mature till wanted. The date of arrival of every consignment is noted carefully, so that there is no possibility of any hams being sent on board before they are thoroughly fit. Equal care is applied to all classes of provisions by these and all other first-class ocean lines ; and even those which aim at making their smaller number of passengers comfortable without competing with the floating palaces have their shore departments and warehouses, and see that everything supplied is of the best attainable quality.

Passengers require clean table-cloths and serviettes, towels, and bed-linen, but in the matter of the laundry the customs of the different lines vary according to the length of the voyage. On the big hotels in the North Atlantic all the tables in the first and second class have

clean table-cloths at every meal, and in the third class two or three times in the week. Also every first-class passenger has a clean serviette every meal, and every second-class passenger has one every day.

In the sleeping-cabins three or four sheets besides quilts and blankets and pillow-cases are provided for every bed, and clean towels are forthcoming as often as necessary—always daily—and sometimes more often than in a first-class hotel ashore. The Cunard and White Star lines run their own laundries.

“Just imagine a washing-day . . .” says the *Cunard Daily Bulletin*, “with between 70,000 and 80,000 articles to be dealt with! Yet this is what a change of linen on either of the two Cunard express steamers means.” The rapidity with which the work can be disposed of is adequately testified by the fact that the whole of the soiled linen from either of these vessels can be treated and returned within thirty-six hours. There are eight washing-machines capable of dealing at one time with 2,500 serviettes, or a proportionate number of other articles according to their size, special blanket-cleaning machines, hydro-extractors, and an electrolytic bleaching machine. These two ships alone send to the laundry about a million articles a year, and there are the other vessels of the fleet to be “washed for” as well, so it will be seen that the company may save a few thousand pounds a year by running its own laundry, as “many millions of articles pass through the laundry in the course of a year.” A class of employés that may not have occurred to the average traveller is the repairing staff for the linen, every article being examined to see whether it needs the attention of one of the skilled needlewomen or machinists in the adjoining department, and those articles that are thought to be too far gone—from the standard of the ship, though most housewives would think the articles could

stand a lot more wear yet before being dispensed with—have to be replaced by others made specially.

The conditions of modern travel on a first-class long-voyage vessel render the laundry question a serious one alike to passengers and steamship. The Orient Mail liners to Australia, the P. and O. liners to India and the Far East, the R. M. S. P. liners to the West Indies and South America, the P. S. N. C. and Lambert and Holt services to South America, the White Star-Aberdeen line Cape steamers to Australia, to mention only a few of many prominent lines, solve the difficulty by carrying a laundry on board. A voyage of two or three months means that a great amount of table-linen must be used, and it is more economical in every respect and much healthier to equip a first-class laundry on the ship than to carry a steadily and rapidly increasing pile of dirty things half-way round the world.

The washing problem for a six weeks' voyage on most vessels is not to be lightly dismissed by the passengers. The ladies, even those travelling saloon, have attempted to solve it by washing handkerchiefs and such-like small things in the cabin basins and drying them on the side of the bunks, while a stewardess might be induced sometimes to rinse out a few of the larger things in the bathroom; though the more general alternatives were either to provide a sufficiency of clean things for the voyage, or to arrange through the intermediary of the stewardess for a female third-class passenger to receive a few more articles when she was cleaning her own in the wash-house provided for the third-class passengers.

Now, on a well equipped liner of the latest type, neither course is necessary. The stewardess will tell a lady traveller that she will take her things for the laundry on Tuesday or Friday mornings, or whatever the days may be, and the passenger will have them ready with the

list and hand them over, and receive them at the specified time and pay for them just as she would had she sent them to a shore laundry. Everything is washed by electrically-driven machinery, only condensed water, which is beautifully soft, is used, and drying is quickly effected in a special ventilated closed chamber into which hundreds of feet of hot dry air are pumped every second. The advantage of a ship's laundry to gentlemen is equally great. It is the custom in the saloon of the best ships to dress for dinner, and an ample supply of clean stiff-fronted dress shirts is a necessity. This is where the ship's laundry shows to advantage, as gentlemen can send their shirts and collars to the wash as often as they like. It also overcomes the difficulty of starched linen going soft, which most things starched ashore generally show signs of doing before they have been many days at sea. All the table-cloths, serviettes, sheets, and other linen of the ship are washed in the laundry during the voyage.

Only the largest lines have their own laundries, the other lines having their washing done by contract with shore laundries, many of which make a speciality of this class of work.

All the principal lines, too, have their own shore engineering staff. The duties of a ship's engineer are not quite finished when his vessel is moored to the wharf; he has to prepare his engines for the customary overhaul by the shore staff. This takes place every voyage.

When the shore staff, says the Cunard publication already mentioned, takes possession of a liner on her arrival in dock, one would be excused for imagining that they were wrecking the machinery, for what was perfect order when they arrived is quickly reduced to a scene of apparent chaos. Steam and exhaust pipes, large enough for an ordinary individual to walk through with ease, are unshipped. All manner of parts are removed

and scattered about ; and the huge rotor covers and the rotor forming the turbines, separate pieces of which weigh 120 tons, are lifted with marvellous skill and rapidity by electrical machinery specially installed for the purpose.

What is true of the great turbine ships is equally true of all other first-class liners. The marvel of it is that in the case of a liner which has only a few days in which to "turn round" and start on another voyage everything can be put right again in time.

The furnaces, or most of them, are extinguished in order to permit of the thorough examination of their interiors and the renewal of any parts that are the worse for wear ; the cases of the condensers are removed so that the tubes can be cleaned and defective ones removed ; cylinders and covers and pistons, valves and pumps of all sorts, electrical machinery, and in fact every mechanical appliance on board is carefully examined and everything not quite right is made good. The result is that the engines of a first-class liner are always in first-class condition, and, so far as human foresight can provide, accidents should not occur. The engineer has to report to the shore staff every defect he has discovered on the voyage and give a written list of all the parts he thinks should receive special attention or be replaced. He has also to make his report on the coal consumption during the voyage, and on this and reports from other engineers will depend the orders placed by the shore staff for coal for the ships. Both staffs of engineers work well together, though they mostly "cultivate a perpetual growl," as one engineering authority expressed it, which might deceive the casual listener into thinking that their relations were less amicable than they really are. Nor until every part of his charge is in the possession of the shore staff does the chief engineer feel that he is at liberty, and even then one or two of his assistants remain to see

how the work is going. Usually about a half or two-thirds of the ship's engineering staff takes its shore leave at a time, the arrangement being mostly made among themselves according to the length of the stay in port and the amount of work to be done. All the engineering staff returns to the ship at least a couple of days before the day of sailing. During the stay in port considerable quantities of engineering stores have to be received on board, and these have all to be checked. Various tools are wanted, hundreds of tons of coal have to be taken into the bunkers, and several tons of oil have to be placed in the tanks for lubricating purposes.

The work of other branches of the shore staff is referred to in a later chapter, in which some details are given of the commissariat department of a wandering hotel.

Long before a vessel can go to sea at all a great deal of work has to be undertaken. In fact, the preparation of the stores for the outgoing of every large liner may be said to be commenced at least six months before she starts on her maiden voyage. All the large shipbuilding yards have their own carpentry and joinery works where the woodwork which is to be put into the vessel is made ready, but there are so many requirements of this nature that many firms find constant and remunerative occupation in meeting one branch or another. The panelling of the hundreds of rooms, the carved woodwork for the decorations, the cupboards for the storage of necessaries, and numberless other articles, all have to be prepared in advance. The size and shape of every sleeping-cabin and public and private room are known, and the carpets to fit to the inch are ordered months before they are needed. This gives time for the carpet-makers to supply the required quantities of any pattern and quality desired, and have them ready by the time they are needed. The same system of measurement applies to every article



of heavy furniture in the vessel. The weight, as well as the size, of the tables, chairs, bunks, berths, toilet arrangements, pianos, and other furnitures, is calculated. No detail is neglected ; even the patterns of the electric light fittings in the different rooms and apartments are selected beforehand to harmonise with the styles of furniture of the rooms in which they are to be placed. It would be an unpardonable anachronism on the part of a steamship furnisher were he to place an Empire type electric bracket in a Colonial-style room, though the uninitiated might not notice there was anything amiss ; still it shows with what care and taste the decorations of a modern steamship are thought out in advance.

How greatly all these artistic distinctions are understood by the travelling public is a matter of opinion. The *élite* of Boston, in the United States, are said to pride themselves on their culture. So when a Chicago lady asked a Boston lady on board a steamer what was the style of the apartment in which they were talking, the lady from the East replied that this was the Adams style.

“Well, they knew how to make themselves comfortable even if they were in the Garden of Eden,” the Chicagoan answered. The Boston lady used to tell this story.

## CHAPTER VI

### THE SHIP'S COMPANY

THE ship's company is divided by the management of the line into two sections : those of the deck, and those not of the deck. The former includes the captain and officers, and the quartermasters, boatswains, sailors, and so on ; and the latter includes the engineers, firemen, and trimmers, this group being known from the complexion it derives by reason of its occupation as the "black squad." In modern steamers the purser, stewards, bandsmen, electricians, cooks, and the various other employés who go to make up the total of a ship's company are regarded as a separate class. The ship's doctor, however, is one of the ship's officers, but the wireless telegraphy operator is a passenger and is really a servant of the wireless company whose system he works, though this is an anomaly which may be altered before long, the proposal having been brought forward to rate him an officer of the ship though not a navigating officer. Legally, all who are not of the "black squad" are considered to belong to the deck division.

The captain is responsible for the proper loading of the ship, though in this, as in his other duties, he is assisted by his mates or officers, for he could never perform single-handed all that is required of him, and has to delegate much of his other work, though not his responsibility, to his subordinates. He has to see personally to the various formalities that have to be gone through before the vessel can sail. The pilot may take the ship out of the river or harbour, but the captain is not relieved of all responsibility on that account, and assumes absolute control when the pilot leaves the ship.

The Board of Trade rules are somewhat antiquated

in some respects. For example, it is not legally necessary for any vessel to go to sea with more than two certificated officers, no matter what her tonnage. In this, as in so many other instances, shipowners have done more than the department requires, and every large passenger ship carries not only the two certificated officers necessary by law, but several others as well, most of whom have obtained their master's certificates, and the others will have taken either their first mate's or second mate's "tickets." It is very seldom that a man holding only a second mate's certificate is appointed to a large liner, even in the capacity of seventh or eighth officer, unless he has considerable influence, but influence will not keep him in the position unless he is able to do the work required of him and show that he can do better when the chance arrives. But whether holding a master's certificate or not, every senior officer on a first-class liner is a certificated navigator, and is competent to navigate the steamer should necessity arise.

As to the qualifications, it may be explained that every officer has to undergo a long and expensive training. If he join a sea-going ship as apprentice, he must serve four years in that capacity before he can enter for his second mate's certificate, and the four years must be served either on a sailing ship or a steamer and cannot be divided between the two classes of vessels. The growing scarcity of British sailing ships of large tonnage, and the steadily increasing number of large steamships, have induced many young fellows to go in for steamship training only, especially as their careers, as soon as they can manage it, will be passed on steamships. At the end of four years' training they may present themselves for the sight test examination as prescribed by the Board of Trade, and having passed this they can be examined for their certificate. After another year's service they can enter for

their first mate's certificate, and after yet another year they can aim at their master's certificate and either at the same time or at a subsequent date, the latter being the course most frequently adopted, attempt to get the extra master's certificate which is the highest it is in the power of the Board of Trade to bestow.

In regard to the sight tests, the regulations concerning which have recently been altered, as many contend, for the worse, so far as the seafaring profession is concerned, it may be explained that they are designed to test whether the examinee is colour-blind, whether either of his eyes is deficient in what is known as form vision, and whether he can give the correct names of the colours of the three lights used at sea when he sees them. Under the regulations in force at the time of writing, the lamp test is being introduced, which makes the examination approximate a little more to the requirements of life at sea. In this test, which is supplementary to a modified form of the much debated coloured wool test, a special lantern and mirror are provided. The lantern, according to the regulations issued in December, 1912, should be placed directly in front of a mirror, with the front of the lantern exactly ten feet away from the mirror. The lantern allows one large or two small lights to be visible, and is fitted with twelve glasses of three colours, red, white and green, and the candidate is required to name any of these colours as shown by the lantern in the mirror. The lights can be made to appear of different sizes, and as reflected in the mirror are designed to indicate ships' lights at varying distances. This test, which takes place in a room partially or wholly darkened, is intended to replace the old colour ignorance test and has the advantage of being rather nearer the conditions, than were the old colour ignorance tests, actually experienced at sea when a light has to be picked up and identified. No boy wishing to

go to sea to become an officer should dream of doing so under modern conditions unless he has first passed the whole sight test, and he should undergo this examination before he enters upon his apprenticeship; the cadet ships make this a compulsory condition of admission.

Without having any intention here of entering upon a controversy concerning the merits of the sight test as interpreted by sea conditions, I think I am justified in suggesting that my readers would do well to support the efforts of those who are endeavouring to have the sight tests further amended so as to make them more like the conditions under which the tested sight has to do its work. If you wish for a full description of the wool test and detailed information as to the conditions you will find it in the *Guide to the Mercantile Marine*, which I wrote in 1912, together with an account of the necessary steps to be taken by those who wish to go to sea.

Every seagoing ship, large or small, is provided with a set of official papers known as the ship's articles. These contain particulars as to her dimensions, draught, displacement, gross tonnage, net tonnage, and underdeck tonnage, type and power of engines, number of boilers, number of men, and the number of passengers of every class she is entitled to carry, and numerous other details. The articles also include the conditions upon which the crew are engaged. By these, the owners undertake to give the men certain wages, to feed and accommodate them, until the termination of the voyage; the men, on their part, undertake to do the work required of them. The articles include also a statement of the capacity in which each man is engaged.

Among seafaring people, the terms are generally pretty well understood, though occasionally a company introduces some condition which, though strictly legal, is not in general application, and its introduction is almost

certain, when discovered, to upset one or two members of the crew, especially if there be a "sea-lawyer" among them. A "sea-lawyer," it may be explained for the benefit of those who do not know the species, is not a solicitor whose taste for a nautical life has induced him to ship before the mast, but a sailor who combines a discontented disposition with a passion for grumbling, an uncanny knack of finding something to grumble at, the gift of the gab, and an elementary knowledge of a few of the legal points which may arise under the articles.

In theory the crew are supposed to know the whole of the contents of the contract entered into between the company and themselves when they sign the articles, but the reading over of the document is sometimes done with more speed than lucidity, and it would pass the wit of any man who was not tolerably familiar with the contents, who might hear them for the first time, to make head or tail of them.

Cases have been known in which the formality was cut down to a minimum, and its observance taken for granted. For instance, I once heard an officer, who was receiving the signatures of the crew, address a number of men as follows:—"Now I am going to read to you the ship's articles. No, I'm not. They're too long. You all know what they are about and so do I. Step up and sign here, and look sharp about it." For all that the men knew, they might have been subscribing to the Thirty-Nine Articles beloved of Convocation.

The articles are signed under present regulations at the local marine office of the Board of Trade in the presence of Board of Trade officials, the captain of the vessel, or other accredited officer, and sometimes one or more representatives of the company.

It is the custom to give each man an advance note, which entitles him to draw from his employer a portion

of his salary yet to be earned. This is a great convenience in many ways to the men, as it enables them to buy a few last necessities for the voyage or to leave a little more money with their families to keep them going until the time arrives for the company to pay a little more on account. In the case of long-distance voyages the latter is done periodically if an arrangement has been made to that effect.

Unhappily for the sailorman, however, the advance notes are accepted as almost as good as currency in "sailor town," and many tradesmen accept them in payment for goods, and do not fail to charge a heavy discount for doing so. The notes are duly honoured by the shipping company after the ship sails.

Sometimes Jack ashore sells his advance note for half its face value, and drifting into the public-houses of the district, goes on board on the following day, if he goes at all, in a more or less helpless condition of drunkenness. There is very little drunkenness now among the sailors of the large liners, and it is decidedly the exception and not the rule for a sailor to go on board his vessel in any degree the worse for drink. Many of them for that matter are total abstainers, and among those who are not there is a very general custom to abstain from all intoxicants when they have any work to do in which the possession of all the faculties absolutely unimpaired or unaffected is necessary. The crimps who managed the sailors' boarding-houses and included some of the greatest rascals unhung, have had their power for evil very materially reduced by the present regulations, and most of the sailors' boarding-houses now are conducted in a respectable manner. A sailor who turns up much the worse for drink will not be permitted to sign the ship's articles, and if he should get drunk after cashing his advance note, that is his own look out. If he fails, from any

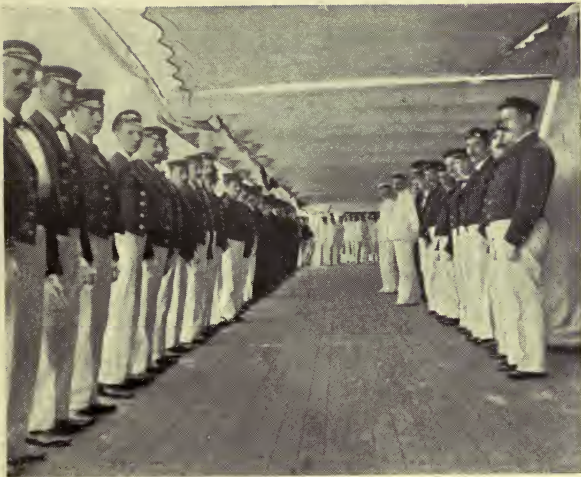
cause, to join the ship, he stands an excellent chance of being prosecuted and sent to gaol. In order to ascertain whether he is on board or not, and that the ship has its correct complement of men, the inspection of the whole of the ship's company takes place on the morning of sailing before the passengers go aboard. Every one, indeed, is expected to be on board the day before sailing.

The inspection of the ship's staff before the passengers arrive is always of interest to such spectators as are privileged to witness it. The proceeding is conducted by a Board of Trade inspector, a Board of Trade medical man, and the ship's captain.

When the signal is given, every ship's employé, with the exception of the captain and senior officers, musters on the deck. Every department is by itself, and all take their places carefully in the order of seniority. The deck department, which includes the officers, is first dealt with, and that part of the ceremony is soon over. One of the inspecting group carries the ship's articles, in which the name of every man employed on board appears, together with his signature of the declaration that he agrees to all the terms set forth in the articles. As the little group of officials passes slowly down the line, every man's name is called, and he has to answer to it. He is at the same time carefully scrutinised by the captain and his officials, and, for purposes of health, by the Board of Trade and ship's doctors, and anyone who does not come up to the requirements, or whose conduct or appearance may arouse suspicion that impersonation has been attempted, will be told to fall out of the ranks and will be attended to afterwards. If a man does not answer to his name, and it cannot be shown that he had leave to be absent from the ship, the entry, "absent without leave," is marked against his name. After the officers, the quartermasters and sailors are inspected, and then



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DECK MUSTER



the other departments such as the engineers, stewards, cooks, and firemen. The sight on a big liner of anything from three or four hundred men to a thousand drawn up in ranks for this inspection, is an impressive one, and it does more than anything else to teach the public how great really is the working side of the population of a modern passenger steamship.

As the inspection of each section of the staff is concluded, the men hurry back to their duties and steps are at once taken to fill any vacancies caused by men not turning up who signed on the previous day.

The hours of duty of the officers, deck employes, and the engine-room squad, are divided into periods of four hours known as watches. When not on duty the men are enjoying their "watch below." On some vessels the master does not keep one of these watches, but is on duty intermittently night and day. When there is a fog or other time of danger, such as that which beset the *Narrung*, he is always on duty, and when the crisis is so prolonged that rest is imperative, as was the case with the overdue *Snowdon Range*, and one or two other vessels in the disastrous storms of last December and January, he is within call all the time. Under such circumstances he turns in "all standing," as the sailor's saying is, which means in his clothes just as they are, wet or dry, scarcely daring to throw off his soaking overcoat or kick off his heavy sea-boots lest valuable time should be lost in putting them on if he should be summoned hastily in an emergency. An uneasy sleep on a couch in the little cabin adjoining the chart-room is as much as he may venture upon. In vessels on which the two-watch system prevails—that is, four hours on and off duty alternately—the first and second mates take charge of the watches, with whom alternately are the other officers. In those vessels which carry sufficient officers to permit

of the three-watch system, that is, four hours on duty and eight hours off duty—the watches may be taken by the first, second and third mates respectively; or by the captain and the first and second mates.

The officers have plenty to do for hours, and perhaps days, before the vessel starts. Leave of a day or two is a luxury when a “quick turn round” has to be worked. In ships which carry the mails, for instance, an officer, usually the second mate, is made responsible for their safe reception and delivery. It is stated that on one well-known steamship line the responsible officer is fined a month’s pay if a mail bag goes astray, while the captain is fined £20. If the steamer is to leave Southampton or Liverpool at noon on a Saturday, the mails begin to arrive at either port soon after Friday midnight from London and all over the country. They are all checked on arrival by the railway company. Then comes the transference to the steamer. This probably begins in the “wee sma’ ’ours” and the second mate and a postal clerk or two, who are to make the journey in the ship, and the railway men and shore postal officials check the bags as recorded on various way-leaves and other official forms from every place where a bag has been collected. A hundred or two bags have no sooner been stowed away than another consignment arrives, and in large liners carrying some thousands of bags of mails the process is repeated right up to the moment of sailing. The mates have a heavy time of it; the day before sailing is one continued rush to get “everything shipshape and Bristol fashion”—the phrase is reminiscent of the old days of sailing ships when Bristol was one of the chief ports in the West Indian trade—and when with this is included an early morning rush to get in the mails, and the rest of the morning spent in seeing to all the hundred and one things that have to be

done, the bare enumeration of which would bewilder a landsman hopelessly, it is no wonder that officers are glad to get the ship away to the minute of sailing. A stretch of thirty hours on duty has been experienced by more than one officer, even in a modern liner, in helping to get the ship ready to start to time, and when to all this the two-watch system is added, he is a hard-hearted man who blames the officers for looking out for a shore berth or at least advocating the three-watch system.

After all this, too, they have to don their best uniforms, and be spick and span before the saloon passengers come aboard and the latter's friends arrive to see them off; for the good appearance of the ship and her officers is a valuable asset, and will be much talked about by the spectators after her departure.

The Cunard and White Star lines, like the two great German lines, have, in addition to the captain on their principal boats, a chief navigating officer who ranks between the captain and first mate. His duties are to assist the captain in the navigation and general supervision of the ship, one or other of these two being always on duty and generally on the bridge, while the routine work, such as the keeping of the watches and look-out on the bridge and the periodical inspection night and day at frequent intervals of every part of the ship, are left to the officers of the watch, who also assist in the navigation. The taking of solar and astronomical observations is a practice which every officer follows as often as he can, partly to keep up his efficiency and partly because he may be asked by a superior officer how his observations work out; and partly because, when all the observations, taken perhaps of some star seen indistinctly and under difficulties, differ, his may help to the striking of a correct average; and partly also because it tells in his favour as a man who is anxious to keep up to the mark.

In most of the large passenger steamers in the New York and Canada trade the three-watch system is maintained, the captain taking one watch, the first mate the next watch, and the second mate the third watch. This rule also applies in some of the steamers in the Australian trade and in one or two of the lines between England and the Far East. The White Star Company has recently taken steps for the introduction of the three-watch system in all its steamers.

In the steamers of those companies in which the two-watch system is retained, with all its disadvantages, the captain and first mate take watch and watch about, the second mate being associated with the captain's watch and the third mate with that of the first mate. The captain's cabin is always on the starboard, or right-hand side of the ship, and that of the first mate on the port or left side. Even in the great liners on which the officers are provided with quarters away from the cabin accommodation, probably in a deck-house in close proximity to the chart-house and navigating bridge, this rule is observed. A watch is a period of four hours on duty; the four hours off duty are known as the watch below. In a two-watch ship the periods are taken alternately, except that the four hours between 4 p.m. and 8 p.m. are divided at 6 p.m. into two watches, called the dog watches, thereby ensuring that the watch which has eight hours on duty one night has only four hours on duty the following night. In the three-watch steamer, the arrangement gives two periods of four hours on duty in the twenty-four, and anyone who bestows a moment's thought to the subject will admit that the strain of keeping watch for four hours continuously in dirty weather well earns a period of eight hours' rest.

The deck hands, such as the boatswains, carpenters, quartermasters, and sailors, are generally divided into

two watches, four hours on and off duty alternately, whatever may be the rule among the officers, with the change over at the dog watches.

A similar custom applies in the engineers' section, the chief engineer and the second engineer taking charge of the watches, with the extra change at the dog watches. There are a few vessels in which the chief engineer exercises a general supervision, and the watches are kept by his assistants. The firemen, stokers, oilers, coal trimmers, and so on are always divided into two watches.

The numerical strength of the crew of a modern first-class steamer is often underestimated by the passengers, because they cannot conceive that in what appears to them the restricted space available in a ship so many persons find employment. They forget that much of the work goes on night and day, and that some must work while others take a much needed rest. In each big Cunarder there are altogether from 800 to 900 employés. The captain and officers total about a dozen, to which must be added the other members of the sailing department, such as sailors, quartermasters, and so on, bringing the total for this section alone up to seventy. The engineering department, which includes all the auxiliary engines as well as the main engines, accounts for close upon 400 more men. In all large steamers these two departments vary in number very little from voyage to voyage. In the domestic branch there are in the big Cunarders and White Star boats about 350 stewards, about 250 of whom are engaged in the saloon, while of the remainder, who are divided between the second and third cabins, about seventy attend to the second cabin. The proportion varies slightly according to the number of passengers in the different classes on each voyage. In the winter time, in the transatlantic trade, there is

generally a falling off in the third class, though the other classes of these great steamers are generally pretty full all the year round. The cooks number about fifty, including the pantry men and scullery men. Nor is the personal comfort of the ladies neglected, for these vessels carry about a score of stewardesses and sometimes more. The number provided for the steerage varies most, depending partly on the time of the year and partly on the number of women and little children making the voyage. There is a minimum number of stewardesses for each class, but if it be seen from the passenger lists that more stewardesses may be necessary the supernumerary stewardesses are engaged or spare stewardesses from another steamer may be taken on for the voyage. Among what may be called the latest specialists to be engaged on ship-board are the telephone exchange attendants, the wireless telegraph operators, the lift attendants, and the editorial and printing staff of the daily newspaper published on board. The ship's band may be recruited from the staff or, as in some vessels, a special band of trained musicians may be carried. Most of the ships' bands are selected from the stewards, and their ordinary duties are lightened somewhat in order that advantage may be taken of their musical skill. Some of them are very good musicians, and a ship's orchestra, numbering from eight to a score players, whether of string or wind instruments, or both, usually wins the commendation of the passengers.

The stewards, the "harmless, necessary stewards," they might be called, keep no regular watches—they often wish they did—but on the contrary are at work from early morning till late at night. The cooks are able to arrange matters so that those who are up very early have a rest later in the day, but the stewards are up as early, are kept going all day, and don't get much chance



of rest until after most of the passengers have "turned in." They have to clean out the public rooms before the passengers are astir, and if any passengers want cups of tea before getting up, even if they wish to rise early, the stewards bring them. The stewards lay the tables and have everything ready for setting before the passengers at breakfast; then they have to clear everything away again and clean up all crumbs or anything else that may be dropped; while some are engaged upon this task others have already started to straighten the sleeping-cabins and make the beds. By the time this is accomplished there is the rush to have everything ready for luncheon, when again all the dining-tables are set and the passengers waited upon; again there is a clearing up after the meal. Then afternoon tea has to be considered, after which the passengers go to dress for dinner, while the stewards are setting the tables for the most elaborate meal of the day. This is served at half-past six or at seven o'clock, and the amount of waiting and running backwards and forwards the stewards have to do in their efforts to please the passengers, some of whom refuse to be pleased, ought to qualify them as long-distance runners, and is at least a strong] proof of their industry and anxiety to do their best.

A more willing man than the average ship's steward does not exist. Night and day his one desire is to please the passengers to whom he is allotted, and he works uncommonly long hours and very hard in endeavouring to do so. After the dinner the saloon has to be tidied up again and made ready for the morrow, and any sleeping-cabins which have been disarranged during the day have to be put straight once more. The stewards have to take their meals in a hurried fashion, usually getting them in relays so that some stewards are on duty while others are feeding. Besides their regular duties there

are the hundred and one little requirements of passengers to be attended to. If an entertainment of some sort is to be given in the social hall or drawing-room, or other public apartment, the stewards have to prepare the room for the function and straighten it up again afterwards. The stewards prefer the deck entertainments, because then the sailors may be called upon to attend to certain of the preparations.

The calls *en route* at different ports generally entail a lot more work for the stewards, such as additional meals at odd hours, and if the call be made at, say, midnight, the stewards have to be up to see that departing passengers get away all right, and to receive and attend to new arrivals and show them to their right cabins and give them some supper before they retire ; and then, and not till then, can the stewards snatch a few hours' sleep before being up betimes to begin the long routine of the next day's duties.

Anyone who thinks he can tour the world cheaply by shipping as a steward will soon be enlightened. One young fellow of my acquaintance who did so with this intent had only one opportunity to go ashore from the time he left London until he returned from Sydney, and that was for a few hours at the New South Wales port ; and as for the scenery *en route*, all he managed to see was in a few peeps out of port-holes when his superiors were not hustling him. The steward has little spare time, except when his ship is in the home port, but he may manage to see a good deal of the world, nevertheless, if he sets about it in the right way.

Seeing the number of men carried in any of the large steamers, it is surprising how small are the changes among them. Many men have sailed in the same ship year after year, and as nearly every member of a ship's domestic staff has to work his way up from the lowest grade of the



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department to which he is attached the work to be done is thoroughly learned, and promotion as opportunity serves is the usual reward of assiduous service conditionally on the aspirant showing that he is fit for promotion. The continuity of service thus provided is distinctly to the advantage of the passengers, for it stands to reason that in a ship whose company work well together the comfort of the passengers will be greater, and it is also a strong proof of the good relations existing between the company and its employés. Not only the officers, crew, and domestic staff often stick to a ship, but the engineers and stokehold hands remain for voyage after voyage, and apart from the restlessness and love of change which are such conspicuous characteristics among those who earn their livelihood at sea, seldom leave except when promoted to a better ship or a higher position.

So few changes occur among the employés of the Orient Company, and in the Orient ships, that the whole organisation has been called the "Happy Family." Many of the chief stewards and chefs, and other important members of the domestic staff afloat, have been connected with the Company for twenty years or more, and I believe I am not wrong in stating that there are still in its service some men who joined the line when it started operations in the seventies, with vessels chartered from the Pacific Steam Navigation Company, and that one of the present chief stewards held a responsible position on board the *Orient* itself when thirty years ago that steamer, then the largest iron vessel to go to Australia, inaugurated the service performed by the Company's own steamers.

Nor is the Orient line at all singular in this respect. There are in all the great liners grey-headed men in the domestic staffs who joined the line as boys, and have been connected with the line ever since, though occasionally transferred from one ship to another. These

elderly men all say they are looking for a shore berth, which is supposed to represent to the seafarer the greatest happiness attainable on this earth, but it has often happened that when the much coveted shore berth has been in sight the temptation to go to sea for "just one more voyage" has been too strong. Many men who go to sea, in whatever capacity, do not like to announce their last voyage, as, especially among captains and officers, the announcement has often been followed by their first accident. Why this should be so, no one knows, unless it be that an occasional coincidence has given rise to a belief in what is with some a very strong superstition. They may give many examples to justify or at least support their contention, but they seem to ignore or forget the far more numerous examples that may be quoted to the contrary effect.

The duties of the navigating officers take up most of their time, especially on voyages of only a few days duration, but on long voyages they have more opportunities for social intercourse with the passengers. In the big yachting steamers, however, they are encouraged to associate with the passengers, and they generally have a very pleasant time and see that the passengers do also, but in the regular liners their opportunities are less, and the owners, as a rule, do not favour too much of that sort of thing. The doctor is the ship's officer who is sometimes looked upon as the responsible social representative of the company, and his duties—expected, though not defined in his agreement with the company—include the making of himself agreeable and seeing that everyone is entertained and not allowed to mope; he is generally the instigator or promoter of the entertainments on board, though careful to give the passengers the credit for them.

The "doctor's shop," as for some reason it is still the

custom to call the cabins devoted to the ship's medical man, possibly because, with the usual fondness of sailors for giving incongruous nicknames, nothing is sold there, varies a great deal in different vessels. In some of the large liners the doctor has not only his own sleeping-cabin and a little dispensary in which he makes up his medicines, but also a small cabin which he may use as a reception room for patients, that is, if they are not too ill to leave their state-rooms. In some portion of the ship, where the vibration and motion are least felt, there is a small apartment known as the hospital. This is usually situated near to the doctor's accommodation, and not immediately contiguous to the passenger accommodation. The hospital accommodation for the first and second cabin passengers is sometimes on the boat deck and sometimes on the promenade deck, this being entirely a matter of arrangement; while that for the third-class passengers in most modern vessels is carried aft and is generally placed in the aftermost deck-house, or if the ship has a turtle back, in the deck-house formed by that construction. In some vessels, the second-class and third-class passengers have to share the same hospital. Really, however, the number of passengers who are so indisposed as to have to be isolated under the doctor's care is so small compared with the total carried, that it happens more often than not that the hospital is not used for voyage after voyage, unless there should be an unusual demand for passenger accommodation and travellers should be accommodated in the hospital.

When this is done, it is stipulated that if necessary they shall give up their berths, and must put up with whatever accommodation can be found for them on board. The Board of Trade has issued a list of medicines and drugs, without which no vessel may go to sea. The large liner companies supplement this list very considerably,

and also have a list of surgical instruments which must be carried ; a few of these have to be provided by the ship's doctor, but most of the instruments are provided by the company.

In ordinary cargo vessels or those carrying only a few passengers, no duly qualified man is provided, and the skipper has to act as medico. To enable him to do this, a set of instructions revised by the Board of Trade is carried on every ocean-going vessel, telling him how to recognise symptoms of various diseases, and how to set broken limbs and apply bandages, and so on. There is also a medicine-chest containing an assortment of drugs, all of which are not only named but numbered, and when, with the aid of the book, the captain thinks he has accurately diagnosed the sufferer's symptoms, he finds that the book instructs him to give certain quantities of certain medicines which are indicated both by name and number.

No doubt some weird experiments in dosing sufferers were tried by the skippers of the old school, who did not hesitate to run risks from which a qualified medical man would have shrunk. There is a story, which is said to be true, that a sailor fell from aloft to the deck, and broke one or two limbs. In terrible agony he was conveyed to the cabin, and the captain, with the aid of the mate and steward, proceeded to set the broken bones. The man was in such a condition, however, that the captain intended to try to chloroform him, but not understanding this somewhat delicate proceeding, compromised by giving the sufferer sufficient whisky to make him dead drunk, and while he was in that condition the fractured bones were set as well as the captain and his assistants could manage. The man survived. The next voyage he slipped purposely on the deck, and said another limb was broken. But the captain could not find the fracture



this time, though he threatened to make one, and the sailor's scheme to get some more free whisky failed.

Such events are practically impossible in a British sailer nowadays. If a man is seriously hurt in a sailing vessel, he is not likely to go many days without an examination by a fully-qualified man being obtainable. In any case a certain amount of "first-aid" knowledge is compulsory for most officers, and many a ship's officer, by dint of study and experience, can set a fractured limb in a manner that a competent surgeon would not disown. Though they don't say much about it to landsmen, most ships' officers take their duties very seriously and are anxious to learn anything that they think will be of value to them. So many large liners are now crossing the ocean every day, and always in recognised routes, that a sailing ship master can generally take his vessel into one of these routes with the certainty of sighting a liner before long. He will then signal that the services of a medical man are required, and the liner will stop for an hour or two, while the doctor puts off with a few instruments and bandages to see what can be done for the sufferer, and having attended to him, returns to the steamer, and both vessels resume their way. One pleasing feature about all this is the absolute comradeship of the men of the sea. The proudest liner on the water will cheerfully stop to render assistance to some little sailing vessel in mid-ocean, and when it is a matter of life and death will freely place its resources at the disposal of some sufferer on board the small ship, and it may be months before the out-of-pocket expenses are refunded.

Instances have occurred over and over again, in which a medical man has volunteered to cross a mile or two of rough sea between a stately liner and some tramp or small tossing sailer in order to do his best when the signal has been displayed that medical attention is required.

The task of the medical man in attempting to set a double or compound fracture in a dingy cabin of such a ship is not an enviable one at the best of times, and when the work has to be done in a vessel which is being jerked about on an angry sea, the difficulty is increased a hundredfold. The journey from the liner to the ship and back again has also to be undertaken, and its risk in the ship's lifeboat, albeit manned by a competent volunteer crew, is ever present ; but it is as nothing to the risk entailed in leaving and boarding the two vessels. Yet no ship's medical man has ever refused to undertake the duty when the appeal has been made to him, and no British crew has been known to refuse to volunteer to man the boat when the necessity has arisen.

It does not matter what the risk is, if a vessel is seen flying signals of distress volunteers will always come forward from the crew to take their places in the lifeboat ; indeed, there is never a lack of volunteers to take the oars nor an exhibition of unwillingness on the part of any of the officers of the ship to take charge of the boat on its errand of mercy or rescue, even if the venture seems courting certain death.

The chief stewards of their respective departments are the officials with whom passengers must first make acquaintance, and under each chief steward are a number of other stewards whose duties are strictly defined who will give all the attention that the passenger can possibly need.

The liners in the New York trade carry the greatest number of stewards, but a less number is sufficient in those steamers which have not the extensive passenger accommodation to be looked after ; the number of stewards varies from voyage to voyage according to the number of passengers. Gone are the days when half-a-dozen stewards were thought sufficient for a couple of

hundred passengers ; gone also are the days when two or three cooks and a ship's boy undertook the culinary work.

A few words as to the accommodation provided in modern liners for the officers and others may not be amiss. The captain has his own cabin and sleeping-room. In some steamers separate accommodation is given to the first, second and third mates, while in others only the first mate has a cabin to himself, and the other mates may have to share their cabins, two officers being allotted to each cabin.

The leading mercantile officers' societies, the Imperial Merchant Service Guild and the Mercantile Marine Service Association, both of which have their headquarters at Liverpool, to which most captains and officers belong, and the Sunderland Shipmasters' Society, have recently been urging upon owners that every officer should have a sleeping-cabin to himself. In most vessels the officers are all quartered on a deck close to the navigating bridge ; they have their own mess-room where their meals are served and one or two stewards to attend to them exclusively, besides one who is the captain's steward. All the officers' quarters are connected with the ship's telephone system, and there is generally an alarm bell in their cabins.

The " wireless " operator is given a cabin next to that in which the apparatus is installed.

The engineers have their accommodation on a deck close to the entrances to the engine-rooms, the chief engineer, and sometimes the second, having a separate room, while the other engineers are placed two or three in a cabin. They also have their own mess-room, and one or two stewards are told off to look after them.

The cooks are accommodated near the kitchens, the chief having his own cabin, which is a somewhat commodious apartment as that description is understood

aboard ship as applied to the accommodation of any of the staff, where he draws up menus and plans appetising experiments in flavours for the delectation of his patrons and the glory of the steamship line he serves. Other cabins are set apart for his assistants.

The purser, the most important man on board on the domestic side, has not only a sleeping-cabin to himself but a special office as well, where he keeps the ship's books, receives the reports of the stewards and cooks, and issues orders for certain articles to be taken from the stores away in the secret recesses of the ship. Here, also, he receives passengers who want money changed into the currency of the ports of call if they think of going ashore for an hour or two, time permitting ; or who have valuables and are afraid of losing them. The purser is authorised by the company to take care of jewelry and other articles, which he locks away in his safe. On some vessels he takes his meals with the officers, and on others he and the chief steward and chief saloon steward have their meals in the saloon at a separate table, after the passengers are done. The chief steward of each class of the passenger accommodation has his own cabin ; the other stewards have their accommodation near the cabins in which they are employed.

The firemen and stokers are in most ships berthed forward in accommodation reached by means of a passage from the engine-rooms, this arrangement saving them the trouble of ascending to a higher deck and descending through the passengers' quarters to their own quarters. The firemen have their own mess-room, and their sleeping accommodation is arranged next to it.

The sailors have their quarters in the fore part of the ship, in or immediately below the fore-castle. The quartermasters and boatswains, who are the aristocracy of the men before the mast, are berthed together and have

their mess-room, and the sailors have generally two sets of sleeping quarters, one for each watch, and a general mess-room.

Although machinery is employed as much as possible for all sorts of tasks in the travelling palaces, there is still plenty of work for the numerous staff. The preparation of the multitudinous dishes in the cook's galley—the average ship's cook is no longer a cook but a chef, and he works not in a galley but in a kitchen, and would be annoyed if called “doctor,” to which nickname the cooks in all tramps and sailing ships answer—requires a numerous staff; all his assistants must be specialists in their respective lines. One man will be concerned with the soups, another with the pastries, another with the game, or fish, or vegetables, or sauces, as the case may be, and each will have as many assistants as may be necessary. All work under the direction of the chief cook. That official consults the purser every evening as to the food to be prepared for the following day. The lists of provisions in the store-rooms are consulted, and the menu is drawn up for all the meals for the next day, the selection being made to give as much variety in the food as is consistent with the state of the stores and the preferences of the passengers.

The likes and dislikes of the passengers are studied a great deal more than those pampered personages have any idea of. Those, for instance, whose consciences compel them to observe various saints' days and other religious events by what is euphemistically termed fasting, will find that they can do so without becoming very hungry in the process. Some passengers really will abstain from food at such times, but unsympathetic unbelievers generally attribute this to that distressing complaint which attacks landspeople when they first go to sea if the weather be rough. One gentleman, who

used to cross the Atlantic frequently, always sailed on a Thursday if he could, as then he could fast on a Friday without difficulty. But all passengers are not so easy-going. Some are as particular what they eat in Lent as at any other time, and ships' cooks certainly prepare fish and other permitted viands so deliciously that there is no difficulty in gratifying a healthy sea appetite and one's conscience simultaneously.

A ship's cooking staff has to know how to meet all sorts of religious requirements. "Kosher" food is carefully prepared for the Jews; this is made a great feature of in the boats in the South African trade, in which the proportion of Jews to the total number of passengers is—or used to be until very recently—probably greater than in any other first-class ocean route. Now the Jews are emigrating in large numbers to Canada. Strict Mohammedans must have their views met, so must adherents of any other Eastern religions who happen to be on board, and all this means a lot of extra work to the cooking staff. The cooking, too, for these has to be exceedingly carefully done or there will be a complaint from the orthodox that they are being defiled owing to the non-observance of some detail of no apparent importance to anyone else.

The modern ships' cooks in a floating palace could never get through their work if it were not for the machinery on board. Even in these great vessels there is not room to carry the staff that would be wanted to do the work now performed by electricity if hand labour alone had to be depended upon.

There are some curious customs at sea. For instance, in a sailing vessel the cook may be called upon to leave his galley, if his duties permit, in certain circumstances to haul upon certain ropes; but he would be justified in refusing under ordinary conditions to haul upon other

ropes or to go aloft ; in an emergency, however, he may be required to do anything except go aloft, and though he may be asked to volunteer to do so he may decline if he chooses. In a modern steamship nothing of this sort can possibly happen. For one thing there are no sail ropes requiring his services, and for another if any heavy hauling has to be done it is always easier to pass the rope two or three times round a steam windlass or steam capstan and let the engines do the hard work. It is also better in its result, for the officer directing the work can have it done with greater sureness and accuracy than is possible with hand power. The sailing-ship cook takes it all in the day's work, but it would be a sight for gods and men were a chief chef of a fashionable liner to find his services required on deck while some "pully hauley" was going on.

The etiquette of the sea demands that the captain's side of the ship is always the weather side, or the star-board side if there be no weather side. If the captain goes on the bridge the officer of the watch will immediately make room for him on his right. The rule is that the inferior officer takes the lee side or port side of the captain, as the case may be, but if an officer is appointed to a special duty he will not leave his post, no matter what position his superior may assume. If one of the ship's company, except the man at the wheel in the steering-house, has to address a navigating officer on duty he will do so from the foot of the bridge steps on the lee side. It is also etiquette for the captain to be addressed as "Sir," and when officially addressing his officers he will always use the word "Mr." This rule has even been maintained in instances where the captain of the vessel has had his son or nephew as one of his mates. Unofficially it was "my boy" and "Dad"; but officially it was "Captain So-and-so" and "Mr. So-and-so."

When the starboard side is the weather side, the first mate, if it be his watch, may please himself whether he takes the chief position in the captain's absence or not ; but the second mate, unless duty demands, will seldom go to the extreme weather side. These unwritten rules were perhaps more strictly observed in the old sailing clipper days, when the captains were far more autocratic than they are now, and had their authority over all on board better backed up by the authorities on shore than is the case at present.

One well-known commander in the Union Castle line when he first went to sea as apprentice in a "wind-jammer," startled the officer of the watch by appearing on the poop and marching up and down on the weather and starboard side. He was in full uniform of blue suit and brass buttons and had a big telescope under his arm. The second mate on the lee side had never seen such sacrilege before. So he summoned the captain who forthwith threatened the youth with a rope's ending if he wasn't in his oldest clothes and swabbing a dirty part of the lower deck in less than five minutes.

In boats travelling to the Far East and employing Lascars, or any other of the Eastern races in any department, the difficulty of food preparation is much increased owing to the system of caste which prevails and is always likely to be applied at some inopportune moment. Thus, certain food has to be prepared by one particular man for certain members of the crew, and the others will not touch it under any consideration, but must have their food prepared by their own particular cook and served to them as they wish. It may only be boiled rice, but the men of one caste will not eat the boiled rice which has been prepared for the men of another. Then, again, there are many other differences among the coloured members of the crew, all of which



are of vast importance to them, and incomprehensible to everybody else, but they manage to cause a great deal of inconvenience nevertheless. When a Lascar crew gets the caste idea into its head, nothing will shift it, argument is useless, and the only thing to do is to meet the men's wishes, or let them think you are meeting their wishes, which comes to the same thing, and make the best of the inconvenience. In some of the former boats the coloured stewards who set the table would not help to wash up the dirty things, nor would the washer-up or the stewards dream of touching the rope which the punkah-boy had to pull regularly, in order to keep the punkahs or swinging blinds rocking in the saloons for ventilation purposes and to attempt to cool the air. These punkah-boys were generally lazy, but when once started at their work, and able to sit down to it, they would keep on for some hours at a time in their own leisurely fashion. The punkahs were blinds or sheets of cloth attached by their longest side to poles which were suspended from the ceilings or skylight beams above the saloons. These were made to swing backwards and forwards by the punkah-boy who pulled the rope. It was not hard work, but the average punkah-boy, unless closely watched, always tried to synchronize the rocking of the punkah with the rolling of the ship, so that he could have a quiet doze while squatting on the deck, and pretending to work. In some boats the punkah-boy was encouraged to sing softly to himself while he was at work. This was not done to entertain the passengers but to ensure that he should stay awake, for if he stopped singing it was concluded that he had gone to sleep. The serang, or chief of the coloured group to which he belonged, would wake him up very suddenly and severely, and no one would take any notice ; but if a white officer only applied half the violence with much less satisfactory

results, trouble was bound to ensue, for the coloured employés always came to the conclusion that they were being shamefully knocked about by the whites, though they seemed to take it all as a matter of course when their serang renewed their energy with a big stick. Anyone who has ever heard one of those punkah-boys singing while pulling the ropes, will quite understand the feelings of an irascible old Indian officer who said that if the boy didn't stop that (something) caterwauling he would drop him overboard ; for there can be nothing more irritating than one of their never-ending chants, always sung nasally and never exceeding variations on five notes. Punkah-boys are now gone, and in their place are mechanical ventilators and electric machines. The punkah-boy may have been picturesque in his native dress, but there is no gainsaying the comfort and the utility of the modern method in which the punkahs are swung electrically and revolving fans are reliable.

The long-distance liners carry smaller crews than the fast vessels in the north Atlantic. As the steamers do not tear along at twenty to twenty-seven knots, fewer firemen and engineers are needed. An Orient or P. & O. liner in the Australian trade will carry about seventy stewards in the saloon, a deck staff of about fifty officers and men, about fifteen cooks and assistants, and an engineering staff of about a hundred. The same applies to the vessels of the Royal Mail Steam Packet Company in the South American and West Indian trades, while in those liners of other companies and smaller tonnage there is a corresponding reduction, but the numbers vary according to the number of passengers and the size and speed of the vessel.

Steamers engaged in the trade with the Far East and employing Lascars in the stokehold or on deck, or native Indian stewards, require more of them to do the work



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The P. & O. Steam Navigation Co.



than would be wanted were whites employed ; but they do their work well, have the saving grace of being economical, and stand the heat of the tropics better than most white men. They are stated, further, to be more amenable to discipline. Liners engaged almost exclusively in the Pacific generally have Chinese or Japanese stewards, who, as a rule, are certainly superior to Indians as workers ; while the " black squad " may be recruited from all the races in the Pacific from Vladivostock to New Zealand, with a good admixture of half-breeds.

## CHAPTER VII

### EMBARKATION OF PASSENGERS. LIFE AT SEA.

WHEN at last everything is made ready for the passengers those important personages—for whose comfort and safety many thousands of pounds have been expended in advance, for whose convenience and direction a large staff of officials is employed, and whose departure, voyage and arrival involve a financial risk running well into six figures and in some cases seven—are permitted to go on board.

It is not the custom to crowd as many passengers into a steamship as it will hold, whatever some persons may say to the contrary. The accommodation is limited, and the number of passengers is restricted by statute. The Board of Trade regulations apply to all sorts of details, of which the public ashore and the passengers are generally profoundly ignorant. So many cubic feet per passenger must be allowed in the sleeping accommodation. This is the minimum, and if the company likes to give a greater allowance, and all companies do, so much the better for the passengers. The minimum is not very great and does not leave a margin for an oppressive amount of comfort or a superfluity of furniture or baggage after the necessities have been arranged. There is also a minimum food allowance scale for the passengers and crew. This is not of a nature to encourage an undue love for the pleasures of the table, though it is ample to keep as many persons as are on board in health for a much greater number of days than the voyage is expected to last. The companies again exceed the legal requirements, and so much the better for the passengers in this respect also.

Not only is there a Board of Trade inspection of the

ship, but an independent inspection is made by representatives of the owners, and every part of the passenger accommodation is visited before the ship sails, by some member of the shore staff who is specially conversant with the work of the department on board he is examining. Every cabin in the ship, from the cheapest bunk in the steerage or emigrants' quarters, to the most expensive suite of rooms, is inspected, and if there is so much as one article out of place or any untidiness or even a speck of dust, the steward who is responsible may be sure of having the fault brought home to him.

The custom is to embark the third-class and emigrants first, probably two to three hours before the vessel sails. This is not, as has been unkindly suggested, because they only pay low fares, but because there are so many of them, because the number of children in that class is proportionately greater than in any other, and because sufficient time must be allowed for them to settle down ere the voyage begins. The second-class passengers embark about an hour or an hour and a half before the anchor is lifted ; and the first-class passengers are received about an hour, and sometimes less, before the steamer is off. The embarkation of the saloon passengers and the last of the mails, and the observance of certain legal formalities attending the departure, are the last items in the programme. As soon as these are attended to the signal is given for all friends to go ashore at once and a few minutes later the liner begins her voyage.

The principal ports of embarkation on the travelling palaces are London, Southampton, Liverpool, and Glasgow, with Bristol and one or two other ports in a less degree.

At all the principal ports the passengers for the most part enter the ship direct from the quay-side ; should, however, the vessel be lying in the stream, as happens

occasionally in the Thames or Mersey, for convenience or to suit her departure to the tide, the passengers are taken to the steamer's side in a tender. The latter may be able to convey for this short journey several hundreds of passengers and much of their baggage, but by the side of the liner she looks a pigmy.

On a bright summer's morning this little interlude may be rather pleasant. The inconvenience is not great except for those passengers who are possessed of several youngsters and a baby in arms, when every youngster except the baby has to look after two or three parcels containing things that had to be brought somehow; these are generally keepsakes sent at the last and most inconvenient moments and at the best of little use to the recipient. A lot of trouble would have been saved to a poor family I saw among a group of assisted emigrants if their friends had not presented them on the tender with a large parcel. This when opened proved to contain four framed amateur enlargements of as many amateur photographs of the party emigrating! What could the recipients do but sell the frames cheap at the first convenient opportunity. People who want to bestow cumbrous gifts upon departing friends and relatives should do so at least a week beforehand; this will give the recipients time to get rid of them surreptitiously before leaving. It is really pitiable to see the way some third-class passengers are burdened with useless souvenirs. There is no mistaking the genuine sentiment which prompts the donors, but if the latter were only to remember that space on board a liner is limited and that gifts should be utilitarian and small rather than ornamental and bulky, there would not be so many articles dropped quietly overboard or given to the stewards and stewardesses during the voyage.

The third-class passengers suffer the greatest



inconvenience from boarding in mid-stream, particularly if in the Mersey there is a strong west or north-west wind blowing, accompanied by squalls. The Thames is not much better, except that the water may not be so rough. The tenders receive as many persons as they are allowed to take, but cannot shelter them all adequately, and those who cannot squeeze into the cabins must perforce stay on the open decks and get wet if the rain comes. The tenders, too, are lively vessels on the seas which can get up in the Mersey, and many a passenger is sea-sick before ever the liner is reached.

There is no denying that the port of London is a long way behind the port of Liverpool in the matter of the comfort of passengers embarking on a foreign-going steamer. The enterprise of Liverpool has provided the floating landing-stage with a depth of water which permits the largest Cunard and White Star liners, and all other steamers, to go alongside. There is also the railway station immediately adjoining the landing-stage; the railway station itself is a shelter capable of holding a great number of persons, the means of access from the station to the stage are also sheltered, and on the stage itself there are more shelters. These have recently been added to and extended, with increased seating accommodation and other comforts; and the period of waiting, though inevitably tedious, has not to be passed in the physical discomfort of sitting on one's luggage or on the floor, or standing. The only time the passengers embarking at the landing-stage at Liverpool are exposed to the weather is the few minutes during which they are being mustered to pass up the gangway and into the ship. Once on board they are as well sheltered as they were in the homes they left behind.

Some day, perhaps, London, if the passenger traffic there is thought to justify the expenditure, may carry

out the scheme of a long riverside wharf and landing-stage capable of allowing the largest steamers to go alongside which use the port. Hardly a day passes without a great liner or two taking her position beside the great landing-stage at Liverpool to receive her passengers. Southampton, also, is ahead of London in this respect, Glasgow thinks it has nothing to learn from the Thames, and Dover, Harwich, Grimsby, Bristol, and many other ports which could be mentioned have all arranged for railway access to the nearest available spot to the steamer. London has not one passenger-embarking or landing-stage situated close to a railway station. Passengers who embark at Tilbury have a good walk along an absolutely unsheltered road from the station to the steamer if the vessel be lying in dock, but if she be lying in the stream there is the inconvenience of going on the tender at Tilbury and being conveyed to the steamer. Passengers embarking at any other of the docks of London have to put up with much inconvenience. Cabs through slummy streets from the station to the steamer, or at least to the dock gates, are compulsory unless one chooses to walk. Some day London may wake up and provide herself with the facilities which many of her citizens have urged so pertinaciously, but until then she will retain the reputation of being the most uncomfortable large port in the United Kingdom at which to land or embark.

The passage along the gangway from quay-side or tender to the liner to the accompaniments of the shouts of the crew to "hurry up" when the unfortunate passenger with children and impedimenta feels that is the last thing he can do, and the rapid transference to the third-class quarters, are apt to give the travellers a curious sense of loneliness and misery. The impossibility, for those who have been caught in a shower,

of changing into dry clothes at once, and the strangeness of the surroundings until they find their allotted quarters, cause many to wonder whether they have done wisely in leaving the known for the unknown. But when they have settled down and know their respective cabins, and have made themselves comfortable, and, thanks to the steadiness of the liner, if theirs has been a mid-stream embarkation, are no longer troubled with stomachic retrograde tendencies, hope once more revives, and they look forward to the excellent meal for which the stewards will soon set the tables. But on a fine day no one experiences any of the serious though very temporary drawbacks, and the transfer by tenders is merely one of a series of novel and entertaining incidents. When necessary the tenders make more than one trip with each class of passenger, or more than one tender is engaged.

Once on board, too, it is astonishing how quickly the stewards direct the passengers to their quarters. No sooner are the passengers past the medical men at the head of the gangway, than they are taken charge of.

"Single men this way, please," a steward reiterates incessantly. "Ticket number so and so, thank you. Straight along the passage. You will find a steward a little further on who will direct you."

That steward is probably standing near the head of a staircase. "Go down the stairs and turn to the left. Here you, sir, you to the right. You all together? All from the same town, eh? Yes to the right, I'll see you again by and by." And so on, directing them to their quarters where other stewards are in attendance to see that each man is shown his cabin and berth with as little delay as possible. The tickets are numbered to correspond to the numbers of the berths, and thanks to this arrangement and the careful directions of the

stewards, the early arrivals are soon on deck again watching other passengers arrive.

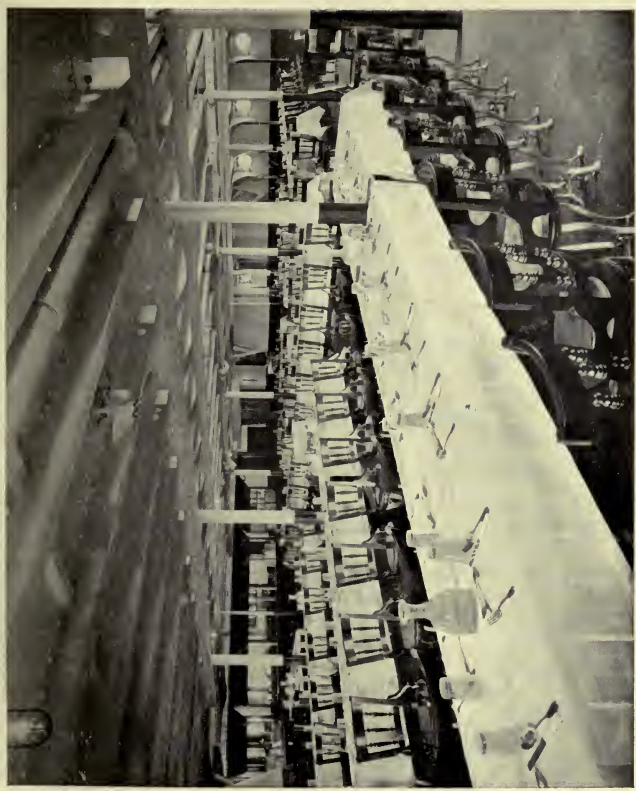
The transference of the families to their quarters is a more tedious operation. The men travelling alone have probably got over their farewells when they left home, and if they feel the separation they don't show it, except in such confidences as they may care to impart to new-found acquaintances as woebegone and lonely and loquacious as themselves. But the women and families often have a troop of friends and relatives to see them off, and think nothing of making a final rush back along the gangway to the shore or the tender for a last kiss.

"It's a nuisance, you know, when you want to be off," a mate of a big liner said to me once; "but after all its human nature and you can't blame them. If I were a woman I'd be as bad myself. You see, it comes harder to a married woman to pull up stakes and to make a new home in a new country than it does to a man or children. A man makes a new home and the children grow up in new surroundings and become accustomed to them; but God help the most of the mothers. They go for the sake of husbands and children, but they leave their hearts behind them, in another sense, as often as not."

"Then I suppose they always want to come back," I conjectured.

"Come back, be blowed; it's leaving here that upsets them. Once they get there and settle down they don't want to move. They keep the sentimental idea that they wish they'd never gone, and a few pay a visit sometimes to the old country, but they are always glad to get back to their new home. You see the secret of it is that when they return they find that their old places are filled. Their friends may be glad to see them, but they don't want to keep them for long."

THE  
ORIENT



*The Orient Line of R.M.S.*

**S.S. "ORAMA," THIRD-CLASS DINING SALOON**

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Our conversation took place while the families travelling third class were being hurried to their accommodation.

At one of my visits to the new Orient liners I was placed under the care of a steward who led me through passages and apartments, up stairs and down stairs, and I had ample opportunity of witnessing the treatment of the passengers and drawing my own conclusions as to the vast improvements which have been made in recent years. In none of the best vessels now is it a case of first come first served, or of those who get there first or tip the stewards the most receiving the best places. All tickets are numbered and the scenes of confusion and disorder that used to disgrace the embarkation of the third-class and emigrant passengers, especially in the American trade, are not known on the boats on which the numbered-ticket system is adopted. The few vessels on which the reform is not introduced do not come within the scope of this book.

Sympathetic stewardesses now received the women and the little children; families are directed to their four-berth or six-berth cabins; the young single women, who are as often as not the daughters of married couples aboard, are directed to quarters specially reserved for them. More than one little one is introduced to its floating home, tired, crying and hungry. The poor mother, almost as tired and hungry, and perhaps nearly crying herself if she chose to admit it, probably rests on the first available seat and endeavours to soothe her refractory offspring. She is soon taken charge of by some stewardess.

“Come with me, please. Yes, this is your berth. You can sit here while your luggage is brought, and when baby goes to sleep you can put him in the berth. Hungry? Yes, dinner will be served as soon as the steamer starts. It is not long to wait now, and in the

meantime I'll see if I can get you a cup of tea and the children some biscuits, only you see there are so many to attend to that I am afraid you must wait a little while."

This is not exceptional ; it is repeated scores of times at the departure of every large passenger steamer. There is a decided change for the better from the incompetent and lazy stewardess so common at one time, whose sole idea was to collect tips and do a minimum service in return, to the clean energetic stewardesses of the modern liner who take charge of the weary travellers and make them as comfortable as they can even in the democratic third class.

The spectacle of a large number of passengers of the emigrant class embarking is, to me at least, always a fascinating spectacle. Even shipowners and embarkation officials, who regard passengers from the point of view of £ s. d., are not proof against the intense humanity—I use the phrase advisedly—which is inseparable from the sight. It would be easy enough to moralise over it, but I shall leave that unpleasant occupation to others, and content myself merely with remarking that I know of no sight more tragic, so far as it concerns those who are left behind, to struggle on and face the difficulties which those who are going are determined shall not be their lot any longer ; and more hopeful and stimulating, as presented by those making the voyage : tragic for the severance of family ties, for the aching sense of deprivation, and a void that can never be filled really, though time is a wonderful healer ; stimulating, because of the steadfast purpose of the voyagers, and their hopefulness of a prosperity in a new land which is apparently denied to them in this country.

" I don't know what I'm going to," an elderly emigrant said to me last autumn, as we were on the tender on which some hundreds of third-class passengers were being



conveyed to an Orient liner in the Thames ; “ but I’m told the climate’s better, and if that’s the case I can’t be worse off there than here. I shan’t do much, but I’m trying to give my youngsters a better chance than I ever had.”

A remarkable feature about the third-class passengers to Canada and Australia is the number of young men among them. They are of all classes of workers, from day labourers to clerks and warehousemen ; there are not many young married couples without children, but the number of middle-aged or elderly couples with a family of strong boys and girls in their teens or early twenties who make the voyage is very considerable.

Such care is observed at the present time to see that no person displaying any of the symptoms of infectious or contagious diseases is allowed on board a vessel that the professional duties of a ship’s doctor are sometimes reduced to a minimum. One doctor on returning to London recently from Australia was asked if he had been busy during the voyage home.

“ Only drew two teeth,” was the answer.

The examination of third-class passengers is comparatively strict in this respect, and it occasionally happens that as they troop on board and pass the medical man by the head of the gangway his keen eye will detect that something is wrong with one or another, who will be ordered to stand aside for further examination. If the examination is satisfactory, the would-be passenger is passed on to his quarters. If the result is unsatisfactory or doubtful, the suspect is either rejected altogether, or referred for further examination to a medical officer ashore. Much the same proceeding is observed with the first-class and second-class passengers. These precautions unquestionably have done a great deal of late years to reduce both the number of cases of illness

and the mortality on ship-board. The strictest precautions that can be taken are not perfect, and in spite of the care illnesses develop at times at sea, but they are by no means as frequent as they used to be. Epidemics of any kind seldom break out, and they hardly ever occur outside vessels not originally intended as passenger ships but which have been converted to that use and are not in some respects as completely equipped in the matter of sanitary arrangements as are the vessels especially built for the conveyance of passengers, though they may meet the somewhat antiquated requirements of the Board of Trade. Intending third-class passengers on long-distance voyages will do well to ascertain that the ship they propose to patronise has been built specially for the trade, or that if she is a converted vessel, she is as fully equipped with all sanitary and cooking arrangements as one that has been so built.

The second-class passengers on arriving, are passed direct to their quarters by the stewards of their department. The arrival of the first-class passengers is a more ceremonious affair, for they sometimes include persons of title, holders of high naval or military rank, colonial governors, millionaires, and even members of reigning families. Their arrival is interesting because there is about it a survival of the etiquette of the sailing-ship days, when the owners of the ships saw personally to their departure and were always careful to escort any exalted personages to the ship's side and present them to the captain. Now the custom is to run a special train from London to the nearest station to the ship, to notify all the saloon passengers the time of its departure, and for a representative of the company to travel on the train with them. This gentleman, often one of the partners or managing owners, will escort the distinguished travellers on board and introduce them to the captain. It is the



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custom for all the officers of the ship to be in full dress and waiting at the head of the gangway to receive the first of the saloon passengers, and naturally the most distinguished of them, under the leadership of the firm's representative, will be guided on board first. They will be presented by name to the captain, and in a general comprehensive introduction to the other officers. As soon as the most exalted personages are safely on board, one after the other of the officers slips away to attend to his duties.

It would never do in this modern era when time and money are interchangeable terms, to waste any of the former, so the officers are soon seeing to the last formalities before the vessel is cast loose from the landing-stage or wharf, or from her moorings in the stream, and the rest of the travellers in the saloon have to enter the ship unIntroduced. The captain, however, is informed from the head office if there is any one among them of more than the average social prominence, in addition to those who may have been shepherded on board, and he is always careful to make their acquaintance and let them see they are not forgotten or neglected. The embarkation of the passengers at the Liverpool landing-stage or at Southampton or at the docks at London is a shorter process than when they have to be transhipped by tender.

When the passengers take their tickets they are usually given an interesting little booklet concerning the voyage and the facilities of various sorts provided on board for their convenience and affording them information. They will be instructed as to the dimensions of the baggage they may carry free, how and when to send it to the steamer, and how much they may take in the cabin with them. The last must be marked "cabin" by means of adhesive labels supplied by the company.

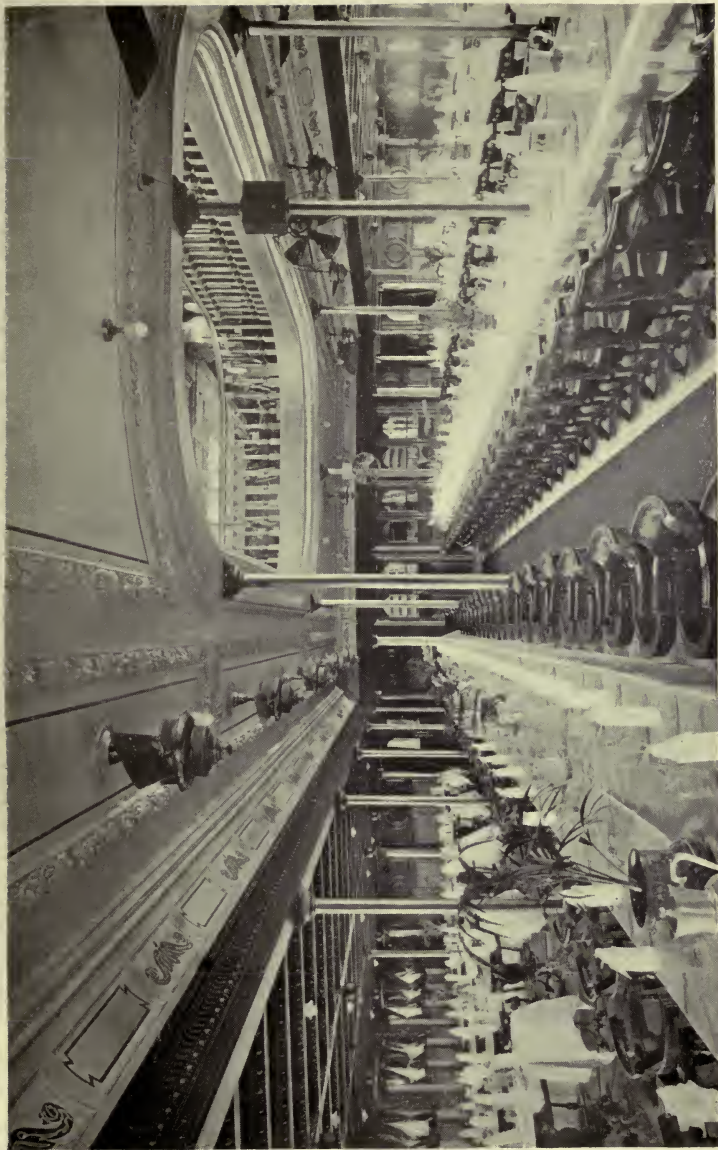
Certain other baggage may be marked "Wanted on the Voyage," and an intimation is given that the baggagehold will be opened at a certain hour once a week, when wardrobes may be replenished. The other packages are marked "Not wanted on the Voyage." The booklets contain a few hints as to the voyage and places *en route*, if any. These little publications are compiled partly to enable passengers to see at a glance what they can do for themselves, and partly to save the time of the stewards who might otherwise be questioned all day long on matters of little real importance though no doubt very interesting to the questioner.

It is always a thankless task to give advice to anyone, whether they would be better for taking it or not. A few suggestions to would-be passengers may, however, not be amiss.

It is not necessary to ask for the captain as soon as you are on board. He will take the purser's word for it that you are there if you have delivered or shown your ticket on entering the ship. The captain would no doubt be sorry to learn you have left your handkerchief somewhere in the train, but he cannot delay the sailing of the ship on that account while you go to look for it; and he will not even wait while you finish directing some picture post cards. In fact, don't ask for the captain at all if you can help it, and then only after you have been several days at sea and the subject is really important, such as getting up an entertainment.

It is not necessary to offer any of the officers advice as to the navigation of the ship. They have been at sea longer than you have, and probably know more about it than you do.

If some of the cabin arrangements do not please you, it is no use asking to have the apartment refurnished. The owners have done their best with the means at their



*By permission of*

S.S. "MALOJA"—THE DINING SALOON

*The P. & O. Steam Navigation Co.*





disposal to anticipate your every wish and make you as comfortable as possible, and they will be very glad if you will make the best of what are really comfortable quarters.

It is not necessary to call for the chief cook if one of the dishes you are eating is not quite to your taste ; he would not come if you sent for him. You have the remedy of ordering something else without extra charge.

It is not necessary to bully the stewards for neglecting you ; there are other passengers who have to be attended to, and the stewards are required by their employers to do their work impartially.

It is not necessary to criticise everything the moment you arrive in the ship, or to point out changes which you think might be better for you. Some of your recommendations would be of no benefit to anyone else ; therefore remember that the "greatest good for the greatest number " is the rule on ship-board.

It is not necessary to be rude to everybody to get your own way. People whom you offend have the knack of "getting their own back," and it is as easy to do this at sea as anywhere else, perhaps easier to those who know their way about. Besides, if you are selfish and want your own way badly, even if you inconvenience other people in the process, it is easier to get it by being polite, and you are less likely to experience revenge, though you will be lucky if you escape it altogether.

It is necessary to treat your fellow-passengers with courtesy and civility. Sometimes an unpretentious person is of some importance and influence in the country to which you are bound, and his assistance may be of great use in passing the customs or in obtaining a situation afterwards ; or he may exert considerable influence

on board among the other passengers, and use it in one of the many ways possible to mar the enjoyment of your voyage.

It is necessary to remember that the ship's servants are human beings and need a little rest sometimes, and that a kindly word will do wonders ; no one receives any better attention by being ill-natured or swearing at them.

If you have a sharp tongue and think you are witty when you are only unkind, just take that little weakness and drop it overboard. There is more gossip in a large passenger ship than at a parish sewing meeting, and there is no reason why you should gratify your alleged cleverness by airing it at someone else's expense. If you cannot say anything nice about your fellow-travellers, don't say anything. Then they can't retaliate.

If you can help others to enjoy the voyage, do so and do your best. If you can contribute to any entertainment or add to the fun of the voyage by taking part in the games, always do so.

If you are invited to join in a game of cards with two or three strangers, who are studiously appearing to be strangers to each other, don't do so.

There are several swindlers who habitually cross and recross the Atlantic,—the species is not much in evidence on the long voyages—and make a living by duping those whom they can induce to play cards with them. The principal Atlantic lines display notices in the smoke-rooms urging passengers not to join in games with strangers. Some of these black sheep cross and recross year in and year out ; some of them have been warned off from certain lines' steamers, but the evasion of the prohibition is easy, for they travel by a different steamer every voyage and generally under a different name, detection in such circumstances being very difficult.



By permission of

S.S. "THEMISTOCLES"

S.S. Themistocles!  
Coronation Naval Review  
H. B. Peffer 1911

Thompson's Aberdeen Line

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Some of the booklets referred to contain this advice. It is also a fact that robberies have been known to occur on board, and the culprit when caught seldom turns out to be an employé of the ship. Therefore if the passengers have any valuables they are advised to entrust them to the purser's care. He will give a receipt for them and lock them away in his safe until they are wanted. No one likes to doubt the honesty of his fellow-passengers, but occasionally some black sheep, whose ideas of *meum* and *tuum* are developed unevenly, books a passage and finds things before they are lost. It is better to be sure than sorry, so the companies disclaim all responsibility for articles which may be stolen, and urge the passengers to take advantage of the additional security provided by means of the purser.

Some passengers, also, have been known to announce the theft or loss of their jewelry, or their purse which they had left in their cabin by itself for a few minutes. Such incidents have occurred, but it is advisable to be sceptical unless proof is forthcoming of the prior possession of the articles; some persons make rather a good thing out of their estimates of the missing jewelry or money, when a sympathetic stranger, a confederate probably, gets up a subscription for the benefit of the sufferer. Jewelry, and money too, should be entrusted to the purser; there are not many opportunities for spending money on ship-board, and the amount one may keep in hand for such incidental expenses as the daily sweepstakes on the ship's run, or prizes in sports, or bar or refreshments or smoke-room expenses, and the little etceteras which the ship's barber—he is generally a floating "universal provider" and can supply you with all sorts of unconsidered trifles from camera-plates to face powder—can let you have for a consideration,

need not be large, and can be replenished from the sum entrusted to the purser if necessary.

Life on board a palatial liner is pretty much what passengers choose to make it. It should be one of ease, and after the first day or two it may be one of dignity also. But it is not advisable to be too dignified or too assertive of that attribute; sometimes irreverent and irrepressible persons are to be found among the passengers, who regard the sea voyage as a prolonged opportunity for indulging in practical jokes which are seldom malicious but always make the victim appear ridiculous. If there be a place where pretensions are quickly seen through, and where the knowledge of the transparency is the longest withheld from the pretender, it is a well-appointed liner on a long voyage with a full complement of passengers. The great floating palaces which rush backwards and forwards across the Atlantic between Europe and America, and occupy only a few days on the journey, give the pretender his best opportunity. At most the voyage lasts only about a week, and there are so many passengers and the time is so short that but few of them manage to form more than mere acquaintanceships.

For these reasons, probably, a curious, but none the less dangerous, type of adventurer known as the ocean gambler, and sometimes less politely as a sea-going sharper and swindler, crosses the North Atlantic with great regularity, backwards and forwards, from the opening of the season in the spring until the close of the autumn. Sometimes these gentry keep up their journeys through the winter months also, but for the most part they stay ashore then and look up their prey wherever they can find people with whom they can gamble and whom they can cheat. These are the gentry against whom the companies warn passengers. The very

dignified person who fancies he knows something about cards is one of their favourite victims.

For the rest, the saloon passengers are just such an assemblage of people as one would expect to meet at a first-class hotel ; many of them are simply travelling for pleasure, a trip round the world or a long voyage out and home for the sake of their health ; some are going for business and will return when it is finished ; and some for the sheer love of travelling and seeing strange places and undergoing strange experiences, and are no sooner comfortably on board than they begin planning where they will go next trip. The last are almost invariably Englishmen, with the singular British knack of making themselves at home everywhere and asserting their British individuality and getting their own British way under any and all circumstances.

These are the men who create and rule the " outposts of Empire " ; when they can afford it they travel from one outlandish place to another, and when they cannot afford to wander all over the uncivilised earth in alternating periods of luxury and discomfort they settle down for a time in some place where they are masters and set to work to evolve the Pax Britannica out of native chaos. Sooner or later they are on the move again ; sometimes they return to England for good, but whatever their intention in this respect, they seldom remain ; they hear the East or the West or the South calling them as no others are called, and they go. There are generally some such on every steamer bound for Australia, or India and the Far East, or South America. They are attracted to each other by some magnetic influence. When they get to know each other a bit and exchange confidences, he is a fortunate man who can be admitted to their charmed circle, and a wise one who can show that he is a good listener ; but let him not speak until

he is spoken to. Life in every country under the sun, hunting adventures wherever there is game to be sought, archæological investigation wherever religious bigotry and superstition oppose it, the imposition of order where there is none, the subjection of savage tribes, hair-breadth escapes from apparently hopelessly fatal situations: all these and many more experiences will be narrated in the most matter-of-fact tone and manner and almost apologetically for troubling the listeners with them, for this is the English way. If a privileged listener, however, cannot avoid the temptation to cap one of their narratives he is asking for trouble, for every real or supposed experience he may narrate will be capped in turn or dissected ruthlessly and shown to be an effort of the imagination; and when this operation is going on the number of those fellow-passengers admitted to the charmed circle for the time being is that of the number in the class to which they belong.

There may also be a number of commercial men among your fellow-travellers, who on a steamer bound for England are revisiting the old country with the intention of having a good holiday among the scenes and people they knew long ago, or who are coming with concessions they hope to find someone in "the City" to take up.

If you are on an outward-bound steamer which has a theatrical company among its passengers you may be sure of having a pleasant voyage; the members of "the" profession are generally good company at sea, good talkers, thorough people of the world, and bent on enjoying themselves and making everybody else enjoy themselves also. Their love of fun, too, is likely to assert itself at any time. A D'Oyly Carte company once crossed to Ireland in very rough weather, and suffered accordingly, but as soon as the smoother water of the



mouth of the Liffey was reached the company pulled itself together and sang this parody of a chorus in one of the Gilbert and Sullivan operas :—

“Twenty sea-sick maidens we,  
Sea-sick all against our will ;  
Every time we cross the sea,  
Twenty sea-sick maidens still.”

When “Little Jack Shepherd” was at the height of its popularity a travelling theatrical company sang the chorus “’Tain’t the leaving Old England we cares about,” from that lively musical comedy, as the steamer hauled out of Tilbury dock for Sydney harbour which is not so far from the Botany Bay mentioned in the song.

There are generally a few clergymen and ministers of various denominations among the passengers : “sky pilots,” the crew call them. The old superstition that every parson is a “Jonah” and will bring bad luck to the ship has almost died out. A few old sailors shake their heads ominously and wonder what will happen when the number of clergy carried is more than the average, but as nothing disastrous occurs through their presence the dismal forebodings of the old salts pass unnoticed. The captain welcomes them because they relieve him of the duty of conducting the Sunday service. A few captains rather like the religious duty to the extent that they will read the lessons, but the majority believe that “every man to his trade” is as good a rule at sea as ashore, and when they can find a clergyman or minister of any denomination to take the whole service they are not sorry.

The presence at sea of the clergy is not without its humorous side at times. Questions of precedence have to be studied ; it would never do, for instance, to ask a curate to conduct service on a Sunday morning when

there was a bishop on board. The latter must be asked first. It is said that once a rural dean claimed precedence over a vicar in the matter of the ship's service, with whom the captain had arranged for the religious duty. The captain, a sturdy Nonconformist, knew little and cared less about the varying dignities of the Establishment, and having ascertained the rank of the objector he silenced all further opposition with the reply, "Well this is a passenger steamer, not a rural deanery; go ahead, vicar."

The same captain suggested on another occasion that a couple of clergy should "take turn and turn about, like you would ashore, and conduct the service between you." He also, when an Anglican and a Wesleyan proffered their services and neither was disposed to give way, declared he would not let either of them "have a look in" unless they carried out his arrangements, which were that the Anglican should take the service in the saloon in the morning and the Wesleyan the second saloon service, and that they should change over for the afternoon service, and join in conducting a service for the third-class passengers in the evening. "It's that or I do it myself," he threatened; and they adopted the former alternative.

As a rule, when a captain relegates the conduct of the service to a clergyman, he leaves it to him entirely. One captain of the old school, however, had a habit of insisting that the hymn, "For those in peril on the sea," should be sung once on a Sunday by the whole ship's company who could be induced to attend the service and join in the singing, and by reason of frequent repetition they knew it well. The clergyman, although asked to announce it, ignored the request, and gave out another hymn at the close. The "old man" got up:—

"We will conclude this service by singing 'Eternal

Father.' It has been the rule every Sunday on every steamer on which I have ever sailed. It is the finest prayer from the sailorman to God that was ever offered, and we are going to have it now."

The clergyman would not give way, but the captain seated himself at the harmonium, announced the number of the hymn in the book, and began it. He was instantly supported by the full force of the ship's company, who rather enjoyed the situation, and the passengers, impressed by the grey-haired sea veteran's sincerity, joined in whole heartedly.

It is very seldom that anything of this sort happens. The clergy of all denominations when on a long voyage seem to be much less clerical and much more ordinary natural human beings than when ashore; and High Churchman and Evangelical, Anglican and Dissenter, have combined many and many a time to conduct the services in the truest spirit of humility, reverence and worship.

As all the passengers who can are expected to do something to relieve the tedium of the voyage, the clergy and ministers can be depended upon nineteen times out of twenty for an interesting lecture on a subject connected with literature or travel. The Roman Catholic clergy on English ships confine their religious ministrations to those of their own faith, though some have been known to attend the services conducted by Protestant clergy. On the social side, however, the well-educated Roman Catholic clergyman, especially if he be an Irishman, takes a lot of beating. "Father O'Flynn" is not unknown at sea; and, besides, "Isn't a priest an Irishman still?"

Several years ago when a certain clerical conference was being held in England, it was attended by a number of clergymen from the United States. They crossed

in a steamer in which it was the custom for the captain to take the head of the chief table, and as the good bishops and other pastors were the chief personages of the voyage they were placed at the captain's board. For some reason the clerical travellers unanimously "let themselves go," as the chief steward put it, on the boiled and roast fowls served at dinner one day.

The captain laid down his knife and fork and looked earnestly at them. One of them wanted to know why.

"You are fonder of chicken than any white men I ever had on my ship before. Do you know what it reminds me of? No? Well, it's a story, I'll tell you. One old hen flew over the fence to another old hen, and after passing the time of day, enquired, 'Where is that handsome strong-voiced son of yours? I haven't heard him lately.' The hen addressed sighed deeply. 'Gone,' she said. 'What happened? What was it?' 'You remember that there was a meeting of the clergy in the town last week?' she queried in return. 'Yes, what of that?' 'You see, they were entertained to a banquet—at which my son was present.' The visitor removed a sympathetic tear with her claw as she replied, 'No doubt you feel the sad loss very much, but you have at least the consolation of knowing that he left you in a good cause and that he has entered the ministry.'"

Most captains of the large passenger steamers are well read men and able conversationalists when they have the time and meet with a few congenial spirits among their passengers; and not a few have a rare fund of stories upon which to draw when opportunity serves. Ships' captains have this advantage over other raconteurs, that they are sure of a fresh audience every few days or weeks, as the case may be, and by reason of long practice they are able to vary the stories to suit immediate needs. Some, also, are not averse from a harmless practical

joke. The sea-serpent has stood them in good stead more than once.

Many a time have the passengers on a steamer coming up the English channel hurried to the deck on hearing the shout, "Sea-serpent in sight." Not a few have made a dash to their cabins for their cameras with the intention of "snapping" the fearsome animal or reptile or whatever it may be called. The sea-serpent is in sight right enough, perhaps less than a quarter of a mile off; and in order that there may be no doubt as to its identity the name can be read distinctly painted in large letters on her bows, for the "Sea-Serpent" in question is a cargo steamer well known as a Thames and Channel trader. This joke is usually perpetrated by a passenger.

A former captain of the Royal Mail Steam Packet Company, however, was responsible for a sea-serpent incident which took in not only the whole of the passengers but many of the ship's company also, besides a few million people in the United Kingdom and the North American continent, as well it might. The steamer, homeward bound from South America, was skirting the Sargasso Sea, which is remarkable for the extraordinary quantities of marine vegetation which may there be met with. Certain currents also circle round it in such a manner that any wreckage caught by those currents will be carried sooner or later into the Sargasso Sea where it will drift about until it slowly rots or becomes utterly soaked and sinks under the weight of the marine growth which is sure to fasten and develop upon it.

The warm latitudes, and in particular the southeastern fringe of the Sargasso Sea, have long been the fabled home of the sea-serpent, which has probably been reported there more often than in all the world's other seas put together.

On this occasion, whether the look-out man or the

officer on the bridge saw the strange object first, opinions differ. Each was firmly convinced it was the sea-serpent. Simultaneously the look-out man exclaimed to the navigating officer, "Look at that, Sir, it's alive," and the navigating officer shouted to him "Look at that; what do you make of it?" He also summoned the captain. The two officers examined it with their glasses.

"Sea-serpent, a real sea-serpent! as genuine a one as ever there was," said the captain. Like a good soul he hurried from the bridge down among his passengers and indicated the marvel. Some of the passengers had already seen it and wonderingly questioned him.

"Judging by its appearance and the descriptions I've read I should say it was a sea-serpent," he announced.

The news spread like a fire alarm through the ship that a sea-serpent was in sight. Every passenger on board helped to line the bulwarks and railings. Cooks and stewards poked their heads out of port-holes in order to catch a glimpse of the strange ocean denizen. Engineers and firemen, the latter forgetting for the time being the scanty nature of their attire in the "glory hole" when passing through the tropics, thronged to any place whence a sight of the mysterious stranger could be obtained. The crew clambered up the rigging to have a still better view. The captain signalled to the engine-room to go "dead slow," and the ship accordingly progressed with no more than steerage way upon her.

Not three hundred yards away was the cause of all the excitement, apparently oblivious to the presence of the vessel, and no less evidently basking in the sun-warmed waters of the waning tropical afternoon. Many passengers made a rush to their cabins for cameras wherewith to "snap" the animal. A sportsman—of the kind that must try to kill anything unusual—produced a rifle and wanted "to have a shot at it," but this was strictly

forbidden by the captain, on the principle, as he said, of "live and let live."

Every few seconds a long and shaggy neck rose from the water, surmounted by a clean looking head which turned to right and left and seemed to gaze interestedly at the steamer.

"Look at its neck," said the captain, and instantly attention was concentrated thereon, while "click" went the cameras and the possessors of pencil and paper made hurried sketches or took voluminous notes.

"Look at its mane," he exclaimed, and they did as they were told with more clicks and more sketches and notes.

"Look at its body," he advised, and pointed out a long dark brown mass which rose and fell with the undulation of the waves; "and look at its fins; and see, there is its tail." More camera clicks, more sketches, and more notes!

"And look at its eyes. How they shine. See how they stick out so that it can see both in front and behind." And again the passengers made pictorial and literary record of the detail.

The captain then thought enough time had been wasted, and instructed the officer on the bridge to signal "full speed ahead" to the engine-room. In another few moments the sea-serpent, still basking on the surface, and raising and lowering its head, was being left behind, its strange eyes still shining brightly as it seemed to gaze after the departing steamer.

Some scientific passengers compared notes they had taken and as a result—like the scientist at Table Mountain of whom Bret Harte's Truthful James tells—"constructed there an animal that was extremely rare." One or two learned articles and lectures were prepared, and the best snapshots had a distinct market value for

purposes of illustration. When the steamer arrived in England the story of the authentic view of the sea-serpent was spread far and wide. Every newspaper got hold of the story and printed it. The incident is even now referred to as one of the few unquestionable appearances of the sea-serpent. The captain's explanation some time afterwards when ashore provided a cruel disillusion.

“The neck was an old spar floating one end up; the shaggy mane was a mixture of canvas and seaweed; the head was the top of the spar, broken and held in place by a bolt, the rusty and wet ends of which shone as they reflected the sunlight much as any other bit of rusty iron would do. The body and the fins were simply long lumps of seaweed such as you may see by the hundred in the Sargasso. Once the sea-serpent had been suggested, imagination did the rest.”

Thus was the appearance of the sea-serpent accounted for.

Occasionally captains are bothered by passengers who ask a great many more questions than are necessary or are strictly polite. One had a regular reply which he delivered from end to end when questioning began; it did not matter what the question was, long practice had enabled him to guess what was coming, and the answer ended with the shouted query, “Is there anything else you would like to know?”

The passenger who likes to check the ship's course by his own map is more often in evidence than one might think. Captain Warr, who recently retired from the Cunard line, once had on board a gentleman who kept on correcting him every time he gave him the name of a channel or headland, and at last when the passenger wished to know the name of a bird which was following the ship the captain retaliated neatly by referring him to the map.





By permission of

S.S. " ARAGUAYA " —SUITE DE LUXE

The R.M.S.P. Co.



THE UNIVERSITY OF CHICAGO  
LIBRARY

One incident which amused the other passengers occurred on an old Inman liner.

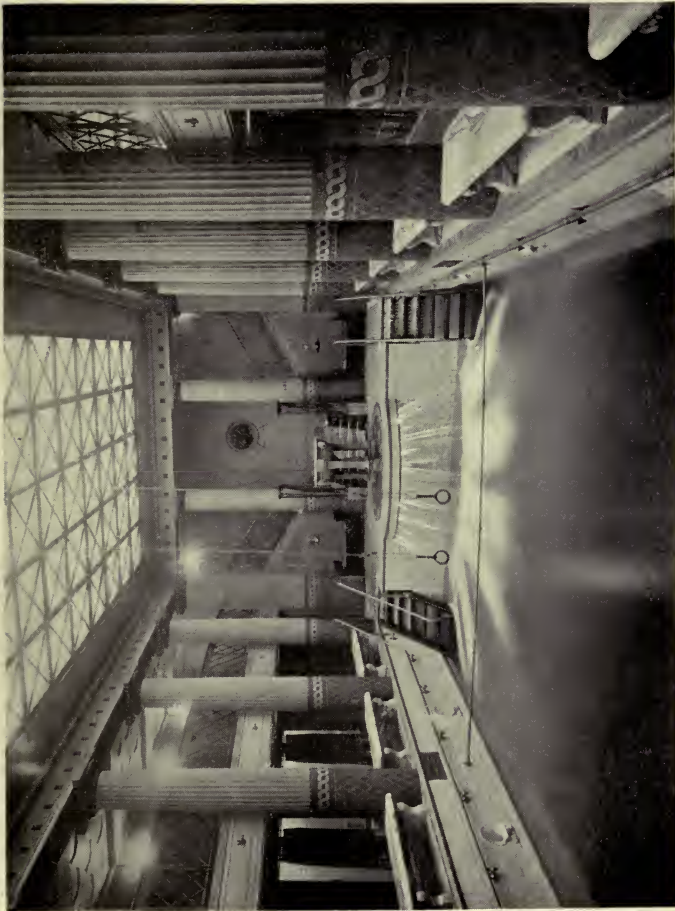
A passenger who spent much of his time in asking questions propounded the query to the captain of his ship, "Why do seabirds follow a steamer?" The captain had about enough of the catechism by now and replied mysteriously, "I can tell you, but it's a secret." The passenger begged to be enlightened. The captain took him by the arm and led him down one side of the deck, up the other side, down the front steps from the bridge deck, on to the forecastle head, back to the stern, upon the turtle deck at the very end, and back to the starting-point; he stopped frequently, leaned forward as though to whisper the secret, and said, "No, we might be overheard." But when the promenade was finished he blurted out in his usual cheery voice, "So you want to know why seabirds follow steamers. It's very simple when you come to think of it. It's partly because they're hungry, and partly because the steamers don't follow the seabirds."

Those passengers who long for something more to do than eat too much and take too little exercise, may find many opportunities of indulging in what is for a passenger in a luxurious liner a strenuous life. If he likes he can rise in the morning when the sailors are washing down the decks with the hose, and he may need to display some agility to escape a drenching. There is no longer the excuse of wanting a bath for promenading the decks at washing time, as salt water baths can be had in the privacy of one's own bathroom, or at all events in the privacy of one of the bathrooms attached to the cabin accommodation. The deck baths may be cold and stinging and delivered with no little force, but the more comfortable way is to seek the bathroom and find the salt water warmed to an agreeable

temperature with a shower of fresh water to follow. Every suite of rooms has its bathroom now, and all liners have a score or more of bathrooms for the benefit of those passengers who are travelling in cabins which have not bathrooms attached. Those who prefer a swim can, if they are travelling on any of the newest liners in the service between Europe and New York, indulge in this exercise to their hearts' content in the large swimming-bath fitted on those steamers. The Cunarders, the great White Star boats, and the newest German palaces have swimming baths, and aquatic sports are consequently among the entertainments got up among the passengers for their amusement. That of the *Olympic*, for instance, is thirty feet in length by fourteen feet wide, and is deep enough to allow anyone to attempt to swim with comfort.

The same ship also introduced a squash racket court thirty feet by twenty feet, with a gallery for the accommodation of spectators; the court is two decks high, so there is ample room for the game to be played with as much energy as its most ardent devotee could desire.

All modern steamers are fitted with a gymnasium, or with gymnastic appliances. Where a regular gymnasium is equipped passengers can indulge in the horizontal and parallel bars, cycle-riding machines, the riding of a mechanical horse—which sometimes can be induced to simulate any pace from a gentle amble to a fast gallop by switching on less or more electrical power if the passenger is not disposed to provide the motive power himself but has enough to do to hold on; boat-rowing and other forms of exercise. Not the least advantage is that energetic young ladies fond of exercise may enjoy the facilities of the gymnasium as freely as the so-called sterner sex. Some of the steamers, however, whose voyages are mainly through tropical waters,



*By permission of*

*The Hamburg-America Line*

SWIMMING BATH ON S.S. "IMPERATOR"

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have a number of these gymnastic appliances installed on the promenade deck where the athletes can serve the double purpose of keeping themselves in condition and providing entertainment for their fellow-passengers.

Endless, too, are the games arranged among the passengers themselves. In the warm tropical evenings when the sea is smooth and the steamer is bowling along at her best, the dances are something to look forward to, something to enjoy at the time, and a pleasant memory afterwards. Nor is their popularity to be wondered at, especially among the younger people, for sitting out a dance in a cosy corner of the deck, where two are company and three are none, where the whole surroundings, in the shape of good music, good company, the whispering wind and sea, and the brilliantly starlit night, are conducive to sentimentality, is an admirable incentive to flirtation, and perhaps to downright love-making. How many scheming matrons with unappropriated and marriageable daughters have ventured on a voyage with the sole intent of seeing the girls captured before the voyage is over, if a suitable captor can be found! Apart from love-making, a ship's dance is usually good fun, particularly when the partners are drawn by lot and the passengers are well enough known to each other to appreciate one another's idiosyncrasies. Fancy dress balls are always popular. Those who know the ropes generally include a fancy costume among their belongings. The most amusing of these are when the costumes to be worn are settled by lot, and there is only a limited number of hours in which to prepare the costume. The more absurd and incongruous the appearance of the character assumed, and the more makeshift the costume, the greater the hilarity. Of course, anything savouring of vulgarity is rigorously objected to. A committee generally manages the affair and sees that nothing to which anyone could

take exception is permitted. Concerts on deck in the fine weather and in one of the social halls if the weather be unpropitious are always popular. It is the custom, and one that should be encouraged, to give at least one concert on every steamer every voyage in aid of the funds of the Merchant Seamen's Orphanage; the charge for admission is high, sometimes a half a guinea, but the intention is that the Orphanage shall benefit as much as possible. Everyone is willing to do his or her best; many professionals who have refused to take part in other entertainments have gladly come forward to give their services on these occasions. In all classes of the passengers these concerts are given on the long-distance steamers, but in some of the Australian steamers the saloon passengers offer to give a concert in the third-class saloon for the entertainment of their humbler fellow-travellers, to which admission is free, the contribution to the fund being voluntary. The second class can generally be depended upon to arrange their own entertainments.

In this connection it cannot be urged too strongly that it is a gross breach of the etiquette of the sea life, and a shocking exhibition of bad manners and low inquisitiveness, for passengers to visit unasked the quarters of an inferior class. Before any such concert as that suggested could be given it would be necessary that the promoters should have the captain's permission first to enquire whether the entertainment would be welcome. The enquiry would be passed to the chief third-class steward who would make the necessary enquiries, and if the reply were favourable to the proposal the performers alone would be invited to enter the third-class quarters. If any others chose to invite themselves the third-class passengers would be within their rights in objecting to their presence, and the stewards might be asked



to eject the intruders. The usual way of excluding those from a superior class who are not wanted is to charge an exorbitant price for admission. The third-class passengers would not dream of entering uninvited the saloon when an entertainment was being given, and they expect to have the privileges and privacy of their quarters respected also. The same rules apply in the case of the second saloon passengers. The barrier between the first and second saloon passengers is less severe than that between the second saloon and the third-class passengers, because the second saloons are exceedingly comfortable, more so than the saloons of many steamers only a few years older, and this tempts many persons to "travel second" who would otherwise "travel first"; there is also the difference of fare, which to many people is worth considering; and in the third place, certain established conventions, such as dressing for dinner, are not observed. It often happens that first and second-class passengers are acquainted, and in that case no resentment is felt if the saloon passenger enters the second saloon deck to chat with his friend. On the long-distance steamers neither would be permitted to have a meal in the dining-room of the other's class; but I have seen it stated that special permission may occasionally be given on a North Atlantic liner for a first-class passenger to invite a second-class passenger to lunch with him in the grill-room or restaurant of those steamers which have one, as distinct from the dining-room, upon payment of a substantial fee for the privilege. In any case the practice is too much objected to, and is open to too many abuses, for it ever to become general.

Athletic sports, dignified with the name of gymkhana, are organised on every steamer on a long voyage, and occasionally on the short voyage across the Atlantic also. Games of various sorts are arranged such as

shuffleboard, cricket, deck-quoits, and tennis, nets being rigged up for tennis and cricket to prevent the ball going overboard. Cricket matches between teams of ladies and gentlemen are often arranged. Amusements of this character are a great improvement upon the boisterous merriment and disagreeable horse-play which marked the old time festival of Father Neptune's visit when crossing the Equator. Father Neptune's visit is never paid now ; indeed, it would never do for the handful of sailors to attempt anything of the sort on a steamer carrying some hundreds of passengers most of whom would be sure to resent energetically anything of that sort. For another thing, there is no longer any public taste for the species of fun which the occasion called forth. The custom was mainly popular among the sailors of the sailing-ship days, when they made the most of the one opportunity allowed them to relieve in their own way, according to the traditions of their calling, the tedium of the voyage. It was the one occasion on which they could pay off scores against an officer who had not "crossed the line," and they made the most of it. An unpopular officer or apprentice could depend upon being made to go through the whole programme ; those who were liked were allowed to buy exemption from some or all of the proceedings. Often enough the ceremony was nothing more than horse-play, but at times it degenerated into something offensive ; in any case, the disappearance of the custom is not to be regretted.

Besides the entertainments on board, the passengers can generally find much to interest them at the various ports of call, and many incidents and scenes to justify amateur photographers, of whom there now are always a number on board, in displaying their skill. All the largest steamers now have a dark room wherein photographers may perform the mysteries of developing and

fixing their negatives. One word of advice I would give them is to use a daylight developing tank if they have a number of plates, as they will then occupy the dark room much less than if they develop every plate separately, and will give other photographers a chance. Passengers have often made a dark room of their cabins, if water is laid on.

Most of the long-distance steamers call at several ports *en route*. The Australian steamers, according to the line to which they belong, call at Plymouth, Gibraltar, Marseilles, Naples, Malta, Alexandria, Suez, Aden, Colombo, Fremantle, Adelaide, Melbourne, Sydney and Brisbane. At no time is there a longer interval than a few days between one port and another. Steamers from South American ports have a number of ports of call ; some put in at La Pallice, Lisbon, Madeira, and the Azores before the South American coast is reached. A few of the mail steamers make the passage direct, but the speed at which they travel soon reduces the distance, while the many incidents of the voyage pass the time all too quickly in the opinion of many.

The various ports of call afford a great deal of entertainment to passengers. At many of them the steamers do not go alongside a quay or pier and the passengers who are going ashore are transferred to launches and small steamers which take them to the land. In fine weather, and with the liner giving shelter, the tenders can come alongside her without difficulty, and the passengers experience no discomfort. In rough weather, or when there is enough swell to make the liner rock unpleasantly, the tenders cannot get so close to the big vessel, and then the fun begins for the onlooker. A boatswain's chair is rigged for the transfer of the passengers. Technically this is a long rope with a loop at the end, in which the passengers are seated one at a

time, and holding on "like Death to a dead nigger"—if the old American sailor's phrase may be permitted in this connection—are swung out by a yard-arm or derrick and lowered by this means to the waiting and lively tender. Occasionally a modernised version of this method is employed, when in place of the loop is a comfortable and safe chair, a half-way arrangement between a grandfather chair and a divan, into which the passenger is tied so that he cannot fall out, and in this he will be lowered carefully to the tender. It is a task requiring no little skill to transfer the passengers safely and dry from one vessel to the other, but, besides larger and steadier liners and tenders, so carefully is the work done that none are ever ducked in the sea now, which was sometimes the case when the old loop was employed. At the few places where the passengers are lowered into small boats there is occasionally the chance of a wetting and the probability of a somewhat undignified arrival in the boat.

One amusing incident occurred at Adelaide a few years ago. The waters of St. Vincent gulf can be very lively when there is a southerly or south-west breeze. The port authorities were accustomed to board the mail steamers in a small steam launch which danced about on the waves with the buoyancy of a cork. The degree to which it would heel to one side and the suddenness of its recovery could hardly be excelled. However, the port authorities were used to it, but passengers going ashore or embarking at the Semaphore or at Glenelg used to eye that lively launch with many misgivings. In the very hot weather some of the local officials were accustomed to dress in white suits. One gentleman thus attired boarded the steamer and was returning in a real boatswain's chair, viz., a loop, to the launch and at the critical moment as he was being rapidly lowered the

launch swung towards him and he disappeared into her funnel. As soon as she rolled in the other direction he was hauled out again, none the worse in himself but apparently dressed in a piebald suit of irregular pattern, black predominating largely.

The daily sweepstake on the ship's run, already alluded to, is about the one form of gambling in which nearly every passenger joins at some time or other during the voyage. The "shilling sweep" is customary; most saloon or second-class passengers can afford that amount occasionally, and even those who indulge in a ticket every day on a voyage from London to Australia, and lose every time, are not likely to be as much as thirty shillings out of pocket. The "ship's sweep"—it is not official, but one of the ship's responsible officials often supervises it,—as it is called, is the only one that should be patronised, as either the whole of the money entered is divided in prizes, or a known percentage is deducted for some charitable purpose. "Sweeps" promoted otherwise should mostly be regarded with suspicion, as they are generally profitable to the promoter; this applies more particularly to those organised privately on the last day of a North Atlantic voyage, when the organiser has been known to forget the prize-winners.

In a few vessels, more particularly those carrying soldiers, some shooting practice is permitted with rifle or revolver. It requires no little skill to hit a bottle or an inflated paper bag swinging ten feet below a yard-arm—if the steamer has any yards—from a distance of sixty feet. The use of firearms at sea by passengers is illegal under any circumstances likely to arise in a modern vessel, and almost all captains are strongly opposed to the cruel and reprehensible practice of shooting at the seabirds. What possible advantage or credit can it be to a man to wound an albatross, or frigate bird, or mollyhawk,

or any other of the beautiful gulls, by sending a bullet through its wing and watching the stricken creature fall into the sea to bleed to death or die of starvation. Nor is it any credit to him to kill the bird outright.

Sailors have many strange superstitions or beliefs in connection with seabirds. One of them is that the spirits of sailors drowned at sea enter the birds which will never rest until the birds find the ship from which the man was lost, and that if the ship is wrecked the birds are doomed to spend the rest of their existence wandering over the ocean and seeking a sister vessel. Sailors and fishermen are alike in this respect, and the belief prevails in one form or another among the seafarers of all nations. So it will be seen that sailors do not like shooting at seabirds, and regard the slayer at sea as little less than a murderer.

Once I was discussing the idea with some old sailors of "windjammers" who believed thoroughly in this strange version of the theory of the transmigration of souls. They averred that no seagull ever tried to alight on a new ship, until after it had made a voyage; but that if a man were lost overboard and a gull afterwards tried to find a footing on the ship, or flew between the masts, it was a sign that the man's spirit had entered the bird and that it had brought him back to the ship.

The fisherfolk of a town where I stayed a few years ago pointed out to me that there were certain boats on which the gulls alighted and that every one of those boats had lost one of its crew at sea. "The men have come back," said the fisherfolk. A beautiful large gull used to glide over one boat in particular and scream, but not descend to it.

"'Tis an omen that some one is being called," was the fisherfolk's verdict. The fishermen went out and returned many times in her, without mishap, but once the boat

was caught in a gale and a man fell overboard and was never seen again. The next time the gull came it alighted on the deck.

With coincidences like this—far-fetched, if you like—to fortify their belief, it is no wonder that fishermen and sailors resent the killing or maiming of the birds at sea. The belief, however, is strong; how strong, perhaps, the “Ballad of Pentyre Town,” where the “grey gulls gather,” may help you to understand.

Travellers through the tropics cannot fail to notice the beauty of the sunsets, especially just north and south of the doldrums, when the whole sky from the western horizon to the eastern, and from the northern to the southern, is a blaze of colour. Once, I remember, nearly all on board gazed at the sunset, impressed by its gorgeous beauty.

“Curious prismatic effect,” a scientist explained: “All these colours and hues are due to the particles of moisture in the atmosphere. You can easily prove it and get precisely similar effects if you direct a beam of sunlight upon the steam from a kettle and——” fortunately someone tripped him at that moment and stopped the explanation, but the beauty of that sunset was spoilt for us.

Not the least interesting episode in life at sea is dropping the mails overboard. The steamer does not stop everywhere at which mails are to be sent ashore; the letters and papers are enclosed in a watertight barrel weighted at one end and surmounted at the other by a short pole with a flag. As soon as the boat to pick up the barrel is in sight it is dropped into the sea and the boatmen row to the spot and recover it. In one or two places the ocean currents play the part of mail-carriers, but they are not to be depended upon.

The study of ocean currents is a subject in which

many captains take a great interest. Captain A. Simpson, of the White Star—Aberdeen line (Messrs. Geo. Thompson & Co.), who spent over thirty years in the trade between England and Australia, and only recently retired, is a recognised authority on the subject. It was his custom to drop in the ocean a bottle containing a paper and well corked to keep out the salt water. The paper stated the latitude and longitude where it was consigned to the sea, the name of the steamer and the date, and a request to the finder to return the message to Captain Simpson. About ten per cent. of the thousand bottles he entrusted to the ocean have been recovered. Some have drifted from the South Atlantic to the coast of Australia where they have been found months or years afterwards. The fate of the others may be conjectured; they were probably smashed by heavy seas, or broken against rocks. Many captains send these current-testers on their long slow voyages.

Sometimes, too, the bottle has been used to convey a last message from a sinking ship; often it affords the only clue to the fate of some vessel which has left port and has at last been added to the list of "missing." For this reason no one should ever send a bogus message afloat; some captains will not, if they can help it, allow bottles with messages to be sent overboard unless they have approved of the messages; a very wise precaution under the circumstances.



## CHAPTER VIII

### SAFETY AT SEA

IN an earlier chapter an endeavour was made to show in a general way and without technicalities the steps taken by owners, naval architects, designers and builders to get nearer the ideal of an unsinkable ship ; that is to say, to divide a ship by means of bulkheads in such a manner that the bulkheads shall limit the effect of possible injury by confining the inrush of water to one or two damaged compartments. Let us now turn to the consideration of the means of safety at sea, the conditions implied both for risk and security, and the measures adopted to meet the one and provide the other.

First and foremost of these measures is the look-out. Safety is only attainable by constant vigilance, not only against exterior dangers but interior dangers also. The dangers which vigilance in the shape of the look-out has to guard against are collision with another vessel or some floating obstruction and stranding. The look-out is maintained by two officers on the bridge, and by one or two men in the crow's nest on the foremast. The crow's nest may occasionally be occupied by a junior officer and one approved member of the crew ; but in any case all officers entrusted with this duty have passed the official sight test—this is compulsory with officers—or in the case of the sailors, a test considered satisfactory by the owners of the vessel. The crow's nest is a barrel-shaped affair situated high up on the mast and reached either by a steel ladder up the side of the mast or by the shrouds in the ordinary way ; the former means of access is provided in modern vessels. The duty of the men in the crow's nest is to report to the officers on the bridge anything they see from that point of vantage.

It may be a vessel far away on the horizon, a stately sailing ship, or a dismal tramp ; a piece of wreckage, or a ship's light ; an iceberg, or a rare buoy driven from its moorings ; or, more rarely still, some unfortunate and dangerous derelict, or a ship's boat. The men in the nest are sheltered nearly shoulder high by its sides, but the position is exposed, and in rough weather or hail or snow squalls there is no other shelter ; the look-out men have to maintain their incessant vigilance, for the ship is rushing along from a quarter of a mile to over a third of a mile a minute ; the conditions of safety are constantly changing, never the same for two seconds together ; and the greater the obscurity, though temporary, caused by squalls, the greater the need for vigilance. In rough weather, or in certain peculiar conditions of light, objects on the surface of the water are far more difficult to sight than in average conditions of weather and light. The turbulence of the seas conceals most effectively objects that would be visible easily in smooth water, and when to this are added the limited conditions of range of sight brought about by a squall, with its accompanying reduction of light and obscuring of the view by snow, hail, sleet, or heavy rain, it will be admitted that the task of the look-out is not an easy one. The duties are onerous, and only those who have experienced all the varieties of weather and light under which they have to be performed can appreciate the unceasing care and watchfulness necessary to their fulfilment.

Perched in the nest by themselves the men would be useless were there no means of communicating instantly to the officers on the navigating bridge the results of their observations. In still or ordinary weather the human voice should be sufficient to carry the distance distinctly, if the mast be not too far forward of the bridge ; but in heavy weather when exposed to a wind which



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seems to roar in one's ears, and the whole structure about one seems to hum and vibrate, one has to shout to be heard a yard away. Sometimes a speaking-trumpet is used, but more often a telephone is installed, connected with the loud-speaking telephone equipment in the navigating-house, and by this means the crow's-nest man can report his observations accurately and at the same time confidentially, for it is not always advisable to let passengers overhear all the navigational remarks and instructions. The reports from the look-out man in his lonely place of vigil are seldom more than a few words ; a bare statement of facts is all that is needed. If the officer on the bridge requires anything more, he asks for it. The look-out in the crow's nest is relieved in some ships every hour, and in others every two hours, according to the weather and the number of hands carried.

The look-out on the bridge is always maintained by the senior officer taking the watch, and associated with him are one of the other officers and perhaps one of the junior officers also. In bad weather they have the advantage of the screens at the ends of the bridge which shield them from cutting winds and stinging rain and hail, and permit them to look ahead as well as they may, even in a snow-storm. Heavily-falling snow is as bad as a fog for shutting out the view. The main value of the look-out in the crow's nest is that it is maintained from a different point and therefore may sight objects not so easily observable from the bridge. That at least was the theory before vessels were built of their present enormous dimensions ; nowadays the bridge is as high above the water as the crow's nest of smaller steamers, and actual experience has shown that the officer on the bridge is quite as likely as, and perhaps more likely than, the man in the nest to sight an object first. It is wonderful how extraordinarily keen the vision becomes

under long practice. Every voyage it may happen that some sailing-ships are sighted when all that are visible above the horizon are their royal and top-gallant sails, and even when the vessels are nearly hull-down peculiarities of their rig will be noted which to the trained nautical eye reveal where the ship was built, and perhaps allow of shrewd guesses as to her ownership. It is the same with steamers. A north-east coast "tramp" can be identified as such by these long-sighted mariners before she is within flag-signalling distance, while the great liners which plough the Seven Seas—the Three Great Oceans would be a better term to suit modern commerce—have every one their several distinctions which he that goes to sea may learn and read. The whole underlying principle of the look-out is to guard against danger, either in regard to the position of the ship herself or the condition of another vessel. By the look-out an occasional vessel in distress, or the remnants of a ship's crew in an open boat, may be sighted and succoured; very occasionally a vessel with a reversed national ensign, or at night a distress flare, is sighted and preparations are made at once for a possible rescue.

But whatever may be the report from the crow's nest or the forecastle head, the responsibility rests with the navigating officers. Don't think that they are "doing nothing because they are only walking up and down the bridge," as many a passenger has remarked, when entertaining the delusion that officers have an easy time. They are listening all the time for signals from the various indicators in the bridge-house, and are themselves keeping a look-out "forard," and over the rest of the ship aft, and to the horizon on either side, and watching the barometer and its weather indications at the same time. They appear to the traveller to be doing very little because the latter does not understand the work. The officer

on the bridge knows what is the normal condition of the ship fore and aft. So long as nothing appears out of the normal everything is right. But let something abnormal appear, however insignificant, and his trained eye will detect it in a moment. A hurried order or two, quietly given, as many sailors as are necessary running to execute it, and an entire absence of flurry, shouting, or excitement, mark the change in circumstances, and the whole incident may be attended to without the passengers knowing anything about it. Sometimes passengers have complained that they are kept in the dark as to what may be happening, but there is much to be said for the officers' point of view that the less passengers know what is going on the less they are likely to misunderstand and criticise wrongly. Passengers should remember that they are passengers, not ship's officers. They are quartered in the social apartments of the ship, and have nothing to do with the navigating-house.

The chief characteristic of the navigating-house, as it may appeal to the average landsman who is permitted as a special favour by the captain to visit that portion of the ship which has been called the eye and the brain, is its simplicity. There are the ordinary large steering-wheel with the binnacle in front of it, a few mysterious looking levers, none more than a few inches long, attached to simple boxes which either rest on a small table or are fastened against the wall, a clock or two, and a few indicators. The whole of the front has strong plate-glass windows usually set in steel frames. Sometimes the front of this house or room is flat, sometimes curved, this being entirely a matter of fancy on the part of the owners or those concerned in its construction. It has two doors, one at each side, always opening upon the navigating-bridge and it usually occupies about a quarter of the bridge itself, the rest of the deck space being

uncovered with the exception of the two extremes of the bridge which are sometimes roofed and also have glass screens at the fronts and sides so that the officer on duty can go to the extreme weather end of the bridge on the look-out, without being obliged to remain exposed to severe weather. In fine weather, of course, he can take advantage of the screens or not as he likes, but when one is facing a howling gale in the Bay of Biscay or the North Atlantic, or fighting an easterly gale in winter in the English Channel, or "running down his easting," or making the best of his way through the roaring forties, the shelter of the screens is much appreciated.

Immediately facing the steersman in the navigating-house are two tell-tale instruments. One shows exactly the position of the main spoke of the wheel so that it can be seen at a glance whether the wheel is at the dead centre, that is, not causing the rudder to deflect either to the left or right; and the other, to the uninitiated, might even be taken for a crescent-shaped modification of a score board in the game of billiards. In reality it is a valuable check upon the steering, and serves also to show the steersman and the officer on duty the exact extent to which the rudder is answering to the wheel. The rudder-head is electrically connected with this indicator and the indicating point slides along marking even small fractions of a degree and shows instantly the exact amount of the turning of the rudder to right or left.

The steering-wheel itself is a small affair compared with what it would have to be were mechanical means not adopted for steering the ship. A rudder weighing some seventy tons or more requires the application of great power to enable it to do its work properly. Steam and electricity together permit the greatest liner afloat to be steered with a wheel no larger than that of a medium sized sailing-ship, and even this size is a matter of





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convenience, for it would be just as easy to steer the ship with a wheel no bigger than that of a little river steamer. The "double cart-wheel," with four men to do it in dirty weather, is never seen now, except on such old warships as have not been sent to the shipbreakers' yards or are preserved because of their historical associations. In the worst weather the modern liner does not need more than one man at the wheel, and he does not have to exert himself. Steam does the work, and electricity shows how it is being done. A turn of the wheel a few degrees is accompanied by a slight rattling, as the electrical connections with the steam steering-gear do their work, and instantly the steam steering-gear at the stern is operated, an indicator in front of the steersman shows the resultant position of the rudder, and the course of the vessel is altered as desired. One man has done in a few seconds what a half-a-dozen could not have accomplished in as many minutes by their own unaided strength.

In large modern ships it is necessary when entering or leaving port, and in many other circumstances, such as launching and picking up a boat, to have an officer on duty on what is called the after-bridge, which is a small bridge extending across the vessel not far from the stern. In some of the largest ships a special bridge is built for this purpose, but in others a portion of the poop or the end of the promenade-deck or a portion of the deck known as the turtle-back is railed off to do duty. In the navigating-house there is a large metal stand with a couple of swinging arms, and on what may be described as its head is something like a small circular plate set in a thick rim of vulcanite and metal. This is really a telephone of the kind known as loud-speaking, and is as unlike the ordinary shore telephones as anything can well be. By its means the captain or officer on duty can

communicate with the officer on duty on the after-bridge. When this telephone is being used, a man is told off specially to attend to it. It would be impossible to shout loud enough to make anyone on the after-bridge hear from a distance of three or four hundred feet or perhaps twice as much ; to pass instructions by relays of men stationed along the deck would waste a lot of time and lead to endless confusion, to say nothing of the impossibility of executing the orders directly the commands were given and the probability of one of the men in the relay making a mistake in the repetition. A similar telephone is fitted on the after-bridge and a man is stationed at it also whose duty it is to receive and transmit at once to the officer there the instructions received from the officer in charge of the ship on the navigating-bridge. The mere repetition aloud by the men at the telephone is at once a check on the accuracy of the message and its transmission, and as a similar arrangement prevails at the telephone on the navigating-bridge, the officer on duty there does not have to leave his post for an instant, which may be by the side of the ship, but gives his command quietly to the telephonist, who instantly repeats it. This system is quicker and quieter than any which has yet been invented. The long arms are the receivers and the plate referred to is the transmitter. The arms are lifted when it is necessary to place the receiver to the ear and swing down again when no longer in use. In many ships there is an equipment of indicators between the two bridges, like those between the bridge and the engine-room ; only in this case the instructions deal with the manipulation of mooring ropes, etc.

Communication is also made by the bridge telephone to the engine-room in the bowels of the ship many decks below. The telephone plays a much more important





part in the navigation of a ship than most passengers are aware. From his cabin, as well as from the navigating-bridge, the captain can communicate with the principal officials in any part of the ship. To speak to the engineer many decks below, all that is necessary is to turn a switch as with an ordinary telephone ashore. Although some people profess to think that there is some jealousy between the engineer and the captain, and that it is the engineer who really runs the ship, each is indispensable, and there is a great community of interest between the two for their own sakes and that of the ship and voyage and loyalty to the owners. The captain as well as the engineer has to give a thought to the coal consumption, for it is always necessary to keep under the allowance per hour if possible lest an emergency arises requiring a greater quantity of coal to be burnt. The ship must keep her scheduled position day by day, and though sails are hardly ever set on modern liners, advantage is taken of the wind and currents to help her along and so ease the coal consumption; this applies more particularly to long-distance liners. The liners in the North Atlantic trade depend wholly on steam power, and with their comparatively short voyage are able to rush ahead under steam only, anxious to reach their port in the shortest possible time consistent with safety. The captain on either class of liner will telephone down to his chief engineer when the falling barometer indicates the approach of rough weather, for storms at sea, though they delay the vessel opposing them, necessitate the expenditure of a greater amount of coal to keep the ship going, and this means harder work for the engine-room staff. Improvements in the weather are also telephoned to the engineer so that the coal may be conserved, while other messages may relate to the number of revolutions of the propellers per minute, how they affect the steering

and the speed of the vessel ; for if one of the propellers is not doing its fair share of work, the steering and the speed will both be affected. These are only a few of the many communications which have to pass between the engine-room and the bridge and cannot be transmitted by the ordinary indicators.

Everyone is familiar with these indicators with their various marks of "ahead" and "astern," but very few people outside those immediately concerned in constructing and working them have any idea of the very pretty piece of mechanism by means of which these indicators do their work. In large steamers there may be three or four such indicators, according to the number of screw propellers the vessel has, besides a few more to supplement the telephone arrangements between the navigating and other bridges. The great length of modern steamships renders it necessary that in manœuvring through a somewhat tortuous channel or passing through a dock-entrance into a tidal river the full use of the steering powers of the propellers should be used. Thus it may be necessary to indicate when one propeller only shall be worked and its direction ; or when one shall be worked ahead and the other astern, or in the case of a vessel with three propellers that one wing propeller shall be worked ahead and the others astern ; or it may be necessary to work certain propellers in either direction at a faster rate than the others. Every propeller with which the ship is provided is driven by its own separate set of engines and these sets can either be connected and worked together, which is the rule at sea when the ship has a clear road before it, or run separately. Always in manœuvring the engines are worked separately. When the engines are not being run the arrows on the indicators usually point to a small segment of the face of the indicator marked "finished with engines." If a



vessel has been under steam no engineer can leave his post until this signal comes from the navigating bridge. There is a corresponding set of indicators in the engine-room, and directly the signal is transmitted from the bridge the engineer in charge, whose place is always by the levers which control the starting, stopping and slowing of the engines, and has immediately in front of him all of these indicators, moves the handle attached to the one on which the signal has been given and thus repeats back to the bridge the order just received.

Thus the officer on the bridge knows that his order has been attended to. When a vessel is about to start on her voyage and it is intended to set the engines going, a preliminary signal is given, and then the indicator is set at "stand by," which means that everyone has to be at his post and wait for the next command which may come in a few minutes or not for an hour or two. The nature of the command will depend entirely on circumstances, and may be anything from slow to full speed, ahead or astern, either for the propelling machinery as a whole or for one of the engines only. When port is once left the indicators may stand at "full speed ahead" for days together. The other indicators enable the officer on the bridge to give his orders for the slackening or tightening of ropes when a ship is being warped through a dock entrance or brought to the quayside by means of the capstans near the bows and stern. Here again mechanical power is superior to human strength not only in respect to its amount but in the greater ease of control and adjustment to the work required of it. The capstans round which the ropes are passed are worked by steam power which can be applied or shut off instantly, and on a few vessels electrically driven capstans also are provided; in either case the instructions for the correct manipulation of the ropes are conveyed by means of indicators operated

in a similar manner to those communicating with the engine-room.

In all large modern vessels all the indicators are worked electrically, and attention is drawn to every signal and its acknowledgment by the clang of an automatic electric bell. In steamers of moderate tonnage in which the distance is not great between the bridge and the engine-room, the indicators are worked by levers with such bevel cog-wheels as may be necessary. In this system, also, every change on the indicator is accompanied by the ringing of a bell as to attract the attention of the engineer should he be engaged at the moment at any other part of the engine-room. This is also an important precaution for safety, as should there be no response from the engine-room the officer would at once conclude something had gone wrong and would telephone down, or call through the speaking tube, or send someone to see what was amiss.

The ship's clock in the bridge-house is not often an imposing looking article of furniture, but there is no denying its importance. In appearance it may be outdone by half the clocks in the passenger accommodation. By it, the other clocks in the ship are regulated.

The ship's time at sea varies from day to day according to the position of the ship on the ocean. Actually it is varying all the time but as it would be too much trouble and cause too much confusion on board to attempt to set all the clocks of a ship right every minute or two or even every hour, the usual plan is to regulate the clocks once a day. The time at which this is done varies in different ships. In vessels carrying a large number of passengers and a correspondingly large staff, the change is made at midnight; in other vessels the change is usually made at midday. The reason for the custom differing is that on a large passenger steamer as in a large

hotel ashore, everything has to be done at its appointed time, and if the ship's time were to be varied at any odd hour from day to day the whole domestic arrangements of the vessel would be grievously upset. Thus New York is about five hours behind London and a vessel going westward to New York naturally loses a little more than half an hour a day, whereas a vessel bound east has to make up that amount of time. A vessel going from here to Australia will find that by the time she has reached the longitude of Marseilles she has gained nine minutes, by the time she has got to Alexandria she has gained two hours, and at Aden she is three hours ahead, and at Colombo the ship's time will be six hours and a half ahead of London. Then she will proceed to Fremantle, where by which time she will have gained seven hours and three quarters all but two minutes. By the time she is off Adelaide the gain has amounted to nine hours and a quarter. At Melbourne it is nine hours and forty minutes, and at Sydney almost ten hours and five minutes. If a voyage should be continued to New Zealand the ship will find herself eleven and a half hours in advance of London, and another twenty minutes will have been gained if the voyage is prolonged to Fiji. If the vessel goes to Australia by the Cape of Good Hope, she will for a portion of the time have to go westward in order to avoid the African coast, for a part of Africa is west of the longitude of Greenwich. If the vessel calls at Madeira it will be half-past ten in the morning when it is noon in London, but the meridian of Greenwich will be crossed shortly afterwards and the eastern hemisphere re-entered, so that by the time the ship is off Cape Town she is a little more than two hours ahead, and thence onward time is gained as long as the vessel is travelling eastward. On the homeward journey after leaving Sydney for New Zealand, providing she is returning

by the South Pacific Route, she will continue to gain time until the 180th meridian is reached when she will be just twelve hours ahead of Greenwich. After that the ship's time will be put back twelve hours and she will then continue to gain time until she arrives at London on London time. If this were not done the ship would arrive in London a day ahead of the actual time on which her arrival took place as she would continue to gain time all the way.

Some amusing incidents in connection with the change of time used to take place in the old sailing-ship days. In a sailing vessel in which I made a journey it was the custom to serve the crew with a tot of grog every Wednesday. The sailors were therefore particularly anxious that they should cross the 180th meridian on a Wednesday, and anything that could be done by bad steering to delay the vessel with that object was done by them, and they displayed an ingenuity worthy of a better cause. To their great delight the ship crossed on a Wednesday and the usual tot of grog was served out. Having learnt that the next day was also regarded officially by the captain as a Wednesday the crew came aft and demanded their drop of rum, and after a little delay for dignity's sake the captain ordered the steward to give them what they wanted. In modern steamers nothing of this kind is likely to occur. The voyage is expected to last a certain number of days and it is equally a matter of indifference whether there are, for calculation purposes, eight days in the week or seven or six. Just the reverse course has to be followed in a voyage from, say, San Francisco to Australia. The great American port being very far west of Greenwich, and Sydney many hours east of Greenwich, a day has to be dropped when crossing the Pacific westward, so that one week will only consist of six days.

When every clock in a ship had to be adjusted separately, it was no slight task to set them right whenever the ship's time was altered ; but this difficulty is overcome in modern steamships by the use of electric clocks. The change over in big passenger steamers nearly always takes place at midnight when most of those on board are asleep, and no inconvenience is thus caused to passengers or crew. All the clocks are adjusted electrically, and big steamers like those in the North Atlantic trade may have fifty or sixty clocks aboard all driven by the one electric mechanism.

In the navigating-house the master clock for the ship is situated, and as this clock is put forward or put back so many minutes, so are all the rest of the clocks in the ship actuated. It seldom happens that when time is lost the clocks are put back ; they are usually stopped for the necessary number of minutes and when the time has expired they are restarted. This is not left for anyone to do, but dependence is placed on an ingenious little arrangement by which a portion of the electric mechanism which animates the ship's clocks stops them for the required number of minutes and restarts them automatically when the interval has expired. In advancing the time of the clocks the mechanism is advanced a minute at a time, and all the ship's clocks gain a minute simultaneously until the correct time for the day is reached.

A small red disc with an electric button in the centre might easily fail to attract the attention of the casual visitor who at the most might think it was merely an electric bell. This is the key of the alarm system for the whole ship. Directly the switch is pressed bells ring throughout the vessel. Every member of the staff, whether on duty or not, hurries at once to his exact place, and he knows the duties expected of him. The watertight doors in every hold will be shut in a few

seconds, if, indeed, they are not shut already by the lever from the bridge or the lever from the engine-room. Certain of the cooks and stewards immediately see to the full provisioning of the boats. There is no confusion, no unnecessary running about, beyond what is supplied by the passengers themselves and it is the duty of the ship's staff to minimise this as much as possible. The men who go to the storerooms pass out certain stores which are rapidly handed along a chain of men until the boats are reached, and each boat is fully provisioned in the course of a few minutes. Every boat is required to carry at all times a small breaker or barrel with fresh water. It is the duty of certain men to see that these breakers are full and to make up any deficiency. The stewards have the task of marshalling the passengers, which is probably the most difficult task of all, apart from that of lowering the boats. Certain stewards in each department visit every cabin to see that the occupants have left. The passengers are mustered in their respective dining-rooms or on one of the upper decks according to circumstances, preferably on one of the upper decks, and even if they should first be assembled in the dining-rooms they are transferred as quickly as possible to the decks. Thence, if the programme of the boat drill can be carried out they are transferred to the boats, but it is in this task that so many contingencies arise to upset the best-thought-out schemes of owners and managers, and negate all the forethought and skill displayed by the captain and his officers.

The new Board of Trade regulations issued in May of this year have attempted to standardise the drill of the ships' companies, so that a certain routine in such matters shall be followed on all the great passenger vessels, and drills are to take place during the voyages or at not less than certain intervals. Every passenger

also is to be shown at the beginning of the voyage how to put on the life belt properly. Another of the new rules provides for a sufficient number of the crew being able to row to man the boats properly.

The same procedure in regard to the mustering of the passengers by night or day is intended to take place whether the disaster be fire, collision, or stranding, these being the three calamities from which vessels suffer more than from any others, though they occur but very infrequently considering the great number of vessels afloat and the many thousands of passengers carried.

Immediately adjoining the navigating-house is the chart-house in which the captain keeps his scientific instruments for "taking the sun" and in other ways, such as by stellar and lunar observation, ascertaining the ship's position; his chronometers, and his charts, and Nautical Almanacks and other technical literature. Here also he works out the calculations which give him the latitude and longitude and the correct time; here are kept the ship's log-book or diary. Close to this apartment are the captain's own cabin and sitting-room, and near at hand are the quarters of the other officers. The wireless operator's room is situated on the top deck also. The wireless installation is not solely for the purpose of safety, though in an emergency that consideration is paramount. Private messages of all sorts can be sent and received; they are just handed to the operator and prepaid for all the world as if the sender were in a telegraph office ashore.

It was sought to be shown in the chapter on the ship's subdivision and construction how vessels are built with the intention of remaining afloat if possible, though injured, or at least of remaining afloat long enough in the case of serious injury to permit of her passengers

and crew being transferred safely to the boats and ultimately rescued. It is in this connection that the value of wireless telegraphy is demonstrated. The injured ship sends out a quivering appeal through the air for help, and another vessel, many miles away, receives on her wireless equipment the call and obeys. The old signal was "C.Q.D.," but this was found liable to be confused with other signals and misunderstood, this being the case in one or two instances when the steamer *Republic* sent out her call when she went down off New York harbour a few years ago, and since then the Wireless International Convention has agreed that the call for urgent assistance should be "S. O. S.," which is given on the Morse code as three dots, three dashes, and three dots. When a ship receives this call her operator at once proceeds to "clear" his instruments in readiness to receive further particulars, such as the name of the vessel, her latitude and longitude, and the number of persons on board, and the nature of the calamity. The signal, "S. O. S.," was chosen because it is simple and easily memorised and does not clash with any other signal. The interpretations of "Save our souls" and "Save our ship," ascribed to the signal by romantic scribes ashore are fanciful, but they served to attract public attention.

The Beaver line steamer, *Lake Champlain*, was the first British vessel to carry an installation for wireless telegraphy. The first tramp steamer to be fitted with this apparatus, was the *Non Such*. The Cunarder, *Caronia*, was in her time the bearer of the most powerful Marconi installation afloat, and in 1908 she was in communication at the same time with Glace Bay, Nova Scotia, 2,260 miles to the westward, and Clifden in England, 936 miles to the eastward. Even intervening land does not prevent steamers travelling at full speed from



communicating with each other. The Cunarder, a year earlier, when 380 miles west of Gibraltar on her way to Italy, sent a message which was received by the steamer *Kaiser Wilhelm II*, which was 1,050 miles away; and only three days afterwards, when the *Caronia* was off Corsica, and the German boat was in the North Sea, the two were in communication again, notwithstanding that there were 1,200 miles of land, much of it mountainous, between them.

The P. & O. steamer *Mantua*, in 1909, just after leaving Malta, was in communication with North Foreland over 2,000 miles away. Great as these distances are—in fact, they were so great as at that time to be absolutely disbelieved, until means were taken to check the accuracy of the reports—they have been far eclipsed in recent years. The Atlantic Transport steamer *Massachusetts*, after she became the United States transport *Sheridan*, received a message from the North Head Station at Washington, when she was 3,500 miles away between Honolulu and Japan, and this message had to cross the United States and the Rocky Mountains and half of the Pacific. Numerous other long-distance feats can easily be recorded. Indeed, it is now possible for steamers to go to America and be in wireless communication with the shore the whole time.

Most steamers are fitted with an installation which will communicate at a distance of about 200 miles, though these installations are capable under certain conditions of communicating over a much greater distance. The principal liners, especially those in various mail services to America, Australia, and the Far East, are provided with installations for much longer distances, and when the much talked of chain of stations is completed at various places throughout the Empire, it will be possible for steamers to remain in wireless communication by a

system of relays, no matter on what ocean route they may be travelling. The inestimable advantages of wireless telegraphy as an assistance to the saving of life have been proved over and over again. When in 1909 the White Star liner *Republic* was sinking near New York after a collision, she was able by her wireless apparatus to call a number of steamers to her assistance, with the result that nearly every one of the many hundreds of persons on board was saved, and the assistance arrived within a few hours of the disaster. Had it not been for wireless telegraphy, the steamers which hurried to her aid would not have known of the disaster, and would have passed but a comparatively few miles away and left the steamer and her living freight at the mercy of the ocean.

The *Titanic* disaster, by its very magnitude, probably did more to arouse the public interest in wireless telegraphy than even the *Republic* disaster had done; the great ship's appeal for help brought the *Carpathia* to the scene at the utmost speed possible, having regard to the ice, in time to pick up from the boats many of the passengers and crew.

More recently still, a large steamer caught fire when off the United States coast and was soon blazing furiously. Again, thanks to wireless telegraphy, assistance arrived and those on board were saved. More recently still, in the autumn of 1912, the splendid liner *Royal George*, belonging to the Canadian Northern Railway, struck the rocks in the estuary of the St. Lawrence, and within a few hours the assistance summoned by wireless arrived at the scene and accomplished the rescue of those on board. Indeed, instances of the value of wireless telegraphy as a means of summoning assistance are many, though very few of them are brought before the notice of the public. The Alaska-Pacific liner *Kentucky*, when on her maiden voyage from New York to Pacific ports, was discovered to be sinking 240 miles off Cape Hatteras.

She was fitted with wireless telegraphy, and in response to her appeals for help, the United States steamer *Alamo* and the American warship *Lucian* both hastened to the scene, the former from Savannah, and the latter interrupting her speed trials not far from Cape Hatteras. The crew of seventy-five on board the liner were rescued. In regard to the *Lucian*, it is stated that she made the rush to the assistance of the *Kentucky* at as high a speed as any achieved during her trials.

Four years ago there were less than 150 vessels carrying wireless telegraphy, now the number is not far short of 2,000.

The *Titanic* and other disasters, but especially that of the *Titanic*, brought to the fore the question of the advisability of making wireless telegraphy compulsory on all passenger steamers. The United States Government, with its usual habit of deciding to do a thing quickly when once it has made up its mind that it ought to be done, passed a law within a few weeks making wireless telegraphy compulsory, and even went further, for it stipulated that an efficient operator has to be carried, and that large passenger steamers have to carry not less than two, one of whom shall always be on duty. It was pointed out that if the steamer had only one operator, and he was resting or was not at the machine, a message might easily be unheeded, but with two or more operators on board, one of whom must be on duty, a message could not be lost. Owing to the impossibility of equipping all the ships with the necessary installation within the time specified, and the shortage of trained operators, the American government allowed an extension of two years for the work to be carried out. Certain South American states also propose to make the adoption of wireless telegraphy compulsory on all vessels using their ports.

It is a curious fact that it is possible to send a message a greater distance by night than by day. A strong gale makes little or no difference in the ability to transmit messages, but thundery weather may interfere with the transmission for hours at a time. What are known as freak messages are by no means uncommon. It is stated that in 1909, a message was received at a Newfoundland station which had been sent from an Australian station distant 15,000 miles. Why the message should skip a number of stations, and be received at one a great distance off, is one of those mysteries connected with wireless telegraphy which have not yet been solved. Indeed, referring to freak communications, Mr. J. E. Taylor, of the General Post Office, in a paper read before the Institution of Electrical Engineers, said :—

“Wireless ‘freak’ communications are wrapped up in the phenomenon of variations in the transmitting efficiency of the atmosphere. Perturbances in this respect exhibit almost the same characteristics of irregularity as atmospheric impulses. Freak ranges of communications or variations in range of communication occasionally occur by day, but are not (in the case of comparatively short-range coast stations) then of a pronounced character. The variations noticed during the night hours are much more pronounced. The sudden veiling or obscuring of distant signals together with the equally sudden ‘opening out’ of signals observed whilst listening on the receiver at a wireless station during the prevalence of this phenomenon is very impressive. These variations of range are not found to synchronise definitely with the periods of atmospheric disturbances, though it may well be that more disturbances are observed when the range extends. The author has, however, observed these remarkable variations in range on nights when ‘atmospherics’ have been conspicuously absent.

Communication taking place at ranges of less than 100 or 200 miles appear to be rarely, if ever, influenced by this phenomenon in these latitudes, and it does not therefore greatly concern the working of the coast stations."

It appears probable that the phenomenon is closely connected with changes of an electrical nature occurring in the upper regions of the atmosphere, and Mr. Taylor ventures to suggest as a possible clue that "the effective receiving range of a station is determined, not so much by the height of its aerial system, as by the height from which it will experience inductive influence, or in other words, the height to which the lines of electric strain emanating from the aerial under the influence of the atmospheric potential gradient will persist. This, however, is at present but a purely speculative explanation."

The scheme adopted by the Radio-Telegraphic conference in 1912, and intended to come into force on July 1st, 1913, contains a number of provisions of great importance. One of these stipulates for the interchange of communication between ships and shore stations using different wireless systems. All vessels are to carry an auxiliary source of power capable of working the apparatus for at least six hours. This is really an emergency installation, and is only to be regarded as such, and it is to be situated in as secure a position as possible. It is to be entirely self-contained, so that an accident of any kind which may effect the main engines of the ship or those from which the power for the wireless is obtained in ordinary circumstances shall not interfere with the successful working of the wireless in its appeals for help. The *Titanic* disaster showed that there was a distinct danger of wireless calls being unheeded. On and after July 1st, on all ocean-going first-class passenger liners

a permanent watch will be kept ; that is, that a wireless operator will always be on duty. The transmission of long-distance messages is to be interrupted for three minutes at the end of every quarter of an hour, in order that any distress calls that may be sent out shall be received and heeded by every vessel with a wireless equipment in the necessary radius of the signalling vessel. Distress calls, whenever heard, are to be given precedence over everything else. The last proposition emanated from America and was based, according to the report of the American delegation, "upon the fact that at least two steamers which were nearer the *Titanic* than the *Carpathia* were prevented from hearing the distress calls of the sinking vessel in consequence of the continuous transmission of press news precluding the *Titanic's* messages from being received by ships fitted with radio apparatus of limited capacity." Another valuable provision from the point of view of safety, is that a ship in distress is to have control over all stations in her vicinity, that is, within her radius of action, and the operators in every vessel are to be placed under the control of the captain.

Wireless telegraphy is superseding all other forms of signalling between vessels equipped with it. The wireless is quicker, and no time has to be spent in starting the signals, as is the case when getting out flags and hoisting them. It is also possible to communicate with shore stations long before the ship and station are in sight of each other. Incoming Atlantic liners signal their approach when three or four hundred miles out on the ocean, and this practice is of additional convenience to the public, for it enables an estimate to be formed to within an hour of the time of the vessel's expected arrival and indicates her safety.

If, however, a big liner should find herself in distress,







she may supplement her wireless calls by the firing of her signal gun at intervals of about a minute, by flying the distress signal of the international code, by flying her national ensign upside down and at half-mast—this, though an unofficial sign is recognised and acted upon by all maritime nations—by burning a flare light such as a tar barrel, and by the discharge of rockets.

Another result of the *Titanic* disaster has been the extra attention which has been given to the possibility of lessening the danger of collision with ice, particularly under circumstances and conditions conducive to the comparative invisibility of the ice. For these and other purposes it was decided to establish a patrol ship for the North Atlantic. According to an official statement in Parliament, the *Scotia*, a whaler formerly employed on the Scottish Antarctic expedition, was chartered early in 1913 to cruise in the North Atlantic off the coast of Newfoundland and Labrador to watch the break-up of the ice and to report its movement, so as to give warning as to the probable quantity of ice which may be in the vicinity of the track of the North Atlantic steamships at a given time and provide information which will assist the lines to form a judgment as to the advisability of giving instructions for the greater safety of their vessels. The *Scotia* is fitted with long-range wireless telegraphy so that she will be able to keep in touch with the wireless stations in Newfoundland and Labrador. The vessel has been sent out as a result of a recommendation made by the Merchant Shipping Advisory Committee in their report on life-saving at sea, the cost being shared equally by the Board of Trade and the principal North Atlantic steamship lines.

The vessel's duties, it appears, are numerous. She carries a hydrographer, a meteorologist, and a biologist who are to "make observations as to currents, etc.,

which will be of general scientific interest as well as of direct value to the work in hand."

The Board of Trade has given the master his sailing directions, and also controls the scientific staff. The vessel is equipped by the steamship lines. The Marconi Company provided wireless apparatus free of charge, and Dr. Assmann, director of the Royal Prussian Aeronautical Observatory at Lindenburg, added to the *Scotia's* scientific equipment a number of kites for meteorological work and instruments to be attached to these kites for recording air-pressure, temperature, relative humidity, and wind velocity. The *Scotia* sailed from Dundee on March 8th, and was intended then to be absent three or four months.

The patrol ship, to be of any practical assistance in reporting the progress of ice towards the shipping lanes will have to be sent out every year. Still, it is a beginning, and it is to be hoped that the experiment will be continued annually as long as its usefulness can be admitted.

A second telephonic arrangement in the navigating-house will attract the attention of the observer, and if he ask what it is for he will be told that it is for receiving signals in thick weather when there is difficulty in ascertaining the ship's true position. He will be informed that the sailor's most dreaded foe when near the shore is fog, and that this is the best contrivance yet devised for indicating the direction from which sound-signals are transmitted. There is as yet no known method which can be depended upon for making known the direction whence a sound comes in a fog, and the thicker the fog the harder it is to tell. This may be due to the varying density of the fog-banks or to other causes, but the difficulty remains, and an oft-repeated sound signal will appear to come from a different direction nearly every time it is heard.

The difficulty of the detection of the direction of sound in fog has been overcome to some extent by the ingenious system of submarine signalling; though perhaps it would be more accurate to say that where it is imperative that the direction of the source of certain sound signals should be ascertained accurately the impossibility of doing this through the atmosphere in foggy weather has been overcome by means of signalling through the actual water itself.

It is a well-known fact that water is a good conductor of sound. If a person in an iron or steel sailing-ship, which is free from engine-vibration, will place his ear against the interior of the skin of the ship, preferably some feet below the water-level, he will be able to hear distinctly the throbbing of the engines and propellers of any steamer within a radius of a mile or thereabouts, provided there is uninterrupted or free water communication, the exact distance depending upon the weather.

Submarine signalling is founded upon the recognition of this principle. Not the least of its advantages are that the signals can be transmitted in dirty weather and that they are not interfered with in any way by fog. The receptive power of the human ear is by no means great, and science accordingly has come to the rescue and enabled it to hear sounds which otherwise would be inaudible. It is also necessary that these sounds shall be distinctly heard by the officer on the bridge or in the navigating-house, and that he can tell whence they are coming. Submarine signalling was only brought into practical use in 1904 after a long series of exhaustive experiments. The apparatus consists of two parts. One part is the submarine signalling bell attached to a buoy and caused to sound either by an electrical communication with the shore or by the motion of the buoy in the water; the other is the receptive appliance carried

by the steamship itself. This consists of two small cast-iron tanks attached to the interior of the skin of the ship twenty to forty feet from the bow and a considerable depth below the water-line. These tanks are filled with water and each contains a microphone which is connected electrically with an indicator in the navigating-house or chart-room. The sound of the signalling bell travels through the water, passes through the skin of the ship, and is received by the microphone whence it is transmitted to the indicator where a vibrating needle or a small bell gives notice of the arrival of the signal. The indicator-box is fitted with telephone receivers which the officer places to his ears, and by the manipulation of a switch disconnecting one or the other microphone he is able to judge on which side of the vessel the sound is the louder, for from that side the signal is being received. It is next necessary to ascertain its exact direction, and this he does by swinging the ship's head slowly towards the side on which it is louder. When from both sides the sound appears of equal distinctness and volume, he knows that his vessel is headed directly towards the signalling bell. His chart shows the locality of the submarine signal, and his compass shows the direction in which the ship is lying; by their joint means he is able to ascertain, even in the densest fog, his approximate position, and he will further verify it by a system of careful soundings of the depth of water.

The ordinary fog signals, such as the hooters at light-houses, can be heard at distances which vary with the stillness or movement and the humidity of the atmosphere. The submarine bell can be heard at all times at a greater range, even as far as the light of a light-vessel in clear weather, which may be four or five miles.

The submarine signalling apparatus is essentially a preventive of disaster. The number of vessels it has

saved from danger cannot be known, but the number of times this has happened must certainly be great. A navigating officer on "picking up" the signals will ascertain his bearings and either anchor or steer for the open sea. Some day steamers carrying a large number of passengers will have submarine signalling installed compulsorily as part of their equipment, as they will have to do before long with wireless telegraphy.

As an instance of how little many people connected with shipping understand the advantages of this invention, it may be narrated that a shipping company's superintendent told his employers that the submarine signal apparatus on their steamers seemed more ornamental than useful, and he accordingly ordered that it should be dispensed with. The captain of the first steamer who received this order said, "All right, if these are the orders, but that apparatus saves me several hours' time every trip in thick weather, and may some day save the ship." The reply was, "Oh, if that's the case perhaps you had better keep it. I had no idea it was so valuable, or saved any time, or, in fact did anything but cause a lot of trouble." That company now has extended the submarine signalling appliances to every one of its vessels.

## CHAPTER IX

### SAFETY AT SEA (CONTINUED)—SIGNALLING, LIGHTS, FIRE PREVENTION, AND BOATS

THE look-out, wireless telegraphy, and submarine signalling are not the only means adopted for ensuring safety at sea. Signalling with flags or semaphore by day, and a powerful lamp worked on the Morse "dot and dash" system, besides certain fixed and various pyrotechnic lights by night, all play their part in the signalling system of a modern hotel at sea. The flag system was modernised a few years ago and the signals entirely rearranged and reclassified. Formerly only the flags representing the consonants of the English language were used; the vowels were objected to as likely, it was said, to cause misinterpretation of the signals by reading the flags as words instead of code messages, it being considered that shipmasters ignorant of English might make this error and conceive they were reading a word in their own language. This may, or may not, have been the real reason for the omission of the vowels; at any rate, this was the explanation given by an old sailing-ship master who certainly believed it.

Under the present system flags representing all the letters of the alphabet are employed, and every letter is indicated by a flag which differs from its fellows in the arrangement of its colours, and for the most part in its design. There is also the code flag. Signals by this means are made with any number of flags up to four. The signals with one flag in which passengers are likely to be interested are the P flag, or "Blue Peter," an oblong blue flag with a white oblong centre, usually flown at the head of the foremast to indicate that the vessel is

about to sail; the plain Q, or quarantine flag, and the dreaded black and yellow L flag, which means "I have (or had) some dangerous infectious disease on board," such as plague, cholera, or yellow fever. Where these and other one-flag signals are used the code flag is flown over the signalling flag; otherwise the use of real one-flag signals, that is, those in which no code flag is used, is reserved with but one or two exceptions for towing purposes, and the flags are displayed over the gunwale by hand.

Signals which are regarded as urgent and important are made either with the code flag and one other flag, or by a combination of any two flags from A to Z. Signals with three flags, if made with the code flag over two flags, refer to time, latitude, longitude, barometer, and thermometer, but if the code flag be under two flags the signals relate to numerals. Signals with three flags without the code flag relate to money, measures, weights, compass, and include auxiliary phrases and a general vocabulary. Under the old system, in vogue before 1900, the general vocabulary was mostly given in four-flag signals. Four-flag signals are used with or without the two burgees, as the A and B flags are called, and the pennant-shaped C and G flags.

If a vessel is seen flying a four-flag signal with the pennant G uppermost, she is a warship. A vessel flying a four-flag signal with the H or any subsequent flag in the alphabet uppermost is a merchant vessel. Certain nationalities have certain letters allotted to them, so that directly the first or uppermost letter of the signal is made out the nationality of the signalling ship is revealed.

Flag-signalling can only be employed satisfactorily when the wind spreads the flags in such a manner that they are easily read. On some of the latest vessels signalling, by what are technically known as fixed and

movable semaphores, is adopted, or semaphoring by means of hand-flags, the positions of the semaphore arms in the British movable system and of the hand-flags being the same; this simplifies the two systems, and a man who knows the one may easily pick up the other. These codes have been adopted by all seafaring peoples except the French, who have their own code of flag signalling and semaphoring, but the flag code is adopted by all. Flag-signalling is also used in connection with the Morse code. Urgent signals of weather or warning are displayed by means of cones, drums, balls, and pennants when flags are unsuitable. The weather cones are familiar sights at all seaside resorts. Some of these combination signs indicate that assistance is needed.

Signalling by night is much less interesting to the spectators because all that may be seen is the intermittent flashing of the signalling lamp above the bridge, and its short and long exposures indicating the dots and dashes of the Morse telegraphic alphabet. The lamp is usually carried on a special mast which can be turned so that the light faces the ship communicated with. All the main lines have their own identifying rocket or pyrotechnic signals, but as rockets are also used as distress signals their employment as identification signals is discouraged by the Board of Trade, and they are unnecessary for this purpose now that wireless telegraphy is fitted on so many vessels.

Signals by night or day can be made with the steamer's whistle, but this is hardly ever used except in a river or estuary, or, in case of distress at sea. A modern siren is capable of emitting a long-drawn-out ear-splitting wail which can be heard miles away under certain atmospheric conditions.

Every ship displays certain lights at night. In dock, one or two lamps, properly hung, are considered sufficient.



Anchored in a stream a small vessel may show one light in a conspicuous place, but a vessel over 150 feet in length must show one light near the bows and another near the stern. The average liner at anchor in a river shows these two lights in conformity with the rules, but there are also scores of other lights showing from her cabin windows which are easily visible a long distance off.

All vessels at sea have to show on the right or star-board side a green light, and on the left or port side a red light. The big liners carry these at their respective ends of the bridge. It is compulsory for steamers to carry at a height up to forty feet above the deck and on the foremast or some other elevated place, a bright white light, and on the aftermast another similar light fifteen feet higher than the foremast light. The green and red lights are to be visible in ordinary weather, that is, on a dark night with a clear atmosphere, two miles off, and the two white lights must be visible five miles away.

In foggy weather vessels proceed with the utmost caution in waters where there is any shipping, such as the English Channel, on account of the risk of collision, while in estuaries and rivers they anchor with as little delay as may be. The sudden descent of a fog upon a score or more of vessels is responsible for no end of a din. Every steamer sounds her whistle or syren repeatedly, and every now and then the melancholy boom of a foghorn and the equally melancholy clang of a ship's bell indicate that some sailing-ship is adding to the doleful chorus her admonition to the others to be careful of her whereabouts also.

Perhaps in the Eastern Mediterranean the passengers on some liner creeping carefully along through the mist will hear the thumping of a drum sounding over the water. The Turkish Government permits the faithful to substitute on their ships a drum or gong for a bell, and the

explanation of the sound is that some follower of Islam is energetically beating it in the hope that it is not yet Kismet for the great ship of the infidel to send the true believer and his little ship to the bottom.

Practically the only internal dangers to be guarded against on shipboard are fire and the accidental springing of a leak. Neither of these dangers is other than highly improbable on a well-appointed passenger steamer. Danger at sea, however, has to be measured by its possible results. A leak may occur through striking wreckage, and the consequent damage may be small, but as no one can tell beforehand where the damage will be sustained the obvious course is to apply equal precautionary measures to all parts of the ship. Hence the double bottom, and the watertight bulkheads and doors. It is the same with fire, no one can predict when or where a fire will break out. Hence the effort to localise it when it occurs, by means of the same watertight bulkheads and doors, and to extinguish it speedily when discovered.

The early history of steam navigation, when vessels were built of wood, is marked by many terrible disasters, but of late years fires on large passenger ships at sea have become of exceeding rarity. There are several systems for coping with fire, each of which has its own advantages. All the large passenger steamers nowadays carry hand grenades and extinguishers of various kinds, which can be utilised at once in the event of an outbreak in any easily accessible part of the vessel. As electric light is provided on all modern passenger steamers, the old and ever-present danger of a paraffin or other oil lamp upsetting, breaking or exploding is eliminated ; and there is now little or no danger to the ship if one of the wires should fuse, as Lloyd's requirements are exceedingly strict for the installation of all wires on purpose to guard against any possible danger from this cause.

There are numerous automatic or semi-automatic devices for making a fusing wire reveal the mishap instantaneously and for shutting off the current ; while in the portion of the ship devoted to passengers the ship's pumps can be set going in a few seconds to cope with any outbreak of fire that may occur and prove too serious to be overcome immediately with extinguishers or grenades.

In regard to the fires in cargo-holds there are, in addition to numerous pumps, several pipe systems for conveying extinguishing gases to the holds in sufficient volume to suppress any outbreak. The chief of these systems are the Clayton and Rich, named after their respective inventors. Both of these depend upon a special engine or pump which is supplied with certain chemicals and converts them into a preparation of carbonic acid gas. A comparatively new method is that known as the Harker system, which withdraws the flue gas from the funnels of the steamer, cleans and cools it, and pumps it into the holds.

One advantage of the Clayton machine in large passenger vessels, is that it takes up very little room, and can be placed in a deck-house on one of the highest decks. It can be driven by steam supplied by the main boiler or any auxiliary boiler, as may be most convenient, or by a small motor engine. The system of piping is that two main pipes lead from the machine and can be carried under the decks with branches leading down into the holds, and with other branches communicating with the cabins and passenger accommodation generally. One of these main pipes is known as the suction pipe, and the other as the delivery pipe, and it is always possible to limit the supply of gas from the apparatus to the part of the ship where the fire may have occurred. The gas which is relied upon for extinguishing purposes is a mixture of nitrogen and sulphur dioxide, formed by

burning sulphur in atmospheric air. The part of the machine where this takes place is called the generator, and the other principal portions are the cooler, blower, and engine, the names of which sufficiently indicate their duties. When a fire breaks out in a hold fitted with this system, immediately the apparatus is set to work the blower draws air from any compartment through one of the main suction pipes into the generator, where the sulphur dioxide is produced. This gas is drawn through the cooler into the blower, which then forces it through the delivery pipe back into the same compartment from which the air was drawn. Thus suction and delivery proceed simultaneously, and as the volume withdrawn is equal to that delivered there is no leakage beyond what is due to diffusion.

The old way of extinguishing a fire on a ship was to throw buckets of water upon the seat of the fire if it could be got at, and this failing the next plan was to scuttle the ship in shallow water if possible, and raise her again when opportunity afforded and if the feat were possible; the latter method was terribly expensive and sometimes resulted in the loss of the ship and everything on board, the passengers and crew only escaping with their lives and such belongings as they could take with them. When steamships became numerous the method was adopted with varying success of forcing steam into the hold where the fire had broken out. This has not always succeeded in extinguishing the flames, but it has generally resulted in inflicting a lot of damage on all the cargo that the fire itself did not ruin, and underwriters therefore do not view this procedure with undisguised admiration. Greater care in the packing of merchandise and the stowage of cargoes has reduced the risk of fire at sea very greatly, while the introduction of the electric light in place of the old lamps has also

contributed in a marked degree to the safety of the vessels, for it was far from uncommon for a hand-lamp to be knocked over with serious results. The watertight bulkhead system on which ships are built is also a great preventive of fire spreading, as when a fire breaks out among a ship's cargo it can generally be prevented from spreading to any other hold; according to the nature of the cargo carried, one of two courses is usually adopted; either steps are taken to prevent all access of fresh air to the hold, or the hold itself is flooded in order to extinguish the flames. Whichever of these two methods be adopted, there is always a risk of a great deal of damage to the ship and the cargo in the hold affected.

Nor is either of these courses invariably attended by the results desired. The great heat developed may heat the bulkheads to such a degree as to start combustion in the hold on the other side, in which case the same remedies may have to be applied, with, perhaps, the same lack of success. The best that can be done under such circumstances, is to get the vessel to the nearest port, where there may be appliances for coping with the fire satisfactorily, and perhaps for flooding the affected holds in such a manner as to do comparatively little damage to the ship or its contents. If, however, the ship is several day's journey at sea, and the fire has attained such dimensions that it is no longer possible to cope with it, the only thing to do is to take to the boats and leave the ship to her fate. In the old days of sailing-ships, provided only with one very large hold and 'tween decks, a fire in the cargo generally resulted in the destruction of the ship. In vessels built on modern principles, a fire in the cargo by no means involves the destruction of the ship, and there have been many instances in which the captains and crews have successfully fought the flames themselves for days at a stretch, and brought the steamers in safety

to their destination, with the damage confined to the contents of the hold in which the outbreak occurred.

A few years ago, one captain, on it being reported that a fire had broken out in the hold next to the engine-room, tried first to suppress it by shutting off the air, and failing in this, he determined, although in mid-ocean, to flood the hold, the sea being exceedingly calm. The bulkheads containing the hold were becoming too hot to touch; that nearer the engine was kept cool by water sprayed on it in the engine-room; the cargo in the aft hold was removed as far as possible from the heated bulkhead, while the ship's hose played upon the bulkhead to reduce its temperature. As fast as the water descended into the bilges of this hold, it was returned to the sea by the ship's pumps, and at the same time the burning hold was steadily deluged with water after a portion of the hatch had been removed in order to allow the steam to escape and thus avoid an explosion. The work went on for several hours, and the ship was settling steadily lower in the water, until at last her stern was almost level with the sea. The hold in which the outbreak occurred had long since ceased to give off steam, but the captain was taking no chances of a further outbreak and continued to pump the water in and out the hold until it came out almost as cold as it went in. He now found that he had not only quenched the fire but prevented it breaking out again, and the steady pumping of the water for a few hours after this soon restored the ship to her former seaworthy level. The structure of the ship was not injured in the least, though some of the paint was burnt off her sides and the bulkheads by the intense heat, and she succeeded in reaching port only a day or two behind her scheduled time. That it was a daring encounter with the seaman's most dreaded enemy, anyone who knows anything of life afloat will gladly admit; yet in the

captain's log, the entry ran something in the following laconic fashion :—

“ Fire in No. 4 hold, could not locate, and as it was spreading and heating bulkheads, I filled the hold with water, and having extinguished the fire, pumped out the water, and resumed the voyage.”

The captain took it all as a matter of course, and had it not been for others who appreciated the danger quite as much as he did, making known his resourcefulness, very little, probably, would have been heard of this somewhat unusual exploit.

Had one of the gas systems been installed, all that would have been necessary would have been to set the extinguisher working, to have withdrawn the air from the hold, and pumped in whichever extinguishing gas the system provided. The former method may be the more romantic and exciting, but it cannot be denied that the latter, if more prosaic, has compensating advantages. Cargoes of wool, cotton and coal sometimes take fire from spontaneous combustion, and in all three the extinguishing of the flames is a difficult matter. The battening down of the hatches, to prevent any air reaching the seat of the fire, may possibly suffocate the outbreak, or at all events, compel combustion to proceed very slowly ; but even then, when the fire is apparently extinguished, and the heat is much reduced, the flames will often blaze up again in a few seconds when the hatches are removed and fresh air can get to the seat of the fire. This applies equally to the three cargoes mentioned.

Flooding with sea-water is a remedy that is both costly and destructive in the case of wool and cotton, though it does little harm to coal either as cargo or in the bunkers.

In the case of an outbreak at sea in a vessel carrying large quantities of these cargoes, and flooding is resorted to, it must be remembered that the buoyancy of the ship

is very seriously reduced, and if the weather be rough, she may be swept by seas from end to end as though she were water-logged, and possibly caused to founder. Any one of the gas systems removes this difficulty. There is no need to flood any hold ; consequently the buoyancy of the ship is not impaired.

Where sulphur dioxide or carbon dioxide is forced into the hold combustion must cease, for either of these gases contains considerably less than the minimum amount of oxygen necessary for the support of even the smallest amount of combustion. Therefore, when through the suction tubes of any of these systems the air in the hold is withdrawn, and the other gases of the kind indicated are forced in, combustion cannot continue for lack of the oxygen to maintain it. So long, however, as the temperature is high, there is always the risk of a recurrence of the outbreak, and for this reason the gases are continued to be pumped into the hold, and extracted by means of the suction pipes until the ejected gas is practically as cool as that injected. It is then known that not only is the fire extinguished, but that there is no possibility of it breaking out again as soon as atmospheric air is admitted. It is thus equally easy to subdue the outbreak in any of these three cargoes. In the case of coal, the gases will penetrate through the smallest spaces just as the air does. Any of the pipe systems can be applied equally well to coal cargoes in bulk, or to side or cross bunkers, and as every part of the ship can be reached, any outbreak can quickly be subdued. Nor is this advantage confined to these three cargoes. All general cargo can be treated with equal facility and rendered equally safe. Also if it be known that the cargo includes a consignment which, though not dangerous, is best kept at a low temperature, the hold in which it is stowed can be systematically cooled by the extraction of the heated air and the pumping



in of cool air. There have been two or three severe outbreaks of fire in liners at sea in the last few years but in every case they have been coped with successfully by means of the Clayton system of filling the hold with sulphur dioxide gas.

So far most of these pipe systems for fire extinguishing are used only for the cargo spaces in the ship ; there are, however, branch pipes communicating with the passenger accommodation which are used principally for disinfecting purposes, and it is thus possible to disinfect a large passenger ship from keel to bridge and from end to end with absolute thoroughness in the course of a few hours. Rats, blackbeetles, cockroaches, and other verminous ship nuisances are destroyed easily. Indeed, when a ship is disinfected in a dock or river, the rats, with their customary intelligence, will sometimes make for the shore as soon as they notice the smell of burning sulphur, or find an increasing difficulty in breathing through the reduction in the quantity of oxygen. The bodies of the insects or vermin are swept up afterwards and burnt. In regard to disease germs, such as those of cholera, plague, or yellow fever, the pipe system of disinfection, as applied to the ships and cabins alike, has been found to give every satisfaction.

The Clayton machine is capable of generating rapidly and delivering over 25,000 cubic feet of fire-extinguishing gas per hour, and the machines of this company are to be found in the vessels, both cargo and passenger, of the principal lines throughout the world.

The importance of installing a fire-extinguishing machine, is demonstrated by the attitude of the marine fire insurance companies. A vessel that is equipped with one of the recognised systems, will be charged by some underwriters less premiums on the fire risk than a vessel which has no such system installed.

Certain cargoes carried in vessels which have an approved system of fire extinguishing are allowed a rebate by the marine insurance companies, which varies according to the nature of the risk covered.

The cost of having a fire-extinguishing system on a vessel is not great, and the wonder is, not that so many ships have the fire extinguishers, but that every ship of any size is not compulsorily fitted with one.

Objection has been raised to the installation in single-hold vessels, or in those vessels fitted with two large holds, it being contended that no system is capable of developing a sufficient quantity of gas to extinguish an outbreak of fire in one of the large single-hold or two-hold steamers carrying coal in bulk. Experiments have accordingly been made with holds of large dimensions to ascertain the speed with which the atmospheric air can be driven out, and its place taken by fire-extinguishing gas, and these experiments have shown that there is no difficulty whatever in meeting these somewhat unusual requirements. An ordinary cargo and passenger ship is subdivided into several holds, and no instance has been recorded yet of a fire breaking out in several holds simultaneously. When a fire has occurred, it has been possible to fill the hold entirely with extinguishing gas, and as a measure of precaution other holds in which similar cargoes are being carried may be filled with the gas and the temperature of the extracted air taken in order to ensure that there is no outbreak there also. In the event of a large cargo steamer carrying coal in bulk in a single hold developing a fire in the cargo through spontaneous combustion, there should be no difficulty in providing ample extinguishing gas to cope with any such disaster. The fact that the engine would be situated at the stern is of very little consequence, for the main pipes can be led to the other end of the hold, and branch pipes can distribute the

gas at any part of the hold where necessary, or at all parts simultaneously, and it does not take more than a second or two for the extinguishing gas to be forced by the apparatus to the extremest part of the pipes. In the case of coal, it will probably be found that a larger quantity of gas is required than in the case of wool or cotton, for the interstices between the lumps of coal in a ship's hold are so numerous that they have been estimated at anything from ten to forty per cent. of the space available for the cargo. Wool and cotton are usually packed in bales so tightly that combustion is almost impossible, if the packing has been done properly and there is not too great an amount of moisture in the material. The better the packing the less the risk of fire, and this may be one reason why fires occur more frequently in American cotton cargoes than they do in cotton cargoes from any other part of the world, for some of the United States ports have earned a reputation for slovenly and untidy work which contrasts most unfavourably with the cotton bales from other countries.

The plan of injecting steam into a hold in which an outbreak has occurred is unsatisfactory, for, unless the outbreak is in the immediate neighbourhood of the injection jet, there is a tendency for the steam to condense, and either not reach the seat of the fire or reach it in such small quantities and so slowly as to be of very little use. It is also almost ineffective in holds of large capacity, and one of its chief drawbacks is that it does not reduce the amount of oxygen in the atmosphere below the percentage at which combustion becomes possible.

If a great passenger liner in mid-ocean should meet with an accident which imperils her safety to such an extent that it is only a question of time how long she may float, the adequate provision of boats becomes of paramount importance. Prior to the accident it was of

secondary or precautionary importance only. The question of boats has come very much to the fore in consequence of the loss of the *Titanic*, and it is argued that had there been more boats, more people could have been saved on that occasion. I have no intention of expressing an opinion upon that subject one way or the other, but I do not think it is out of place to urge in regard to the manipulation of the boats that those accustomed to the work, as the ship's officers were, were more likely to understand the difficulties of the work than landsmen who were not there and passengers who have had no practical experience of it. British officers and sailors at such times do their duty in a manner which is beyond question and beyond praise.

The deduction is made also that every passenger steamer should carry enough boats to accommodate everyone on board, so that every person should have an equal chance of being saved.

The departmental committee appointed to consider the whole question of the adequate provision of ship's boats has decided, as was expected would be the case, in favour of ocean-going passenger steamers carrying enough boats to carry all on board ; but recognising the difficulty of fulfilling this requirement, were a hard and fast rule applied to all steamers, the committee recommended that certain life-rafts should be carried, the total accommodation of lifeboats and rafts together being sufficient to accommodate all in the ship. This provision is to be in addition to life-buoys and life-saving jackets, which are compulsory now as hitherto, and such other means of flotation, as buoyant deck-fittings, which any shipowner may feel inclined to pay for.

The portion of the new Board of Trade rules relating to life-saving appliances on foreign-going passenger steamers, including emigrant ships, is comprehensive.

Lifeboats are to be carried "in such number and of such capacity as shall be sufficient to accommodate the total number of persons which is carried, or which the ship is certified to carry, whichever number is the greater." The Board evidently thinks that the largest possible steamship has not been built, for it stipulates that vessels of from 750 to 840 feet in length shall carry not less than twenty-two sets of davits for lowering boats to the water, and shall carry not less than fifteen open boats to be attached to davits; those from 840 to 940 feet in length shall carry twenty-four sets of davits and not less than seventeen open boats attached; and those 940 to 1,040 feet in length shall have a minimum of twenty-six sets of davits and not less than eighteen open boats attached. Still longer vessels are to have the number of sets of davits and the minimum number of open boats decided by the Board. The minimum aggregate capacity of lifeboats in cubic feet is also settled by the Board. A steamer of 420 to 450 feet, for instance, is to have lifeboats of not less than 6,000 cubic feet aggregate capacity. A lifeboat may be open or decked, as long as it fulfils the rules. All boats have to be marked with their dimensions and the number of persons they can accommodate, and the word "person" includes not only an adult but every child over the age of one year, unless the context of the rules implies otherwise. Every open boat is to have seating accommodation for as many persons as it is intended to carry, and the thwart and side seats must not be more than a certain distance from the bottom boards of the boat, in order to ensure the requisite stability and seaworthiness.

As to the boats themselves, it may be explained that an open lifeboat is to be two-ended, or pointed at both ends, and shall have for every ten cubic feet of her capacity not less than one cubic foot of airtight and

watertight compartments. A boat constructed of metal is to have airtight compartments of slightly greater buoyancy to make up for the lesser buoyancy of the metal as compared with the wooden boat. Another type of lifeboat provides that a portion of the buoyancy apparatus may be carried outside the boat, slightly below the gunwale. This is usually attached in the form of a fixed fender, and it may be roughly taken that the buoyancy of the interior apparatus is not to be diminished by more than one-fourth, while the total of the interior and exterior buoyancy is to be the same as if the whole apparatus were carried inboard. A third type of lifeboat is fitted with a strong watertight deck, with, in some instances, enclosed airtight compartments. The other boats may be square-sterned, that is, having a wide transom, and are to be fitted with internal buoyancy contrivances similar to those of the type of lifeboat first described. One lifeboat in any number carried between four and ten, inclusive, may be a motor boat, and if more than ten lifeboats are carried one in every five may be a motor boat, and an increased proportion may be provided by permission of the Board of Trade under certain circumstances.

In regard to the stowage of boats under the new rules, a decked lifeboat may be stowed underneath an open lifeboat, and decked lifeboats may be stowed in sets of three, one above another; this permits of the necessary number of boats being carried without encroaching too much on the deck space available for passengers. Another important provision, evidently the outcome of the great height at which boats are carried on some vessels, is that when boats are carried on more than one deck the two different sets of boats are not to foul one another. In regard to the lowering of the boats, all steamers launched after March 1st, 1913, which have their boats more than twelve feet above the load line disc are to have davits

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and lowering gear of sufficient strength to lower the boats when fully loaded.

In some conditions rafts of an approved design may be used in lieu of a small proportion of the boats. Most people would not know a ship's raft if they saw one, but that has not hindered some well-meaning enthusiasts from protesting against the rafts at all on a steamship. They may dismiss as inaccurate the idea that a raft consists of two or three pieces of wooden grating, an oar or two, a couple of odd spars and an empty barrel, all loosely tied together, and that upon this a few unfortunates huddle themselves as best they may until such time as, according to the story books, they are rescued. The records of shipping show that improvised rafts of this character have been the last hope of many and the salvation of few ; of the tragedies of thirst and despair and the madness of hunger in its most horrible form it would be out of place here to write. Where a merciful Providence has dropped the veil of time and forgetfulness, it ill becomes anyone to attempt to lift a corner.

The raft, as understood by the Board of Trade and the steamship-owner, is a very different affair from that just referred to. There are several kinds of rafts, all of which have, or have had, official approval. One, which was in favour for many years, consisted of two or three long watertight hollow cylinders, pointed at each end and laid side by side, but three or four feet apart. These cylinders were from about eight to twelve feet long and were fastened between the two sides of a double wooden grating, the idea being that it was equally efficacious either side up. Being covered only with a grating it could not be filled with water, and though it might be swept by seas it would continue to float. A mast, sail, oars, some pieces of rope and a fresh water-barrel were its equipment. Such a contrivance, though very good in its

way, by no means represented finality in the designing of rafts. Folding rafts or pontoons, folding boats, of which the Berthon is the best by reason of its extraordinary buoyancy for its size when kept in good repair, and steel rafts like pontoons with inner and outer skin and watertight compartments between the two skins have all been tried with success, and at present rafts or pontoons of the type last mentioned are considered superior to any previous type of raft. These contrivances have seats, oars, mast and sails, etc., and the usual lockers for storing water and provisions, and are provided with escape valves to discharge automatically any water which may be shipped. Also, like all the boats, they have to carry a gallon of water and two pounds of biscuits per head for their occupants. The idea of a ship's raft, as distinct from a ship's boat, is that it will support a great number of people for its size near where the accident to the ship occurs, to which wireless calls for help will direct rescuing vessels; whereas a ship's lifeboat may undertake a voyage to seek assistance or to meet the rescuing vessel. Every boat and lifeboat now has to carry, in a tin case for protection against the weather, coloured pyrotechnic lights, inextinguishable by water, for use as alarm signals.

As a matter of fact most ocean-going passenger steamers do carry, and in late years always have carried, a sufficient number of boats to accommodate everyone, but it does not follow from this that in the case of accident everyone could be saved. Several other conditions have to be taken into consideration. The most important of these is undoubtedly the weather, for if this be unfavourable, it may upset the whole of the arrangements for the lowering of the boats. This point was lost sight of entirely by a great many people who advocated recently that boats for all on a steamship should be supplied, so as to be able to save the whole of her passengers and crew in case of

danger. In theory this is all right. Let us see how it works in practice. The best devised means do not permit of a boat being swung more than a few feet away from a vessel's side. If the davit swings out with a radius of eight to ten feet, which is quite as much as is practicable, it follows that, as boats must be slung from their centre line, the space between the side of the ship and the side of the boat will be reduced by at least half the width of the boat ; and if a boat has a beam of six or seven feet, the space between the boat and the ship's side is reduced at once by three to three and a half feet. This leaves a maximum space of only five to seven feet between the side of the boat and the side of the ship. In lowering a boat from such a height as the boat deck of a modern liner, it must be remembered that the boat has to travel through the air anything from thirty to sixty feet, and that all the time it is being lowered this distance it is swinging backwards and forwards, and also to and from the vessel, and is gaining momentum at every swing. The fore and aft momentum may be checked by men with leading ropes, standing at deck openings lower than the boat deck ; but it does not do to tighten these fore and aft ropes too greatly, or the boat will be drawn in to the ship's side, and the lateral momentum will be increased with the result that the boat may be dashed against the side of the ship and smashed, and its occupants dropped into the water. The sea is not still, and in most cases to which the boats have to be resorted, it is exceedingly rough, and there is always the risk, and a very great risk too, of a broken sea rising to meet the boat, and tilting it at either end, or catching it on the broad side and upsetting it, or dashing it against the ship. This is not a fanciful danger, it is an experience that has been witnessed hundreds of times, and no means have ever yet been designed which will enable a boat to be lowered

from a ship into a rough and angry sea with perfect safety. The hooks at the end of the tackle—or arrangements of blocks and ropes by which the boat is lowered—have not unfrequently been difficult to dislodge when the boat has reached the water, owing to the subsiding of a wave and the consequent dropping of one end of the boat. Sometimes a sailor with presence of mind has been able to sever the rope with his knife, but more often than not, when the hook has remained caught in the ring or sling, the boat has been suspended by that end, and most of its occupants tumbled into the sea and lost.

The great height at which boats are carried increases the probability that the long falls will twist when the tackle is unhooked from the boats, and the ropes are thus relieved of their weight. If either of the falls of the boat should twist, it is frequently very difficult to untwist them and raise them sufficiently far to enable them to be hooked to the inside boat, for the latter to be lifted to the side of the vessel to be lowered to the water. The longer the fall, the greater the risk of its twisting, and this risk is always present, no matter what care may be taken in untwisting the rope when it is rove through the blocks, as its tension is bound to vary with the degree of moisture in the atmosphere.

Hitherto, we have been considering only such circumstances as might arise in the case of a vessel stranding on a sand bank, and remaining fast, though comparatively steady. We have supposed, also, that she is resting upright, and that the waves are running in a line parallel to the length of the vessel, so that the boats on each side can be used. But if a ship should happen to run on rocks, she will most likely sustain at once considerable damage to her bottom, and the consequent inrush of water, added to the tilting the rocks will probably give her, will cause her to lean over to one side. If she leans over to the

weather side, practically the whole of her boats may be useless. To begin with, the broken character of the sea, owing to the rocks, will render it exceedingly difficult for a boat to be launched with safety. The heeling of the vessel would of itself permit the weather side boats to be launched with some facility, but against this there must be set the great probability of them being swept against the ship's side, and also of them being upset when they reached the water, either by the incoming wave or by the broken backwash thrown back from the ship. A shipmaster, who, under these circumstances, succeeded in getting five boats out of twenty safely into the water with their full complement of passengers would consider that he had done an exceedingly clever piece of work. The rougher the sea, the greater the danger incurred in attempting to lower a boat with a large number of people in it, and the greater the loss of life if anything happens to the boat. In some circumstances it might be possible to bring the boats round by the stern or bow of the stranded ship, according to which end presented the best opportunities for saving life, and lower the passengers one at a time into the boats, but this again is not always practicable. The boats on the lee side of the vessel, that is the side least exposed to the weather, would be useless, as it would not be possible to lower them into the water, without them being swung against the ship's side, as it would take but a very slight heel to neutralise the distance between the sides of the boats and the sides of the ship at the time they are swung clear.

If, however, a vessel in striking rocks or stranding on sand, remain upright, or heel over from the weather, the launch of the boats on the lee side becomes a comparatively, though not actually, simple matter. The danger of the boats being swung against the ship's side is reduced almost to a minimum, for as the boat is lowered,

the distance between the ship and the boat increases, and owing to the heel, the boat has to be lowered a less distance. Again, the stranded hull will act as a break-water, and the sea on the lee side of the ship will be much less angered than on the weather side. Under these circumstances, all the boats on the lee side of a ship may be launched, but it will depend entirely upon the circumstances of the disaster, and the consequent decision of the master, whether the boats are launched with their passengers in them, whether the passengers are lowered into the boats as soon as the water is reached, or whether the boats are brought round to some most convenient or sheltered part to receive the passengers. In these, the most favoured, conditions it is evident that the number of boats which can be launched will not accommodate the whole of those on board. Nor is it possible to see, as ships are at present constructed, how the boats can be carried so that the whole of them shall be available for use on either side as may be required. It must be remembered, also, that a ship's boats are not the light playthings one sees on the smooth waters of a river. A ship's boats will each weigh, according to its size and material, anything from a quarter of a ton to a couple of tons, while a ship's dinghy, which is only reckoned a fine-weather boat at the best, and only holds a few people, will weigh five or six hundredweight. It is therefore not the easiest task to move ship's lifeboats from one side of a ship to another, especially in a storm, even if assistance can be derived from the numerous derricks with which nearly all ships are fitted. Some of the largest of a ship's lifeboats will carry as many as seventy-five people, but the majority of the boats will not hold more than thirty or forty ; and the seaworthiness of the boat is less, the more number of people in it and the rougher the weather. In order to secure careful lowering of a boat,

whether full, or merely with one or two men in it, the boat is sometimes slung from a ring in the centre of a chain which passes from end to end of the boat, which when suspended forms, as it were, the base of a triangle. There is a great deal to be said for this method, and it has unquestionably proved its utility and advantages on many occasions. It is safe and simple, and the boat can be released in a second or two on reaching the water.

The importance attached to motor boats for ship use is shown by the regulations issued by the Board of Trade whereby a "motor lifeboat, approved by the Board of Trade, may be substituted for one of the boats under davits in the case of all foreign-going and emigrant steamers which are required by the rules of 10th February, 1902, to carry more than four boats under davits."

Let us suppose that a large liner, with a great number of passengers and a numerous crew, has met with some disaster which imperils the safety of the vessel, and that in spite of her calls for assistance by means of her wireless telegraphy, it is necessary for all on board to seek temporary safety in the boats. As already pointed out there is the difficulty of launching them, and when launched, the further difficulty of transferring people to them from the ship. Presuming that all this is accomplished satisfactorily, several hours and possibly days may elapse before the help sought can arrive. For not all parts of the world have as many steamships crossing them as the lanes in the North Atlantic, and on less frequented routes a vessel might easily have to wait three or four days before a vessel receiving the call through her wireless telegraphy could reach the scene of the accident. The occupants of the boats, after their ship had gone down, would find themselves in the predicament of having to row or sail their heavily-laden boats to the nearest place

where they stood a chance of being picked up, or to the nearest point of civilisation, or the nearest land affording them temporary safety, whence other aid could be obtained. The work of rowing under such circumstances is hard, and unless the boat is in charge of a skilled man to attempt to sail it is a risky proceeding. Again, it is necessary that the boats for the safety of their occupants should keep fairly close together, so that in the event of an accident happening to one boat, its occupants could be distributed among the others. The additional weight, moreover, will place the boats lower in the water, besides making them more laborious to row and more difficult to manage. The supply of food which can be carried in a ship's boats is very limited, and considerations of weight prevent more than a very restricted amount of water being included in the equipment. The exposure to the weather by night and day, and the task of rowing, even if all take a spell at the oar in turn, are together very exhausting, and at last the time comes when it is no longer possible to do much more than give the boat enough way to enable her to be steered in the required direction.

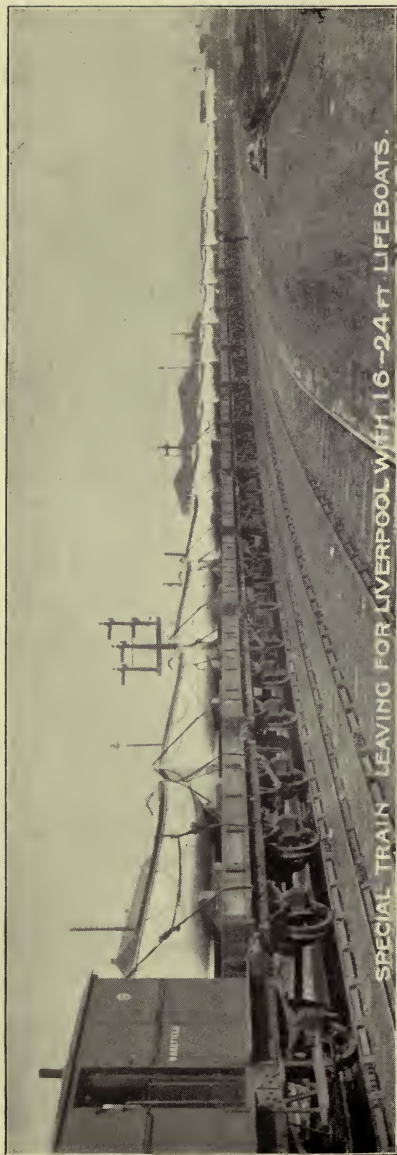
If, however, the ship is equipped with a motor lifeboat, the terrible danger surrounding all castaways in boats is robbed of much of its seriousness. The motor lifeboat can be depended upon to propel itself, and to tow all the other boats, thus saving at once the fatigue of incessant rowing. It can maintain a definite speed by day and night as long as the supply of oil lasts. The rate of progress with the string of boats in tow will be slow, but will nevertheless be sure, and what is of equal importance, in the desired direction. If the wind is favourable, the motor boat may be very materially assisted and the speed of all increased by hoisting sails on the boats towed.



For some reason or other, there has been a prejudice against the employment of motors for ship's boats, but the success which has attended the introduction of motors into vessels of all shapes and sizes from canoes a few feet long to 10,000 ton liners, has done a great deal to remove this attitude.

The introduction of steel as a material for the construction of the boats, marked another great advance, and as steel lifeboats do not run the risk of serious damage in the very unusual possibility of oil escaping from the motor and becoming ignited, their superiority over wooden lifeboats is admitted. Steel motor lifeboats are carried on a number of the latest liners, and in view of their constant readiness for service and the many good points they include, a short description of a typical boat of this character may be read with interest. The boat is twenty-eight feet long by eight feet beam and has a depth of three feet six inches. Like the ordinary lifeboats it is "two-ended," the two ends being shaped alike, which adds considerably to its seaworthiness and its adaptability for the duties it is specially intended to perform. Each end of the boat is covered with a wooden deck which is not flat, but is curved slightly, so that any water which may go over the end of the boat is at once thrown off. The front of each compartment formed by the sides of the boat and this deck is fitted with a wooden bulkhead, and the compartments themselves are provided with buoyancy tanks. In the fore compartment, also, are placed the tanks containing the oil fuel. The motor and motor bed are placed amidships with a watertight bulkhead at each end of the motor space. As the whole of the motor space can be protected from the sea by a tarpaulin, neither water nor spray can enter that part of the boat, and the efficiency of the motor can be maintained in exceedingly rough weather. It is not

necessary to enlarge upon the importance of this arrangement. Seating accommodation is provided all round the boat, and provision is made for rowing eight oars, and the mast can be stepped at the second thwart forward. As unprotected steel is liable to be acted upon by salt water, the steel used for these boats is thoroughly galvanized and covered with two coats of white lead paint outside, and coated inside with bitumastic enamel as high as the seats, and above that with lead paint. The frames are of mild angle steel measuring  $1\frac{3}{4}$  inches by  $1\frac{3}{4}$  inches, and of a thickness of  $\frac{1}{4}$  inch, and they are spaced about 2 feet 3 inches apart from keel bar to gunwale, while the keel bar itself is of what is known as T bulb section of mild steel, measuring  $4\frac{1}{2}$  inches by  $\frac{1}{4}$  inch. The stern frame is of cast steel and the stern tube which carries the shaft from the motor to the propeller is of cast iron. In some of the boats the gunwale is of teak, which is one of the hardest woods and the least affected by sea-water, and is almost proof against the ravages of the marine insects which play such havoc with the wooden portions of vessels exposed freely to sea-water. It had been found, however, that there was a tendency to corrosion in that part of the boat to which the teak gunwales were fastened, and in the latest boats steel gunwales have been fitted instead of teak. The thwarts and side seats are of teak, but metal is used for fastening them in position. The floor is of pine, and the engine-room floor is of steel. The motor consumes about a gallon and a half of ordinary paraffin per hour. The paraffin tanks have a capacity of about sixty gallons, and all the fittings connected with them and joining them with the motor are of metal. The tanks themselves are strongly made of tinned iron. In case of need, more oil tanks can be carried, and if it should be necessary to launch one of these boats in mid-ocean, it might not be a



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*The Seamless Steel Boat Co., Ltd., Wakefield*

STEEL LIFEBOATS FOR OCEAN LINERS



difficult matter to increase very materially the store of oil in the boat and also to place in the other boats one or two tins of oil which could be transferred to the motor boat to replenish its own stock. A boat such as we have described, will have a draught, when light, of about 1 foot 10 inches. Its weight is approximately 3 tons 3 cwt., and it will accommodate thirty-eight persons including two carried in the motor compartment, and its speed is between eight and nine miles an hour. The superiority of steel boats over wooden boats has been proved on many occasions. In the matter of construction they are unaffected by the weather, whereas the wooden boat is liable to change with every change of climate. A boat built of seamless steel will stand any changes from arctic cold to tropical heat, and is just as effective in the one as in the other.

A wooden boat to be kept watertight in all weathers has to be continually wetted, or partly filled with water, to prevent her planks from shrinking. If this be not done, her seams are almost sure to open and her planks may crack. Boats which are carried bottom up on the chocks are sometimes so leaky as to be useless until they have been soaked sufficiently for the wood to swell to close the cracks. The danger that a wooden boat in being launched will be swung against a ship's side and seriously damaged, is always present. It does not take a very violent bump to inflict sufficient injury on a wooden boat to set it leaking. A steel lifeboat, on the other hand, is impervious to the weather, and will stand a much greater bump against the ship's side without sustaining any damage worth speaking of. Even if it should be so badly knocked about as to be dented, it will probably still float, and the side may be faired again with a mallet at the first opportunity. The only wooden boats which can compare to the seamless steel boats are those

constructed like most of the boats for the Navy, with double planks laid diagonally, but in the matter of cost these are quite as expensive as those of seamless steel. The steel lifeboats have proved their value in many extraordinary ways. When the steamship *Lucigen* was struck by a big wave, a steel lifeboat on the bridge-deck was lifted out of its chocks and dropped on the hatch and steam winch on the main deck ; it was badly dented but capable of being used. An ordinary wooden lifeboat would have been smashed. Everyone will remember the wreck of the steamship *Mohegan* off the Lizard in 1899. She had a number of steel lifeboats besides some of wood. After the wreck, the coastguard found one wooden boat broken to pieces and quite unseaworthy, and four or five steel lifeboats all dented, but only one with a hole in it, and they could all have been rendered seaworthy. These boats were sold after the wreck, and one of them, until quite recently, was in use as a water tank, from which it will be seen that the boats were comparatively little damaged by their pounding on the rocks. A few years ago, the Hamburg South American steamer, *Presidente Roca*, caught fire off Patagonia. She carried two seamless steel lifeboats besides four of wood. These four were destroyed in the flames, and though one of the remaining steel boats had its woodwork burnt away, the people remaining on board the burning steamer managed to launch the shell of this boat and forty-eight persons were rescued. This boat, it may be added, was thirteen years old at the time. It may be wondered how many wooden lifeboats which had seen thirteen years' service would be capable of showing such a good record, even apart from the damage by fire.

As shipping experts are agreed that it may be impossible for some large passenger steamers to carry sufficient boats to accommodate all on board under all circumstances,

many attempts to add to the life-saving apparatus have been made, notably in the direction of providing life rafts and collapsible boats. Of rafts there are several types, each of which is claimed to have some special advantages over the other. A great deal of reliance has also been placed on collapsible boats, those of the Berthon and one or two other makes being admitted now by the Board of Trade.

When the ship's equipment and stores are overhauled, as described in the chapter on the Commissariat, the boats are thoroughly examined also, and there is not a single article in any one of them that is not inspected to see that it is in first-class condition.

Another inspection takes place on the morning of the day of sailing, and, since the *Titanic* disaster, it is much stricter and more thorough than it used to be, particularly so far as the ship's boats are concerned. Prior to that catastrophe it was generally conceded to be sufficient if the Board of Trade inspector picked out one or two boats for inspection, and finding them to be all right, accepted them as representing satisfactorily the condition of the remainder ; but if anything were wrong with one of those inspected, or an item in the boat's equipment were missing, all the boats would be overhauled. The system worked very well, and I cannot call to mind any disaster in which there was loss of life due to unseaworthy boats which had been passed as seaworthy by the Board of Trade examiners.

Many of the boats of the Orient Line are carried half out-board, that is to say that they rest on hinged iron rails or chocks which swing back to the ship's side out of the way, as soon as they are relieved of the weight of the boat resting on them. As the davits turn outwards, the boat automatically swings clear of the ship. This saves a great deal of time in lowering, and has the

advantage of combining these facilities with the carriage of the boat on a rigid frame, this method being superior to the old practice of hanging a boat from davits and preventing it swaying by placing bands or ropes round it. The carriage of the boats being half out-board, also means that one-half their breadth, or three to four feet, is already clear of the ship, and the second row of boats lying against it has to be moved a less distance by just that amount, which is an important consideration when boats weighing anything up to two tons may have to be handled in a race against time on a dark and stormy night. The saving of deck space by this arrangement also means a corresponding increase in the amount of space which may be devoted to passengers. Besides the boats, numerous life rafts are carried of a pattern which enables them to be stowed two deep, or one above another.

Many liners also carry, as an additional precaution in case of emergency, collapsible boats. I was privileged to be present recently at the inspection by the Board of Trade officer of the boat equipment of one of the largest Orient liners leaving the port of London. In this vessel not one boat was carried bottom up on the chocks, and the number of boats carried had been augmented since the outcry of "boats for all" last year. The boat deck was lined from end to end with boats, and in some places they were two abreast. The framework over the poop, and forming an elevation on a level with the deck immediately below the boat deck, was covered with boats; there were altogether eleven on this part of the ship alone. At each side of the fore end of the boat deck, near the navigating-bridge, was a boat, smaller than the lifeboats, and called a gig; these were the emergency or accident boats; they are kept swinging at the davits and ready to be launched in case of accident. These boats can be swung out with their crews and lowered





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*The Orient Line of R.M.S.*

**S.S. "ORVIETO," BOAT DECK**

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in half a minute; just how many seconds more are required to get them into the water depends upon the roughness of the sea. At the inspection these boats were swung out and lowered some distance at the desire of the Inspector, and by their regular crews and without a second's delay. The covers of all the other boats were taken off in readiness for the Inspector to see that every boat had its full complement of oars, mast, sails, boat-hook, rudder, plug, lantern, oil, biscuit tin, pyrotechnic lights, and fresh-water barrel. The orderliness characteristic of shipboard arrangements is enforced even in the disposition of these articles in the boats. The place of some of them is fixed by the Board of Trade Regulations. The masts are tied separately to the thwarts or seats in the centre, with the foot of each mast as near as possible to the thwart against which it will rest when it is stepped in the block on the keelson to receive it. The main sail, usually a lug, is rolled round its spar or gaff, and when the mast is up can be hoisted in a few seconds. The running rigging, simple in design, but effective in result, goes automatically into its place as the mast is raised. In a few minutes from the issuing of the order the boat may be swung clear of the ship and lowered, in readiness for the reception of her passengers. The Inspector may order any or all of the boats to be lowered into the water, in any order that takes his fancy, or some from each side may be lowered to the water at once. Everything worked without a hitch and there was not a fault to be found, though the inspection was far from being perfunctory.

Equal care is taken in every ocean passenger liner leaving a British port. Not a large passenger steamer sails without this inspection being made; not even a cargo steamer is permitted to put to sea without being overhauled in the same manner so far as the boats are

concerned, though with the few boats these vessels carry the procedure does not take long.

Surely it cannot be disputed that all concerned in the production of travelling palaces, and those ashore whose duty it is to provide and manage them, and those to whom is entrusted the responsibility of their safe navigation do the utmost that skill and experience suggest to ensure the safety of these vessels and of all who travel in them.

## CHAPTER X

### LUXURY AFLOAT

THE question has been asked many times of late, to what extent is the public itself responsible for the immense steamers, their great speed, and the extraordinary luxury of their accommodation. There is no denying that there is a public demand for greater speed, and that companies which can place the greatest steamships on their service and give them the greatest speed, and equip them with the most various luxuries, however superfluous most of them may be to the majority of the passengers, will receive the greatest and most profitable patronage. If the public requires all these things it will have to pay for them, and pay well, too, for the cost of meeting the public's wishes is enormous. The greater the size of the ship, the greater the safety, other things being equal, but the greater the magnitude of the disaster if it should come, which, however, is exceedingly improbable. In taking account of accidents at sea, the public forgets the hundreds of voyages performed without mishap and ignores the considerations of safety implied. The demand is for speed, not only by the travelling public but by the commercial community. That demand must be met, and this is the shipowner's duty. If he can make a profit as well, so much the better for him.

The mails must be brought oversea in the shortest possible time and delivered with the minimum of delay ; if the sailings can be arranged to permit of replies being sent the same day the public is not grateful but wonders why it was not accomplished before. The acceleration of the mails to and from New York, their shipment or reception at Queenstown, their hurried scramble across

Ireland and the Irish Sea to Holyhead and thence to London, Manchester, Liverpool, and the great centres in the Midlands and the North, all mean a speeding up in the transmission, a greater strain on those responsible, more work to be done in less time, and more employés to cope with it. As matters stand now, the mails from America may be landed at Queenstown, or Fishguard, or Plymouth, or Southampton, according to the steamer by which they are conveyed. The latest arrangement permits of a mail being delivered in London and certain provincial towns in less than seven days of its departure from New York City ; it arrives on a Friday night and is distributed on Saturday morning, and replies can be sent to catch at Queenstown the mail steamer sailing from Liverpool on the Saturday afternoon. Not a moment is wasted. The mails are roughly sorted before they are rushed into the bags at the various post offices ; a further hasty sorting takes place while they are in transit between London and Liverpool, or London and Holyhead. The mail bags are no sooner on the liner than they are consigned to the care of the clerks of the ocean post office and their contents are further sorted. The work of sorting goes on at high pressure throughout the voyage, and if the mail be a heavy one the clerks have their work cut out to get it done, and sometimes it is too much even for their experience and skill. The faster the ship, the less time there is for the sorting and the heavier the mail, for the public always chooses the fastest vessels for the conveyance of the letters. All this speed has to be paid for. The amount of the remuneration offered by the postal authorities to the steamship companies for the conveyance of the mails seldom leaves any profit to the company for the work, and some contracts, or mail carryings without contract, have resulted in a dead loss to the carriers.



*By permission of*

VERANDAH CAFÉ, S.S. "MAURETANIA"

*The Cunard S.S. Co., Ltd.*

THE  
CUNARD  
S.S. CO., LTD.





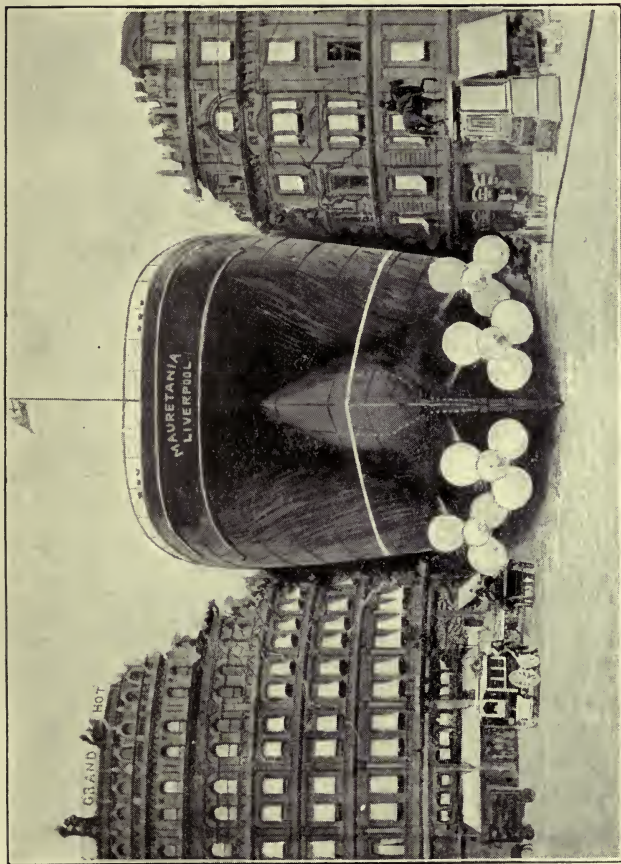
The liner *La Bretagne* was the first French steamer to carry the French sea post office. The post offices on this line were instituted to expedite the delivery of mails at New York and Paris, and to relieve the mail pressure at these two offices. The experiment was tried for two months, and proved so successful that these post offices have since been permanently established on the steamers of the French Trans-Atlantic Company. There are also post offices on all the principal German liners. The growth of the world's commercial intercourse is now so great that all ocean-going mail steamers have sorting facilities on board, to save time ashore.

The question of the carriage of the mails, and especially the call at Queenstown, has been the subject of debate ever since that call was instituted. There is no denying that it has cost a great deal of time and money to outward-bound steamers, and the late Sir Alfred Jones, with his characteristic outspokenness, stated that the dodging about the Mersey of the Cunard fast mail steamers, including the *Mauretania*, *Lusitania*, and *Campania*, on Saturday afternoon to get to Queenstown on Sunday morning to receive the mails, is nothing short of a national sin. He urged that these steamers should leave Liverpool at one o'clock on Saturday afternoon and get through to New York in time to land passengers and mails on the following Thursday afternoon. He also strongly favoured the homeward mails being landed at Holyhead instead of at Queenstown, and he did not hesitate to state that this would be done but for the Irish vote in Parliament and the contract of the Cunard Company which made the Queenstown call compulsory. He was probably right in regard to the Irish vote, for no matter what other subjects Irish members of Parliament may differ upon, they are unanimous in the conviction that the mail steamers must call at Queenstown. If the time of the

Sassenach were not thereby wasted, there would be another injustice to Ireland.

There is this to be said for Fishguard, that by its geographical situation it is the most convenient port at which passengers on liners bound for Liverpool may go ashore, if they wish to reach London a few hours earlier than by the Liverpool route. Fishguard has the advantage of being about 150 nautical miles nearer to New York than is Southampton ; while the train journey from Fishguard to London is not much longer than that from Liverpool to London, and the distance by sea from Fishguard to New York is about 100 nautical miles less than from Liverpool. This advantage may not be great, but it will certainly appeal to the passenger whose main thought when he is afloat is to get ashore again. In regard to passenger traffic, moreover, it has the advantage compared with Southampton, that passengers may be landed earlier at Fishguard ; on the other hand, the railway journey from Fishguard to London is longer than from Southampton. Landing and embarking at the Welsh port, also, have to be performed by tender.

At the beginning of 1907, the White Star created no little surprise by suddenly announcing that its largest steamers would have Southampton as their port of departure instead of Liverpool. It had been expected for some time that one of the great lines would adopt the southern port instead of the Mersey, and it seemed to be taken for granted that the change would be made by the Cunard line. But to the general amazement the Cunard line remained at Liverpool and the White Star adopted the other port. The reason for the change was that the great German lines were making calls at one English Channel port or another, and were attracting South of England passengers who might otherwise have travelled via Liverpool.



*The Cunard S.S. Co., Ltd.*

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THE "MAURETANIA," AS IF PLACED IN NORTHUMBERLAND AVENUE

MAURETANIA



The Americans, first in their river steamers and then in the few steamers in which they have essayed to enter the North Atlantic trade, notably with the Collins liners, showed that speed and luxury could be combined, and that the public would support the line which made the most of these two characteristics.

Another important factor is that speed makes for safety. Granted that a steamer be well built, the engines which are capable of driving her at a fast speed in average weather are capable of forcing her ahead through bad weather or of bringing her out of a dangerous position such as the too near proximity of a lee shore. If the number of voyages made and the small number of accidents be taken into account, it will be admitted that speed makes for safety under practically all conditions except that of fog. The public demand for speed and safety in vessels of great size entails the provision of expensive luxuries as an inducement to the public to patronise the vessels in which the demand is met. The fastest vessel afloat would not be patronised remuneratively if it were not luxurious. Luxury has been defined as the art of providing edibles out of season, and more things to use than anyone can possibly want combined with the least exertion and the utmost physical comfort if anyone should want to use them. If this definition be correct, then modern liners have certainly provided luxury. Indeed, it is difficult to imagine what else they can add for the comfort or amusement of their passengers, unless they instal real ice skating rinks as they could do by an extension of the refrigerating system. The innovation would prove very popular, especially on a hot day in Mid-Atlantic where the ocean is enjoying a siesta, and the ship has no more motion than if she were crossing a mill-pond.

Stock theatrical companies have been spoken of, and

first one line and then another has been credited with the intention of adding a theatre and a company of skilled performers to its attractions. The problem presents many financial difficulties. Apart from these it would be unfair to the artistes to expect them to give a matinee and evening performance daily whether the passengers chose to attend or not ; it would be impossible to carry separate companies for melodrama, opera and comedy ; and it would be unkind to the passengers to allow them to patronise the performances of a company rash enough to tackle "The Stranger" in the afternoon, and "Parsifal" or "The Daughter of the Regiment" in the evening. Perhaps an adaptation of the modern picture palace may prove the solution of the difficulty. The children certainly would like it.

The demand for luxury and speed combined with safety is not of modern growth. In previous chapters I have endeavoured to show its development from the earliest days of steam navigation : how the passenger has formulated it, and the steamship owner, designer, and builder have endeavoured to meet it, and by the exploitation of their efforts have stimulated the demand still further. It is advisable now that we should see how the latest public requirements are created and supplied in the most typical vessels on the different main steamship routes of the world. The modern palatial steamship, as has been already pointed out, consists of two classes of vessels : those for short journeys of only a few days' duration, and those whose voyages extend to as many weeks. Manifestly the steamers specially designed for the one purpose are almost entirely unsuitable for the other.

The North Atlantic traffic, as explained elsewhere, has its own special features, and the floating hotels engaged therein are divided into the "express" and the



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“big” boats. The only difference between the two classes is that the express steamers are a little faster. The two Cunarders, for instance, are the acknowledged holders of the speed records for the voyage either way across the Atlantic. When they were launched they were not only the fastest but the largest ocean-going steamers. Now the White Star *Olympic* is larger by some 10,000 tons, but she is less fast, though she crosses the ocean regularly at an average speed of close upon twenty knots, or nearly twenty-three miles per hour, or about as fast as a railway train, not excepting the expresses on some lines. So far as the passenger is concerned he cannot tell to a few knots what is the speed of his vessel. By the Cunard flyers he travels faster and reaches his journey's end a few hours sooner; by the “big” boats he travels not quite so fast and enjoys his luxurious surroundings a little longer.

The *Imperator*, of 51,000 tons, is expected to have a normal speed of twenty-two knots; her actual speed, when she has made a few voyages and her engines are working with absolute smoothness, should be a knot or two faster. The *Britannic*, yet to be launched, is expected to be faster, and will certainly be larger, but whether in dimensions or tonnage measurement no details are yet vouchsafed to enable a definite statement to be made. Concerning their newest hotel, the *Aquitania*, the Cunard company say she is the longest afloat but of a trifle less beam than the *Imperator* and of slightly less tonnage; her speed will be second only to that of the *Mauretania* and *Lusitania*.

Time is money, and if a few hours can be saved by adopting one port in place of another it must be done. Therefore there is an intense rivalry between certain of the ports to provide the most attractive facilities for the great steamships, and the railway companies, many of

which are interested financially in the development and success of this or that port, second most ably the efforts of the port authorities and the steamship companies to save time and money and increase their own revenue.

The public, thinking only of its own welfare and convenience, to which all these commercial enterprises must be subservient, in its several forms demands the observance of due economy of time. How can the commercial man compete against his rivals if anyone else spends for him a few hours or minutes he thinks he can employ? How, too, can the American tourist, taking a month's holiday, cross the Atlantic twice and "do" the United Kingdom and Ireland and most of Europe to his own satisfaction in the rest of the month if hours, minutes and seconds be not saved? It has been asked if anyone be the better for all this hustle and rush. The steamship companies are. The hustler and rusher help to fill the most expensive cabins, and to pay for the luxuries in speed and surroundings they require. If it were not for the comforts and luxuries, and the enforced rest and the recuperative effect of a sea voyage, even at the speed of modern North Atlantic steamers, some American tourists would die of exhaustion, and many of the commercial men who rush from one side of the Atlantic to the other in the furtherance of their schemes would collapse under the strain.

Up to a few years ago an ocean voyage did mean a few days' complete isolation from the rest of the world—and it does still if you like to travel on a steamer which does not publish a daily newspaper on board with columns of news from the world's centres, and the latest important Stock Exchange quotations from London, Paris and New York, transmitted by wireless telegraphy.

Wireless at sea, so far as the passenger is concerned, is not necessarily an unmixed blessing. As long as the

passenger feels that he can be in communication with his business ashore whenever it pleases him to send a wireless message, he will yield to the temptation to enquire how affairs are progressing. He may have undertaken a sea voyage in order to obtain rest and change. Without wireless communication he would have to content himself with waiting until he reached the end of his journey before he could ascertain the prices of the goods or securities in which he is specially interested. But if he has an idea in his mind that a certain commodity, stock or share will rise or fall in value within a certain time, it may be prophesied that he will send a wireless message to ascertain the quotation and the prospects for a rise and fall. The mere fact that he may be able, with so little trouble, to receive a reply on which he can do business will justify him in his own mind for making the attempt "just this once," and it is not in human nature to resist the temptation to repeat the experiment whether the venture has been advantageous or otherwise. A man who saw in the paper published daily on his steamer that certain rubber shares were going up sent a wireless from Mid-Atlantic to his secretary at New York to sell his rubber shares. In a few hours he received an answer, and turning to the operator quietly remarked that he had just made 185,000 dollars, and he added that when he went ashore he would "buy a motor-car and take a drive through Europe." All steamers carrying wireless in the North Atlantic trade are either in direct communication with the shore stations or with other vessels which can speak to the shore. On the big ships the wireless telegraphy room has a small apartment attached to it with thick walls and a double door, so as to be as sound-proof as possible. It is specially devoted to the reception of the messages intended for the next day's paper. For some hours during the night the operator will receive messages for publication

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the following morning and usually takes about 600 words. The messages are prepared, so far as British ships are concerned, by a special news department in connection with the Marconi Company; the German and French ships have different arrangements. Besides being a telegraphist, the operator has to know something of public affairs, and also be able to act as a journalist to the extent that he may have to sub-edit the telegrams in preparation for the following morning's paper. This is by no means an easy task, for it requires the utmost accuracy in the reception of the messages, especially where figures and quotations are concerned, and an appreciation of the literary value of words in the expansion of the telegrams to render them intelligible to his readers.

The first impression on entering a floating palace for the first time is one of bewilderment, notwithstanding the literature which the company has issued with the ticket. On no large steamer now do the passengers enter at the top deck or at one of the decks in the so-called superstructure. The height of the sides of modern liners above the water has permitted doors to be fitted by which passengers and their baggage enter and leave and stores are taken in. The visitor to a modern steamship may be excused for getting lost on board if he should gratify his curiosity and try to inspect everything which may appear interesting.

If you are not fortunate enough to be able to make a voyage in a great steamship, you should take advantage of the first opportunity of inspecting one. There is a very praiseworthy custom among shipowners of throwing their new vessels open to visitors on the eve of the maiden voyage, charging an admission fee, and devoting the proceeds to some charity. If you cannot visit the ship then, you should obtain, if you can, a permit to look over

her at some other time and take the chance of her being *en déshabillé*, or not prepared to receive company.

There is no exaggeration in describing the steamship as a floating town. Perhaps a better description is that she is a travelling palatial hotel, combining the best features of the modern hotel with the comfort and luxury generally associated with the palace.

If the liner be described as a town, it can only be one in which the streets are built one above another, in which the co-operative principle of cooking is adopted, in which all the artificial light and heat required are obtained from common sources, in which the sanitation is as perfect as science can make it, in which the luxury provided is out of all proportion as a regular condition of life to the income of most of its dwellers, in which the minority work and the majority play, and in which the rent collector, tax-gatherer, and "men who come with nasty bills and always look so sleek" are conspicuous by their absence. The ship's community has no politics, no general elections, no canvassers for votes, no candidates enthusiastically making promises they know perfectly well they can never keep, and no deluded electorate. There are no police, no law courts for the ventilation of moral unsavouries; the aggravations of the work-a-day world ashore are missing. The state, as epitomised by the liner, takes charge of the passenger; certain less fortunate persons minister to his or her wants; objectionable persons can be subjected to a rigid boycott, and their existence ignored; and beneath, above, and around is a system as perfect as skilled organisation can make it for seeing that the floating city pursues the even tenor of its way until its destination is reached; while over and above all, on the navigating bridge, is a benevolent despot who can play the part of the sweet little cherub—in blue suit with brass buttons—or rigorous

ruler who can consign a recalcitrant subject to an uncomfortable apartment situated between a coal bunker and a refrigerated chamber, there to remain until the despot, as representing the community, thinks the affront to its dignity is atoned for.

Let us consider a few of the representative floating palaces of the different companies and see how they are arranged internally, and with the aid of illustrations obtain some idea of what they are like ; how space is seemingly wasted, and how, at the same time, an extraordinary amount of detail is introduced ; how spacious and palatial the various apartments are, and how wonderfully everything is packed into the comparatively restricted dimensions of a floating hull. Yet no space is really wasted. Space on a steamship has an economic and commercial value, and no one knows this better than the steamship owners. They understand perfectly, much better than the public, that if the public wants space it must pay for it, and further, that if the public is not given space and luxury combined it will not pay for either. Luxury cannot be provided in poky cabins. The greater the space and the more numerous the luxuries, the higher the prices that may be charged and the greater the number of people who will be tempted to pay them. It is a question of supply and demand, but it is difficult to draw the line between the two. The supply of novelties and extra comforts created the demand for more, and the competition between the various lines provided the incentive for greater inventiveness in adding attractions of a directly or indirectly remunerative character.

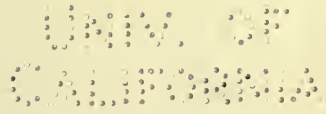
All the large steamers have at least two entrances on each side, one communicating direct with the saloon accommodation and leading to what is called the entrance hall, and the other communicating with the nearest way to the third-class or steerage accommodation. The



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S.S. "ORAMA," DINING SALOON

*The Orient Line of R.M.S.*







second-class passengers frequently embark at the saloon entrance but are at once directed to their quarters so that they obtain nothing more than a fleeting glimpse at a fraction of the grandeur to which they cannot attain. On a few vessels there is a separate entrance for the second class also.

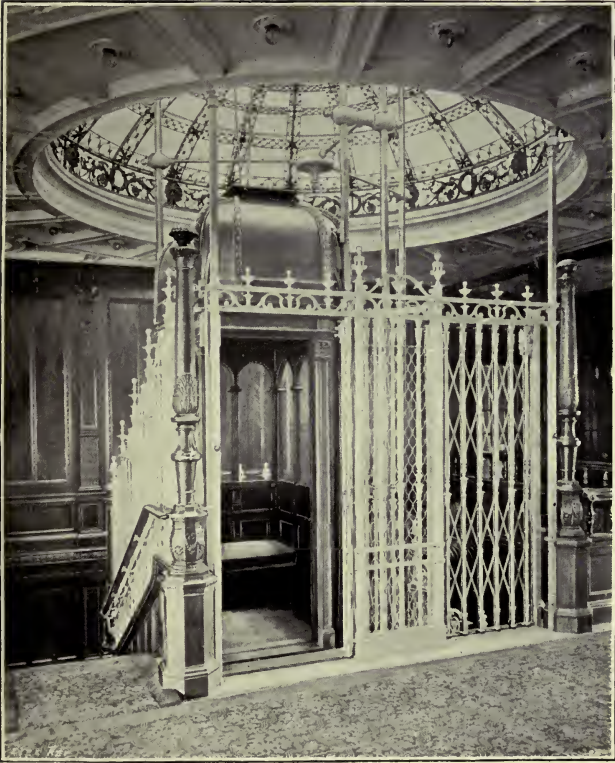
The entrance hall of all steamers is an imposing apartment. Round it the other saloon apartments may be said in a sense to radiate, for it can be described as the central public room of the ship. No two vessels are precisely alike in their internal arrangements, but they are all rivals in their internal fittings. Near the entrance hall is the lift or elevator, or one of them, which carries passengers between the lowest passenger deck and the highest, and stops at any intermediate deck as desired, just as a hotel elevator does at the various floors.

When it was first proposed to instal lifts in ocean liners the objection was raised that the lifts would only work when their shafts were in a vertical position, and that otherwise the cages would jamb. But the makers tested the shafts they proposed to use for ships by running a cage up and down one inclined at various angles and also rocking as it would in a rolling ship, and it was found that the motion made no difference. Like everything else that is not worked by steam on a ship, the lifts are fitted with electric power, the winding-gear being placed close to the head of the shaft.

The Germans, with their usual enterprise, were the first to try whether the advantages of lifts at sea would be as great as was expected if the difficulty of the motion of the ship could be overcome. As just stated, this supposed difficulty was easily dealt with and was found to be almost non-existent, especially after the counter-balancing weights were fitted to run in the contrary direction to the cages. Certainly lifts of some sort had

to be provided if passengers were to be saved the trouble of climbing up or down three or four flights of stairs. Stairs tire people ashore, and are much more likely to do so when they are rocking with the ship, and there is an ever-present necessity for holding on to a handrail. The necessity for lifts is all the greater now that steamers are built with as many as eleven decks, eight or nine of which are devoted to passengers. The Hamburg-Amerika liner *Amerika* was the first ocean liner to carry an electric passenger lift, and when her sister ship the *Kaiserin Auguste Victoria* was built she, too, was given lifts, and the *President Grant* and *President Lincoln*—German ships, in spite of their names—were soon similarly equipped. The North German Lloyd first installed lifts in the *George Washington*, and so popular a feature were they that the company had them fitted in the *Kaiser Wilhelm II* and the *Kronprinzessin Cecilie*. The new German liner *Imperator*, which at present is the largest liner afloat, has a number of lifts, both the first and second-class passengers being given this convenience.

The *Olympic* has three lifts, every one of which will raise 15 cwts. at a speed of 100 feet per minute from the upper deck to the promenade deck, a distance of 37 feet 6 inches. The cages of all ship lifts are of steel framed with woodwork, generally mahogany, panelled and mirrored as usual, and having seat and electric lights. The *Olympic* has a lift in the second-class accommodation : the only difference between it and the first-class passenger lifts is that it is less ornately finished. The White Star set the example in providing lifts in the second class, and now all the latest vessels in the North Atlantic trade, whether British, French or German, have adopted them. The *Adriatic* and other first-class vessels of the line have lifts, while in its Canadian connection they are fitted in the *Laurentic* and *Megantic*. The Cunarders *Lusitania*



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CUNARD S.S. "MAURETANIA," PASSENGER LIFT

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and *Mauretania* each have two large passenger lifts in the main staircase, capable of ascending or descending at a speed of 150 feet per minute and carrying nine persons at a time, and lifts have also been fitted on the same company's *Caronia*, *Campania*, *Franconia* and *Laconia*.

Lifts are not confined to steamers of the North Atlantic. The splendid "A" steamers of the Royal Mail Steam Packet Company, and the newest vessels of its associated lines, the Pacific Steam Navigation Company and Messrs. Lamport and Holt, have introduced them to the South Atlantic and the Pacific. The P. & O. Company, by installing lifts in its latest "M" class steamers, has familiarised them to travellers to and from India, Australia, and the Far East; and voyagers to and from Australia thoroughly appreciate the convenience in all the new steamers of the Orient line.

The Allan line has placed lifts in its new steamers *Calgarian* and *Alsatian*; its great rival in the Canadian trade, the Canadian Pacific Railway Company, deemed its new steamers the *Empress of Russia* and *Empress of Asia* incomplete without lifts; they are also to be included in a new steamer which is under construction for the Union Castle line's South African trade, this, perhaps, being one result of the company coming under the control of the enterprising R.M.S.P. Nor are the colonial steamship services behind the great companies of the old world in their endeavours to add to the comfort of their patrons. The Union Steamship Company of New Zealand is having them fitted in the *Niagara*, while two of the great Australian shipping organisations, the Howard Smith line and the Australasian United Steam Navigation Company are following suit in the *Canberra* and *Indarra* respectively. Those who remember the small vessels which were at one time thought good enough for the Australian coast trade cannot fail to notice and

wonder at the growth of colonial prosperity which has justified the adoption of steamships of continually increasing size for the interstate trade, until many of these vessels are as large as were the liners between Great Britain and Australia not so very many years ago, and are far more luxurious.

On every one of these steamers there are in addition electrical lifts for the ship's stores, and others for the passengers' baggage.

Many travellers, who pride themselves upon their experience, prefer to see the chief saloon steward as soon as they go on board and make sure of a pleasant place at table being reserved to them at every meal. They make straight for the dining-room and select the nicest situated table they can. This is a matter of some importance so far as the comfort of the meals is concerned. Some people like fresh air, and are never happy unless they feel it blowing about them; they are often a nuisance to their fellow-travellers who complain of the draughts. Some like to be as near the pantry, or serving-room, as possible, so as not to be kept waiting a moment longer than is necessary for the succession of dishes. Others like to be as far away as they can get from that favoured spot, and to take their time over their food, in the serene confidence that they will be properly looked after by the stewards; these people usually choose a table at the side of the ship and near one of the windows. In the dining-rooms on the small-table plan, by which tables are arranged to accommodate any number of persons, from two or three to a dozen, there is ample choice for all; on some vessels there are series of tables of equal size, generally seating from six to a dozen on either side; and on others the long-table system is still in vogue. Of course much depends upon the route upon which the steamer is engaged and the class of passengers she carries. In all cases,



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THE CARLTON-RITZ RESTAURANT ON S.S. "IMPERATOR"





however, every passenger is given a comfortable revolving chair, and he may arrive at or leave the table without inconveniencing any one else, and he has ample room to take his meals in comfort.

Much might be written of the dining apartments themselves. Their spaciousness always strikes the voyager for the first time, and a no less favourable impression is created by the sumptuousness of the decorations, the excellence of the lighting arrangements, the superiority of the table appointments, the evidences of thoughtful and refined taste, and the general air of making one feel at home and at ease at once.

The main dining-room on many steamers opens off the entrance hall; the grand staircase which passes the end of the entrance hall communicates with the decks above and below, and there are in addition other stairways.

The *Olympic's* dining-room is 92 feet in width and 114 feet in length, and is decorated throughout in seventeenth-century English style, the decorations in several famous "stately homes of England" having been copied. There is this difference, however, that in the steamship the dark oak ceilings, which are such a feature of that style of decoration, have given place to white moulded ceilings, and as the walls are also white the effect is light and pleasing in the extreme, while an air of richness is imparted by the presence of a large number of artistic mouldings. The sidelights or windows are arranged in groups of six and four alternately, and in front of these windows and inside the saloon leaded glass windows have been fitted to increase the effect of the apartment being in a large country mansion. At one end of the saloon, and also extending across the ship, are two pantries, out of sight of the passengers but conveniently placed to ensure that rapid and satisfactory service for which the

company has a reputation to maintain. Large pantries are a necessity when no fewer than 532 passengers sit down to dinner at the same time. There are also a number of recessed bays which, like the rest of the room, are fitted with small tables, but the arrangement enables families or friends to dine together almost apart from the large room. The dining-room is entered from the reception-room, which is at its forward end and is itself as wide as the ship and 54 feet in length. In the reception-room are the grand staircase, leading to decks above and below, the elevators giving similar access, and several small tables and comfortable chairs where passengers can stay to read, or pass the time in any other way that pleases them best. The dimensions of the *Olympic's* dining-room are to be excelled by those of the corresponding apartment of the *Britannic*, and by those of the *Imperator* and her sister ship, the *Vaterland*. The dining-rooms of the *Lusitania* and *Mauretania* are equally imposing, and they will be far surpassed by that of the *Aquitania*, launched in April. Those who prefer their meals in the restaurant can betake themselves to that apartment where they will find they can have what they like to choose from the menu as though they were in a restaurant ashore. This is a great convenience to those whose appetites are not equal to sampling all the courses which constitute a dinner on an ocean liner, who do not like to sit and wait and do nothing until the next course they want arrives. It is a really beautiful apartment, and many people think meals here are preferable to those in the dining-room, one of its chief attractions being that it is on the bridge deck, and that the traveller can get anything he wants at any time. If he feel hungry after a game of bowls or quoits, or a turn in the gymnasium, he can pop into the restaurant and have something appetising to stifle

the cravings of the inner man until the next regular meal. Another advantage of the restaurant is that if a passenger does not want anything between the *hors d'œuvre* and the dessert he can skip from one extreme to the other and lose no time in watching other people attend to the numerous intermediate courses.

The idea of introducing restaurants on ocean liners was received with some ridicule and as calculated to stimulate a demand for unnecessary and expensive luxuries. The general public simply regarded the innovation as the brilliant idea of a shipowner who wanted to "go one better" than his rivals by providing a feature on his steamer which they had not on theirs. From the point of view of advertisement and publicity, this suited the line which made the experiment, but the actual motive really was economy. Among the hundreds of passengers carried every voyage there are always a number who want all sorts of extraordinary things at unusual hours and most inconvenient moments, and if their wants, however unreasonable, are not immediately attended to they are likely to complain of the inattention of the ship's staff. To attend to their wants meant that the stewards and cooks were being continually called away from their regular duties which suffered in consequence; if a new department could be created to minister to these numerous additional wants the regular work would not suffer and the general comfort of all on board would be increased and a fancied source of grumbling removed. It was also foreseen that the restaurant would appeal to the class of passengers who do not always want to take the set meals or to have them at special times, and as they would patronise the restaurants the pressure in the dining-saloon would be relaxed somewhat to the comfort of all concerned.

The first Cunard steamers on which the restaurant

was adopted, were the sisters *Caronia* and *Carmania*. Since then the *Mauretania* and *Lusitania* and other Cunarders have been similarly fitted.

In the restaurants passengers can have all their meals when and with whom they like. Small parties of from five to twenty persons can dine together, or a passenger may entertain his friends to a specially prepared meal at any hour up to nine o'clock in the evening. It happens not once but many times every voyage that some of the passengers like to have a little dinner among themselves, and their wishes are consulted just as they would be were they giving instructions for a similar function at a large hotel ashore. Artistic menu cards are prepared and printed in the ship's printing office, and these are frequently preserved as mementoes of a very pleasant incident of the voyage. If desired a photograph of the organiser of the dinner may be reproduced on the cards.

The various apartments are decorated in almost as many styles and combinations of styles as there are rooms to be adorned. Every monarch's reign, and every period of history of every civilised nation, after which a style is named, have been laid under contribution by the designers of furnishings who seem to regard history from the point of view of its reproductiveness in the matter of mural adornments, the shape of chair legs, the picturesqueness of sideboards, and the scheme of architecture of bedsteads. The Turkish bath of one ocean hotel has been given a design reminiscent of Pompeii; that of another suggests Constantinople and is said to be Byzantine, while that of a third is suggestive of Arabia. They are as comfortable as can be; the bather can perspire as happily and healthfully in one as the other, the attendant of either will liberate him spotlessly clean; the cooling-room, where coffee and cigarettes may be enjoyed, will enable him to regain an agreeable temperature and



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catch no cold afterwards, and he will return to the company of his fellows immaculate physically and charmingly placid, for no one ever saw a man in a state of irritation after a Turkish bath such as can be obtained on board a modern liner. These are not the "steam baths," about the size of a piano-case, some people have talked about, but rooms large enough to take in at least half-a-dozen bathers at a time.

In the dining-rooms every ornamental historical period has been resuscitated. You may sleep in a bed depicting one ruler's fancy, breakfast under another dynasty altogether, lunch under a different flag and furniture scheme, play cards or smoke, or indulge in music under three other monarchs, have your afternoon cup of tea in a verandah which is essentially modern and cosmopolitan, and return to one of the historical periods experienced earlier in the day for your dinner in the evening at which meal, whatever be the imperial style or the degree of Colonial simplicity, you will appear in very modern evening dress. It is impossible to dress to suit your surroundings, so the modern evening dress has to take the place of all other costumes and save a world of trouble. It is a wonder that some arbiter of fashion has not decreed that the costumes of the passengers shall match the scheme of decorations provided by the steamship companies in the several apartments.

When you board the *Olympic* you enter the reception-room, which is Jacobean English in style, but so modernised and improved that even King James might be forgiven if he did not identify it. The dining-room is in this style, as already described. The restaurant is decorated in the Louis Seize period with beautiful tapestry on the walls. The lounge is Louis Quinze in design with details copied from the palace at Versailles. The reading-room and writing-room remind those learned in such

lore of the Georgian period of about 1770, but in pure white ; a feature of this room is the immense bow window at the forward end whence a splendid view can be obtained of any scenery as the ship approaches. The smoking-room, one of the finest of its kind on the ocean, is Georgian of an earlier period. A welcome feature of the public apartments on the higher decks, where they receive the full force of the wind, is that draught-proof revolving doors are fitted and that no matter how strongly the wind may be blowing, those inside the rooms are never inconvenienced by draughts caused by persons passing in or out. These revolving doors are now found on all large steamers. Corresponding apartments on the great Cunarders and their German rivals are in no way inferior.

The height to which these apartments are carried is remarkable. All dining-rooms now are at least two-storied ; most are surmounted either by a dome or a highly decorated ceiling in keeping with the general artistic effect. A few steamers have their dining-room ceiling extending above the second story. Nearly all have a balcony round the apartment where the ship's orchestra sometimes plays.

One remarkable feature about the different styles of decoration employed on all first-class ships is the thoroughness with which the scheme adopted is adhered to in completing every room, whether it be a sleeping-cabin or a gigantic dining-hall. The decorations are modernised in accordance with modern notions and methods of production, the marvellous ingenuity of modern machinery and the extraordinary effects produced being employed to the utmost advantage. The carpets, for instance, are the best that can be woven, but the patterns are reproductions of, or if new are elaborated from, old design. Electric lights are essentially modern in their general adaptability. Yet so artistically are the light standards



designed, with such faithfulness to the prevalent idea of the period represented, that in spite of the apparent incongruity of electric light and Empire furniture, there is no real incongruity, for the designs match so beautifully and harmonise so well that the impression conveyed is one of repose and rest and comfort; the general air of luxury is present, but it is always subordinated to the suggestion that the luxury is for comfort and use, and not for show.

Nor are the materials employed in any degree inferior to the impression of superior quality they give at first. The finest woods that can be obtained, the best silk tapestry, the highest quality metal work, the best mirrors, the finest appointments, are bestowed in lavish profusion.

In regard to the styles of internal decoration, there may be enumerated Louis Seize, Empire, Adams, Italian Renaissance, Louis Quinze, Louis Quatorze, Georgian, Old Dutch, Modern Dutch, Colonial, two or three Georgian and Jacobean, the Regency, and Queen Anne. There are also several combinations. Any or all of these may be found on modern liners in the North Atlantic. All social classes of passengers and all tastes in surroundings and furniture are catered for. If a good democratic citizen of the United States thinks he can enjoy his voyage better in an Empire suite of rooms—in a more comfortable bed than the Emperor ever had—or a French republican likes a royal suite of one of the Louis monarchs; or an ardent German Socialist suddenly evinces a desire to travel in luxury in an Imperial suite or in one named after some Teuton hero or ruler; whatever the taste, the steamship company will welcome and make them comfortable, as long as they can pay the fare in advance.

Other apartments are verandah cafés, which are open in summer and shut in with plate-glass windows in inclement weather to form winter gardens; music rooms

placed in various parts of the ships, in some in the balcony above the dining-room and in others next the reception-room; drawing-rooms, usually near the music-rooms; lounges, where most convenient. Even the deck under the boat-deck, where the saloon passengers mostly promenade, is closed in in winter with plate-glass windows for much of its length, and passengers can watch the angry seas tossing their heads and throwing the spray upwards towards the windows, and keep dry and warm and sheltered. Wind screens on deck form cosy corners, which are always much appreciated.

Sumptuous and even gorgeous as some of the public rooms are, it is in the bedrooms that the passenger really learns to appreciate the comfort and luxury of a modern floating hotel. On all the large steamers the system of suites of rooms prevails. These consist of from two to four rooms each, and every style of furnishing, and of the utmost taste and most exquisite richness of design, is there for the selection. In the best apartments berths are unknown. Beds such as are obtainable ashore are the rule. Where two persons are to occupy one sleeping-case, there are two beds; in some rooms the beds lie "in beauty side by side," in others they are placed end-on. All the large liners have cabins fitted in both these styles. The making of the beds on board ship is an art of itself. The arrangement of the sheets and blankets in the berths is very different from that which prevails ashore. In the private cabins and suites of rooms which are fitted with bedsteads the beds are made in the ordinary way. When, however, the beds are constructed in one of the numerous berth styles the sides of the upper sheets and blankets are folded in a peculiar manner along their entire length besides being tucked in at the sides so that the passenger finds himself very comfortably covered when he turns in, without having

THE  
LUSITANIA



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EN SUITE ROOM, S.S. " LUSITANIA "

*The Cunard S.S. Co., Ltd.*



to disarrange the bedclothes entirely as he would probably do were the bed made in the ordinary shore fashion. This is a little point, apparently of not much importance, and it may easily escape the notice of passengers who, for the most part, are quite content to accept the comfort provided and not worry themselves about the means by which it is afforded them. The first-class berths of all the large popular ocean-going passenger steamers have on their outer sides and at the head end, two boards which serve the purpose of keeping the passenger in the berth in comfort if the vessel has a tendency to roll, not that there is any danger of anyone falling out nowadays, and one of these boards is hinged about the middle in such a way that it can be let down outwards so as to form a small table on which to place the morning cup of tea, or a book if a passenger likes to indulge in the luxurious habit of reading himself to sleep. He need not even get out of bed to put out the light. There is a convenient switch near the head of his bed, and he can extinguish the light with a minimum of trouble and exertion. Although called berths, they are as unlike the ordinary berths as it is possible to be, and are really comfortable spring beds supported at the ends by brackets attached to the walls of the cabin. They have spring and wire mattresses covered by thick overlays of the finest procurable flocks. Even if, in very rough weather, one of these mammoth liners should raise her stern so high that one of her propellers is partially out of the water, the passenger will feel no extra vibration. Engineering science has devised a means by which the engine automatically stops any tendency of the screw to race, and permits it to revolve at its ordinary speed directly it is again immersed. The spring mattress in the berth, also, is so devised that the springs absorb the little vibration, if any, which might be felt in the cabins. The only

time the passenger can be sensible of the vibration is when he is standing on the floor, or if he should place his hand against one of the walls of the cabin.

The conveniences for a family travelling are astonishing. Communicating doors will give access to two or three sleeping apartments, a private bathroom with lavatory accommodation, and a small sitting-room, the whole furnished in a most artistic and certainly costly manner. The small sitting-room is much appreciated, especially by those who like their breakfast before they dress for the morning; in slippers and dressing-gown they can repair to their sitting-rooms, have their breakfast brought to them, and dress at their leisure afterwards.

The advantages of this arrangement are many, not the least being that a married couple with perhaps one child may occupy one state-room, two or three children and the lady's own maid may be placed in the adjoining state-room, and access to a third room may be given if required. A family can thus, to all intents and purposes, make a journey to Australia or the Far East, or North or South America, or India, in what is virtually a self-contained flat with all the advantages which complete privacy assures. All the first-class state-rooms are furnished with wardrobes with full-length mirrors, and there are, in addition, combined drawers and dressing-table with swing mirrors just as one will find in a comfortable bedroom in a first-class hotel. In very few first-class state-rooms on any of the modern liners are there more than two berths, though on some vessels a sofa is added which may be used as a berth if the demand upon the passenger accommodation justifies its transformation. These sofas are just as comfortable as the berths themselves, and many passengers prefer them rather than put themselves to the trouble of climbing up into the upper berths, though convenient steps are often provided, and occasionally

a short ladder is fixed to render the ascent easy. The wise traveller generally chooses an upper berth for reasons that to him or her are obvious, but the inexperienced traveller generally elects to take a lower berth. The upper berth sometimes has an additional advantage that it is better lighted for reading in bed. The motion of these big vessels also is so steady and even and slow—"unjerked" was the expressive adjective employed by an experienced traveller of my acquaintance—that it causes no inconvenience in entering or leaving the upper berth, and the old advantage the lower berth had in this respect is neutralized. Except in bad weather, it is seldom that saloon passengers in the most modern type of steamers are incommode. The chief saloon steward of one of the big Cunarders told me recently that he had made many voyages in that vessel and had not had one passenger ill, and I was assured by one of the principal officers of the White Star's big boat, the *Adriatic*, that even when she crossed from New York in the equinoctial gales at least half her saloon passengers did not miss a meal.

The telephone service in many steamers is extraordinarily complete. The big Atlantic liners which sail from Liverpool are connected with the post office system as soon as they are placed alongside the landing-stage, and similar arrangements are to be made at Southampton and London. There is a telephone in many ships in every cabin, and a passenger can telephone, from the seclusion of his bed if he likes, to anyone in any part of the United Kingdom served by the telephone system. Business men who have to give or receive final information or instructions just prior to sailing find this connection an inestimable convenience. The telephone is not useless when the connection with the shore is severed. The ship's telephone service then becomes complete in itself. The greater portion of it is reserved for the use

of passengers, but, as set forth in an earlier chapter, there is a complete telephonic installation between the different official departments of the ship. Passengers can telephone from their cabins to the stewards' department for anything they want. When you awake in the morning and want a cup of tea you telephone for it; the number of your cabin appears on the indicator on the switchboard, so that there is no mistaking it; you can telephone for your breakfast when you are ready for it, and if you subscribe at the beginning of the voyage to the ship's morning paper you can summon it by telephone also, and consume your newspaper, your hot buttered rolls, and your tea or coffee simultaneously. If you want a Turkish bath you can telephone to the attendant to know when a bench will be vacant; if you want a shave you can ring up the barber to know when there is a vacant chair in his sanctum; if you want to make up a congenial card party you can telephone to your friends in their cabins when to join you.

In the saloon of all first-class ocean steamers, whatever their voyage, the day is usually begun with a cup of tea served in the state-rooms, and a very pleasant and refreshing thing is a nice cup of tea in bed. Breakfast is served in the large dining saloon from eight to half-past nine, after which the passengers are free to amuse themselves until lunch at one o'clock. Anyone who is hungry in the meantime can patronise the restaurant or apply to one of the dining-room stewards, and if, after lunch, his hunger should render it impossible to wait until afternoon tea, between four and half-past, he can again replenish the inner man. Afternoon tea is usually over between half-past four and five, and the passenger must then do his best to wait until dinner is served at seven. This meal concludes about nine o'clock. It will thus be seen that the shipping companies do their best to satisfy

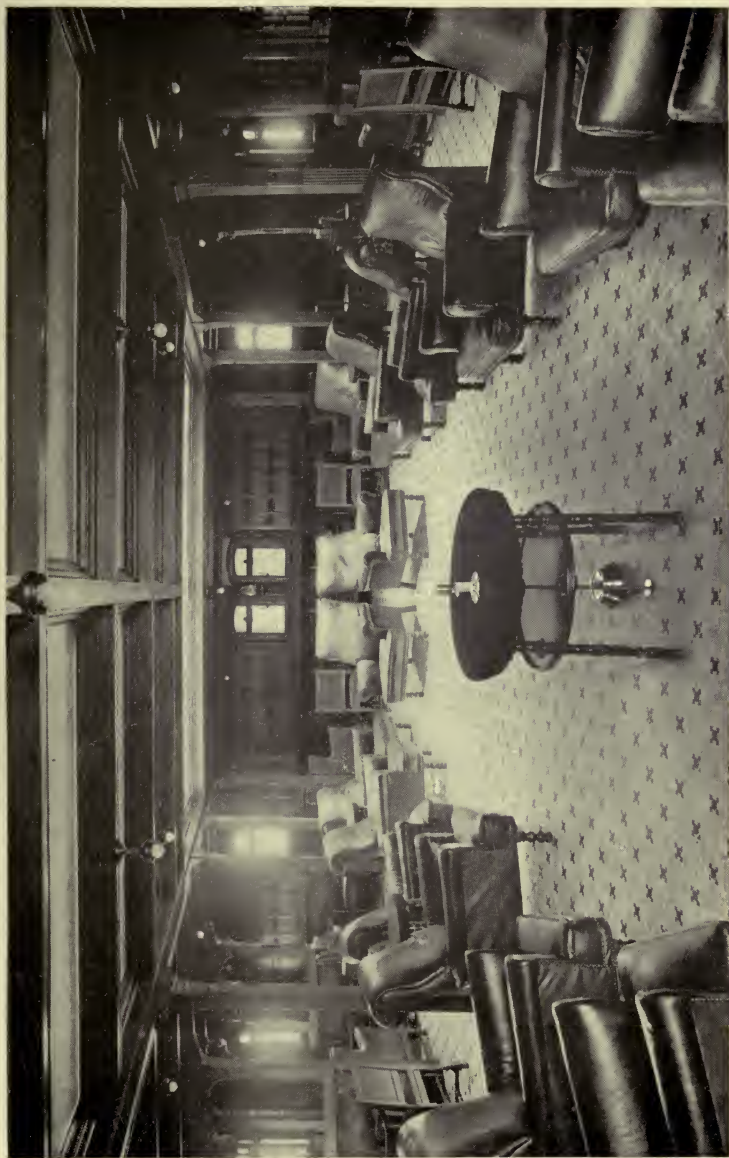


the needs of those who are possessed of good appetites, and if anyone goes hungry it certainly is not the fault of the companies.

So far we have been concerned mostly with the decorations and sumptuousness of the best known steamers in the New York trade. There are many other very fine vessels similarly engaged belonging to the lines mentioned and other companies, notably the Cunarders *Franconia* and *Laconia*; and the steamers in the Boston and Philadelphia trade are equally comfortable to travel in and but little behind the more famous vessels alluded to.

The shipping in the Canadian trade has undergone some remarkable changes in the last three or four years. Up to comparatively recently the Allan, Beaver, Dominion, and Donaldson lines had it pretty much to themselves. The Canadian Pacific Railway began by acquiring the Beaver line, and the Morgan combine secured the Dominion line. The Canadian Pacific improved its fleet, and the White Star joined in with the Dominion service. The "Combine" placed two new steamers, the *Laurentic* and *Megantic*, on the service about the same time as the enterprising Allan line made its famous experiment with the *Victorian* and *Virginian*. Since then the competition between the different lines in the Canadian trade has become extraordinarily keen. The remarkable development of the North-West and the enormous number of people who have flocked thither have given the Canadian steamers a degree of prosperity which has justified their owners in catering yet more amply for the passenger trade between the Mother country and the Dominion. The Cunard line, anxious to share in the good things of this trade, acquired a smaller line, which is now run under the Cunard flag, and the Cunard company has now added the steamer *Andania* to its Canadian fleet, and is to increase it by the *Alaunia* in the course of the year. The

Canadian Cunarders start from Southampton and only second and third-class passengers are carried. The new vessels are of about 13,000 tons. A peculiarity of the Canadian trade is the number of second-class and third-class passengers in proportion to the total number of passengers, and this has necessitated their being catered for to a degree unknown in any other trade route. The White Star line has found it necessary to take the splendid ship *Teutonic* off the New York service, turn all her saloon accommodation into second-class accommodation, and run her in the Canadian trade with second and third-class passengers only. The "*Empresses*" of the Canadian Pacific Railway have made a speciality of the second and third-class passenger travellers, though the first-class accommodation will compare favourably with that to be found on the steamers of any other line. The Canadian Royal line consists of the *Royal George* and *Royal Edward*, which were formerly the two floating palaces *Cairo* and *Heliopolis*, built for the conveyance of first-class passengers only between Marseilles and Alexandria; their port of departure is Bristol. The second-class apartments on all these steamers is equal to the first class of a few years ago. The dining-rooms are mostly arranged on the restaurant principle, with arm-chairs instead of benches, the sleeping cabins have only two, three or four berths, bathrooms and other conveniences are ample, and electric light and electric ventilation are everywhere, while every apartment is warmed in cold weather. There are music, reading, smoking, and drawing-rooms. Some steamers have as well social halls and ladies' rooms; all have ample deck space, both covered and open. Were ever those people who have had to economise in fares treated so well before in the matter of steamship accommodation?



*By permission of*

**FIRST-CLASS SMOKING-ROOM, "ROYAL GEORGE"**

*The Canadian Northern Railway Co.*



The greater length of the voyages to the Far East, the East Coast or West Coast of South America, to West, South, and East Africa, Australia, or New Zealand has necessitated the development of the steamers in a manner different from that prevailing in the North Atlantic. The number of passengers in the long-distance voyages is less, and there is consequently no demand for immense passenger accommodation. In the magnificence of their appointments they do not seek to outshine the others, but they are none the less exceedingly well equipped, and if surpassed in the number of attractions they are equal in comfort and luxury to the leviathans, and those who are privileged to travel by the principal steamers of the great lines on the long-distance routes have nothing to complain about. Every one of them has a large nursery and children's saloon where the youngsters can play and have their meals, and many of the nurseries have numerous pictures likely to entertain and interest them. The social apartments for [the adults leave nothing to be desired.

The negotiations between the Commonwealth Government and the Orient line resulted in the company undertaking in return for a payment of £170,000 per annum, to maintain a regular fortnightly mail service between Australia and Europe for ten years from February 1st, 1910.

The Orient liners, which may be called the last word so far in the Australian trade, are about 550 feet in length, or a little more, with a width of between 63 feet and 64 feet. In all the latest steamers of the fleet the restaurant system of arranging the dining-rooms has been adopted, and on every one of the vessels there are spacious lounges, music-rooms and smoking-rooms. There is a large provision of single berth cabins, and *cabines de luxe* consisting of bedroom, private sitting-room and bathroom and

lavatory communicating. Every cabin is separately lighted and ventilated by electricity. A great many of them are arranged on the tandem system. No fewer than four decks are devoted to the saloon passenger accommodation. The library, for the convenience of those who have not brought enough literature of their own, is well stocked with works of fiction and reference, and in the reading and writing and smoking rooms there are many cosy corners where one may be comfortable and read or doze in peace.

Six fine vessels, aggregating 73,424 tons, were recently added to the Orient fleet, and a seventh of about 14,000 tons is now building. The vessels each carry about 450 passengers in the first and second class, and about 800 in the third class.

In the South American trade the Royal Mail Steam Packet is an easy first, especially since it absorbed the Pacific Steam Navigation Company, the Lamport and Holt line, and the Nelson line, which were among its chief British competitors and are now its associates and supporters. The finest vessels of the Royal Mail Steam Packet fleet are the "A" steamers, so called because of the initial letter of their names. The first was the *Araguaya*, with a length of 535 feet and a gross tonnage of 10,537 tons. All the luxurious features which have proved so popular in the North Atlantic palaces are introduced in these steamers; in some saloon sleeping cabins they are even superior, for there are handsome brass bedsteads for all, and no upper berths. As much of the voyage is performed in tropical seas, ventilation has received the utmost attention. Among the features of the *Araguaya* may be mentioned the grand oaken staircase with its choice decorations of palms and flowers, the wooden carvings in the dining-room which are replicas of those of Grinling Gibbons at Hampton Court

and Kensington palaces, the colonaded dome above the dining-room, the "Empire" bed and sitting-rooms in the *cabines de luxe* on the bridge-deck, and open marble fireplaces carrying electric fires in the shape of logs. The children's nursery in white and gold is a saloon in miniature. The *Arlanza*, the latest of the "A" steamers, a beautiful vessel of 15,000 tons, has no fewer than eighty rooms each fitted for one person; most of the others are for two passengers. This vessel has a special cloak-room on the upper deck adjoining the first-class entrance, where passengers coming in from the deck can leave their coats, hats and wraps without troubling to go to their cabins to remove them. The *Deseado*, *Desna*, and other new vessels of the same company's "D" fleet are hardly less comfortable, their gross tonnage being about 11,500, and the "B" steamers, which maintain the company's West Indian connection are superior to any others to be found in those waters.

The *Vandyck*, launched in 1911, and the *Vauban* and *Vestris*, launched in 1912, of about 12,000 tons gross each, of Messrs. Lamport and Holt's express passenger and cargo service between this country and South America, were built to inaugurate the firm's new service, and though they are nominally sister ships, they vary considerably in detail. The general designs of the ships were prepared by the owners to meet certain requirements which their experience told them were necessary. Compared with the *Vauban*, the *Vandyck* carries considerably more saloon and second-class passengers, and as the steamers on the service between Liverpool and Buenos Ayres put in at Vigo, Lisbon, Rio de Janeiro, and Monte Video, and on the homeward voyage at Madeira and Southampton, these various ports of call are much appreciated by Continental travellers. There has been adopted for all classes of passengers the highest standard of accommodation

associated with the most luxurious of the great North Atlantic steamers.

The Nelson line has now twelve new steamers, and maintains a direct weekly service between London and Buenos Ayres, and carries the mails. The average time of the voyage is twenty-two days, but one of their steamers, the *Highland Corrie*, made the passage in fourteen days four hours.

A reference to travelling palaces in the South American trade would be incomplete without mentioning the Booth line, which is especially associated with Brazil. Some of this company's steamers, besides performing the ocean voyage from Liverpool, undertake the longest river voyage in the world, as they travel 2,000 miles up the Amazon river and cross the South American continent as far as the foot of the Andes, their final port being Iquitos in Peru.

The P. & O. Company's vessels are to be found in many parts of the world east of Suez, and nearly every trade route served by the company requires that the vessels engaged in it shall be provided with some distinctive feature to increase its usefulness. Ventilation is one of the greatest necessities in steamers trading to hot countries or passing through the tropics. Every sleeping-cabin in its latest and best class, the "M" steamers, is supplied with cool air, or in other ways ventilated, and how great a boon this is only those who have endured night after night in an old-fashioned and stifling cabin can tell. These vessels have all the usual public rooms, and their 400 first-class passengers are accommodated amidships on the main, spar, hurricane, and promenade decks, the last extending for about 300 feet of the vessel's length. There are no berths in the ordinary sense, but metallic beds with spring mattresses, and the furniture of the cabins is of the usual ample and costly description.



The dining-saloons are further forward than in many vessels, being situated on the spar deck at the forward end of the bridge space and extending across the ship. These rooms are lighted by side windows and a domed gallery above. The double stairway at the after end of the saloon leads to the entrance hall on the promenade deck, where are the divan and music-rooms, the first-class smoking-room being at the after end of that deck. The "M" steamers, one of which was chartered as a royal yacht when the King and Queen visited India, are chiefly employed in the main Indian and Australian services.

A large post office is situated on the spar deck at the aft end of the ship, where sorting tables and everything else necessary for the expeditious handling of mails is provided, and there is a supplementary sorting-room on the main deck, in case a more than ordinarily heavy mail has to be dealt with. The mails for Indian, Chinese, and Australian ports are carried in rooms on the lower deck. Somewhere on this deck, also, are the bullion rooms, which are built of steel, and are thief-proof and fire-proof.

Among others in the Indian trade which have a reputation to maintain in the matter of the comfort of their passengers is the Brocklebank line. When the East India Company's monopoly was broken in 1813, a ship of this firm was one of the first, if not the first, to enter the port of Calcutta. The line was practically the pioneer of the general trade to Calcutta, and its connection has remained unimpaired to the present time. The steamers have been built specially for this trade and only first-class passengers are carried; all their accommodation is amidships, the state-rooms are large, and not more than two passengers are carried in each cabin. The steamers of the Ellerman lines, and its associates, the Hall and

City lines, have also been built for the Indian trade ; they include some of the fastest boats plying between England and India.

Like all other steamers in the Indian trade they have children's nurseries, and situated near them are the quarters for the ayahs, or native servants of the passengers, who can attend at once to their young charges.

Only first-class passengers are received on the Bibby line steamers, which maintain an express service to and from Egypt, Ceylon, Southern India, and Burma, with Liverpool as the port of departure and London as the arrival port. This line being the originator of the tandem cabins, it is only to be expected that every state-room should have a port or window giving access to the outside open air. All the passenger accommodation is above the main deck, and all the usual features of luxurious modern travel are in evidence. The spacious promenades on three decks are not exceeded by the steamers of any other line, and a special feature of these steamers is that, as no other class of passengers is carried, the large clear main deck forward gives ample room for various games : more room than on some larger steamers, where the games are restricted to the promenade decks. In regard to the tandem cabin, the Bibby line states that " the inside one is generally to be preferred because it has the following special features : It is equally airy, having a port and wind-scoop to the side of the steamer, besides in many cases a skylight which can always remain open. The floor space, wardrobes, etc., are unusually large, while the extension to the ship's side affords very ample hanging accommodation, and the berths being nearer the centre of the ship are naturally the steadier in rough weather." Several short sea trips can be made on the Bibby steamers, which will be enjoyed by those who have not time for the long voyages.

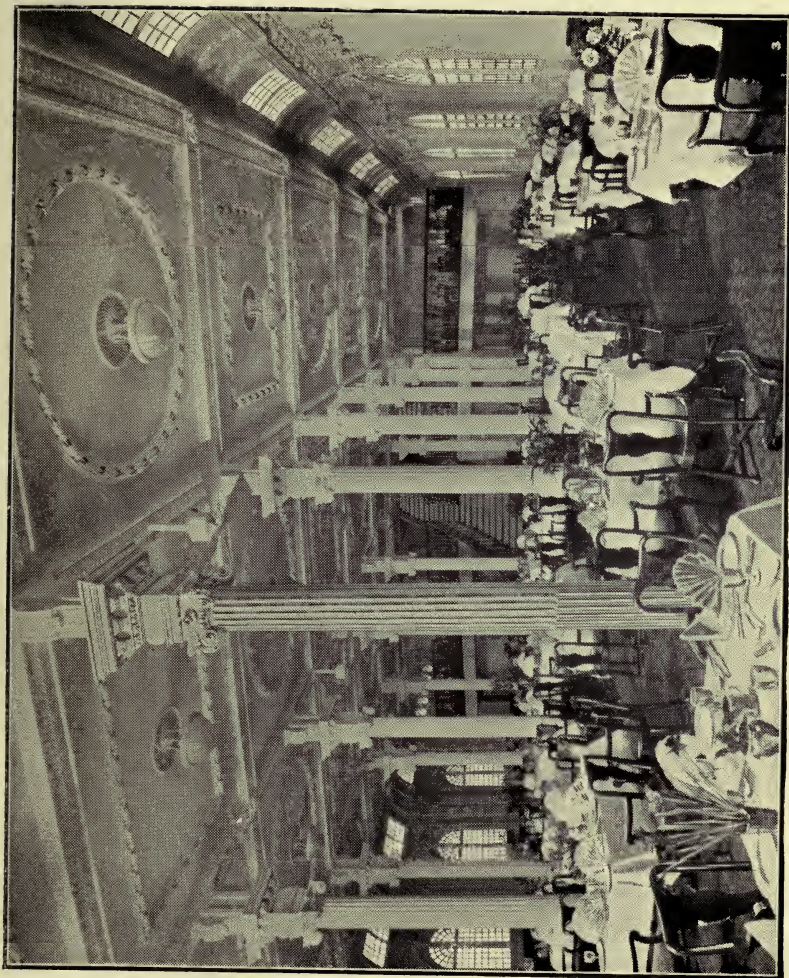
West Africa earned the sinister reputation of being the white man's grave, thanks largely to the ubiquity and pertinacity of the harmful, unnecessary mosquito. The discoveries of modern science are restricting this pest's activities. Steamers arriving at any of the west-coast ports were instantly invaded by the insects. Now, however, owing to the adoption of mosquito-proof curtains and screens in the newer steamers employed on this route, travellers are little inconvenienced. The comparative shallowness of the harbours has prevented the employment of large vessels, but the latest steamers of the Elder Dempster fleet are of considerable size and fitted with a degree of comfort which must be most acceptable to those who have to travel to and from the West Coast, or locally.

The great Continental liners are as comfortable as the British vessels. The features which are to be found under one flag are repeated under half-a-dozen others, the Germans, French, Spaniards, Italians, Dutch, and Austrians all competing for a share of the world's travelling patronage, and all adopting the attractions and luxuries inseparable from the immense floating palaces they find themselves compelled to provide.

A natural development of the increased facilities for ocean travel has been the number of persons who travel for pleasure only, and as the size and comfort of the steamers have almost eliminated the former drawbacks of sea journeys, in all but the worst weather, the habit of taking holidays on the ocean has increased of late years to a remarkable extent. The yachting steamer is the outcome. The advantages of a round tour by sea are too obvious to need enumeration. One can cruise in the Baltic, or among the Norwegian fiords, or in the Mediterranean, or among the islands of the West Indies, with a degree of comfort unknown only a few years ago.

All the great steamship companies have found it worth while financially, both as to direct profit and as an advertisement of their other steamers, to detach some of their best liners for these so-called yachting cruises. The P. & O. Company and the Royal Mail have gone further and built steamers specially for this purpose, the former having the *Vectis* and the latter the *Arcadia*. Nominally yachts, they are really fine ocean-going steamers, replete with every convenience passengers can desire, devoted solely to this work, and carrying no cargo. The Cunard, Orient, and White Star lines employ certain of their regular liners on similar cruises, and so popular are they that they seldom make a voyage without a full passenger list. The *Arcadia*, which is claimed to be the most luxurious yachting steamer afloat, could not be more so if she were the property of some millionaire. She is one of the few ocean steamers whose promenade deck extends from one end of the ship to the other.

An innovation which has found a great deal of favour among the travelling public is the elimination of one class of passengers. The *Demosthenes* and *Themistocles*, of Thompson's Aberdeen line, from London to Australia, carry only first and third class. The whole of the midships portion of the vessel is devoted to the first class, and the third class are carried in the after end where they are more comfortable than they would be were they divided between the two ends of the ship. The reputation for speed and comfort which this line earned in the sailing-ship days, when it owned some of the fastest and most comfortable clippers in the Australian trade, is fully maintained in its steamers; for one thing the cabins are of unusual height, as much as nine feet in many of them, and only a little less in any of the others. The number of single-berth cabins is unusually large. The line is associated with what is known as the All-Red



*By permission of*

DINING SALOON, R.M.S.P. "ARCADIAN"

*The R.M.S.P. Co.*

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Route via the Cape, only British ports being touched at ; the steamers call at Capetown on the outward voyage and at Durban as well on the homeward voyage.

The third-class passengers to Australia travel with a degree of comfort undreamt of only a few years ago. The *Moravian* and *Norseman* of the Aberdeen line carry third-class passengers only. The company hazards the conjecture that, considering the respective fares, the third-class passengers are more favoured than the saloon passengers on the *Themistocles* and *Demosthenes* ; their quarters are on the poop, main and 'tween decks, and include two, four, and six-berth cabins, while on the former vessel single-berth cabins have been provided. There are also hot and cold plunge-baths and shower-baths.

The Orient steamers carry about 800 passengers in the third class. The accommodation is chiefly on the upper and main decks, and ample space is given for promenading and open-air recreation, while for spaciousness and comfort it is vastly superior to that prevailing on steamers carrying third-class passengers only a few years ago. The sleeping accommodation is comfortable and commodious. The cabins are for two and four persons, and there are a few cabins for large families. The old system of open berth compartments no longer obtains in Orient line steamers. Every sleeping cabin is fitted with wash-basin, mirror, etc. The bath-rooms are close at hand, both baths and wash-basins being supplied with hot and cold water. The mothers of little children appreciate, too, the convenience of being able to wash some of the children's things ; there are large baths for the purpose, and ample room for hanging the clothes up to dry in a well-ventilated room if they are not taken up to the deck. The comfort of the third-class passengers is well studied ; there are large dining-rooms, music-rooms

with piano, and commodious and comfortable smoking-rooms for the men. All are electrically lighted and ventilated.

The third-class accommodation varies on the steamers of different companies like that of other classes. It cannot be denied that the accommodation on the best steamers in the North American trade, where the voyages are short, is often inferior to that of the steamers in the long-distance trades, such as to the Cape or Australia, or New Zealand. The North Atlantic passage is short, and for the few days it lasts a little less comfort and a little less room are matters of small moment. This is no drawback even in wintry weather, for the passenger list is then smaller, and there is more room for those who make the voyage. The long-distance ships are fitted up with the idea that the vessel is the temporary home of the passengers for some weeks at least. Inconveniences that are endured for a few days would be insupportable were they inflicted for a long period. Passengers carried in the third class of the North Atlantic steamers are oppressed by their own numbers and even think themselves overcrowded, but it must not be forgotten that a great amount of space is now devoted to their comfort, much more, indeed, than was formerly thought necessary. Four-berth cabins are the rule, and every cabin has its own wash-basin. They are all ventilated : warmed in winter and well supplied with fresh air in summer. Every cabin is lighted by electricity. For sleeping there are no longer wooden bunks, two or even three deep, but iron or steel berths, no more than two deep, and every berth has a spring mattress and comfortable overlay. Blankets, sheets, pillows, and pillow-cases, too, are provided, and towels, though passengers are expected to find their own soap. Instead of one room doing duty as ladies'-room, dining-room, children's play-room and





*By permission of*

S.S. "THEMISTOCLES," THIRD-CLASS SMOKING-ROOM

*Thompson's Aberdeen Line* □

THE  
MISTOCLES



smoking-room, there are large apartments arranged to meet all these requirements except the children's play-room ; and as all the social rooms are commodious there is ample room for all, and the children either play round their parents or romp about the deck. The deck space set aside for the third-class passengers is greater by far than it was until recently, and in fine weather promenading and games of all sorts can be indulged.

There is a great improvement in the class of persons who travel third class. Most British lines will not carry emigrants from Central Europe because of their dirty habits. This may seem unkind, but if you were to see the disgusting condition of some of the men and women who come from that part of the Continent, you would not wonder at the restriction but would be surprised that they were ever allowed to enter a railway train—even a fourth-class continental—for a seaport or were allowed to embark.

Some steamers sailing from continental ports carry passengers at slightly less fares than do the British lines ; if sailing by an English steamer from a continental port an English passenger may experience little discomfort, for all British steamers are under the Board of Trade regulations, but he must not expect the comforts and luxuries he would receive on a first-class British vessel sailing from a British port. The chief German and French lines leave nothing to be desired in the matter of the accommodation provided on their best vessels. The cheap continental steamers should be avoided by those who appreciate comfort and cleanliness, for they cater for any one who can pay their low fares, and it is by these steamers that the mid and Eastern-European emigrant mostly travels. The improvement in the accommodation in the transatlantic liners has coincided with the virtual prohibition of the modern steamers to the low-class continental emigrant. The third-class quarters on the

*Imperator* are so good, and the vessel is so large, that the Hamburg-America managers found themselves impelled to introduce a fourth class or emigrant accommodation ; but the fourth class is claimed to be nearly equal to the ordinary third, while the third class on this vessel is an intermediate not so good as the second.

## CHAPTER XI

### THE COMMISSARIAT : FOOD AND STORES

THE passengers and crews in the great steamships have to be fed, and there has to be placed on every ship a large number of articles for the passengers' use, this duty being attended to by the victualling and stores department. The Board of Trade, in accordance with the decision of Parliament, has decided a minimum for the stores shipped according to the size and speed of the steamer, the number of her propellers, the number of passengers and crew carried, and the voyage. This minimum does not err on the side of luxury, and if the steamer companies were to confine themselves to it and give their patrons just what the Board sanctioned, the patrons unfortunate enough to experience it would be justified in concluding that the simple life afloat was worse than the simple life ashore. The Board bases its minimum on what it supposes to be the effective least that a tramp steamer without passengers can do with.

A passenger steamer in the foreign trade and having only one screw propeller is helpless if anything happens to disable her propeller ; if her speed is not less than twelve knots she must carry provisions for at least twenty-six days for all on board, both passengers and crew. A twin screw vessel of the same speed need only be provisioned for a minimum of twenty-one days ; if anything should happen to deprive her of the use of one propeller she can still get along with the other propeller, though at reduced speed. A single-screw steamer, capable of attaining a speed of seventeen knots, need only be provisioned for twenty-one days ; but a ship of that speed

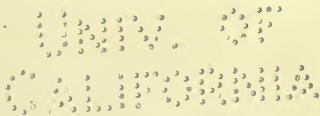
having two, three, or four screws need be provisioned for seventeen days only. It does not follow, however, that the expensive luxuries provided on a great liner for a five or six days' voyage would be supplied to the passengers for seventeen days if the ship should have her voyage prolonged for that length of time.

The official scale is not luxury, but it is better than many seafarers were allowed by their owners until the Board stepped in and improved matters under Parliamentary sanction, and later insisted that ship's cooks should receive sufficient training to give them an elementary knowledge of the subject ; and it is also better than the provisions given to passengers in the olden days by shipowners who were not always careful to keep within what little law there was.

The big steamship companies, in whatever trade, have always exceeded the minimum. It is not going too far to say that they are now in perpetual rivalry in their efforts to approach the unattainable maximum. The requirements of every trade route and every class of passenger have to be studied and met. The food, whether for Catholic or Protestant, Jew or Gentile, has to be collected, cooked, and served. The difficulty of the problem thus presented is solved by the expedient of carrying a little more than experience teaches is the average for each class of passenger at the different seasons of the year.

The assemblage of the stores in readiness for the ship has already been described. Before the stores can be shipped they are most carefully inspected, every care being taken that none but first-class articles are allowed to enter the vessel.

The inspection of the stores is not the perfunctory haphazard affair it is sometimes represented to be. A day or two before every big liner sails, nearly all the stores



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THE COLD STORE ON THE D.O.A.L. LINER "GENERAL"

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which are to be placed on board are gathered in one of the large sheds at the dock side. The only articles of food which are not laid out with the others for examination by the Board of Trade Inspector are the unpreserved foods such as fresh fish and fresh meat which would soon lose their freshness if they were to be exposed to the air for a few hours in an ordinary dock-side shed. If you were to enter one of these sheds at the time of the examination, you would find the Board of Trade Inspector and perhaps another official or two from his department, two or three officials of the steamship company, the line's marine superintendent, the purser or the chief steward, and one or two more officials, the number varying according to the importance and reputation of the company and the quantity of articles to be examined. All the different articles are sorted separately; the consignments from the different contractors are not allowed to be mixed. If the look of an opened crate of eggs does not please the inspector he may order a dozen or more of the eggs to be cracked; and if the appearance of the contents indicates that they have left the days of their youth behind, or the emanating odour from one suggests it is more fitted for electioneering than omelettes, he may unhesitatingly condemn the whole crate. Perhaps a dozen sides of bacon are waiting to be carried into the ship; he will select one or two for close examination and probably order one of them to be cut into three or four pieces so that he can examine the flesh. If the result is doubtful the consignment may be condemned as a whole, or the good sides selected and the others returned to the contractors. All the tinned meats and soups and fruits and milks are set out, each variety by itself, and as many samples are taken as the inspector deems necessary. His word is law. Generally a day is set apart for receiving the dry stores, and scores of men may be employed in

transferring the stores from the sheds to the dock-side, and from the dock-side to the ship. "Store-days," as they are called, are one long rush at high pressure from the time the work starts until it is finished. As fast as the articles are hoisted to the ship's decks they are seized upon and hurried to the particular store-room below for which they are intended. The inexperienced onlooker may think there is a lot of confusion, but in reality there is very little, for as far as possible all the consignments of each article are shipped together. A second day is set apart for receiving the fresh stores, which are conveyed in hot weather in insulated vans, or in the case of fish are packed in chopped ice in large boxes such as may be seen at the railway stations when the fish trains come in.

No reputable company would dream of shipping for its passengers' consumption, stores which had been condemned; moreover the penalty for doing so, or even attempting to do so, is heavy, and the publicity which the newspapers would give to the legal proceedings in the event of a Board of Trade prosecution would be a free advertisement of shortcomings which could only have most harmful consequences and cause serious financial loss. There is, as a matter of fact, either an actual or a moral check on every one concerned. A contractor who might send inferior stores stands a very good chance of losing a large and profitable customer, and possibly more than one as the reason why he is dropped becomes known. The line supplying its passengers with food of indifferent quality soon acquires a reputation among the large travelling public as the one to be avoided. Even if the food should apparently be all right at the time it is examined and shipped, and should be found to be uneven in quality or to have deteriorated afterwards, and public attention is called to it by the passengers when they

get ashore, enquiries are made as to the cause of this state of things, and anyone found to have been lax in the execution of his duty will certainly hear of it. Therefore the Board of Trade's examination of the food supplies of the large passenger liners is strict. The stores left over at the end of every voyage, if they remain in the ship, are examined in the ship before she sails again. When the ship is in harbour only sufficient food may be removed from the store-rooms for the needs of those actually employed about the vessel. The store-rooms are sealed up as soon as the vessel arrives; the customs officers go over her and "rummage" her from stem to stern for dutiable articles, and this done, the store-room doors are ornamented with the official wax seals which none may remove without authorisation, which can only be obtained after the due observance of many formalities.

In a conversation one day last summer with the purser of a well-known steamer, the subject cropped up of the steadiness of modern steamers compared with those of a quarter of a century ago and its effect upon the passengers and the food consumption on board. He pointed out that formerly most passengers were upset at first, and that they nearly always became ill after they had a meal or two on the ship. "For the first two or three days," he asserted, "we only cooked half the quantity of food we did later. There was only the motion of the boat to upset them then, and they have not even that excuse now, but there is another reason."

"And that is?" I asked.

"Look at the menu," he said. "See the number of things they have to eat. The fact is the food's too good for them. They are not used to it, and when they come on board they find it so nice that they can't resist it and eat too much, and then they have a bilious attack. That's what's the matter with them. It's biliousness, not

sea-sickness. Nobody need be sea-sick on a big steamer. They may miss a meal or two, but they soon get over it and make up for lost time. That's why a sea voyage does people such a lot of good ; it's partly the sea air and it's mostly the good food. That's why they put on weight, and if you could weigh all the passengers when they come on board and when they go ashore five or six weeks later, you would find that they weigh hundreds of tons more ; yes, sir, hundreds of tons ! And why ? because they are well fed. Look at me," he added, " do I look any the worse for all the years I have been at sea ? "

I had to admit that he did not ; his generous proportions indicated that the good food he praised so highly had certainly added to his weight, and I could pardon him for his exaggerated estimate on the additional weight of passengers running into hundreds of tons. If they all filled out as he had done, the exaggeration would not be so great.

Far different this from the state of things indicated by the following anecdote, the scene being one of those steamers on which the old-fashioned practice prevailed of the captain seating himself at the head of a long table and presiding at the meals.

The captain had entered the dining-room the first day out and greeted a party of uncomfortable looking gentlemen.

" It's a bit lively this morning, gentlemen, but glorious weather, and I am pleased to see that there are as many as eighteen to keep me company at dinner. It won't be long before it is served. I hope that you fourteen gentlemen will enjoy the soup, and I think that you eleven gentlemen will enjoy the fish, and the steward tells me that there is both boiled and fried. Then we will have something more solid. What do you nine gentlemen say to a nice bit of roast or boiled pork ? Or perhaps

you three gentlemen would prefer some steak and kidney pie? You will find we give you plenty of good wholesome food on this line. What, none of you to keep me company? Steward, serve the dinner, and tell Mr. Mate I'm waiting."

The selection of the stores for an Atlantic liner has to be based on totally different considerations from those prevailing on a large passenger steamer going on a long voyage. In the North Atlantic palaces great numbers of passengers have to be catered for in large quantities for a few days only. The consumption of stores for one voyage of the *Olympic*, enumerated in the following particulars—the amounts given may be accepted as correct, as they were supplied me by the White Star line—may be considered as a fair average of what the company has to provide every time that steamer leaves Liverpool, and this statement does not include the replenishing stores embarked at New York:—

Fresh meats, 75,000 lb.; fresh fish, 11,000 lb.; salt and dried fish, 4,000 lb.; bacon and ham, 7,500 lb.; poultry and game, 8,000 head; fresh butter, 6,000 lb.; fresh eggs, 40,000; sausages, 2,500 lb.; sweetbreads, 1,000; ice cream, 1,750 quarts; coffee, 2,200 lb.; tea, 800 lb.; peas, rice, etc., 10,000 lb.; sugar, 10,000 lb.; jams, 1,120 lb.; flour, 200 barrels; potatoes, 40 tons; apples, 180 boxes; oranges, 180 boxes (36,000); lemons, 50 boxes (16,000); hothouse grapes, 1,000 lb.; fresh milk, 1,500 gals.; condensed milk, 600 gals.; grape fruit, 50 boxes; lettuces, 7,000; cream, 1,000 quarts; fresh asparagus, 800 bundles; onions, 3,500 lb.; fresh green peas,  $1\frac{1}{4}$  tons; tomatoes,  $2\frac{3}{4}$  tons; beer and stout, 20,000 bottles; mineral waters, 15,000 bottles; wines, 1,500 bottles; spirits, 850 bottles; cigars, 8,000.

The Cunard Company, while pointing out that the quantities and varieties of food-stuffs carried vary according to the number of passengers conveyed and the season of the year, inform me that the following particulars are compiled from the reports of the catering department showing the stores on the *Lusitania* for one voyage with

500 saloon, 500 second cabin, and 1,200 third-class passengers and a crew of over 800 persons :—

Beef, 45,000 lb. ; mutton, 17,000 lb. ; lamb, 3,000 lb. ; English salmon, 750 lb. ; oysters, 20 barrels ; live turtles, 3 ; dried fish, assorted, 200 boxes ; caviare, 100 lb. ; chickens, 2,000 ; fowls, 600 ; ducklings, 300 ; turkeys, 150 ; geese, 60 ; small birds, various, 1,500 ; pheasants, partridges, and grouse, each 150 brace ; butter, 5,500 lb. ; potatoes, 28 tons ; ice cream, 1,500 bricks ; cream, 6,000 jars ; milk, 3,000 gals. ; tea, 1,000 lb. ; coffee, 1,600 lb. ; sugar, 10,000 lb. ; pickles, 720 quarts ; pork, 2,500 lb. ; veal, 1,500 lb. ; fresh fish, assorted, 12,000 lb. ; dried fruit, assortments, 2,800 lb. ; oranges, 80 boxes ; apples, 230 boxes ; grapes, 800 lb. ; peaches, nectarines, etc., 1,500 ; pears, 40 boxes ; melons, English, 150 ; bananas, 20 bunches ; grape fruit, 30 boxes ; tomatoes (English), 1,000 lb. ; lemons, 20 boxes ; sauces, assorted, 300 bots. ; jam and marmalade, 2,600 lb. ; biscuits, 450 tins ; cereals, 8,000 lb. ; flour, 210 barrels ; salt, 2 tons ; ham, 1,400 lb. ; bacon, 4,000 lb. ; cheese, 1,600 lb. ; eggs, 40,000.

There are also several articles not enumerated here but given in the White Star list, while the latter boats are in no way behind their Cunard rivals in the number of articles carried and specified in the Cunard list.

Certain articles obtainable in England are considered superior to those obtainable in America, and for this reason special supplies of English grapes, nectarines, peaches, salmon, sole, turbot, mutton and lamb are shipped at Liverpool for the use of passengers on the return journey from America.

The foregoing may be regarded as the everyday necessities on the steamers of either of the great lines mentioned. To them must be added various extras such as about a ton of Christmas puddings, if the steamer is going to spend December 25th at sea, and perhaps half a ton of mince-meat for the mince-pies which will be cooked on board. Crabs, lobsters, and crayfish, varying in quantity according to the season ; truffles, *pâté de foie gras* ; the edible portion of French frogs and snails, for the delectation of cosmopolitan and

continental travellers whose tastes lie in those directions ; varieties of sausage to please German travellers : all these are added in their due season. Then on the American festival of Thanksgiving Day, when every good American in the United States and out of them thinks it his bounden duty to celebrate the event by eating roast turkey stuffed with oysters and served with cranberry sauce, the steamship companies add to the stores for that voyage a few hundred turkeys and the customary accompaniments.

These vessels each employ about fifty cooks to prepare the food, and this number would be ridiculously inadequate were it not for the many labour and time-saving appliances, worked by electricity, introduced on the steamers. Electricity, when suitably applied and treated as it should be, is a most accomplished scullery staff. There is hardly any of the rough or dirty work it will not do. It works the lifts by which the stores are conveyed from the store-rooms in the lower part of the ship to the kitchen. It works ingenious little machines by which the potatoes are peeled better and quicker than a score of men could manage : other machines which revolve circular knives and cut loaves into slices of unvarying thickness for sandwiches, or thin bread and butter, or into slightly thicker slices for toast ; these machines, also, will attack a side of bacon from which the bones have been removed and in a few seconds cut it into rashers all of the same thickness. Nor do the cooks have to make the toast. There are electrical toasters for this work. The slices are placed in the toaster, the current is switched on, if it is not on already, and in a few seconds there are some scores of slices ready for the passengers, and the machine rings the bell when they are done. Do passengers want boiled eggs ? Nothing easier. The cook who looks after eggs places as many as are wanted in one of a series

of wire cages, sets a graduated regulator to show how many minutes they are to boil, turns a switch and leaves electricity to do the rest. That obedient servant lowers them into the boiling water, keeps them there the required time, and lifts them out again and rings a bell to intimate the fact. Other electrical machines cut up vegetables or mince-meat, and the bread itself is kneaded by energetic and tireless electrical arms instead of those of the baker ; all he has to do is to place the ingredients in the mixer and let the machine do the work for him while he attends to something else. Electrical power lifts the dough from the troughs, sets it to rise, and when it is ready for the ovens it puts the loaves in to bake. When bread has to be baked daily for three or four thousand people it is evident that the means of doing so must be on a corresponding scale. There are, therefore, several ovens, all of large size and heated by electrical fires which warm the ovens perfectly and can be regulated to any temperature desired. Under each oven is a bed of charcoal which is heated to incandescence by electricity ; of the cleanliness and effectiveness of the method there is no question. When the loaves are done the same obedient servant lifts them out of the ovens. The advantages of cooking by this means are very great. The saving of time is one important factor, for by the adoption of electricity alone can such numbers and quantities and varieties of provisions be cooked simultaneously ; the cleanliness of the method is unquestionable. Some of the ovens, too, are large enough to take in a side of beef after it has been cut into two or four portions.

Electricity for cooking is employed more on some vessels than on others ; it is the custom to have steam-cooking appliances also in order that either system may be used as desired, or both if necessary. On all the large steamers every class of passenger accommodation has its own



PORT OF  
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S.S. "MAURETANIA"—THE KITCHEN

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kitchen and kitchen equipment. This contributes to the convenience of the cooking staff no less than to that of the passengers.

Electricity is an equally competent servant in washing up. On an average the saloon and second passengers use about half a dozen plates each at every meal, and sometimes more, and estimating the number of passengers in these two classes alone at a thousand, and allowing three meals to the day, it will be seen that about eighteen thousand plates have to be washed up daily. The cups and saucers per passenger average three or four a day, and these have to be washed up also. How long would it take a dozen men to complete this work? Electricity does it all in a few minutes, certainly in less than half an hour. As fast as the stewards bring the things from the dining-room they are placed in large electric dish-washers, and are cleaned, dried, and polished ready for use so quickly that the plates may be used two or three times over at the same meal. The knives are cleaned by an electrically-driven polishing machine almost as fast as they can be placed in the machine and withdrawn by the attendant.

Not only is there a kitchen for every class of passenger on the big Atlantic ships, but every kitchen is divided into sections, every one of which has its special work. One part is in charge of the pastry-cooks and turns out nothing but pies and tarts; another set of cooks looks after the poultry, another attends to the fish, another to the entrées, another to the joints, another to the sauces and gravies, and another to the soup. A soup-kitchen afloat is a very different affair from a soup-kitchen ashore, and the soup differs in corresponding degree. The kitchen of each class is situated as near to that class's dining-room as possible; the kitchen communicates with the pantry from which the dining-room is served.

On all modern high-class passenger steamers the excellence of the cooking and serving leave nothing to be asked for, either as to promptness, skill, or cleanliness, and the care taken to secure these features, and the perfect ventilation of the kitchens, are not equalled by many hotels ashore. The visitors to the kitchen of such a vessel as the *Mauretania* are at once impressed by its spaciousness. In the centre is a large island range with ten furnaces and twelve ovens, and a very large extent of hot-plate surface, it being one of the largest of its kind for ship use. Roast meat, a luxury at one time unattainable at sea—cindered joints misrepresenting it,—is turned out to perfection by the electric roasters, and electric charcoal grills cook the chops and steaks. Clean steam for cooking purposes is supplied by a large steam-producer, and is led to ranges of steam ovens and steam-cooking boilers; and steam hot presses and bains-marie serve to keep the food hot till required. A plentiful supply of hot water is obtained from a large steam-heated constant service hot-water boiler, and is led to taps in the range and to various points in the kitchen. Amongst the smaller labour-saving machines may be noticed electrically-driven bacon-slicers, triturators, etc.

Adjoining the first-class kitchen is the bakery. On the *Mauretania* this work is done in a large steam-pipe baker's oven in a given time without requiring any attention from the bakers. A smaller oven with coal furnace is used for any confectionery, etc., which requires a special process. A proving press also forms part of the equipment, while a baker's oven is used for boiling purposes. Here, as in the kitchen, electricity has been pressed into the service, and there are ice-cream, whisking and cake-making machines actuated by that power.

The third-class kitchens, providing as they do for a number of persons equal to the population of many a

small town, have appliances commensurate with the requirements. The cooking range is one of the double tier type, having a length of ten feet, with four large ovens. Six large steam-heated cooking boilers give the necessary supplies of soups, etc., and the vegetables and potatoes are cooked in four steam-cooking ovens, pure steam for which is obtained from a separate steam-producer. Here as in the first-class kitchen a constant service steam-heated water boiler gives a plentiful supply of hot water.

A separate kitchen fitted out with cooking range, three steam-cooking boilers and steam oven supplies the food for the firemen and sailors.

A special feature of all first-class North Atlantic ships is the number of pantries placed in convenient positions for serving the food expeditiously. The main pantries for the first and second class have every modern appliance, such as steam-heated carving tables and hot presses, bains-marie, entrée-presses, coffee and hot-water boilers, automatic egg-boilers, electric hot plates, and electrically-driven labour-saving devices. Separate pantries, similarly fitted, are on promenade-decks, boat-decks, shelter-decks, etc.

One well-known captain in the North Atlantic trade took it as a personal insult if anybody complained about anything on the ship of which he had command. He was convinced that his ship was the best afloat and that he was the best captain it could ever have. He was a big man and very pompous. One of his rules was that all complaints had to be brought to him. If a passenger complained of the fare he would before long receive an intimation that the captain desired to speak to him. The captain had a regular catechism which he used to put to the complaining passengers, and when once he had started on it nothing short of a water-spout, or something equally serious, would have prevented him from going through it to the bitter end.

“I understand,” he would say, “that you have made a complaint about the quality of the food which has been supplied to you on board this ship. Do you know, sir, that this line is famous for the excellent quality of its food, and that this ship is the best equipped in this respect of its fleet? Do you know this, sir?”

The passenger usually replied that he did not know.

“Then let me tell you that it is so. Do you know that this ship cost considerably over a quarter of a million sterling?”

Generally there was no reply to this.

“Do you know that it carries a large and competent staff of cooks every one of whom is skilled in some branch of the culinary art? Were you accustomed to the services of a staff of cooks when you were on shore?”

The passenger, of course, could only say “No.”

“On this ship you receive your breakfast, a meal of three or four courses; on this ship also you receive for your lunch a meal of an even greater number of courses. On this ship also you receive for your dinner five or six or seven courses, as the case may be. Were you able to afford two or three varieties of soup, to say nothing of all the viands mentioned in the *carte du jour*, prepared by a staff of cooks in kitchens fitted with every modern convenience, and served by a staff of servants and in a large and sumptuous dining-room? Could you, I say, afford this when you were ashore?”

Again the passenger would have to answer “No.”

Then the captain would thunder in a most impressive manner:—

“Then why, sir, do you venture to criticize the excellent arrangements made on this ship for feeding you even to repletion with a quality and quantity of food to which you admit you have not been accustomed? Go away, sir, and don’t let me hear any more of such complaints or I shall know how to deal with you.”

The unfortunate passenger who, by this time, was feeling pretty crushed, was glad to escape. Those who knew the captain's little ways would generally egg on some grumbler to complain to one of the stewards that everything was not quite as it might be and the complaint was sure to be carried to the captain, the resulting interview affording entertainment for not a few of those on board, for the incident was never conducted in private. The captain used to be surprised at the number of complaints that were made, but it never occurred to him that some practical jokers among the passengers were extracting entertainment from him, as well as from the grumblers. Generally the interview took place while the captain was on the navigating-bridge and the delinquent was facing him on the deck immediately below, and the questions certainly were not spoken in whispers.

With such a number of passengers to see to, the number of table articles must be correspondingly large, but it is smaller than it would have been but for the electric washers. The old custom of having a big wash up after dinner is unknown on these steamers. Still, the list is imposing enough. The *Olympic's* crockery list includes:—

Breakfast cups, 4,500 ; tea cups, 3,000 ; coffee cups, 1,500 ; beef-tea cups, 3,000 ; cream jugs, 1,000 ; breakfast plates, 2,500 ; dessert plates, 2,000 ; dinner plates, 12,000 ; soup plates, 4,500 ; coffee-pots, 1,200 ; tea-pots, 1,200 ; breakfast saucers, 4,500 ; tea saucers, 3,000 ; coffee saucers, 1,500 ; beef-tea saucers, 3,000 ; pie dishes, 1,200 ; meat dishes, 1,000.

The glass articles of one sort and another comprise:—

Cut tumblers, 8,000 ; water-bottles, 2,500 ; crystal dishes, 1,500 ; celery glasses, 300 ; flower vases, 500 ; ice-cream plates, 5,500 ; wine glasses, 2,000 ; champagne glasses, 2,500 ; cocktail glasses, 1,500 ; liqueur glasses, 1,200 ; claret jugs, 300 ; salt cellars, 2,000 ; salad bowls, 500 ; soufflé dishes, 1,500 ; pudding dishes, 1,200.

Nor is the collection of silver and cutlery any less formidable. There are on this ship :—

Sugar basins, 400 ; fruit dishes, 400 ; finger bowls, 1,000 ; butter dishes, 400 ; vegetable dishes, 400 ; entrée dishes, 400 ; meat dishes, 400 ; dinner forks, 8,000 ; fruit forks, 1,500 ; fish forks, 1,500 ; oyster forks, 1,000 ; cream jugs, 400 ; butter knives, 400 ; fruit knives, 1,500 ; fish knives, 1,500 ; knives, table and dessert, 8,000 ; nutcrackers, 400 ; toast racks, 400 ; dinner spoons, 5,000 ; dessert spoons, 3,000 ; egg spoons, 2,000 ; tea spoons, 6,000 ; salt spoons, 1,500 ; mustard spoons, 1,500 ; grape scissors, 100 ; asparagus tongs, 400 ; sugar tongs, 400.

The linen department, including the equipment of the bedrooms, necessitates the following being taken every voyage :—

Aprons, 4,000 ; blankets, 7,500 ; table-cloths, 6,000 ; glass cloths, 2,000 ; cooks' cloths, 3,500 ; counterpanes, 3,000 ; bed-covers, 3,600 ; beds, 3,600 ; eiderdown quilts, 800 ; single sheets, 15,000 ; double sheets, 3,000 ; pillow slips, 15,000 ; table napkins, 45,000 ; bath towels, 7,500 ; fine towels, 25,000 ; lavatory towels, 8,000 ; roller towels, 3,500 ; pantry towels, 6,500 ; miscellaneous articles, 40,000.

Whenever any of these large steamers is thrown open for inspection at New York an invasion of souvenir-hunters takes place, and everything that can be pilfered as a souvenir is seized. As much as possible is locked up, but a great many things, nevertheless, are removable, such articles, even, as electric-light globes, matchbox-stands, knives, forks, cups, saucers, and spoons being annexed. Instances have been known of the buttons of an officer's uniform having been cut off, as the door of his cabin had been incautiously left unlocked.

Vessels making the longer voyages carry fewer passengers and smaller crews, but a greater proportion of food per head has to be provided. On no two trade routes are the requirements identical ; even in the same trades the differences in the catering of one company and another



are remarkable, this being due chiefly to the differences in the classes of passengers carried. For instance, in the Union-Castle line—when the South African mining boom was at its height and the Rand and Bloemfontein were supposed to be fairly bulging with auriferous and diamondiferous neighbourhoods only waiting to be exploited in the form of “propositions” by company promoters, who, be it remarked parenthetically, got more money out of the British investor than the latter did out of some of the mining properties—one steamer was specially favoured by the Children of Israel because of its food and cooking, which were supposed to be less heterodox or more orthodox than other steamers of the line. Whether their opinion was justified or not, I cannot say. The religious food preferences of passengers are a serious matter for the steamship companies. When the many hundreds of the Russian sect of Mennonites attempted to emigrate *en bloc* to America, the first enquiry of the steamship companies was as to their personal habits, and the second was “What will they eat, and what won’t they eat?” When another Russian sect, the Dukhobors, —who muddled religion, superstition, ignorance, and the simple life in equal proportions—went to Canada, some difficulty was experienced in finding steamship accommodation for the more thorough-going sectarians because of their objection to soap and clothes as superfluities, but they quickly came under the civilising influences of the good things on the third-class table. Fortunately for the steamship companies these are extreme cases. National prejudices and habits have to be observed and treated with deference. The German ships pay more attention to sausages than do British ships. On the Italian steamers enormous quantities of spaghetti, polenta and macaroni are cooked. A flash-light photograph of a dining-room full of passengers on a lively

steamer, eating spaghetti or macaroni with their fingers should prove interesting.

The cosmopolitanism of South America differs from that of North America in that it is based on the Latin race, whereas that of the North has an Anglo-Saxon foundation. This is shown in various ways, including the peculiarities of the cooking for local tastes, and national preferences have to be catered for, and comparing the menu on a steamer in the South American trade with that of a vessel in the Australian trade you will notice certain dishes which are common to both, and others which are peculiar to one trade route only.

Indeed, a good dinner is a good dinner the civilized world over. There are oftentimes more differences, more wonderful surprises, in the language of the menu than in the articles disguised. The inventiveness of steamships' cooks is extraordinary. Who but a French cook at sea, having had an accident with two of his sauces, one being the ordinary British gravy and the other a French preparation, would have thought of combining them? But he did, and served the mixture in special sauceboats, the trays of which bore rings of red white and blue paper, and it was a great success as "Sauce à l'Entente Cordiale." It was a ship's cook also who having run short of browning to colour some thick sauce, sent to the bar-room steward to drain some stout-bottles for him. The stout went into and flavoured the sauce and gave it a beautiful rich colour. It was served as "Sauce à la Dublin." Another time the same cook, to celebrate St. Patrick's Day, repeated the experiment, and having decorated the sauceboat stands with green paper, paper shamrocks and bits of sorel or clover, sent it to the tables as "Sauce Irlandaise."

Nearly all the passengers on British steamers between the United Kingdom and Australia or New Zealand

are British, and there is little to choose between the Briton and the Australian in the matter of food preferences. The largest vessels in the Australian trade belong to the White Star line, which travel by way of the Cape of Good Hope. The mail lines—the P. & O. and the Orient—travel by way of the Suez Canal. The steamers of both these lines call at a number of ports on the way, and thus replenish to some extent their stores of fresh fruits. But besides their long voyage passengers, these companies also receive a number in their interstate trade, and the people who come on board for the Australian coastal voyages have their special needs also. A wise discrimination, therefore, is exercised in choosing the contents of the ship's larder.

Taking a vessel of the newest type in the Orient line, which carries a large number of second-class and third-class passengers, in addition to those in the saloon, we find that about 1,500 people, all told, have to be fed. The bulk of the third-class passengers are carried on the outward voyage only, but the first and second-class accommodation is usually pretty full, whether the voyage be outward or homeward.

I am indebted to the Orient Company for the following list of stores, including those taken on board at the different ports of call, which were supplied to the *Otranto* for one voyage only:—

Bacon and ham, 11,500 lb.; butter, 14,500 lb.; tea and coffee, 5,750 lb.; jam and marmalade, 9,100 lb.; dessert fruits (preserved), 5,600 lb.; fresh eggs, 49,500; cheese, 5,100 lb.; cocoa, 450 lb.; dried fruits, 6,000 lb.; fancy biscuits, 2,600 lb.; pickles, 2,700 pints; preserved vegetables and fish, 3,200 lb.; flour, 108,000 lb.; potatoes, 134,000 lb.; tomatoes, 2,500 lb.; lettuces, 10,200; apples, 13,400 lb.; lemons, 12,000; bananas, 150 bunches; melons, 500; assorted nuts, 1,120 lb.; fresh meats, 168,000 lb.; poultry and game, 3,000; milk, 5,500 gals.; sauces, 500 large bots.; sugar, 22,400 lb.; rice, oatmeal, peas, etc., 15,680 lb.; carrots and onions, 22,400 lb.; cabbages, 8,400;

oranges, 45,000 lb. ; grapes, 4,500 lb. ; pears, 50 boxes ; pine-apples, 400 ; fresh and dried fish, 22,400 lb. ; rabbits, 3,300.

The stock of wines, spirits, beers, etc., amounts to some 60,000 bottles.

A laundry plant of some considerable extent makes provision for dealing with large quantities of soiled ship's linen during the voyage as well as personal work for the passengers. Over 90,000 pieces of ship's linen will be washed during the round voyage at a busy season, besides such articles as are landed at the terminal ports (London and Sydney) for treatment on shore. This renders unnecessary the carrying of enormous stocks of linen such as would be required without a laundry plant on board, consequently the appended figures (though respectably large and representing a big outlay of capital) will not take first rank amongst the remarkable statistics in which the present day reader delights :—

Blankets, 2,180 ; counterpanes, 3,330 ; sheets, 8,650 ; pillow cases, 6,150 ; table-cloths, 1,450 ; towels (various), 21,500 ; sundries, serviettes, tea cloths, etc., 10,000 ; total, 53,260.

All these vessels are provided with an ample stock of crockery and glass, and so that there shall be no accumulation of dirty things they are washed by electrically-driven machines directly they have been used ; thus, during the progress of a meal it is practicable to bring the same article into use more than once. Each of these steamers carries not less than :—

Spoons, 5,200 ; cups and saucers, 2,500 ; knives and forks, 3,000 ; plates, 7,000 ; tumblers and glasses, 4,500.

In the German long-voyage liners the stewards have one unalterable belief ; nothing can shake it, and nothing that you can say or do to the contrary will ever persuade a German steward that he is wrong in this respect. It is that you may be hungry. You may be wandering aimlessly about the saloons or the lounge or have made





yourself comfortable in an easy chair in a corner to read, but you will not be left long in peace for a steward is sure to come up and ask you if you would not like something to eat. It may be only half-an-hour after a solid mid-day lunch, but the question will be put nevertheless, and your obliging steward, if you cannot make up your mind what you will have, will very likely leave you for a moment only to hurry back with a tray bearing a large assortment of samples of the delikatessen beloved of the Fatherland. He will tempt you if he can, and when at last you have swallowed something to please him and to get him to go away and leave you in peace, you will not be long in enjoyment of your book or paper before he or another steward will arrive to importune you to eat some more. On a French liner most of the stewards are under the impression that you want an *aperitif*, or an *eau sucree*, or a liqueur or a glass of wine, frequently accompanied by a tasty little biscuit or some confection or *plat* which will be recommended you as unusually nice or the correct thing to absorb at that stage of your journey. Many people find Spanish steamers to be like some other things Spanish, an acquired taste. This is owing to the fondness of Spanish cooks for seasoning so many dishes with garlic, and except to people of Spanish or Portuguese nationality or descent garlic has drawbacks.

## CHAPTER XII

### COASTAL AND RIVER STEAMERS

THE demand for comfort by travellers and for speed in the transmission of correspondence and goods has been the cause of a remarkable development in the coastal steamship services of the United Kingdom. Improvements corresponding to those in the great liners have been made in the coastal vessels and others intended for short journeys and day excursions, both in this country and in those whose inland waters have given a means of communication impossible in England. With the exception of the two Cunard fliers, we find that the fastest sea-going merchant steamers in the world are employed in the home trade of the United Kingdom, and that with the additional speed there has been a corresponding increase in the luxury of their accommodation. In regard, however, to the speed and luxury of smooth-water steamers the United States are easily first, owing to the need of maintaining communications over the long rivers and great lakes of the American continent. Of late years, also, several steamers of the Hudson River type have been introduced on the South American rivers.

The General Steam Navigation Company, whose vessels are familiar sights to frequenters of the lower Thames, and the City of Dublin Steam Packet Company are the oldest steamship companies in the world, and both have now some of the finest steamers of their respective classes in British waters. The General Steam Navigation Company has a very large fleet to cope with its local and continental traffic, and it has taken special pains to please holiday makers who go to the South of France for their vacations.





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It may be said to combine the yachting features of some of the big lines with the tour ashore, for it has built some steamers especially for this route and combines its service with trips ashore. It also owns the *Golden Eagle*, admittedly the finest example of the type of excursion steamer so popular with Londoners. The steamer excursion traffic is a development of the response to the demand by the large and steadily-growing public which has time for trips of a few hours or a day's duration, and does not mind paying fairly well for the privilege of a short sea excursion if it can be had under enjoyable conditions.

Among other companies running coastal services may be mentioned the City of Cork Company between Liverpool and the South of Ireland, and London, and Queenstown, the Powell and Hough line between Liverpool and London, with calls at several south-coast ports *en route*, the Langlands' service from Liverpool to a number of ports in the United Kingdom, and in the summer time, the holiday service round Great Britain, and the Clyde line, with regular sailings between Glasgow and London and a number of other ports. The MacBrayne steamers from Glasgow to the islands and west of Scotland have this unique feature among British holiday coastal traders that although many are paddle steamers they have sleeping accommodation for a large number of passengers.

Then on the east coast we have the very comfortable vessels of the London and Edinburgh Steamship Company, the London and Dundee line, the London and Aberdeen line, the Carron line, and the Tyne-Tees line. The steamers run by all these enterprises have been built for the traffic, and as the services are maintained throughout the year they are excellent sea boats to be able to cope with the rough weather which is experienced in the winter months.

The sea-going qualities of the coastal steamers of the

United Kingdom are second to none the world over, and the main characteristics of the type have been adopted by all other countries which have short open sea voyages in comparatively shallow and certainly rough waters, such as those which surround this sea-girt isle. In comfort, too, they seek to give the best accommodation to their passengers possible commensurate with the number carried and the shortness of the voyage. In some cases all the saloon accommodation is carried forward of the engine-house, as in an Atlantic liner; in others the best portion of this accommodation is carried in the superstructure and forward of the engines, and the remainder is placed in the after end of the vessel. The extreme after part, however, is not devoted to sleeping quarters, but to bathrooms, and the dining-saloons are as near amidships as they can be arranged. The cabins, roomy and well ventilated, are comfortably furnished with spring berths like those in an Atlantic liner; many have only two berths, and in very few cabins are there more than four passengers. Every cabin, too, has its wash-basin and mirror; some have wardrobes, tables and sofas, and all have an ample supply of hooks whereon passengers can hang their coats and hats. Every part of these steamers is lighted by electricity. Smoke-rooms for the gentlemen and boudoirs for the ladies are common features. For a voyage lasting only a night or two, on the east coast, and less than a week on the west coast, it cannot be denied that the companies do their utmost with the space at their disposal to make their patrons comfortable. One cannot expect the luxuries of an Atlantic liner, but it is astonishing how much comfort is provided in the British coastal steamers. The cooking is always good.

The importance of the Isle of Man renders necessary the employment of a steamship service between the



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island and Liverpool daily throughout the year. This service is maintained by the Isle of Man Steam Packet Company, which, in its eventful history, has had in its fleet every type of sea-going vessel, from little wooden paddle-wheel steamers to large steel turbine-driven triple-screw steamers capable of carrying as many thousands of passengers as the early boats did hundreds. The fleet includes a few cargo steamers, its largest and best boats being devoted entirely to the requirements of the passenger trade. The saloon accommodation is by far the greatest. In the newest steamers, the *Viking* and *Ben-my-Chree*, the dining-rooms are carried in the superstructure amidships, where are also ladies' rooms, smoke-rooms, and lounges; and further public rooms are provided aft. There are also cabins into which passengers may retire if need be. These steamers carry a wireless installation, and some holiday-makers on their way to the "Irish Sea Eden" have been known to send messages to friends left behind "from mid-ocean."

Another phase of the home-trade steamship work is that for which the railway companies are responsible. It is to the London and North Western Railway Company that the public owes these steamers, for that company, after a tough legal struggle with the Government, secured the right to own and run steamships. The story is a romantic one, but it is too long to give here. This company's steamers have always been known for their speed, comfort, and graceful appearance. Those with which sixty or more years ago they maintained the service across the Irish Sea were among the handsomest and fastest paddle-wheel steamers ever seen, and were famous for their sea-going powers. The present steamers, the *Hibernia*, *Scotia*, and *Anglia*, to mention only three of the numerous fleet, have carried the mails between Holyhead and North Wall with extraordinary regularity,

and some hundreds of passengers besides. They are almost Atlantic liners in miniature. There are comfortable berths in which the saloon passengers can go to bed as easily as they can ashore, and a number of cabins fitted for two or four passengers only. The *Greenore*, the latest of the L. & N.W. Co.'s steamers, and intended for the Holyhead and Greenore service, is 315 feet in length and 40 feet beam. She has been said to embody every well-tried marine engineering and scientific appliance. She is the first of the company's vessels to be equipped with water-tube boilers and Parsons turbines; her nominal speed is twenty-one knots, but her actual speed is over a knot faster, even when loaded, or within measurable distance of half a mile a minute. The first-class accommodation is amidships, and she can carry 176 first-class passengers, while an attractive novelty is the *cabines de luxe*, which are as luxurious as many in an Atlantic liner. The dining saloon, which has small or party tables on the restaurant plan, is on the main deck, and the first-class smoke-room on the bridge deck; while the ladies are not only given a cabin on the main deck near the dining-room, but also a domed lounge on the bridge deck above. The latter apartment has considerable sleeping accommodation, screened off from the rest of the apartment.

Fast though she is, she is exceeded in speed by several vessels in the service between England and the Continent, including those of the South Eastern and Chatham Company on the Calais-Dover and Folkstone-Boulogne services, which, with the Belgian State railway's steamers between this country and Flushing are the fastest short-distance sea-going railway steamers in the world. The Great Eastern Railway Company's steamers from Harwich to Antwerp or Rotterdam are very comfortable and fast vessels, and the same may be said of the Midland



NEW YORK



*The Hudson River Day Line*

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Company's steamers from Heysham, the North-Western and Lancashire and Yorkshire steamers from Fleetwood, the Great Western Company's steamers between Rosslare and Fishguard, the South-Western Company's Channel Islands service, and the Great Central's steamers from Grimsby to the Continent. Nearly all are twin screw vessels, and most of the latest are twin or triple-screw and driven by turbines. Most of the railway companies' steamers are equipped with wireless telegraphy apparatus, and many have submarine signalling; while in construction they are given many watertight bulkheads and doors, and are exceedingly strongly built.

Turning to the United States we find the length of the rivers and in summer the sheltered nature of much of the coastal communication have been responsible for the development of large passenger steamers, of great length and speed, and shallow draft, and having extensive and luxurious passenger accommodation in their enormous superstructures. For most of these vessels paddle-wheels are preferred.

The question has been asked times without number why the immense ships of the Fall River line are given paddles and not screw propellers. Before the New England Navigation Company introduced its beautiful vessel, the *Commonwealth*, in 1908, it went into the question very thoroughly. The problem that was before the company was to "construct a six-story floating hotel, with a length of two New York City blocks and a width of about half a block," on a foundation which could not exceed 15 feet in depth. The hotel had to be given an average speed, rendered safe against collision and fire, on a route where fogs are prevalent, sea room restricted, and a larger portion of the course in normally smooth waters. Side wheels with feathering paddles were considered to meet all these requirements. The guards and wheels

are claimed to afford the hull a large amount of protection in the event of a collision and at the same time give the vessel a stability unobtainable from screw steamships limited in draught by the depth of the channels approaching the four eastern termini of the line and particularly the cities of Providence and Fall River. The great beam obtained by making full use of the guards has given the necessary lateral space for outside state-rooms, which adds greatly to the comfort of the traveller on this journey of one night. These outside cabins are almost entirely free from all traces of vibration from the engines and paddle-wheels, while if screw or turbines were used, the vibration would be noticeable from end to end of the vessel. American passengers like to travel in the utmost comfort attainable, and they "will not stand either the shake of the propeller or the tremor of a turbine," if they can help it. "The needs of the Fall River line," said its chairman, "do not require the use of the hold amidships for freight or passengers, whereas a shaft would interfere materially. A further and most important factor is that the immense power of the side-wheel engine and wheels can be exerted almost instantaneously to stop the headway of the ship, a most essential requirement on Long Island Sound, where craft of all descriptions are met in all sorts of weather."

The precautions for the vessel's safety are remarkable. she has a double bottom, and the hull space is divided into nine compartments by watertight bulkheads without doors. Two fire bulkheads extend from the hull to the upper deck, and a sprinkler system with 1,800 outlets is installed throughout the ship. There are numerous thermostats for ascertaining the temperature of any portion of the vessel, and the freight deck itself is lined with iron. All this, besides her passengers, crew, engines, and furniture, means so much weight which could not be

carried on a vessel of the dimensions of the *Commonwealth* if the form of hull necessary for a screw-propelled vessel had been used. This steamer cost about £400,000 ; she is of 5,980 tons burden, and as her freight capacity is but 700 tons, practically the whole of the immense vessel is devoted to the passenger accommodation.

She, like other vessels in similar employ, is fitted with wireless telegraphy, and in order that passengers may be kept acquainted with what is going on ashore or in other parts of the world, items of current news are posted on bulletin boards located near the wireless room, and special news is furnished on request. There are libraries, music-rooms and writing-rooms. On some of the steamers what is termed valet service is provided : "suit or gown sponged and pressed over night. The garments will be returned at any hour of the morning desired ; especially during the season of summer travel this will be a great convenience to ladies. Particular attention and care will be given to gowns."

The *Commonwealth* has sleeping accommodation for 2,000 passengers. Her state-rooms number 452, including 16 parlours, and there are besides these 600 berths. Every cabin has its telephone. Her silver service numbers close upon 5,300 pieces and her dining-room, on the upper deck, 50 feet above the water, seats 300 persons. Her stock of glassware numbers 3,500 pieces, her crockery 17,500 pieces, and every week there are sent to the laundry 40,000 articles. Her state-rooms and saloons took 8,500 yards of carpet. She is lighted by 3,000 electric lights, for which nearly 80 miles of wire are installed, and the current is supplied by three dynamos. To feed the passengers she takes for every trip a ton of roasts, steaks and chops ; 200 lbs. of poultry ; 240 dozen eggs ; 500 loaves of bread ; 100 gallons of milk ; 300 lbs. of butter ; 300 lbs. of fresh fish ; 150 lbs. of salt fish ;

100 lbs. of coffee. In the linen stores are 3,750 napkins, 4,150 towels, 5,500 pillow-cases, 8,040 sheets and 1,834 blankets. The *Providence* and *Priscilla*, though slightly smaller, are fitted up in the same lavish fashion. An idea of their size may be gathered from the circumstance that a walk round the seven decks of the *Providence* makes a journey of a mile.

The Hudson River Day line has specialised in day steamers, and states, apparently with justification, that no steamer equalling the *Hendrick Hudson* has yet been built. She is 400 feet long and 82 feet over the guards, and is licensed to carry 5,500 passengers, being the largest river passenger carrier afloat. In the method of her construction, the arrangement of her decks, and her speed of 25 miles an hour, she is claimed by her owners to be "one of the wonders of the modern mechanical world." The sumptuousness of her accommodation will challenge comparison with any excursion steamer. No freight whatever is carried. Unfortunately the British day excursionist cannot embark on such steamers as the *Hendrick Hudson* and other palaces of the line. We have no rivers like the Hudson, and no sheltered waters like Long Island Sound. Our variable weather renders impossible the employment of such vessels.

The American lakes have passenger steamers suited to their waters, and as a specimen of the best type of steamer the White Star liner *Tashmoo*, of Detroit, may be mentioned. She is calculated to be able to stand more weather than the New York river and Sound steamers have to encounter, but she has many of their characteristics. It must be remembered she is a summer boat, and is not intended to meet the gales and ice which render the navigation of the lakes so difficult in winter. She is built throughout of steel, is 320 feet in length and 70 feet in width over the guards, and her triple expansion



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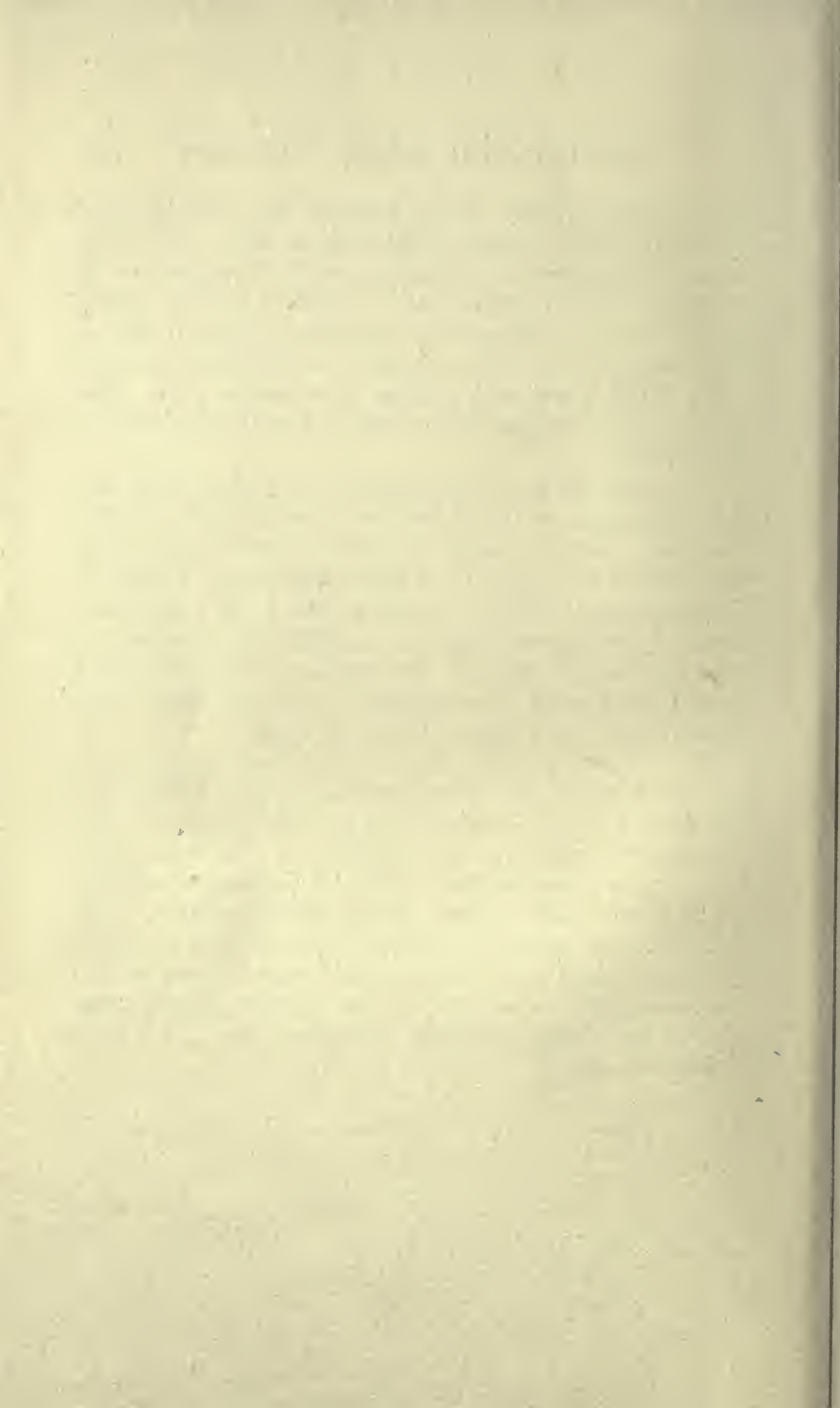
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engines have enabled her to keep up for a run of over 100 miles a steady speed of  $23\frac{1}{2}$  miles an hour. Her main saloon is furnished in mahogany, and her dining-room in mahogany and marble, and in addition to her public rooms she has sixteen large parlours or state-rooms for the exclusive use of passengers. Altogether she can carry 3,500 passengers, besides a numerous crew. She was specially designed for work on the Detroit and St. Clair rivers.

A remarkable vessel built specially for inland waters is the *Seeandbee*, of the Cleveland and Buffalo Transit Company, for the daily service between those cities. She is 500 feet in length, has 500 state-rooms and twenty-four parlours, which can accommodate 1,500 passengers, but her government permit is for 6,000 day passengers. She is provided with all the luxuries which steamship passengers regard as necessities, and her paddle wheel engines give her a speed of over 22 knots.

The steamship has, to me, always been a subject of boundless fascination, from whatever point of view it is considered. Even the story of the development of the "tramp" steamer is not without its romance. How much more romantic then, is that of the accommodation on the best ocean liners, the travelling palaces. The luxury of one year has become the necessity of the next, and as to the future the most that may be said is that the inventiveness of the owners of travelling palaces and of the designers of the accommodation is far from being exhausted.



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