SAVED FROM THE WRECK!

THE LIFEBOAT

Its History and Heroes

BY

F. M. HOLMES

AUTHOR OF
"ENGINEERS AND THEIR TRIUMPHS," "ENGLAND'S NAVY,"
"FIREMEN AND THEIR EXPLOITS," "CHEMISTS AND THEIR WONDERS,"
ETC., ETC.

WITH ILLUSTRATIONS BY C. J. STANILAND, R.I.,
AND OTHERS.

LONDON
S. W. PARTRIDGE & CO.
8 & 9 PATERNOSTER ROW.

APPROACHING THE WRECK.

PREFACE.

THE present volume seeks to recount, in a popular and non-technical manner, the story of the invention and development of the Lifeboat and of the Lifeboat Service, illustrated by a number of characteristic incidents of Lifeboat rescue; while some information is also added as to the life-saving rocket apparatus and its work.

The change that has taken place in life-saving service on our coasts during the last hundred years or so is truly wonderful. In 1789, when the wreck of the 'Adventure' thrilled the country, there appear to have been no special means for saving lives from wrecks. In 1899-1900 there were 305 Lifeboats on the coast, of which 290 belonged to the Royal National Lifeboat Institution, which is supported entirely by voluntary contributions, the other fifteen being locally provided or otherwise supported; while Government was represented by 313 life-saving stations under the Board of Trade, and mainly worked by the coastguard, 297 of these stations being furnished with the rocket apparatus. There were also 217

life-saving companies, numbering in all 3768 volunteers, and there were six brigades, with a total of 469 members.

As in other volumes of the series—in which the author has endeavoured to tell the story of the triumphs of engineers—much information has been obtained at first hand, and he has to thank Mr. Charles Dibdin, the Secretary, and other officials of the Royal National Lifeboat Institution for their great courtesy in this respect, and for permission to use some of their diagrams and illustrations, to visit the Lifeboat 'Stores,' and to inspect for himself the construction of various types of Lifeboat.

Further, the author has obtained information especially as to the early history and the vexed question of the invention of Lifeboats from various sources, including an old volume of 'The Tyne Mercury,' also from 'The Gentleman's Magazine,' 1806 and 1834; from a paper by the late Sir David Brewster, and from the report of the evidence and other proceedings in Parliament respecting the invention of the Lifeboat, and other documents, etc., by Greathead (London, 1804), and also from Mr Charles Dibdin's pamphlet on the origin and history of the Lifeboat Institution.

The public may perhaps be surprised to learn that there are eight types of Lifeboat under the control of the Institution. The reasons for the construction of various types will be found set forth in the following pages, though, it is hoped, without too much technicality. The ingenuity displayed in constructing craft to meet various peculiarities of coasts and of the weather is no less remarkable in its way than the great gallantry of the crews who man the boats, and together they form a bright and noble page in the history of our country.

A SELF-RIGHTING LIFEBOAT AFLOAT.

CONTENTS.

CONTENTS.

CHAPTER VI.

CHAPTER VII.

CHAPTER VIII.

CHAPTER IX.

CHAPTER X.

CHAPTER XI.

THE LIFEBOAT:

ITS HISTORY AND HEROES.

CHAPTER I.

THE WRECK OF THE 'ADVENTURE.'

THE story of the Lifeboat may be said to begin at the mouth of the river Tyne.

One stormy day in September 1789, a ship of Newcastle, named the 'Adventure,' stranded on the Herd Sands, scarcely three hundred yards from the southern shore of the river.

The storm was terrific. The waves leaped and dashed on the wreck, and the crew took refuge in the rigging. Spectators gathered on the shores in thousands, and sympathetic souls offered rewards to the boatmen who should put forth to save the men.

But none would venture. To do so in the ordinary boats, then in use, would have meant certain death, and the terrible sight was witnessed of the doomed men falling, one by one, into the raging sea within sight of help, and yet none were able to save.

We can imagine the frightful horror of the scene.

Shrieks and cries and groans would rise from the assembled multitude, as one by one the crew dropped down to death; and again and again would offers be renewed to induce brave men to venture, but to no purpose.

"No boat can live in that sea," they would say; "we should only make widows of our wives and orphans of our children if we ventured. We should lose our lives for no good end."

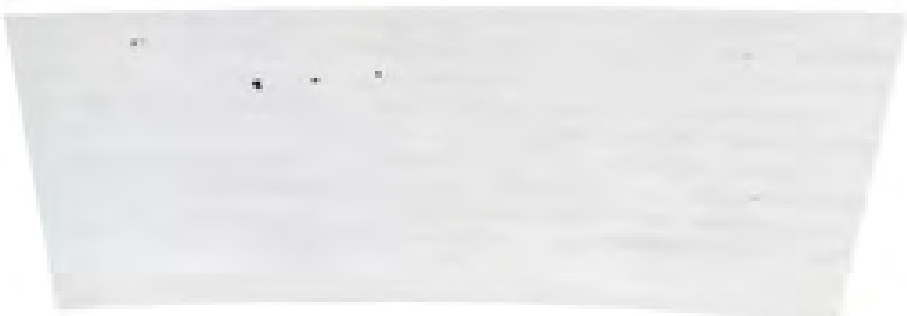
And at length the stormy autumn day drew to its close. The last of the 'Adventure's' crew had sunk to his sad grave, and as the spectators turned away, some might have thought that they had witnessed the end.

The end! Nay, a stirring story was only just beginning. The deaths of those doomed men proved to be the commencement of a new era. They died, we might say, that many others might live. For from that terrible disaster sprang noble and strenuous efforts, which resulted in fully establishing the value of the British Lifeboat in public estimation.

True, Lukin's 'Unimmergible Boat' had been patented before, namely, in 1785, but this shocking calamity to the 'Adventure' aroused public attention to the necessity of special means for saving life from shipwreck; it swept away much of the apathy that prevailed, and gave an impulse to the Lifeboat movement that carried it on to a measure of success.

We do not wonder that, after such a scene, an excited gathering took place at South Shields to consider what should be done to prevent a recurrence of such a catastrophe. Tynemouth was a dangerous haven, and ships were frequently wrecked

SHOWING A FLAKE.



on the Herd Sands on the south side, or on the rocks on the north side. At that time no special means existed of rescuing the unfortunate crews; and, clearly, what was wanted was a boat that could live in such dangerous seas and heavy breakers as at such times prevailed.

A committee was constituted, with Mr. Nicholas Fairles as chairman, and the public subscribed a sum of money to offer rewards for the best lifeboat. A competition for models and plans was thrown open, and among the competitors—if, indeed, they were not the only two—were William Wouldhave, a painter and also the parish clerk of South Shields, and Henry Greathead, a boat-builder of the same place.

Greathead, indeed, lived not far from the fatal Herd Sands, and he had had experience of the sea himself, having been a ship's carpenter. He was one of twin children, born at Richmond, Yorks, on 27th January 1757, and was therefore nearly thirty-three years of age when he entered his model for the competition.

His father was a civil servant, and moved to Tyne Bank in 1763. Henry was apprenticed to boat-building, and after his career at sea as ship's carpenter, returned in 1785 to South Shields. There he began a boat-builder's business, and took to himself a wife. He had been some four years in trade when the premium was offered for the best plan of a Lifeboat, and to his plan the prize was awarded.

There has been much controversy as to the respective claims of Lukin, Greathead, and Wouldhave to the invention of the Lifeboat. Whether Greathead or Wouldhave were indebted to Lukin for any of their ideas we cannot with accuracy determine. But

Greathead it must be remembered was himself a boat-builder, and this fact may have given him some practical advantage in the competition.

The truth in the main seems to be roughly this:—Wouldhave suggested the use of cork to render the boat buoyant, and Greathead devised the shape of the craft with a curving keel; and the discussion resolves itself to some extent into a controversy as to the respective value or originality of these ideas.

It seems beyond doubt that the committee, though they awarded the prize to Greathead, yet adopted some good points from Wouldhave's model, and instructed Greathead to build a boat embodying these points with his own. It would seem, therefore, that the committee regarded the peculiar shape of the boat as of the greater importance.

The story of the competition is thus told in a letter dated from Newcastle, and signed W. N. C., which appeared in the 'Gentleman's Magazine' for 1806. It strongly advocates Wouldhave's claims, however, and may therefore be too partisan to be regarded as quite impartial. Wouldhave's model, it says, was rendered buoyant by cork, and about Greathead's there was nothing particular except a curved keel, which would not prevent it from turning bottom upwards. These models, it appears, remained for some time before the committee, until two ingenious and scientific members of it, Messrs. Fairles and Rockwood, formed a plan of the intended boat in clay from the two models, and gave it to Mr. Greathead to copy from. Mr. Greathead suggested as an additional improvement that it be built with a curved keel, the only part of the invention, says the writer, to which he has a

shadow of claim, and which has been proved to be of infinitely less value than the other peculiarities of structure of the boat.

Others, however, were not of the opinion that Greathead's contribution was so slight; but it is well-nigh impossible to adjudicate fairly on the respective claims of these inventors to-day.

The story goes that an accident suggested to Wouldhave the idea of the form of boat he adopted. He was assisting a woman to place a vessel of water on her head, when he noticed that a broken wooden dish floated in the water with the points upwards, and that no matter how frequently it was turned, it always reverted to its original position. He thereupon embodied the idea in his boat, which may thus be said to have been the result of experience and observation. This story has been credited to Wouldhave, but Greathead himself, in his evidence before a Parliamentary Committee, stated that the following idea had frequently occurred to him, from which he had conceived the principle of his invention, viz.: Take a spheroid, and divide it into quarters; each quarter is elliptical, and nearly resembles the half of a wood bowl, having a curvature with projecting ends; this thrown into the sea or broken water cannot be upset or lie with the bottom upwards.

Whether, therefore, the traditional story be true of Wouldhave or of Greathead, or whether it be much exaggerated altogether, it would appear that some foundation for it exists, since Greathead himself curiously gives the illustration of the broken wooden bowl. No doubt some foundation generally does exist for traditional stories of suggestions leading to

inventions, though they may have become distorted or exaggerated in the telling.

In any case, Greathead was given the premium, and was instructed by the committee to build the boat. It was thirty feet long by ten feet wide and three and a third feet deep. Its keel was greatly curved, and its stem and stern were formed alike and sloped considerably outward. Greathead's early boats were much higher at the ends than at the middle; so much so, indeed, that it is said if a rule could have been placed from the top of one end to the top of the other it would be about two and a half feet above the gunwale amidships.

The boat seems to have been of light draught, and could carry nine or ten persons as well as the crew. It was rowed by ten oars, double-banked; that is, two rowers sat beside each other, there being five seats for the oarsmen. The exterior and interior were lined with cork, which in some parts was about four inches thick—the total quantity of cork on the boat weighing some seven hundredweight. Plates of copper seem also to have been used in the construction of the boat, possibly for purposes of added strength.

Thus the three great features of the boat appear to have been: (1) Its great breadth and lightness of draught; (2) its covering of cork; and (3) its curving shape. The idea of using the cork is said to have been due to Wouldhave, though we know not whether he derived it from Lukin, who certainly made some use of cork in his boat previously; the correspondent of the 'Gentleman's Magazine' in 1806 says that the lifeboat was for a long time known in the town of Shields by the name of Wouldhave's Cork Boat.

The craft was finished in 1789, and appears to have been stationed at South Shields; while, in 1798, the Duke of Northumberland commissioned Greathead to build a boat, which he endowed and stationed at North Shields. But the first boat went off for the first time in January 1790, and succeeded so well that in 1803, Greathead was able to say that no fewer than 200 lives had been saved at the entrance to the Tyne, and that in no instance had she failed.

And how did Greathead's boats behave in the rough sea? Let eye-witnesses answer.

Ralph Hillery, who gave evidence before the Parliamentary Committee on the subject of the reward to Greathead, and who said he had been forty-five years at sea and had resided at Shields, testified that he was in the North Shields Lifeboat the first time she went off. She went to the aid of the sloop 'Edinburgh,' which was seen on the Herd Sands about one and a half miles from the shore. The 'Edinburgh' was anchored before the Lifeboat got to her, and she continued striking the ground so heavily that she would not have held together ten minutes longer had they not got to her; they made her cut her cable, and then took off seven men and brought them on shore. The sea at that time was monstrously high, so high that no other boat whatever could have lived in it.

And the following report appears in the 'Tyne Mercury' of 29th November 1803:—

"NORTH SHIELDS, *Nov.* 22.—Having, yesterday, witnessed the most extraordinary escape of the crew of the brig 'Bee' from shipwreck that was perhaps ever known, by means of the Northumberland Life-

boat, I take the most early opportunity of giving you a correct statement of the whole circumstances. The 'Bee' of Shields, John Houston, master, having put to sea in an easterly wind, had not proceeded far when it began to blow strong from the south-east, which obliged him, a few hours after, to put back. In taking Tynemouth bar, at last quarter ebb, in a heavy sea, she struck the ground, and unshipped her rudder. Being now completely unmanageable, she drifted towards the north side of the bar, and at length drove on the Black Middins. Those who have witnessed the tremendous sea which breaks on the north-east part of this harbour in a south-easterly wind, may form a conception of the dreadful situation in which the crew of this vessel were situated. In the midst of rocks, where the sea runs mountains high, so much so as frequently to obscure the ship, and where any vessel might immediately be expected to go to pieces, their immediate refuge from being starved to death, or being swept into 'the gulph profound,' was to take refuge in the shrouds, which the captain with six men and boys, being the whole crew, immediately adopted. The dangerous situation in which they were placed immediately attracted an immense number of spectators from both North and South Shields. The shores in every direction, indeed, were lined with people, who expressed by their anxious looks the most sympathetic apprehension for their safety. The attempt of making use of the Lifeboat was, by most people, thought impossible, and, at all events, attended with extreme danger, owing to the tremendous sea, and the immense number of rocks

which lay where the vessel was stranded. So confident, however, was Mr. Greathead, the inventor of the Lifeboat being able to live in any sea, if properly navigated, that he, without hesitation and with the greatest alertness, volunteered his services to bring the men off from the brig. This intrepid offer operated like electricity amongst the sailors, and immediately the Northumberland Lifeboat was launched, and manned with Mr. Greathead and South Shields pilots. In the course of a few minutes they reached the vessel without much difficulty, and picked the men off the shrouds, shivering with cold, and almost perished by fatigue. One man, in making too much haste to enter the boat, fell among the breakers, but was immediately recovered. When the whole crew was in the boat, they rowed towards the shore, and in less than an hour from the time the boat was launched, did they return in safety to South Shields, without a single accident. This is certainly the most astonishing and hazardous expedition that any lifeboat has ever yet attempted; and from the ease with which she went to and from the brig, without scarcely shipping any water, it is hardly credible to think what she may accomplish. The joy that seemed to pervade the people on shore, when the boat returned in safety, is more easily to be conceived than described. This is a fresh laurel added to the inventor of the boat, and sheds additional lustre on the Duke of Northumberland and other benevolent patrons for rendering this invention of so much effect to the cause of humanity."

At this date — 1803 — Mr. Greathead had built eighteen lifeboats for England, five for Scotland,

and eight for foreign countries—a total of thirty-one altogether. In the year 1800 the Duke of Northumberland had ordered one for Oporto; and about the same time Mr. Cathcart Dempster had ordered one for St. Andrews, where in 1803 it saved twelve lives.

The utility of the Lifeboat was now fully established.

HENRY GREATHEAD.

and about 1803 Greathead petitioned Parliament for a reward.

His claim was considered by a Committee of the House of Commons, who reported favourably, and £1200 was granted to him. Sir David Brewster declares that "as he was merely an extensive builder, and a slight improver of Lukin's lifeboat, he was scarcely entitled to a larger sum than he received."

Lukin boldly declared that Greathead's boat was in all the essential principles of safety precisely according to his patent, and differed from it in no considerable respect, except the curved head, which, he asserted, contributed "nothing to the general principle of safety," but rendered it unfit for a sailing boat.

It is certainly worthy of note that the curved form of the boat was not afterwards adopted, and appears now to have almost entirely disappeared. At the same time we must remember that it appears to have been regarded as an essential feature of safety in those days.

Greathead certainly enjoyed the substantial rewards of success. Besides the orders for building so many boats, the Trinity House and Lloyd's both presented him with a hundred guineas, the Society of Arts fifty guineas, and the Emperor of Russia gave him a diamond ring. Dr. Trotter, Physician to the Fleet, burst forth into poetry on the event, and wrote an ode on the Lifeboat, in which, after picturing the terrible position of the ship striking on rocky shores, he concludes—

Thine was the task, adventrous man!
To snatch the victim from the wave;
Blest be the head that form'd the plan,
The heart that had the wish to save!
Impelled by nice mechanic arts,
The well-trimmed Skiff its aid imparts;
The deep yields up its half-won prey,
And sinking eyeballs beam with day!
A gift, beyond the poet's flame,
A grateful crew shall incense burn,
And GREATHEAD shine in deathless fame,
While love and friendship hail the tar's return.

boats with new craft, and improving the type of boat and of life-saving apparatus generally.

What then has its record been during the following half century, and how did its new organization succeed?

CHAPTER V.

PROGRESS OF THE LIFEBOAT INSTITUTION—TUBULAR AND STEAM LIFEBOATS—THE PADSTOW DISASTER.

WHILE the construction of lifeboats was being improved, the public on their part were according the Institution more generous support.

The Press took up the matter, and publications such as the 'Quiver,' the 'British Workman,' and the 'Boy's Own Paper,' greatly interested their readers in the placing of lifeboats on the coast, and raised large sums of money for that purpose. In a sense the personal and proprietary instincts of mankind were appealed to as well as the humanitarian or religious; it was only natural that the readers of any publication should feel a peculiar interest in the boat to which they had subscribed, and which was, so to speak, their common property. Sunday Schools added their mite, and placed at Brighton a lifeboat, called appropriately enough the 'Robert Raikes,' after the founder of Sunday Schools, and many a contest she has fought with the stormy channel in saving life.

keel, which was regarded as Greathead's invention. Moreover, the fact that the reward of the committee was given to Greathead must tell in his favour. We incline to regard the first Shields Lifeboat as practically a joint production, to which Lukin's name ought perhaps also to be added, though doubtless Wouldhave and Greathead did not work jointly together in their models. Possibly, but for the sharp words Wouldhave seems to have uttered, he would have had some share of the credit and reward, to which he was entitled. He died in 1821 at South Shields, and a stone to his memory has been placed in the parish church of St. Hilda's. The stone bears the figure of a lifeboat, and the following inscription :—

SACRED TO THE MEMORY OF
WILLIAM WOULDHAVE,
WHO DIED SEPTEMBER 28th, 1821, AGED 70 YEARS,
Clerk of this Church and Inventor of that Invaluable Blessing to Mankind,
THE LIFEBOAT.

Heaven genius scientific gave,
Surpassing vulgar boast, yet he from soil
So rich no golden harvest reap'd—no wreath
Of laurel glean'd. None but the sailor's heart,
Nor that ingrate of palm unfading this,
Till shipwrecks cease, or lifeboats cease to save.'

Wouldhave's claims have since been publicly acknowledged, his name being placed on a memorial to Greathead erected on South Shields pier, and unveiled on 25th June, 1890.

It is sad that he should have reaped no reward if, as some affirm, he was actually the inventor; but Lionel Lukin was in the field before either of these

two men, and Lukin's claims appear to be even stronger than those of Wouldhave, though it is quite possible that Wouldhave may have acted quite independently of Lukin.

But indeed it is now practically impossible to justly and accurately appraise the claims of the three men, Lionel Lukin, Henry Greathead, and William Wouldhave, to the invention of the Lifeboat. Sir David Brewster declares Lukin to be the 'undoubted inventor,' and he was unquestionably first in point of date. He employed air-tight cases and cork to give buoyancy to his boat, air-cases being a great feature of lifeboats to-day. But the question is how far Greathead was influenced by Lukin's patent, how far the use of the curved keel was of such great importance as to render Greathead's boat a separate and independent invention, and whether it was not an altogether stronger and superior vessel.

Lukin's boat was undoubtedly a valuable production, and actually saved lives before Greathead's boat was built. His name must always be remembered with Greathead's, and to his story and his efforts we must now direct attention.

CHAPTER II.

THE STORY OF LIONEL LUKIN.

No one knows exactly the circumstances which led a fashionable coach-builder of Long Acre, named Lionel Lukin, to invent a Lifeboat.

Apparently his heart and mind had been stirred by the news that many lives were lost by the overturning of both rowing and sailing boats, and being a man of mechanical talent and inventive skill, he turned his attention to devise means for the prevention of such losses. But whence gained he the ideas of the use of cork and of air-cases for the safety of the boat?

He appears to have been totally unconnected with the sea. Perhaps this circumstance militated at first against the widespread recognition of his invention. "What should a landlubber know of sailing craft?" seamen might not unnaturally have asked.

Possibly, too, there was something against him in the name he gave his boat. Greathead's craft was plainly called 'The Lifeboat,' though we do not know who gave it the name; but Lukin dubbed his the 'Unimmergible Boat,' and we suspect that com-

paratively few persons could in those days master the mysteries of such a title.

The writer of Lukin's obituary notice in the 'Gentleman's Magazine' of 1834 shrewdly remarks that the importance of a name is generally too little considered; it is foolishly thought, says he, "that the public is most attracted by Greek and grandiloquence;" but perhaps we may attribute Mr. Greathead's success to this circumstance, that, while Mr. Lukin's 'Unimmergible Boat' seemed to demand some troublesome exercise of the understanding to comprehend its mysterious meaning, the title of 'The Lifeboat' spoke at once to the sympathies of the heart. It would be curious indeed if the difference of name caused the difference in the recognition of the inventors' claims.

But let us look at the story more fully.

Lionel Lukin was born at Dunmow, a little inland town in Essex, on 18th May, 1742. He belonged to an old family, and took up the business of coach-building; he joined the Coachmakers' Company in 1767, and came to have a fashionable business in Long Acre.

As a coach-builder he often waited on the King; and the Prince of Wales—afterwards George IV.—took an interest in his invention. The Prince encouraged him in his project, and it is said even offered to pay for his experiment.

He therefore purchased a Norwegian yawl, and altered and improved it according to his ideas, and tested its efficacy as far as possible on the Thames. He then patented his invention, the date being 2nd November, 1785.

His plan was this—he fixed to the yawl a projecting gunwale or upper rim of cork about nine inches thick amidships, and gradually sloped down to the stem and stern. Under this upper edge he placed double sides or air-tight enclosures, and also similar contrivances at the head and stern and under the seats. He added an iron keel by way of ballast, to keep the craft upright, while the hollow cases under the gunwale were believed to diminish rolling.

The boat seems to have been buoyant enough, but had apparently one defect, namely, the sides were liable to be staved in. No doubt the hollow air-cases under the upper edge contributed to this result, and Greathead's boat not having these side air-cases could not suffer from this defect.

But Lukin's boat was undoubtedly successful. About the time of his patent, though the exact date is not quite clear, he fitted up a Bamborough coble for a charity with which the Rev. Dr. Shairp of that place had to do, and the boat was successful in saving many lives the first year it was at work. Lukin also had interviews with many influential persons, including Admirals King and Schank, the Dukes of Northumberland and Portland, and also with Lord Howe, First Lord of the Admiralty. Lord Howe gave him strong approbation verbally, but took no official steps to further the invention.

Lukin seems certainly to have done his best to spread abroad a knowledge of his invention, and appears unquestionably to have been the first in the field.

"Did either Mr. Woodhave (*sic*), Mr. Greathead, or indeed any other person," asks Lukin indignantly,

in a letter in the 'Gentleman's Magazine' in 1806—"give to the public any idea of a Lifeboat till after the year 1785, when my invention brought the subject under consideration? In that year my patent was publicly enrolled in the Patent Office; many advertisements inserted in the public papers; the specification soon after printed in the Repertory of Arts; many experiments made with my boats by myself, by Sir Sidney Smith, and by other persons, on the Thames, at Margate, and at Ramsgate. I had also the honour of stating my ideas to his Royal Highness the Prince of Wales, to the Duke of Northumberland, to Earl Howe, and to many other scientific noblemen and gentlemen. By these various means the subject of a lifeboat was brought into extensive discussion, not only in England, but also in several parts of the Continent of Europe; and a boat supposed to be particularly adapted to the northern coasts of England was by me fitted up (in addition to its curved keel) according to my patent, for a lifeboat, and actually used for that purpose at Bamborough, under the direction of Dr. Shairp; and by its use alone no inconsiderable number of shipwrecked seamen were preserved to their families and their country. All this occurred previous to the publication even of the proposals of the Shields Committee. . . ."

This letter defends Mr. Lukin's claims against the assertion of a Mr. W. A. Hails, of Newcastle, that Lukin was not the inventor of the Lifeboat; but the letter is interesting as showing in his own words what steps he took and what success he met with in his efforts to spread abroad a knowledge of his invention.

Bamborough, where Lukin's boat was successfully at work apparently as early as 1786, is on the coast of Northumberland; and it is therefore certainly not improbable that Wouldhave and Greathead may have heard something of its success. Sir David Brewster regards it as the first lifeboat launched on a stormy shore, and declares that in the first year of its use it was the means of saving many valuable lives.

Why then did not the Shields Committee adopt it? Was it through jealousy of a landlubber's production; or was it because they did not fully understand it; or because they did not regard it as quite satisfactory?

If they had heard of a boat answering the purposes of a lifeboat actually on their own coast, surely it would have been thought that they would communicate with the patentee without troubling to open a competition and raise money for a prize?

Possibly the idea that Lukin's invention was not for a special safety or lifeboat, but to render various craft unimmergible, may have militated against their adoption of the boat. Lukin himself declared that whereas the Shields boats were "only applicable to the case of relief in distress," his invention, "which is equally applicable to sailing boats, must appear much superior to them; being calculated not only to afford relief when necessary, but also as packet boats, pleasure boats, etc., to prevent the frequent recurrence of the fatal accidents arising from the oversetting and sinking of common boats from storms or mismanagement; as neither rowing boats nor sailing boats constructed upon the principles I have stated can be either overset or sunk."

From these words it is clear that Lukin did not contemplate so much the construction of a special craft as of rendering all craft unsinkable, yet it appears equally clear that his boats did answer the purpose of a lifeboat.

In his reply, which in some respects is needlessly offensive, Mr. Hails comes to the point in asserting that in the Lifeboat "the form is a principal object, and no dependence whatever is placed on projecting gunwales for securing the unimmergibility of the vessel." Further, he indicates that projecting gunwales in a crowded river would soon be swept away.

Here, then, we have before us the chief points in the controversy, and the question still remains unanswered, Who was the real inventor of the Lifeboat? Lukin was certainly first in point of date, but there is difference of opinion as to the value of his invention. Once more we say the vital question is, how far the Shields men were indebted to Lukin for any of their ideas.

This question can probably never be answered, and in the absence of any satisfactory answer we must regard the early Lifeboat as really the joint production of the three. Lukin, Greathead, and Wouldhave, all contributed. Greathead being a practical man and having an excellent opportunity, took prompt advantage of it, and pushed his claims with unremitting perseverance. The consequence was that he has been perhaps most widely and popularly regarded as the inventor, whereas that honour should be shared with others.

But to return to the story of Lukin.

He declared that he was pleased rather than

chagrined to hear that a boat had been built at Shields on the principles he had made public, and that pecuniary profit was never his first object in the business.

Lukin's first boat—apparently the converted Norway yawl—came to an untimely end. Captain James, Deputy Master of the 'Trinity House,' recommended Lukin to entrust the 'Experiment'—as he had appropriately named the craft—to a Ramsgate pilot, who was at that time in London, in order that it might be tested in rough weather.

Lukin did so, but, alas, the man and the boat seem alike to have disappeared. Lukin heard that his craft had crossed the Channel several times when no other boat would venture; and as he could hear nothing from the Ramsgate pilot, and could get no compensation for the loss of his boat, it was supposed it had been surprised in smuggling, and consequently destroyed or confiscated.

This was distinctly a bad beginning, and the incident could scarcely have happened had Lukin been a practical seaman, or connected with ships and engaged on the coast. In this respect, as a practical man striving to answer a great need, Greathead had afterwards the advantage.

Not dismayed, however, Lukin at once built a new boat, and named it the 'Witch.' It was about twenty feet long, like its predecessor. Several naval officers, including Sir Sydney Smith, tested its capabilities and found, after repeated trials, that it could not be sunk or overturned. Lukin himself sailed the boat at Margate, and, because it was able to carry an unusual quantity of canvas, it sailed swiftly.

So far, Lukin's invention appears to have been remarkably successful. No doubt, however, seafaring prejudices were against him, and seamen probably disliked the projecting gunwales and the double sides. Moreover, it is quite likely that the necessity and the utility of the invention were not widely recognised round our coasts; while, lastly, no funds existed for the building of such boats.

Nevertheless, a few were constructed. Besides fitting up and converting the Bamborough coble, Lukin built four boats in addition to his own, and one of these four proved of great value at Lowestoft.

It cannot be said, therefore, that Lukin's boat failed, or that his claims to the invention are to be ignored. He must, at least, rank side by side with the two Shields inventors, if, indeed, he has not a prior place. He is one of the inventors of the Lifeboat — if not the sole inventor — and his name deserves to be cherished in grateful remembrance. Lukin appears to have made no profit by his invention; he continued his business of coach-building until 1824, when he retired and settled at Hythe in Kent, dying there on 16th February, 1834, at the great age of ninety-two. He was the author of several other inventions, including a rain-gauge and an adjustable bed for patients.

He desired that on his tombstone should be recorded the statement that he was the inventor of the Lifeboat, and the following was placed there:— "This Lionel Lukin was the first who built a Lifeboat, and was the original inventor of that principle of safety by which many lives and much property

have been preserved from shipwreck; and he obtained for it the King's patent in the year 1785."

There is no doubt this epitaph very fairly expresses the truth. He was the original inventor of the principle of safety; but for many years no memorial was raised to him. However, on the 3rd of October, 1892, mainly through the efforts of the Rev. Mr. Hall, vicar of Hythe, who raised a fund for the purpose, a stained glass memorial window was unveiled in the parish church of Hythe; and the service was attended by the Mayor and Corporation, the local lifeboat-men and coastguardsmen.

Each, therefore, of the three early inventors has now his memorial, and his claims are fairly placed before the public. The controversy connected with their names may be buried with them. Each did good work, and contributed to the general result; and each is entitled to a fair share of honour and of grateful remembrance.

The Lifeboat, however, was to be considerably modified and improved after these three men had left it, before it became a thoroughly satisfactory craft for all coasts; and the names of other inventors and clever craftsmen must be added to the list before the muster-roll is complete.

Some years, however, elapsed before the next important improvement. Meantime, several minds were at work on the subject, and several other boats were made. In 1807, a Mr. Wilson of London introduced a boat which, in effect, was mainly an improvement of Lukin's principle. That is, Wilson separated the outer air-cases into divisions, so that, if one were broken, the others might still remain

serviceable. He also made other suggestions applicable to boats generally, and the Society of Arts granted him the Society's Gold Medal.

Ten years or so later the Society voted their silver medal to a Mr. Bray for a contrivance rendering ships' boats buoyant by fixing air-tight boxes under their thwarts. These boxes, however, could not be prepared so promptly on the spot as some of the methods of a Rev. Mr. Bremner, who, before the year 1800, suggested that empty casks should be placed in ships' boats to give them the required buoyancy. Mr. Bremner suggested various plans, and, in 1800, he experimented in the port of Leith before a committee nominated by the Leith Trinity House, who marked their approval by making him a presentation of a piece of plate.

Again, in 1829, a curious plan was put forward by Lieut. Ansell, by which bags of tarred sheepskin should be kept on board. They were to be inflated when required, and one leg of the defunct sheep was to be fitted with a spigot to close up the bag when ready for service. Clearly an improvement on this plan is the use of cork or other life-belts, which do not need inflation.

Captain Rorie's plan, made public in 1837, was perhaps the forerunner of arrangements now made to render the seats of steamers, etc., unsinkable. He urged that large copper tubes or bamboo trunks should be kept in readiness to be placed under the seats of boats; and travellers must have noticed that many of the seats on board some passenger vessels are fitted with air-tight cases to keep them afloat.

Again, as far back as 1791, Sergeant Bell of the

Royal Artillery contrived a plan of shooting a line from a distressed ship; and in 1807 Captain Manby introduced his famous life mortar, which proved the foundation of the rocket apparatus. Captain Manby's mortar fired a shot fitted with curved barbs to fasten itself to the ropes on the bulwark of the vessel and carry a line with it.

THE "GREATHEAD" LIFEBOAT AT SEA.

These suggestions, and others which could be mentioned, all indicate that several minds were occupied with plans for the saving of life from shipwreck or the overturning of vessels. It seems clear, however, that Greathead's boat took precedence of all others; but as years went on it was found to be not infallible.

In 1810, one of his boats met with a terrible

disaster near Hartley, on the coast of Northumberland. She had gone out to the rescue of several cobles, and had saved the crews, when, on returning, a heavy sea knocked her about so badly that she became unmanageable, and was driven on the South Bush Rock and dashed to pieces, with the loss of many lives. Again, eleven years later and five years after Greathead's death, his original boat was lost upon the dangerous rocks at the mouth of the Tyne, where it had saved so many lives; but on this occasion there was no loss of life.

Nevertheless, Greathead's boats had performed eminent services, and the value of such craft began to be widely recognised. Yet few were built. Public authorities evidently did not regard it as their duty to multiply lifeboats or reward those who used them; and voluntary effort did not adequately supply the deficiency.

Then arose one man to appeal successfully to the people; a great disaster came to shock and arouse the public mind; and there sprang into being the Voluntary Society which has done so much for the Lifeboat, and whose name is a household word around our shores.

The Royal National Lifeboat Institution was born.

CHAPTER III.

SIR WILLIAM HILLARY'S GREAT WORK—THE LIFEBOAT INSTITUTION FOUNDED.

"WILL Englishmen look quietly on and see hundreds of their fellow-creatures annually perish, when means of rescue, if supplied and properly used, are within reach?"

Such was the purport of an urgent appeal addressed to the nation in 1823 by Sir William Hillary, Bart., a gentleman whose name should ever be held in honoured remembrance as a true patriot and a noble philanthropist.

Dwelling in the Isle of Man, he had often witnessed the terrible scenes of shipwreck, and had, indeed, taken part in efforts to save the sufferers. In 1822 he helped to save the crews of various vessels, including the 'Vigilant,' a Government cutter which was wrecked in the Bay of Douglas; while the culminating disaster seemed reached when in the same year he witnessed the total wreck of H.M.S. 'Racehorse' at Langness Point, at the eastern extremity of Castletown Bay.

Thereupon Sir William issued his appeal. He had

a right to appeal, for during his noble career he had helped to save no fewer than three hundred and five lives. The agonies of shipwreck had, as it were, entered into his very soul. He had evidently become an enthusiast—a fanatic some might say—and he urged the question with all his powers.

The response to his appeal was satisfactory. Mr. Thomas Wilson, Member of Parliament for the City of London, and Mr. George Hibbert, another M.P., cordially supported his views, and on 12th February 1824 a preliminary meeting was convened in London to consider the subject. It was then decided that a National Institution should be organised. Its objects were: "The preservation of life in cases of shipwreck on the coasts of the United Kingdom; the prompt assistance of the persons rescued as their necessities may require; the giving of rewards to those who preserve their fellow-creatures from destruction; and the relief of the destitute families of any who may unfortunately perish in their attempts to save the lives of others." The Institution was to be supported by voluntary effort.

The preliminary meeting was followed by a largely-attended public gathering at the London Tavern on 4th March 1824, when Dr. Manners Sutton, Archbishop of Canterbury, presided, and the 'Royal National Institution for the Preservation of Life from Shipwreck,' as it was then called, was started on its great career.

Between the preliminary meeting on 12th February and the meeting of 4th March, the King—George IV.—had consented to become Patron, and the Dukes of York, Clarence, Sussex, and Cambridge, and Prince

Leopold, Vice-Patrons, of the young Institution. The first President was the Earl of Liverpool.

It speedily got to work. During its first year, 1824, it received the sum of £9826, and a dozen lifeboats were built for various stations.

In its earlier days it assisted local efforts to place lifeboats in suitable positions, and it also supplied Captain Manby's mortar apparatus and the rocket apparatus to various neighbourhoods. Moreover, it provided for the needs of sailors who had been rescued. Benevolent persons and other associations had been at work, and in 1824, besides the twelve lifeboats aforesaid, there were thirty-nine other lifeboats on the coast unconnected with the new Society.

Progress was therefore being made. No doubt the need for such appliances was being slowly forced on the public mind. The value of lifeboats had been recognised; the need was to multiply their number. An important point in Sir William Hillary's appeal was that the means of rescue were within reach of the public, and yet they looked on and saw hundreds perishing annually on their shores.

We see an illustration of the state of affairs prevailing on no doubt many parts of our coasts, in the wreck of the East Indiaman 'Thames,' near Eastbourne, early in 1822. She was a fine vessel, and almost new, and left the Thames with a brisk breeze from the south-west. She continued beating west from the Wednesday until the Saturday; on that day at noon she weathered Beachy Head, and the wind increased until it blew a gale.

Night approached, and still the storm grew, until

the unfortunate vessel was struggling with a complete hurricane. The ship drifted fast to the shore, and began to fire signals of distress. "But," says the 'Annual Register,' and the sentence is very significant, "such was the state of the elements, that all idea of assistance from the shore was soon abandoned as hopeless." In other words, we may say now no lifeboat was there.

The vessel drifted ever nearer the shore; the sea ran mountains high; and the moon, casting a dim light through the clouds, made the danger only more visible.

About midnight the ship struck a rock near the Head, but floated away and drifted toward Eastbourne, where she struck again. It was now about two o'clock on the Sunday morning, and she continued to beat on the shore, while the heavy seas broke over her with great violence, threatening to dash her to pieces. Still the signals of distress were continued; lights appeared on the shore; and, in spite of the hour, the beach became covered with persons anxious to save and yet unable to do so.

They had to watch a dreadful spectacle in the dim dawn of the February day. The mainmast had gone, carrying away four of the crew, and then the mizzen and the foremast followed, and seven more of the crew were drowned. Imagine the anxiety and the agony of the people on shore, seeing such terrible disasters, and yet unable to help.

In full daylight the fine ship was seen lying on the sand not far from the dry shore, quite dismasted, and beating on the ground with great violence. Indeed, it was wonderful she held together so long, and had

she not been almost new, and of very strong build, she must have broken up.

As it was, the hundreds of persons on shore could see the crew crowded on the deck and looking anxiously to them for assistance, yet expecting every moment to be overwhelmed by the breakers which were beating against them with undiminished fury.

At length, says the record, "the only boat that could be found large enough to attempt to launch on this tremendous surf was brought to the spot, and a midshipman (we have not learned his name) of the Preventive Service and six seamen in a moment volunteered their services to attempt to reach the ship."

Several endeavours were made, but each time the boat was swamped and the men were washed ashore. At last, the gallant little band worked their way almost outside the surf when a wave struck the boat on the starboard bow and upset her. The six seamen gained the shore, but, alas, the brave young officer fell a victim. He struggled hard with the waves, but the ship's crew on the one hand and the people on shore on the other had to witness his struggles and could not stretch out a hand to help. Finally, his strength became exhausted and he sank to rise no more.

A martyr to duty, to courage, and to humanity! Yes. But also a martyr to that lack of a lifeboat which would have carried him and his brave companions to the rescue of the crew.

At length Captain Manby's mortar apparatus was put into action; and a rope being sent on board, all of the remaining crew and passengers were brought on shore. They were, as might be supposed, quite

worn out; but while the passengers were taken to an inn, the officers and crew remained, hoping to save part of the cargo. In all human probability, had a lifeboat been at hand, not a life need have been lost; and occurrences such as this, showing even the value of Manby's mortar apparatus, must have had a great effect on the public mind in illustrating the need of establishing lifeboats and life-saving apparatus on the coasts.

After founding, with others, the Lifeboat Institution in 1824, Sir William Hillary returned to the Isle of Man. There he continued his great work. He had a staunch old veteran to help him, a coxswain, named Isaac Vondy, and in 1825 these two assisted to save sixty-two lives from a stranded ship named the 'City of Glasgow,' in Douglas Bay. Sir William was also instrumental in saving a score of lives from other vessels in the same year.

In 1826 this indefatigable man established a District Lifeboat Association, and its first boat was placed at Douglas Bay; another followed, at Castletown; a third, at Peel, in 1828; and a fourth in 1829, at Ramsey.

With his son, Sir William succeeded in saving numbers of other lives before his noble career closed. But he was seriously injured at the wreck of the mail steamer 'St. George,' on 20th November, 1830. The steamer was totally wrecked on St. Mary's Rock; but in the lifeboat Sir William took off the whole crew, numbering twenty-two persons. Together with three others, however, he was dashed overboard amidst the wreckage, and suffered the fracture of six of his ribs, his life being saved only with great difficulty.

A soldier on the battlefield is rightly rewarded for

deeds of bravery and of self-abnegation, and surely the heroic labours of such men as Sir William Hillary in the saving of life are worthy of honour as great. His true monument, however, is the Lifeboat Institution itself, the Institution which he assisted so largely to found, if, indeed, he should not be regarded as the actual founder, and which has saved so many thousands of lives in the course of its noble career.

Its receipts during the second year of its existence, 1825, amounted to £3392, about a third of its first year's income; and for fifteen following years the annual income never reached this total. And yet it profited by the liberal support of a few individuals.

In 1825 a Mr. Hecker, of Finsbury Square, gave it £1000, and another large donor was Mr. W. Prior, of Herne Hill, Camberwell, who gave it £1827. At the time of its second report it had assisted in the saving of 342 lives, either by its own apparatus, or by other appliances, for which it had given rewards.

Nevertheless, in the course of a few years, the Institution began to decline. Public interest was perhaps not sufficiently maintained. Sir William Hillary died, and after his decease the public subscribed less, and the agents showed less zeal. In fact, between the years 1841 and 1850 no appeal whatever was made to the public, and the receipts for the year 1849–50 reached only £354, 17s. 6d.

On the other hand, many of the boats had decayed, and some of the local associations were dead. The fact seems almost incredible, but in 1849 there were scarcely a dozen absolutely efficient lifeboats to be found on our coasts. Even in the Isle of Man, at the beginning of 1851, the four placed there by Sir

William Hillary had been allowed to decay, and there was practically no lifeboat for service.

Yet nominally at this time, the beginning of 1851, England and Wales, with a sea-coast of some 2000 miles, had seventy-five lifeboats, many inefficient; Ireland, with a coast of 1400 miles, only eight lifeboats, very inefficient; and Scotland, with her 1500 miles of coast, a like number, some being quite unfit for use. In Orkney and Shetland not one was to be found.

These numbers give a total of ninety-one lifeboats on our coasts in 1851; of these, only thirty were the property of the Institution, and very few were in good repair. One cause of the decay of lifeboats may perhaps be found in the fact that on stations where wrecks were happily rare, the boats remained out of water for a long time, so that when they were required, the men had no faith in them and preferred their own.

Such was the state of things in the Lifeboat world about the years 1849 to 1851; and it shows a great reaction after the auspicious start of the Lifeboat Institution. But even then new life was stirring. On 4th December, 1849, had occurred another terrible accident, which shocked and aroused the public. Once more disaster was the herald of great effort, and out of evil came great good.

CHAPTER IV.

AN EPOCH-MAKING DISASTER—THE SELF-RIGHTING LIFEBOAT APPEARS.

THE scene of the story again changes to South Shields.

On the morning of Tuesday, 4th December, 1849, between the hours of nine and ten o'clock, a light brig of Littlehampton, named the 'Betsey,' was seen taking the bar at the mouth of the river Tyne, the tide being about half-ebb, but a strong sea running at the time.

For some days a strong gale had been blowing from the east, occasioning considerable loss to shipping on the coast, and watchful eyes were beholding the harbour. The brig was soon observed to strike on the fatal Herd Sands; and at once the lifeboat was made ready, and twenty-four South Shields pilots climbed on board. They rowed down to the brig, and lay alongside, starboard of the vessel, the bows of which faced the sea.

A rope was now thrown from the brig and caught by the pilots, who fastened their boat by it to the vessel by the bow. But as the men were preparing

to take off the crew, a heavy sea broke round the bow, struck the boat on the larboard side, and, upsetting her, threw the boat's crew into the seething water.

The men plunged about in the sea, but the overturned boat was completely unmanageable; the rope broke and the boat drifted away, bottom upwards, three of the crew being able however to climb on the overturned craft. Bravely the men struggled in the flood, but the crew of the shipwrecked brig had the terrible anguish of seeing the gallant men who had come to save them, sink one after the other into the tumultuous waves.

Only four out of the boat's crew of twenty-four were saved. The three on the overturned boat were picked up by a second lifeboat which put out to their aid; while the fourth man struggled on board the wrecked vessel. With the crew of the brig he was eventually saved by another lifeboat as the tide receded.

When the second lifeboat returned to South Shields, one of the most heart-rending scenes occurred which was ever witnessed on that storm-beaten coast. Wild-eyed wives and mothers, and grief-stricken fathers and relatives rushed down to the water's edge to learn who was saved and who was lost. And when the loss was made known, the wail of women and the choking sobs of strong men mingled with the scream of the gale and the distant roar of the cruel sea. Sturdy men, who had withstood many a stormy peril and had fought their way unquestioning through many a stiff north-easter, were overcome with grief at the terrible news.

The overturned boat had drifted south, and the second lifeboat put out yet again at imminent risk of the lives of the crew, hoping that some of the missing men might be beneath the boat. The craft reached her among the breakers, and got her in toward the beach, some of those on shore dashing in up to the neck to haul her in. But, alas, nothing was found save the scarf of one of the men. It had been fastened around the thwart and attached to his wrist, but the knot had broken and he had gone. The best swimmer could not live in such a sea. Most of the drowned men left large families and numerous relatives, and a liberal subscription was commenced at South Shields for the widows and orphans of the terrible calamity.

This disaster proved an epoch-making event in lifeboat history. The overturned boat was built at South Shields in 1842, and measured thirty-four feet long over all, eleven feet four inches broad, and nearly four feet deep amidships. She rowed fourteen oars double-banked, and was steered with an oar at either end. "She was cork all round outside about two feet three inches deep," said one of the superintendents at the inquest. She had air-boxes at each end and along the sides. The witness—John Milburn—had often been out in her in worse seas and had had no reason to find fault. One day four crews were saved by her. She was examined every day by the superintendent, and she was spacious enough to carry forty or fifty men. Yet in a moment this large boat was overturned, and twenty experienced boatmen were drowned.

Moreover, this disaster did not stand alone. It

was, perhaps, the worst, and attracted public attention the most, but there were others. Thus, in the storms of 1846 alone, no fewer than thirty-nine vessels went ashore in Hartlepool Bay. These, together with the growing loss of life from shipwrecks, led to renewed zeal in the lifeboat cause, and also to a very considerable improvement in the construction of the boat itself. We shall not be far wrong, however, if we trace this renewed effort and improved boat mainly to the Shields disaster. It was, so to speak, the torch that fired the explosion. As if to emphasise the need, no fewer than one hundred and thirty-four wrecks occurred on British coasts in March, 1850, an average of four per day.

In the same year, the late Prince Consort lent his valuable aid to the Lifeboat Institution; Her Majesty had been patron since she came to the throne in 1837, and the Prince, together with the late King of the Belgians, became vice-patrons. The Queen gave, in 1850, the sum of £100 to the funds, and has continued ever since to subscribe £50 annually. The Institution was re-organized and, about this time, the late Mr. Richard Lewis, a barrister, was appointed secretary; while in 1851, the fourth Duke of Northumberland, the 'good sailor duke,' as he has been called, accepted the presidency, and threw his whole heart and soul into the work.

From this time forward the prosperity of the Institution was remarkable. The tide had turned, and it now flowed high and full. Not only has money been forthcoming, but the work accomplished has been great and widespread.

A glance at the reports will show the marvellous

change. In 1849–50, the total income from subscriptions and donations was but £84; dividends on a capital of £9000 were £270, while a balance in hand of £476 gave a total of £830, which the committee might spend. The lives saved were about a hundred, and the expenditure was £590.

This was evidently the day of small things. Now compare these figures with the results for the year 1899, made public at the annual meeting on 14th March, 1900. The total receipts, excluding legacies, were £72,588, and would have been more, but for the urgent appeals to the public on account of the Transvaal War. The sum received in legacies during the year was £33,107, of which nearly £8000 was for specific purposes and trusts. The expenditure was nearly £86,000, including more than £34,000 for building, equipping, improving, and repairing lifeboats, carriages, houses and slipways. The total number of lives saved, for which the Institution granted rewards, was 609; of these 501 were rescued by the lifeboats, and 108 by shoreboats and other means; besides these rescues, the lifeboat crews were instrumental in saving twenty vessels. The total number of lives, for saving which the Institution has granted rewards since 1824, had risen by the end of the year 1899 to the great total of 41,842, and in several years has been over a thousand lives annually. And what can be more notable, than that while the total available income, including balance in 1849–50, was but £830; in 1899, including legacies and sums for specific purposes, it was nearly £107,000.

What has caused this great change. There are various reasons, no doubt; but a more urgent appeal

to the public, with better management in the general work and organization of the Institution are no doubt chiefly among them. The public cannot be expected to support a weak and ineffective organization, even if its objects are beyond dispute.

At the first reorganization of the Society, it was charged with the direct superintendence of all lifeboat work on the coasts, assisted by local committees. Periodical inspections were established, also quarterly exercise of crews, quarterly reports, and fixed rates of payment to coxswains and men. In 1851 also, the Institution began to place boats on new stations and replace old boats with new ones.

Among other changes made about this time was the transference of the Institution's work of providing for shipwrecked sailors, to another society. From 1839 the necessities of shipwrecked men were partially met by the Shipwrecked Fishermen and Mariners' Society, as well as by the Lifeboat Institution. The Mariners' Society had also placed a few lifeboats on the coast. In 1853, however, its directors suggested that its boats should be handed over to the Institution; while the Institution in its turn was to relegate the work of providing for shipwrecked persons entirely to the Society. The Institution was to alter its title to 'The Royal National Lifeboat Institution, founded in 1824 for the preservation of life from shipwreck.' The arrangement was agreed to and was definitely carried out in 1854, and has been maintained ever since.

Moreover, in 1855, the Board of Trade undertook the provision of the life-saving rocket apparatus on

the coast in conjunction with the coastguard service. These changes confined the Institution to its specific task of providing, maintaining, and supervising the lifeboat work itself; and the magnitude of that task at present may be realized when we say that whereas, in 1851, the Institution had only thirty boats, and very few of these in good repair, it had in 1899 no fewer than 290, for the efficiency of which it was responsible.

But one of the greatest changes was the remarkable improvement made in the construction of the lifeboat itself. In 1851 the Duke of Northumberland offered a prize of a hundred guineas for the best design or model of a lifeboat. The competitions were to be adjudicated upon by a special committee of experts, with the surveyor of the Navy as a final referee.

In response to this offer, no less than 280 models and designs were sent in, some coming from America, France, Holland, and Germany. They were deposited at Somerset House, in rooms lent by the Admiralty for the purpose. The chairman of the committee was Captain Washington, R.N., and for six months they worked hard at the task of selection.

After examining all the models and deciding what the special qualities of a lifeboat should be, including the power of self-righting, they then examined the specimens a second time, to decide upon the model which most nearly fulfilled the requirements.

Finally, the committee gave the prize to Mr. James Beeching, of Great Yarmouth, who, like Greathead, was a boat-builder. His model gained eighty-four

marks out of a maximum of a hundred. About fifty of the best models were shown in the Great Exhibition of 1851. The Duke of Northumberland had also offered a hundred guineas for the purpose of building a boat on the approved model, and Beeching began to construct a craft after his plan. She was thirty-six feet long and rowed twelve oars. She was the first self-righting lifeboat ever built.

This particular power was given her by means of water-ballast, which could be admitted into a tank or well at the bottom of the craft after she was afloat, and by raised air-cases at the two ends of the boat. She was also furnished with means for freeing herself readily from any sea-water that might dash on board. She was purchased by the Ramsgate Harbour Commissioners, and saved many valuable lives.

At first the committee seemed quite enthusiastic about Beeching's boat. "The crews," they said at the end of their report, "need no longer have a misgiving about their safety; that a thoroughly good lifeboat can be built, no longer admits of a doubt; and any builder who will construct after the lines shown in plate i. (Beeching's plan) or plate ii., may rest assured that he will turn out a boat that, if properly handled, need not fear to face any weather or sea."

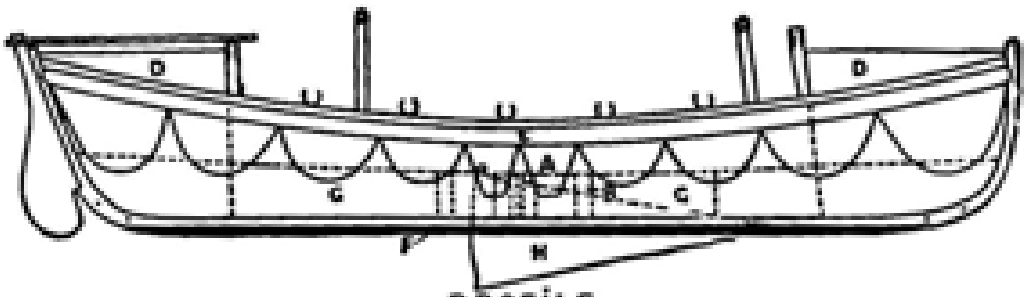
Nevertheless, in actual practice the principle of the water-ballast did not always work out satisfactorily. Beeching built several other boats on his plan, and three of them were overturned when carrying large sail in a heavy sea, the water-ballast not being properly secured. Other defects also developed, and altogether the type of boat did not fully satisfy the committee.

They therefore asked Mr. Peake, one of their number, and assistant master-shipwright at Woolwich Dockyard, to again examine all the models, and to design the best boat he could; combining in her the best qualities from each model.

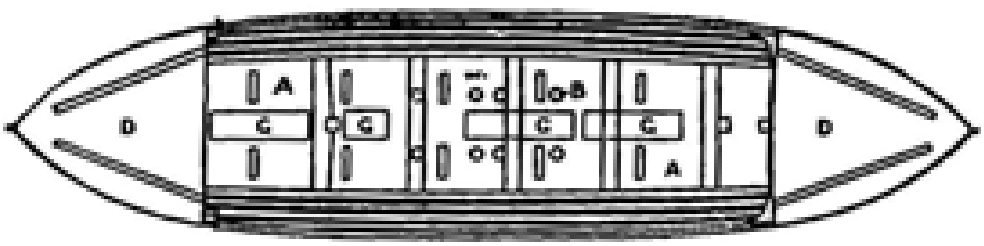
Mr. Peake did so with great success, adding features suggested by his own experience. Under his superintendence a boat was built at Woolwich, at the Government's expense, and was tried at Brighton on 3rd February, 1852, in a high sea and a strong south-westerly gale. She answered admirably. Still, modifications were subsequently made in the boat. The Duke of Northumberland was present at the trial, also Captain Washington, R.N., chairman of the committee, while Captain Ward, Inspector of Lifeboats, commanded the boat, which was manned by coastguardsmen of the district.

The right type of boat for the use of the Institution now seemed to be gained; and several others were built for the Society on the same design. Indeed, during the ten or eleven years, from 1852 to 1863, Messrs. Forrest of Limehouse, builders to the Institution, constructed about 160 self-righting lifeboats; about forty of which were for foreign governments or for the British Colonies. In the same term of years, the number of lifeboats connected with, or belonging to, the Institution, rose from thirty in 1852 to 124 in 1863, showing progress at the average rate of nearly ten a year.

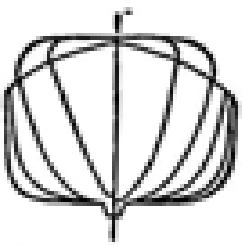
The Duke of Northumberland presented four of such boats, with boat-houses, carriages, buoys, and lifebelts for the crew, to four dangerous stations on the Northumbrian coast, the stipulation being that



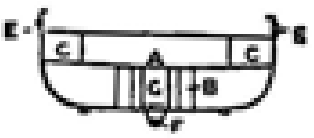
PROFILE.



DECK PLAN.



BODY PLAN.



MIDSHIP SECTION.

SELF-RIGHTING TYPE.

A.—Represents the deck.
B.—Relieving valves for the automatic discharge of water off the deck.
C.—Side air-cases above deck.
D.—End air-compartments, usually called "end-boxes," an important factor in "self-righting."
E.—The "wale" or "fender."
F.—Iron keel ballast, important in general stability and self-righting.
G.—Water-ballast tanks.
H.—Drop-keels.

local committees should, jointly with the Institution, maintain the boats in efficiency, and regularly exercise the crews every quarter.

Since 1852 Mr. Peake's boat has been modified and improved from time to time, but it has remained the type adopted by the Institution. Therefore, from the boats of Mr. Beeching and Mr. Peake has developed the famous and well-known self-righting lifeboat now so frequently seen on our coasts; and thus it is that the Institution's lifeboat cannot be regarded as the plan or the invention of any one individual, but is the result of several men's work.

As to its results, the self-righting boat—of which the Institution had in 1899 no fewer than 244 on the coast—have been launched nearly 9000 times on service in forty-five years, and have saved upwards of 16,000 lives. The boats have been capsized fifty-six times when out on service, but on only twenty-eight of those times has there been loss of life

What now are the main constructive principles of the Institution's self-righting lifeboat to-day?

It has a water-tight deck—or, as some persons might call it—a false or second bottom or air-chamber, as high as the water-line without when the boat is loaded, and of course assisting to give great buoyancy. Detached air-cases are also placed along the sides from the deck to the thwarts, while large air-cases, sometimes five to six feet long, are further built at the bow and stern of the boat, and greatly add to its buoyancy. Indeed, these air-cases are sufficient to float the boat, should the space below deck be filled with water. These cases also give power of self-righting, even if the boat should be in part stove in; while a heavy iron keel, weighing about nine hundredweight, and sometimes much more, which also assists in the

work of self-righting, controls and gives stability to the great buoyancy of the boat. The boats are ballasted with the iron keel, and in some instances with water tanks. The water in these tanks can be admitted or pumped out at pleasure.

Piercing the deck are six or more relieving tubes,

MAN WITH LIFEBELT.

fitted with valves, which only open downward. If, therefore, any sea-water break on board, it presses on the valves, which open immediately, and allow it to escape; but should the sea-water attempt to enter from beneath the boat, the valves close tight as an oyster, and prevent a drop from surging aboard.

The size of the boat is generally thirty-four feet long by seven and a half or eight feet broad, and she is rowed by ten oars, two abreast. Some self-righting boats are larger, as, for instance, the Sheringham boat, which is forty-one feet long, by nine and a quarter feet broad.

The crew of a ten-oared boat ordinarily consists of thirteen men, but the boat is large enough to carry forty persons, or even more. The buoyancy of the air-cases is sufficient to float more than eleven tons of weight.

These are the general proportions of the ordinary self-righting boat of the Institution, but it uses others, both larger and smaller, some carrying eight and some fourteen oars. The same proportions are, however, usually maintained.

The framework of the boat is, as we shall discover when we see the boats built, usually of Honduras mahogany, this being a wood which is remarkably sound and durable. There are two 'skins' or sets of planks, with glue and canvas placed between them, a method of building which adds to the elasticity and strength. The planks, moreover, are not laid longitudinally, but diagonally to the keel, passing, so to speak, beneath the boat: one set pointing one way and the other in the opposite direction, the strength gained by this method of building being very great.

The boats are also equipped with life-saving appliances. Short lines hang alongside in festoons, to which persons struggling in the surge can cling and help themselves on board. Strong but light lines are also kept, with grappling irons, or with a

short stick, weighted at the end, so that they can be thrown on board the wreck and become fastened to the rigging or masts.

But one of the most successful appliances was, and still remains, the lifebelt designed by the late Admiral (then Captain) John Ross Ward, Inspector of Lifeboats, and to the construction of which he devoted much attention. He caused a number of narrow, separate pieces of cork to be fastened to a strong wide belt of linen or of cloth called 'duck,' and so made as to reach from the arm-pits to the hips, or even lower. The corks were ranged in two rows, above and below the waist, a narrow space existing between the rows, the larger pieces being above, the smaller below the division. The belt was fastened to the body by strings around the waist and straps over the shoulders.

So useful were these belts that when, in February 1853, the Southwold lifeboat was overturned, the crew of fifteen men, all wearing the belts, were saved; but three gentlemen who had gone out also, but without belts, were lost, though one was an excellent swimmer.

A lifebelt has now lines of corks completely covering the chest, and sufficiently buoyant to support another person besides the wearer. It solves the problem of being light and yet strong, flexible, and buoyant, and so shaped as to admit of the full and free movement of the arms and chest, and power of breathing.

Other apparatus supplied to the boats consists of anchors and cables, life-buoys, launching appliances, lanterns, rockets, and carriages.

Carriages are furnished for nearly all but the largest boats, and the craft are kept at the boat-houses mounted on the vehicle ready for instant service. The carriage is not only useful for its obvious purpose of transporting the lifeboat along the shore to the most suitable spot for launching, the nearest to the wreck; but is also of great service for the purposes of the launch itself. Indeed, the boat can be launched

LIFEBOAT AND CARRIAGE.

with comparative ease from the carriage in a rough surf, when without a carriage it would frequently be almost impossible or very difficult to do so.

The keel and weight of the boat rests entirely on the rollers of the keelway fitted on the vehicle, and when it approaches the surf it is backed into the rough water, and thus forms a sloping plane down which the boat can glide with great swiftness. The boat is kept on the carriage with the bow at the

rear, and consequently faces the sea when it is backed into the breakers. Self-detaching launching ropes are hooked to each side of the boat's stern-post, and pass through sheaves, or rollers, at the rear of the carriage, and return to the beach, where the strong hands of willing helpers grasp the ropes, or horses are sometimes attached to them, to run the boat off into the water.

The actual launch is thus performed: when the carriage is run out to the surge the crew climb to their places, the coxswain with his hand on the helm watching for a favourable moment. If possible, the carriage is backed further into the surge. Then the coxswain gives the word; the launching ropes are heartily pulled; they run through the sheaves; the boat rushes over the rollers of the keelway and rapidly dashes into the surf; the crew give way at once, and the boat cuts through the surge before the breakers can dash her back on shore.

An incident, illustrating the great value of the transport carriage for conveying the boat to a spot for launching comparatively near the distressed vessel, which occurred at Eastbourne several years ago, may be given, based on the report in the 'Lifeboat Journal.'

Information was received at Eastbourne that a large ship was in a dangerous position off Beachy Head lighthouse, and flying a signal of distress. The crew of the 'William and Mary' lifeboat was mustered, and the boat on its carriage, drawn by seven horses, started for Birling Gap. At Meads, before mounting the hill to cross the Downs, three extra horses were procured, and with this royal

equipage of ten steeds she quickly mounted the hill and traversed the Downs to the Gap.

Here the men were obliged to take the boat off her carriage, as the incline down to the sea was sharp, and the Gap had to be widened to admit the boat. Some long pieces of wood, which were happily on the spot, were used, and the lifeboat was, after great exertions, got safely down to the beach.

Now another difficulty presented itself. A great gale was blowing from the south-west and a tremendous sea was dashing in. But the boat was launched, and after a very severe struggle against a hard sea the distressed vessel was reached. She was then about a mile from the shore, and opposite the Gap, labouring heavily, with sails torn, spars carried away, and two anchors down. The lifeboat anchored as close as possible to the ship and hauled the crew on board. They were very exhausted, and one had sustained a fracture of the ribs.

A storm of rain came on as the boat neared the ship, and both were hidden from the crowds of spectators on the cliffs. Then to their great relief the boat was seen returning. She took the beach in splendid style, almost close to the spot whence she started, and the rescued men were tended by the coastguard. The lifeboat was taken up the Gap with much difficulty, and returned home. When the weather had moderated, the ship, which was the 'New Brunswick' of Brevig, laden with deals and bound for West Hartlepool, was taken by a tug and lifeboat from Newhaven to that port.

The great utility of the carriage both for conveying the boat along the shore and for purposes of launching

will now be apparent. Indeed, the Institution has spared no pains to render the carriage as well nigh perfect as possible, and the present type has been the result of experience and experiment and of various trials even as the lifeboat itself has been.

In 1852 the late Colonel Nisbett Colquhoun, R.A., who was chairman of the Institution's carriage sub-committee, caused a carriage to be built from his own designs. It was supplied to four stations but then abandoned, because of its weight and cost. It became the type, however, of which later specimens have been modifications.

Lieut.-Colonel Tulloch, R.A., who succeeded Colonel Colquhoun at his death, caused one of such modified carriages to be built by Ransome & Sims, of Ipswich. It was lighter and cheaper; but after many trials had to be abandoned, because it was not sufficiently simple. The committee then asked Captain Ward, Inspector of Lifeboats, to investigate the subject and prepare a report. The result was a design of which the committee approved and which has become the model for the Institution's carriages ever since. At some stations, however—as for instance at Ramsgate Harbour—a carriage is not required either for conveyance or for launching. The boat is kept in the water and is taken out by a steam tug as near the wreck as possible.

It was in this manner then that the Institution solved some of the knotty problems before it, when about 1851, it took, as it were, a new lease of life, and started again on its upward career. From that date, it began to conduct its noble work with renewed energy, placing boats in new places, replacing old

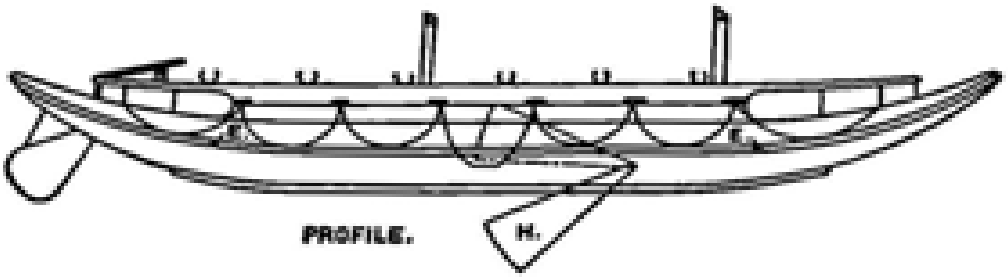
In a similar manner the great towns supported the Institution. They came to recognize the oneness of the nation in the lifeboat cause, and the claims of the movement upon them. The coast towns were not to be left to bear all the burden alone. So, quite a feature of lifeboat history has been the support accorded to the Institution by the great provincial towns. The names of some of the boats such as the 'Bradford' testify to this aspect of the movement; while Liverpool, Manchester, and Wolverhampton, Edinburgh and Glasgow, have not only presented boats to the Institution, but have become annual contributors to the funds.

Private beneficence has also aided the movement, some persons defraying the entire cost of a boat. This cost with the boathouse rises to about £1500, the expense of maintenance being about £125 annually. A notable instance of this private liberality occurred in April 1900, when the Padstow steam lifeboat having been wrecked, Mr. R. A. B. Preston, the donor of a rowing lifeboat sixteen years previously, offered to present another boat in place of the one wrecked, an offer gratefully accepted.

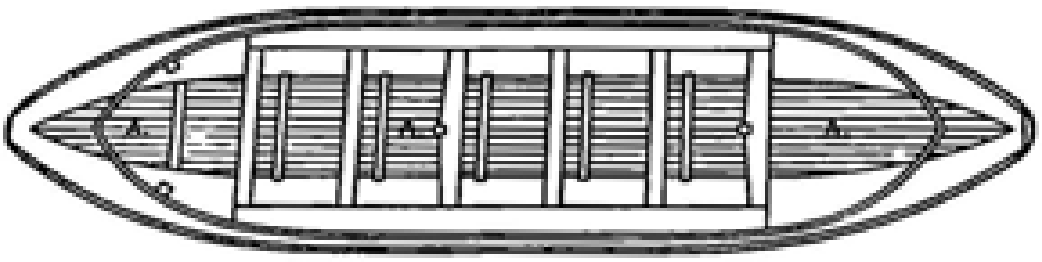
Thus the Institution and its work continued to grow. In 1852, on 1st March, appeared the first number of the 'Lifeboat Journal,' with the object of placing before the public the great work of the Institution, and the publication has been issued quarterly ever since. No doubt it has done much to inform the public mind on the subject, and to arouse and maintain interest.

In 1852 also was invented the 'tubular' lifeboat, one feature of which was its great stability. The boat was designed by two Welsh gentlemen, Messrs.

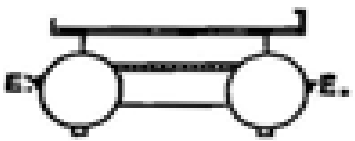
H. & H. T. Richardson—a father and son—and they first used one on a Welsh lake. They also sent a model to compete for the prize offered by the Duke



PROFILE.



PLAN.



MIDSHIP SECTION.

TUBULAR LIFEBOAT.

A.—Deck.
E.—Wale or fender.
H.—Drop-keel.

of Northumberland. Although Beeching won the prize, yet a tubular boat was built for the Institution, and was placed at Rhyl, in North Wales. Here

Greathead died in 1816, and an inscription was placed in St. Hilda's Church, South Shields, to his memory.

Wouldhave apparently obtained no reward. Some persons, however, strongly advocated his claims to the honour of the invention. The correspondent of the 'Gentleman's Magazine' aforesaid roundly declares Wouldhave to be the inventor, while Greathead, he says, was employed to build the boat. And he draws the following unpleasant picture:—

"When Mr. Greathead, in order to obtain a parliamentary reward, applied to the committee for a certificate of his being the inventor, it was flatly refused him. At length three of the committee out of five framed a kind of a certificate, purporting that he was the inventor of the curved keel, and was selected to build the first boat. The unfortunate Wouldhave, stung with a sense of the injustice done to him, imprudently made use of some hasty and intemperate expressions in remonstrating with the gentlemen, which they found it difficult to forgive, and which it is thought operated materially to his injury. Mr. Greathead, however, persevered, and has obtained a multitude of rewards; whilst the meritorious and industrious Wouldhave is compelled to sit in silent mortification, and see his rival claimant bedecked with honours, to which in justice himself alone is entitled."

This is disagreeable reading, and we cannot but believe that while Wouldhave is entitled to great credit for the use of the cork, yet in the minds of many, greater, or quite as great, importance was attached in those days to the shape of the curved

she was for many years successful, exhibiting great stability and saving several lives. She was, it is said, placed there because the boatmen of the town asked for a craft of that description. In 1896 another boat of the same type replaced the old one, after forty years' service.

But before the first of the two was placed at Rhyl, a full-sized tubular boat was built at Manchester at the expense of a Mr. Lees. She was forty feet long, and rowed fourteen oars. She voyaged all round the coast from Liverpool to Ramsgate or to the Thames, and was sold to the Portuguese Government and placed at Oporto.

Tubular lifeboats, therefore, cannot be said to have been entirely unsuccessful. The principle of their construction may thus be briefly described. It consists in placing two lengthy tubes parallel to each other, but a few feet separate and connected by a deck. Thus, an arched hollow space exists underneath. The tubes are, of course, closed at the ends, and the general shape might popularly be said to somewhat resemble a barge. The boat, however, is not self-righting, and lifeboatmen, as a rule, do not like the type.

From 1852 onward, the work of the Institution began to increase rapidly. Not only did many local authorities and associations transfer their boats and stations to its care, but the public began to support it with munificence. In 1854 Mr. Lowe of Shadwell gave it £1000, two years later Captain Hamilton Fitzgerald, R.N., bequeathed it £10,000, and Mr. Foster, another vice-president, gave £1000. In 1857 it had seventy lifeboats under its control,

and in the same year the Norfolk Association handed over its seven lifeboats to the Institution's care.

Step by step it made progress. In 1860 Her Majesty granted it a Charter of Incorporation. In the same year it placed standard barometers at lifeboat stations and other places, and daily indications were exhibited in the hope that by such means the seafaring public might be warned of impending storms. Later on, in 1882, with a similar object the Institution granted aneroid barometers to fishing vessels, and subsequently to coasters of 100 tons burden, at a substantial reduction from the retail price; so highly has this grant been appreciated that more than four thousand of these instruments were applied for up to 1900, and by heeding their warnings many wrecks have, it is believed, been averted.

Year by year, too, the number of boats controlled by the Institution continued to increase. The fifty-seven boats of 1857 became seventy in 1858, eighty-one in 1859, and in 1863 the fleet numbered 124. In this year the Institution took over the stations of the Lincolnshire Wreck Association, and additions were made each year for some years afterwards.

In 1883, on the death of Mr. Richard Lewis, who had been the secretary for thirty-three years, the Institution was for the second time in its existence reorganised under his successor, Mr. Charles Dibdin, a senior official transferred from one of the Revenue Departments of the State, and for many years the honorary secretary of the Civil Service Lifeboat Fund. For ten years previously to this the income of the Institution had been practically stationary. In 1882 the income from all sources was only £57,795, 11s. 9d.

Since then, however, it has nearly doubled, increasing largely and steadily to £106,936, 13s. in 1899, that amount having been three times exceeded, namely, in 1894, 1896, and 1898.

A very important transfer was effected in July 1894, when the stations of the Mersey Dock and Harbour Board were handed over to the Institution under sanction of the Board of Trade. So great has the increase been that in 1899, while the fleet of the Institution numbered about 295 boats, the lifeboats on the coast not the property of the Institution numbered only fifteen.

This great increase in numbers and efficiency, no doubt, formed one reason why the public supported the Institution with increasing liberality. So satisfactory did this support become that in 1869 the committee felt able to dispense with certain assistance they had for some years received from the Board of Trade. In 1854 the Board of Trade had undertaken to repay coxswains' salaries and the rewards and sums granted to the lifeboat crews for exercises and service. These payments were made by the Board from the Mercantile Marine Fund after the passing of the Merchant Shipping Act, the Board being anxious to help the Institution, but fifteen years afterwards it felt able to stand alone.

Among other means adopted for saving life, the Institution in 1863 drew up and distributed broadcast full instructions for restoring the apparently drowned. These instructions were adopted after complete inquiries among medical men and coroners throughout the kingdom; they are used in the Royal Navy and coastguard service, also in the

vessels and lighthouses of the Trinity House and by the St. John Ambulance Association. Still further, in 1865, the Institution built several 'Safety' fishing boats of some twenty tons burden, which gave much satisfaction on the Scottish coast. The type of boat recommended by the Institution is now largely used on the east coast of Scotland, and similar experiments have been tried on the west coast of Ireland. Before 1865, strange as it may seem, fishing boats were undecked. By the use of the improved type of boat recommended by the Institution, it is believed that the loss of life in fishing vessels has been greatly reduced. It must be borne in mind, however, that the types of fishing boats in vogue on different parts of the coast may be found to vary, somewhat different types having been, so to speak, evolved during a long course of years, the boatmen profiting by experience in storm and danger to construct or suggest a craft best suited to their requirements.

In the same category of efforts for preventing disaster must be placed the Bill which the Institution promoted, providing for the removal of wrecks likely to prove dangerous to lifeboats. The Bill which amended the Removal of Wrecks Act of 1877 became law in 1889, and has proved very beneficial. Quite as important has been the action of the Institution in urging the Government to provide telegraphic or telephonic communication between all coastguard and signal stations, and where necessary post offices near lifeboat stations, the object being to inform lifeboat authorities as soon as possible when, and where, they are required.

The need of such communication was very great. On one night alone, in March 1891, fifty-three men perished near the Start Light; when it is almost certain that had the keepers been able to communicate with the shore, many, if not all, of these lives would have been saved.

Then in December 1891 occurred the terrible wreck of the 'Enterkin' on the North Galloper Sands. She struck not far distant from the Galloper lightship and within a few miles of Ramsgate harbour; she fired rockets, which were answered by rockets from the lightship; but the light-keepers could not telegraph the exact position to the shore, and so although brave men put out to the wreck they could not find her, and the 'Enterkin' went to pieces, and twenty-five men were lost, while the rescue party were struggling to find her.

Such a story enforces its own moral without any comment. Mr. Pendarves Vivian, who was for long M.P. for West Cornwall, tried to raise the question in the House about 1875, and again a few years later; while the Associated Chambers of Commerce also stirred in the matter.

At length Sir Edward Birkbeck, Bart., the chairman of the Institution, gave notice, in April 1892, of a resolution on the subject in the House of Commons, at the request of the committee, and a resolution was passed in the House in April 1893. It declared the desirability of establishing such communications, and also that a Royal Commission be appointed to consider the subject of electric communication between lightships and isolated lighthouses and the shore. The final report of the Royal Commission was

published in the autumn of 1897, and many electric communications have been established which have proved of great benefit. Ere many years have passed it may be hoped the system will be complete, and that thus it may be possible to summon lifeboats with all speed to the scene of disaster.

All these varied efforts of the Institution may be said to belong to its preventive work, as distinct from the actual work of providing and manning the lifeboats; but the Institution was also engaged in the task of still endeavouring to improve the boats themselves.

Thus in 1884 it obtained the prize of £600, offered by the London International Fisheries Exhibition of the previous year, for the best coast lifeboat; and three years later, in 1887, it offered gold and silver medals for designs of a mechanically-propelled lifeboat suited to the service.

At first the result was disappointing. Numbers of drawings and of models were submitted, some coming from Great Britain, others from the Continent, and others again from the United States. They were submitted to three experts quite unconnected with the Institution, who, however, reported that not one was suited to the Institution's requirements. The three judges were Sir Frederick Bramwell, Sir Digby Murray of the Board of Trade, and Mr. John I. Thorneycroft.

Nevertheless, in the next year Messrs. R. & H. Green, the well-known ship-builders of Blackwall, submitted a model of a boat, since known popularly as a steam lifeboat, and which, after some modifications, was accepted.

The modifications were the result of conference between the committee of management and their professional officers, and the boat having been built, she was placed at Harwich in 1890, and enjoys the distinction of being the first steam or mechanically-propelled lifeboat ever constructed. She was named the 'Duke of Northumberland,' after the president of the Institution, and was built by Messrs. Green and engined by Messrs. Thorneycroft. She is now stationed at Holyhead.

The boat is exceedingly interesting as being a practical solution of a problem which for long had perplexed engineers, and was regarded as well-nigh insuperable. The propulsion of a lifeboat in very stormy seas by paddle wheels or 'screws,' according to what may now be called an ordinary method, was obviously most difficult, and was in that instance put aside as impracticable. The solution was at that time sought in another manner, namely, by the use of water-power or pressure to yield the necessary force; and it was an application of this power that was successful.

The proper designation of the craft is therefore a hydraulic steam lifeboat, a title which has been shortened and popularised into the term steam lifeboat; the steam, however, being used to operate a turbine or water-wheel, or, in some subsequent boats, centrifugal pumps.

The propelling machinery may thus be described:—It consisted of a compound horizontal engine, surface-condensing, and having about 170 horse-power, utilised to drive an almost horizontal turbine about two and a half feet in diameter. This turbine

drew water through a vertical inlet amidships, and delivered it through two outlets in the boat's sides. The violent ejection of a jet of water propels the boat along, even as a rocket is shot upward by its rush of fire.

The boiler was one of Thorneycroft's water-tube type, giving a large heating surface with a comparatively small grate surface. The boat was fifty feet long, twelve feet beam, and when loaded at three and a half feet draught her displacement was twenty-three tons. She was subjected to several trials, one being a trip from Harwich to Holyhead, a distance of a thousand miles, and stood the test quite satisfactorily. At Harwich she rendered excellent service in saving many lives and much property.

The success of this boat led to the construction of others. In 1893-94 Messrs. Green built two others: one for the Lifeboat Institution, and the other for the Lifeboat Institution of South Holland. They were sister vessels, and were a little larger than the 'Duke of Northumberland.' Their length was fifty-three feet, beam sixteen feet, and depth five and a half feet. They could float in slightly shallower water, however, their draught being only three and a quarter feet, while their loaded displacement giving this draught was thirty tons. They could carry nearly forty passengers, also four tons of coal and half a ton of fresh water in the reserve tanks.

Some improvement was made in the machinery. Instead of one turbine and inlet, the new vessels were each furnished with two vertical centrifugal pumps, one placed on either side of the vessel and driven direct from the crank-shaft of a compound, direct-

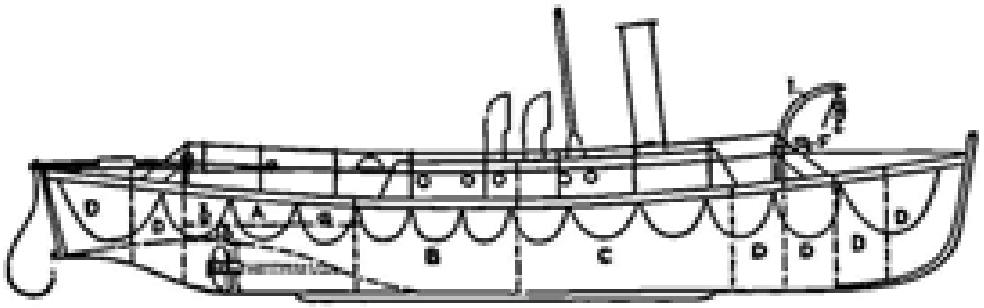
acting steam engine of 200 horse-power. The go-ahead outlets were placed in the bottom of the boat, and the go-astern outlets in the sides, and connected to the pumps by pipes. The vessels, therefore, are propelled through the sea by ejecting water forcibly through pipes.

A most valuable improvement appeared in these boats in the shape of a lateral or side propulsion, enabling the vessel to be prevented from colliding against a wreck, and also to move away when her work was done.

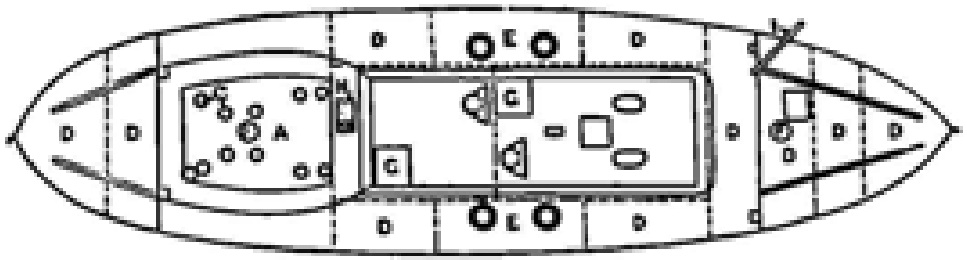
This lateral propulsion was obtained by means of a special side outlet, patented in England and abroad by Mr. J. F. Green, and enabling the water to be discharged on the side nearest the wreck, and thus to push the boat away, so to speak, should collision seem imminent. The boilers were of the water-tube type, and all the propelling machinery was fitted by Messrs. John Penn & Sons, of Greenwich.

Buoyancy was very carefully considered, and the vessels were, moreover, divided into thirteen water-tight compartments. Should one be stove in, provision was made to connect it with the inlets of the centrifugal pumps, so that the inflow of water could be used by the pumps for propelling the boats.

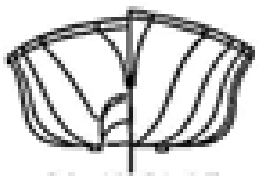
It is obvious that a steam lifeboat is of great service at ports or harbours, such as at Harwich and Holyhead, where the water is deep and the men in putting out to sea might have some distance to row. The first steam lifeboat has been stationed at Harwich, Holyhead, and also at New Brighton near Birkenhead, and has rendered good service. A second steam lifeboat, called the 'City of Glasgow,'



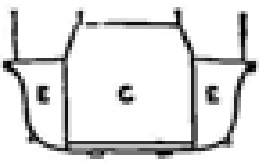
PROFILE.



DECK PLAN.



BODY PLAN



MIDSHIP SECTION.

THE SCREW STEAM LIFEBOAT.

A.—Cockpit.
a.—Deck.
b.—Propeller hatch.
c.—Relief valves.
B.—Engine room.
C.—Boiler room.
D.—Water-tight compartments.
E.—Coal bunkers.
F.—Capstan.
G.—Hatches to engine and boiler rooms.
H.—Cable reel.
I.—Anchor davit.

has followed the first at Harwich, and a third, named the 'Queen,' was built in Her Majesty's second jubilee year—1897—and is now at New Brighton.

In the following year screw steam lifeboats were placed at Padstow, on the Cornish coast, and at Grimsby, the screw propeller being placed in what may popularly be described as a large, somewhat arched, hollow space at the stern.

A terrible accident, however, wrecked the Padstow boat in April 1900. She was known as the 'James Stevens, No. 4,' and had been placed on the station only about fifteen or sixteen months. There was a strong feeling that a more powerful craft was required on this very dangerous coast than a rowing lifeboat, and in consequence the 'James Stevens' was kept here, as well as the 'Arab,' a rowing lifeboat.

During the evening of Wednesday, 11th April, a terrible gale sprang up, and the wind blew hard from the north-west. The mouth of Padstow harbour is exposed to the full fury of the Atlantic waves, and rendered dangerous by the presence of cruel rocks, known by such terribly significant and suggestive names as the Doom Bar and Hell Bay.

A two-masted boat, known as the 'Peace and Plenty,' had been fishing off the mouth of the Camel during the afternoon, but as the wind increased she ran under Staple Point, at the entrance to the harbour, for shelter. But, though protected here from the wind, she felt a tremendous current, while huge seas broke over her deck. So powerful were they that the mate and two men were swept overboard, but were hauled up by ropes.

Then as night was closing in, about nine o'clock, the disaster began. The boat dragged her anchor, or broke her cable, and drifted toward a terrible reef south of Hell Bay or the Greenaways.

Meanwhile the perilous position of the craft had been seen, and efforts were being made to save her. First, a crew of pilots had gone out to work her into the harbour, but before she was reached, she drifted off to the rocks. Then signals were flashed up for the lifeboats, and both the 'Arab' and the 'James Stevens' prepared to put off to the rescue.

The seas were very heavy, but the 'Arab' battled her way bravely through them, crossed the terrible bar where the seas raged mountains high, and actually got alongside the fishing-craft before she struck; when crash! a tremendous sea dashed over the lifeboat and knocked eight men overboard and broke eight oars.

The task was now to save the struggling men, and after great difficulty and in spite of considerable peril, they got aboard. But, alas, the 'Peace and Plenty' had crashed on the rocks, and lay amid the seething cauldron of surf raging around. The 'Arab' had actually cast anchor, and was about to take off the fishing crew when the calamity occurred.

She was far off now, and Samuel Brown, the coxswain, seeing his men so exhausted, decided to return, and signalled for the steam lifeboat.

But how to return? He endeavoured to slip his anchor, and was not successful. With fine seamanship, however, he kept his boat's head to the sea by adding a line to his cable and slowly paying it out, and by this means he was enabled to work the boat through the heaviest seas. Then waiting a favourable opportunity the boat's bow was veered round to the cliffs, and the crew, bruised and battered, but safe, were subsequently landed at a small cove. By this time

the steam lifeboat was forcing her way through the furious waves. Her fate, however, was far worse than that of her sister! About a mile from the shore, when turning to discover the exact position of the wreck, a gigantic wave struck the stern, while the bow was dipped low in the trough of the sea; and then broke on the bow and turned the vessel instantly completely over, and she drifted keel upward. Three of her crew were eventually dashed ashore, two of them in such an exhausted condition that they had to be carried to a neighbouring farmhouse. Four men, however, out of a crew of eleven, were battened down in the engine room, and they must, it is feared, have suffered a terrible death by the steam or the machinery; while four other men of the crew also lost their lives.

As for the men of the fishing vessel, several were saved by the Trebethedick Rocket Apparatus. Seeing the terrible state of affairs, the Rocket Brigade had got down the cliffs and carried their gear over the perilous rocks below. After firing six rockets, one was sent over the wreck and conducted a line over it, and soon after eleven o'clock four of the crew were rescued, one being a lad of about fifteen. One man put on a cork jacket and leaped into the sea, and after being severely knocked about by the tumultuous waves, was hurled on shore. Three, however, of the fisher boat's crew were drowned, which, with the eight of the steam lifeboat complement, numbered eleven lives lost on that fatal night. Both the 'Peace and Plenty' and the 'James Stevens' were dashed on the rocks and became total wrecks. Four of the drowned lifeboatmen left widows and large families, and the

Lifeboat Institution, expressing deep regret at the terrible calamity, sent a cheque for £1000 toward the fund which was speedily raised for their benefit.

It is a sad story and one which tells an incident happily of rare occurrence, for fatal accidents to lifeboats are very infrequent.

The survivors of the 'James Stevens' declare there was no means of finding the fishing vessel in the dark, the captain not being able to burn lights as signals. The situation on board the lifeboat as well as on the wreck must have been terrible. The lifeboat was in a tremendous sea, battling her way and yet unable to discover the surf-beaten wreck of which she was in search. Had she been able to see the fishing vessel she would, it is thought, have been able to steer fairly straight towards her and have saved the crew. The Board of Trade inquiry fully exonerated the Institution and the crew from any blame in the matter.

The suitability of screw steam lifeboats for their dangerous work is no doubt a matter for experts and for lifeboatmen themselves. In placing a new boat, the committee of the Institution permit the coxswain and crew to select the special type of boat provided, but it is obviously probable that the terrible disaster at Padstow may raise a prejudice against such boats, and prevent their greater use.

Let us, however, take a lifeboat trip round the coast, and glance at various types of lifeboats now in use.

CHAPTER VI.

A LIFEBOAT TRIP ROUND THE COAST—VARIOUS TYPES OF LIFEBOAT—WHAT IS THE IDEAL?

AT the close of the year 1899 there were no fewer than eight different types of lifeboat stationed on the British coasts. Let us, in imagination, row round the shores and note the differences.

These types have been developed to suit the special requirements of different parts of the coast, or to meet the preferences of the men. They indicate not only the anxiety of the Institution to meet all such reasonable wishes, but also the desire to adapt its life-saving appliances to varying needs, to improve its apparatus, and to render the entire service as efficient as possible. A consideration of these varying types in actual use will be interesting and instructive.

First must stand the Institution's self-righting—or S.-R.—type, so familiar to visitors to the seaside, and in such general use all round the shores of the United Kingdom. Some of these boats have water-ballast, enclosed in tanks, while others are without this feature, but have a heavy iron keel; in fact, the

heavy keel and the water-ballast are optional and variable according to the peculiar needs of the station where the boat is to be engaged, and in deference to the wishes of the crews. The water, it must be remembered, can be admitted or pumped out at pleasure.

Many of the boats have also drop-keels of varying size and weight and somewhat triangular in shape, which can be lowered at will beneath the usual keel, and add substantially to the 'grip' of the boat on the water. All of the boats, however, are fitted with the huge end-cases which are such conspicuous features of this class of boat, and form such an important factor in the self-righting quality of the craft. The heavy iron keel, also, is important for self-righting and for general stability.

All enclosed compartments are ventilated automatically by valves and pipes, specially designed for the purpose; while around the outside of the boat at the top just below the gunwale is the 'wale' or fender, which acts as additional protection. The great extent to which this class of boat is used is evidenced by the fact that out of 290 boats on the Institution's list on 31st December 1899, no fewer than 244 were self-righting.

The other seven types are not self-righting, but they endeavour to solve the problem in other ways.

The first of these is the Norfolk and Suffolk class, some specimens of which are exclusively sailing craft. They are large in size, measuring in some instances forty-six feet long and over twelve feet broad. They are heavily ballasted, having not only a heavy iron keel up to seventeen hundred-

weight—some, however, weighing less—but also a great quantity of water-ballast, which, as in the S.-R. boats, can be taken in or let out at pleasure.

This type has been in use on the east coast for many years, and has, no doubt, been developed by the special requirements of its work. It is suited to shallower water than the self-righting type. Further, not only are the seas on the east coast very heavy, but the boats have often to beat to windward against furious gales some distance out from the shore. Wrecks occur on the various dangerous sandbanks at some distance from the coast, and it is held to be necessary that the boat should sit deep in the water and be well ballasted, or it would too much resemble a cork, to be tossed hither and thither on the tumultuous waves, and perhaps so unstable as to be frequently capsized.

As it is, the stability of these boats is firmly trusted by the crews, and they claim that the craft cannot be capsized. Being so heavily ballasted and driven along by powerful sails, they plough their way deeply through every sea. Huge waves break over them and submerge the crews, but they are protected from being washed overboard by strong ropes passed through iron stanchions placed round the vessel.

The great weight of the boat and ballast would present a serious difficulty in launching if the ballast were not quickly removable: hence the use of water ballast. Further, the great size of the larger ones would prevent them from being manageable in a heavy sea by oars alone.

The water-ballast is taken into the boat by the

same holes which are used for the self-emptying of the craft, the valves or plugs closing them being opened just before leaving the shore. On launching the boat the water rushes in, and a large quantity is allowed to flow on board. The boat is fitted with air-cases at the bow and stern and along the sides up to the thwarts, while the water fills up the unoccupied space. The weight of water varies on these boats from over five to nearly seven tons. Additional buoyancy is gained by a very large cork or hollow fender or wale running along the outside of the boat.

Accidents have occasionally occurred from injudicious management of the valves. In 1858 the Southwold boat was upset from this cause. The boat was returning from exercise when, before reaching the surf, the crew, thinking they were sufficiently near home, closed the plugs and pumped out a quantity of water. The boat plunged into the surf still under sail, when the sea, following after her, struck the stern and lifted it high; the water still left in the boat was not sufficient in quantity and weight to prevent the boat from being lifted, but ran to the bows and submerged it; the boat swung round across the surf, and was at once overturned; the masts were smashed against the bottom, and the vessel, not being self-righting, remained overturned. The crew of fifteen were saved by their lifebelts, but three amateurs, not wearing the lifebelts, were drowned.

The disaster shows that a little water-ballast may be a dangerous thing, but it is argued, and not without reason, that sufficient water-ballast up

to the plane of flotation so weights the boat that it cannot be capsized; it is not necessary, says the argument, to be self-righting because it cannot be overturned. Unfortunately, these boats have, on very rare occasions, capsized. Thus an accident occurred to the Aldeburgh lifeboat when out on service on 7th December, 1899. She put forth in response to signals, when a heavy curling breaker roared its way along and, turning the boat over, six out of the eighteen of her crew were drowned.

She was a large boat, specially built for the crew, according to their selection, and had been instrumental in rescuing 152 lives. The men had the greatest confidence in the craft, and the Board of Trade, after a careful inquiry, reported that she was suitable for her work, and was properly equipped. The report also stated that she was in good condition on leaving the shore, and was carefully navigated by a most competent and experienced coxswain.

It would appear, therefore, that the accident was one of those very rare occurrences that no human foresight could control; and it must he owned that disasters to this type of boat are very infrequent.

A few of these boats are sufficiently small to be managed by oars, but the majority are sailing vessels. They have two drop-keels, in addition to their stationary iron keel; also relieving valves for the automatic discharge of water off the deck. There are eighteen boats of this type on the coast, and they are the most numerous class next to the self-righting type.

A fine specimen of the Norfolk and Suffolk type—the 'N and S' as they are called for the sake of

THE FALLING LIFEBOAT.—NORFOLK AND SUFFOLK TYPE.

LIFEBOATMAN PREPARING TO THROW A LINE ON BOARD THE WRECK.

brevity—was placed at Southend in 1899. She is thirty-eight feet long and twelve feet broad. Clacton has a self-righting boat, and so has Walton. Harwich is furnished with a steam and also a self-righting boat, but when we reach Aldeburgh we have a Norfolk and Suffolk boat. Thorpeness and Dunwich have self-righting boats, but when we get to Southwold, then we are in the region of 'N and S' boats. Southwold has two of such boats, Kessingland has two, Lowestoft two, Gorleston has three, Pakefield—which comes before Lowestoft—has one, Yarmouth one, Caister two, and Winterton two, while Palling has one, and also a self-righting boat.

Pursuing our way northward, we find that Hasborough has a self-righting boat, but at Cromer we meet with another type, of which there are but three specimens in the service. They are known as the Cromer type.

This class resembles the 'N and S' type, but the bottom is not quite so flat, and the bow rises higher. The boat has no heavy iron keel, no end air-cases, but large side air-cases above deck, relieving tubes for automatic discharge of water from the deck, and large water-ballast tanks and a couple of masts. The three Cromer boats are thirty-five feet long, about ten feet broad, and are furnished with fourteen oars. They are stationed respectively at Cromer, Wells, and Blakeney, the two latter boats being a trifle broader than the boat at Cromer.

From Wells, northward, to Berwick-on-Tweed, are stationed no fewer than forty-seven boats, and all are of the self-righting type except the 'Grimsby, No. 2,' which is a steam screw boat. She is fifty-six feet

SELF-RIGHTING LIFEBOAT TAKEN IN TOW BY A TUG.—THE IDEAL METHOD.

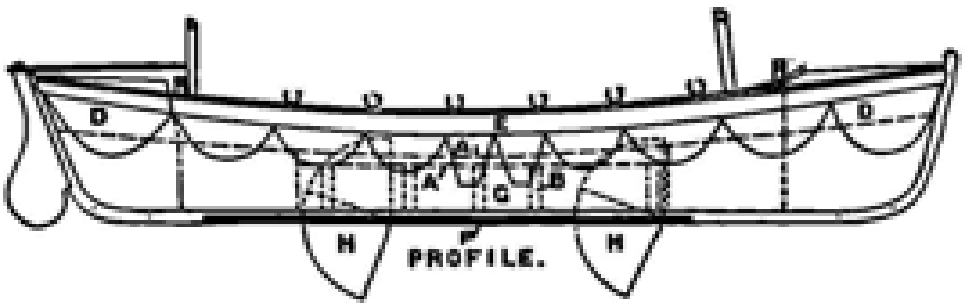
long by fourteen feet eight inches broad, and is known as the 'James Stevens, No. 3,' having been built by a legacy bequeathed by Mr. Stevens. Like the late Padstow boat, the screw-propeller is placed in a hollow or hatch at the stern of the boat. The vessel has four water-tight compartments at the bows, and two at the stern; and after the loss of the Padstow craft she was the only specimen of a screw-steam lifeboat on the coast.

The other three steam lifeboats are really hydraulic steam crafts, being propelled by the ejection of water. These boats are stationed at Harwich, at Holyhead, and at New Brighton respectively. They have rendered good service, but there is, as might be expected, a great loss of power in working them, and their rate of speed, in actual practice, reaches about eight to eight-and-a-half knots.

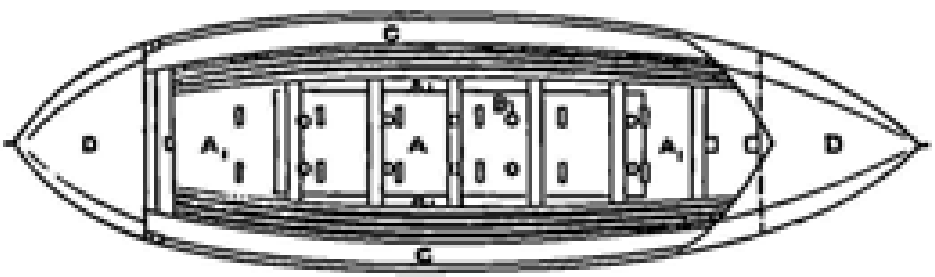
Nevertheless, mechanical propulsion of lifeboats is desirable at certain stations, if possible. The ideal provision for lifeboat work may be said to be realised at Ramsgate, where a splendid self-righting boat is placed, with a powerful steam tug to tow her out. The boat measures forty-two feet long by eleven feet broad, and is fitted with twelve oars. The expense, however, is necessarily very great, while few lifeboat stations have such a harbour as Smeaton & Rennie constructed at Ramsgate.

From the Thames southward, we find again a large number of the self-righting boats, varying from thirty-four to forty-four feet long and broad in proportion. At Ryde, in the Isle of Wight, is to be seen the only specimen of the 'Lamb and White' type. It is a comparatively small boat, dating from

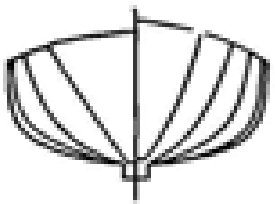
1869, rowing eight oars and measuring twenty-eight feet long by six-and-a-quarter feet broad. It was



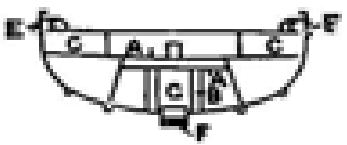
PROFILE.



DECK PLAN.



BODY PLAN



MIDSHIP SECTION.

THE WATSON TYPE.

A.—The deck.
B.—Relieving valves for the automatic discharge of water off the deck.
C.—Side air-cases above deck and thwarts.
D.—End air-compartments.
E.—Wale or fender.
F.—Iron keel ballast.
G.—Water-ballast tanks.
H.—Drop-keels.

transferred to the Institution with the Ryde station a few years ago.

At Poole, however, we come upon a type which ranks next to the Norfolk and Suffolk, in point of numbers. It is known as the 'Watson,' formerly the Southport type, and was designed by Mr. G. L. Watson, the consulting naval architect to the Lifeboat Institution. It is a large sailing lifeboat, specially designed for trials of boats held by the Institution in 1892, and is a modification of a large craft designed by Mr. Watson for the Southport station in 1887. It has a raised forward deck to throw off seas which may break on board, and is also furnished with a heavy iron keel, as ballast in the central part of the craft, also end air-compartments—though not so high as in the self-righting type—and deck and side air-cases above the deck and thwarts. It is, moreover, fitted with two triangular shaped drop-keels, also water ballast-tanks, a wale or fender, and relieving valves for the automatic discharge of water from the deck.

The boat for Poole and Bournemouth measures thirty-eight feet long by nine feet four inches broad, and rows twelve oars. It was built in 1892. A Watson type of boat of the same length, but a trifle broader, was placed in 1899 at Penzance, and these two are the only specimens of the type on the South coast, except one at St. Mary's in the Scilly Isles. To see the next Watson boat, we must sail past picturesque Wales to Pwllheli, in Carnarvonshire, she being the same size as the boat at Penzance, and built in 1898.

Wales has a number of the S.-R. boats; and Anglesey is well supplied, there being eleven stationed round the island including two at Holyhead All these are of the self-righting type, with the exception

of the hydraulic steam lifeboat at that port. Holyhead has also a self-righting boat.

Coming round toward Liverpool, however, we find more boats of the Watson type. There is one at New Brighton together with the 'Queen,' the hydraulic steam lifeboat. There is one at Southport, together with one of the self-righting type. There is another at St. Anne's, as well as one of the self-righting boats, and there are also Watsons at Blackpool and Fleetwood. Crossing the Channel, we also find three Watsons in use in Ireland, at Howth (Co. Dublin), Kingstown, and at Tramore respectively. Altogether there are twelve boats of the Watson type on the coast.

Returning to the neighbourhood of Liverpool, we find a few boats of what is known as the Liverpool type. These boats, of which there are only half-a-dozen in the Institution's service, measure about thirty-five feet long, but are nine, nine-and-three-quarters, and ten feet broad. They have heavy iron keels, drop-keels, of a different shape from the Watson type, four separate water-ballast tanks, end air-compartments—but not so high as in the self-righting type—side air-cases above deck, relieving valves, and a wale or fender. Speaking generally, the Liverpool type is broader than the Watson, the usual measurement being thirty-five feet long by about ten feet broad; the boat, however, at Point of Ayr being thirty-five feet by nine feet broad. The Watson at Blackpool is, however, thirty-six feet long by eight feet ten inches broad. The iron keel of the Watson seems also much heavier in proportion, though shorter than on the Liverpool type.

The Liverpool type may be found at Hilbre Island and at Hoylake, both in Cheshire, at Formby in Lancashire, at Ardrossan in Ayrshire, and at Campbeltown in Argyllshire.

Compared generally with the self-righting boats, the Liverpool type is much broader in proportion to the length. Thus at Stornoway, a self-righting boat, thirty-four feet long, measures seven-and-a-half feet in breadth, and rows ten oars; while the Liverpool type at Campbeltown measures thirty-five feet long by ten feet broad, and rows twelve oars.

After leaving Campbeltown, we find self-righting boats round the Scottish coast, north and east to the point where Berwickshire unites with Northumberland. There are forty-four boats in Scotland, including some of the Western Islands, and all are of the self-righting type but the two Liverpools. In Ireland also, with the exception of a few Watsons, the thirty-five boats are all of the self-righting type.

We have, however, left at Rhyl, the only specimen of the tubular lifeboat in the Institution's fleet. The stem and stern are shaped alike, and slope outward greatly, and the craft, though devoid of an ordinary keel, is fitted with a drop-keel, while the sides are furnished with a wale or fender. The essential feature of the boat from which she derives her name is that of the two long, closed tubes running parallel to each other, but a few feet apart, and connected by a deck, leaving a hollow space between. Each tube has a slight projection running longitudinally beneath it, something as a keel might appear. The tubular lifeboat once stationed by the Institution at New Brighton has now been removed, the hydraulic steam

lifeboat and the Watson lifeboat now there having been placed on the station in 1897 and 1898 respectively. The dimensions of the present tubular boat at Rhyl are thirty-four feet in length by eight feet ten inches in breadth, while she rows twelve oars. Curious craft though the tubular may appear, yet she shows great stability and has rendered good service.

With this boat concludes our tour. The review is interesting and instructive, not only as illustrating once again the old proverb of 'many men, many minds,' but also as showing the various boats actually in use and the efforts made to render them absolutely efficient, and to suit various peculiarities of shore and sea.

Great buoyancy is needed in a lifeboat, but it also needs stability and a certain amount of weight, and if possible a suitable build for applying mechanical power to propel the craft through heavy seas. All boats connected with the Institution have provision for sailing, even the steam lifeboats being supplied with masts and sails.

A lifeboat is therefore to some extent a compromise between contradictory qualities. If too stout and stable she may be too clumsy and heavy; if too buoyant she may too much resemble a featherweight cork to be tossed hither and thither uselessly on the heavy seas. Breadth in proportion to length yields stability but interferes with speed and also with the power of self-righting.

A compromise has therefore to be struck and arrangements made, such as of drop-keels or centre-boards, ballast tanks and water valves, to arm the boat against the various dangers that may beset her in her perilous career.

But we may understand these things better and see much more that is interesting concerning the boats and their service, if we visit the great storeyard of the Institution, where the reserve boats are kept, where the new craft are tested, and where, as through a narrow channel, pass all the various equipments, the ropes, chains, masts, sails, lifebelts, and lanterns, for use at the numerous stations all round the coast.

Let us away then to Poplar.

CHAPTER VII.

THE LIFEBOAT AT HOME—A VISIT TO THE INSTITUTION'S STOREYARD.

"BROOMFIELD STREET! Lifeboat Stores! Oh, I dunno, I'm sure. You'd better ask agin."

We do ask again, and repeated questions do eventually bring some sort of direction; and at length, in a very retired corner of the huge metropolis, we find the Lifeboat Institution's storeyard. It is so quiet and so retired that the visitor, unless he have very explicit directions, may experience considerable difficulty in finding it.

"Difficulty!" exclaims one of the officials at the yard, when at last you do arrive, "I am not surprised. When I came here first, people in the next street did not know where it was."

Technically, no doubt, it is situated in Poplar, but you had better forget Poplar and think of Bromley —Bromley-by-Bow, we mean, not Bromley in Kent, and you may couple with it in your thoughts the Lea Cut. What is the Lea Cut? It is a canal, sometimes called also the Limehouse Cut, which passes the yard on its way to the Thames; and

unpromising as the prosaic sounding No. 27 Broomfield Street may appear for the address of such an establishment, it is, in fact, very admirably situated for its purpose.

In front, however, you see apparently a row of neat and comparatively small houses. One doorway bears the name-plate of the Institution; otherwise there is nothing particularly characteristic to inform the ordinary observer of the business within.

Once admitted, however, you forget the East-end streets, and seem in something like another world. You mount some steps with a rope for baluster, and you very soon find yourself amid numerous coils of various-sized new ropes, bales of sails, anchors and chains, while glancing through the windows at the back you see the familiar white and blue of the Institution's boats as they rest here on carriages, off duty and waiting to be repaired or refurnished for their hazardous work. Yonder, behind the barrier, is the Lea Cut. You suppose the boats come and go by the canal.

Some do, it is explained, but it is not necessary. The storeyard is situated near depôts of all the great railways, and a boat can easily be taken on a suitable carriage to the train. Indeed, most of the Institution's boats travel in that way.

On the left you notice large gates opening on a little side road, which, if you came westward, say from Bow Common Lane or Upper North Street, you may have already observed. The buildings also comprise two neat little cottages for officials of the storeyard, and a magnificent dog on the premises

would soon make unwelcome inquiries concerning any unauthorized intruders.

So then you have the whole plan before you.—Here are the lofts and floors filled in as orderly a manner as possible with all kinds of rigging, equipments, and stores of every kind for the boats and boat-houses; then the yard with the boats needing repair standing on their stocks or carriages; then the large shed containing new or reserve boats, gleaming with bright fresh paint; and finally, the Lea or Limehouse Cut, in which the boats may take their bath and splash about to show how cleverly and easily they can right themselves.

On the left hand side of the yard are the gates opening to the side road, while toward the right hand corner stand the gates which, being rolled back, disclose the canal.

Out of these gates, to right hand or to left, pass from time to time the large white and blue boats. They go from their quiet home here to their dangerous work. They pass to many different stations, some amid sand and shingle, some on bleak and wind-swept shores, some by hard and cruel rocks. They pass first to their boat-house on the beach, where, perchance, for days and months they sleep as it were in silence, lulled by the plashing and the murmur of the sea.

Then on a sudden flashes the signal, the alarm bell rings, there is a hurry of many feet, and this spick and span boat, resting so quietly, is launched into boiling surf and heavy, tumultuous waves, and in a minute finds herself fighting not only for her own life, but for the lives of her crew,

and of the shipwrecked souls she is struggling to save.

Imagine, then, if you can, the difference between this quiet yard with the stagnant canal and the lifeboats dozing here so peacefully in the sunshine, and the scenes of struggle and of tempest through which they have already passed, or will pass in the days to come.

We suppose that pretty well every lifeboat afloat has passed through this yard. There is the new Hunstanton lifeboat, brilliant in her white and blue paint, and, being of the self-righting type, fitted at stem and stern with the huge and high-built air-cases. Now that you see the boat on shore, and away from her boat-house and from the sea, you realize how large and high these air-cases are constructed, and how impossible it seems for a boat to remain keel upward perched on these cases, especially if the keel be heavy.

You board the boat and examine it. You notice the large side air-cases, as well as the end compartments, the thwarts, the self-emptying valves, which open at a touch from above, and would run off any water that falls on them, but close quite tight on any pressure from below. You notice the life-lines hanging in festoons around the sides, and the lines on board for the use of the crew themselves. Here, too, is the box for provisions; for not only the crew, but the persons rescued, may need support. Everything that ingenuity and experience can suggest seems furnished on a well-equipped lifeboat for the due performance of the work and supply of its needs.

Near by is 'Reserve No. 5,' a reserve boat ready to be sent at once to take the place of a similar craft at any station, should she be taken off duty through damage by accident, or need repair owing to length of service.

Here, too, you may see a boat of the Norfolk and Suffolk, or of the Watson, or of the Cromer type. You notice some differences in shape and construction. Her sides may appear much lower, and her beam much broader, while the end air-cases may be altogether absent, or certainly much smaller than in those of the self-righting type.

In another boat, which is unpainted, you can notice the strips of mahogany of which she is built, and observe their diagonal position, and how neatly they are placed together side by side. The discoloured boats outside the shed bring clearly before you the far-reaching operations of the Society. Here is one from Howth, in County Dublin, resting quietly side by side with one from New Romney, near desolate and dangerous Dungeness, in Kent; and here is one from Church Cove lying beside one from Bridlington Quay, in Yorkshire.

Even a cursory examination of the stores crowding the lofts shows how numerous are the requisites for furnishing a boat and boat-house with completeness. Everything is kept here save the explosives, such as mortars, rockets, and port-fires for signals, or for throwing lines on board a wreck. These explosives, or most of them, are kept at the makers', Messrs. C. T. Brock & Co., of Upper Norwood.

But as for the other things—their name is legion. Everything to fit up the boat-house and boat may

be said to pass through this establishment. Many things are literally sent from here, but on the other hand there is no need for every hundredweight of paint to be hauled inside the gates and then hauled out again. Such bulky goods may be sent to the station from the makers. But the orders and samples would pass through, and with some things even the actual goods themselves are despatched from these stores. So that when the coxswain or local secretary of any of the Institution's boats at any of their 290 stations requires anything for the due equipment, or adequate maintenance of the house or boat, application is made to the head office, and the stores are duly sent from this establishment. It is the narrow channel which widens and flows out and supplies the stations all over the kingdom.

In the pattern room you may see a microcosm of the whole. A pattern of every requirement is kept here, to be sent to the manufacturers, as samples by which goods are to be made. You would never think that a lifeboat and its house required so many and such various things. Anchors you can understand, but why cart grease?

Well, of course boats are frequently conveyed on carriages with wheels, and they are also slipped off 'ways' into the sea, and a little lubricant is often very valuable.

Then you ask, Why are these boards kept here? You have seen them in the storeroom outside.

The 'boards,' as you call them, are 'skids,' upon which the boat may slide over sand or shingle, or they may perhaps facilitate the wheels of the carriage in passing over the same difficult ground. Here are

various skids, single and double, also roller skids, and a turn-table for turning the boat's bow towards the sea after she has returned, so that she may be in position again for her next trip.

But what is this? you inquire; a cane with a heavy head? It resembles a life-preserver more than anything else you can call to mind. What can be the use of this weapon in a lifeboat store?

It is a life-preserver in another sense of the word, but not a weapon. It is a heaving cane, which the lifeboatman throws on a wreck with a line attached. The difficulty of getting a boat safely near a wreck with the sea surging around is often very great, and the heaving-cane with its line is a means of setting up communication between the two. Then, of course, there must be a tub in which the line can be kept and coiled ready to run out easily for service.

Shovels for clearing away sand; hatchets, axes, and numerous blocks through which ropes may be run; boat-house door locks and keys; stationery; harness for the horses to haul the lifeboat carriage; beach lanterns and hand lanterns for work on dark and stormy nights; marline spikes like thick, big needles with large eyelet holes; spanners and boat flags; oars of ash and fir, sweep oars for assisting in steering the boat; compasses, and candles to illuminate them, masts, veering lines, and chains of various kinds—all such diverse things are here; nearly 220 different items in fact, the names of which are all printed in a four-columned list for convenient reference as an order-form and for packing. Why! it is like the

warehouse of a huge business or the government of a small state.

But what is this? A drogue, you say. And what is a drogue? You see canvas and a wooden framework and rope; but they afford little explanation. The canvas when spread out resembles a cone-shaped bag, something like a long dunce's cap. The wider end is kept open by the wooden framework, and is attached by a line to the boat. When thrown out, the canvas bag floats, but yet grips the water as the boat pulls the mouth against the sea. The popular name of a drogue is a sea-anchor, and it is very useful in keeping a boat's head to the sea; when it has served its purpose it can be hauled in by means of a rope attached to the smaller end. Every lifeboat is furnished with one.

Metal anchors are here, of course, varying in weight from 56 lbs. to 112 lbs., also light 5 lb. grapnels; lifebuoys and lifebelts, with the long, medium, and short corks for the lifebelts; all kinds of rope, coiled in bundles, from running gear to cables, some twisted of white Italian hemp and some of Yacht Manilla; and while there is rope cable, there is also fine steel wire cable, and, at the other extreme of size, there are various kinds of twine, white and tarred.

All the ropes and chains are tested by hydraulic power, the trial to which they are subjected being the enormous strain of ten tons. They have to play their part in rough and stormy weather which will try their quality even to breaking point, and lives may hang upon their strength and endurance.

Out in the yard near the canal gates stands a

TESTING SELF-RIGHTING BOAT.

strong crane, lifting its stout arm above a weighing floor.

"That is where we test the boats," exclaims an official of the storehouse; "we can pick them up there, and swing them over the water and drop them down. Then we pull them over with a parbuckle and see if they will right themselves. We fill them up with deadmen and see if they float properly, load them up to the gunnel with heavy weights, and test them in every possible way."

The 'deadmen' are chiefly weights of iron cased over, and estimated at the rate of about eleven stone weight per man; they are kept in a large box on the quay near at hand. The canal is sixty feet wide at this spot, so there is ample room for splashing the boats about and watching their behaviour; while, as for weighing them, their heaviness indicates some of the stores—such as the size of the chains—which should be issued for their use. The larger boats are tested in the London docks.

Not far distant from the crane, lie on the ground a number of dilapidated ropes and other material. These are returns. Not only are the stores issued to the stations through this yard, but when they are no longer needed, or have become worn out they are returned here. Then, after inspection, such stores as cannot be used by the Institution are sold.

Among the great variety of goods, you may see in the lofts are the small model lifeboats used in demonstrations on behalf of the Institution. Thus every requisite is kept or sampled here, and they suggest the large and complex business to which

the management and maintenance of the entire Institution, with its fleet of nearly three hundred Lifeboats, has grown.

But whence come the boats? They are tested here and put through their paces to show what they can do. But where are they built?

CHAPTER VIII.

BUILDING A LIFEBOAT.

IF you were to follow the Lea Canal north-eastward from the Lifeboat Stores you would find that it led you to Bow Creek, and Bow Creek is the mouth of the River Lea, where, some distance southwards, it finds its way to the Thames.

On the banks of the Creek, where it joins the river at Blackwall, you would discover the extensive yards of the Thames Ironworks and Shipbuilding Company; and on one of the slipways to the Creek you would probably behold a brightly-painted blue and white lifeboat ready to be launched.

From the sheds behind resounds the noise of hammers, though not with such a din as in another department of the works close by, where hundreds of men are at work on the sides of a huge steel-plated ship; and through openings in the sheds you catch glimpses of the same bright blue and white of the lifeboats, and see skeletons and sides of the boats in various stages of construction.

They tell their own tale. This is evidently the birthplace of the lifeboats. This is the spot where

the famous craft of the Royal National Lifeboat Institution are being built. You look around. Here is the keel of one lying on its blocks, like a long rib of wood, bent upward at the end. Above the keel, and extending a few inches on either side of it lengthways, projects a thick plank, and from this keel and plank spring the sides; while above the plank is fixed another length of wood like the keel below, and called the keelson.

This laying of the keel, as it is called, is the beginning of the actual construction of the boat; but brains have been at work before. From the Lifeboat Institution have come all the plans and designs of the boat. Everything is depicted first on paper. In a small shed adjacent lies a long roll of brown paper, on which the plans of the boat are drawn out full size. Photographs of these are taken in white lines on a blue ground, and are of a more convenient size for carrying hither and thither about the sheds, and lying beside the men as they work. Everything has been thought out and calculated beforehand,—the thickness of the wood and the proportions of the various parts. The consequence is that everything proceeds according to a pre-arranged plan, and according to the details marked out on the sheet of designs.

After the keel has been laid, the next point is to fix the moulds. These are cross-section wooden frames, which are afterwards cut away or removed, but around which the side-planking or the skin of the boat is to be placed.

The sides of a lifeboat are constructed probably in a different manner from that of any other craft

afloat. They are built up of two skins, or layers of mahogany planks, with glued canvas or calico placed between, and they are placed diagonally from the keel, one skin turning toward the stem, and the other toward the stern of the boat.

Generally speaking, the planks on the sides of a boat are laid lengthways, straight from stem to stern. But in the lifeboat the planks spring upwards, as it were, from the keel to the gunwale—called popularly the gunnel—at the top of the boat's side, but they spring upwards in a diagonal direction. Thus the two layers of planks on the boat's side resemble a series of diagonal crosses or X's, the planks of the crosses being laid closely side by side, and thus it is almost impossible for one plank to be started out of its position by the heavy blows of the rough sea. A piece of the planking may be smashed or beaten in, but the chances of leakage and of successful attack upon any single plank are greatly diminished.

The boat has three continuous ribs running lengthwise from stem to stern—one for the deck, one for the thwarts or seats, and one at the top for the gunwale. There are further a number of inner supports or 'frames,' seventeen or eighteen of them in a boat forty-three feet long. These, together with the ribs, the seats, the deck and the various compartments for air or water-ballast, added to the shape and make of the sides, assist in giving stability to the structure, and tying it, so to speak, altogether.

Great care must be taken with the moulds to get them in exactly the correct position, as the boat is shaped and formed around them. When the first

skin of mahogany planks is in place they are covered with glue, and the calico is then stretched over them and ironed even as a laundry-maid would smooth out her linen. Over this prepared canvas the second skin or layer of planks is laid.

The mahogany planks are steamed to make them pliable, the long case full of steam for the planks being just outside the sheds. Mahogany is used as being a very sound and hard wood, while the system of building the planks in the boat diagonally, with the canvas and glue between, adds greatly to its elasticity and strength.

The air-cases are covered in a similar manner with glue, over which calico is stretched and ironed, while the wood of which they are made is of pine; elm is used for the keel and the keel plank, elm being a durable wood and able to withstand the alternations of being wet and dry. Outside, near the steam box, lies one of the heavy iron ballast keels for a Watson boat, and you are surprised to see its great size and weight. It looks big enough to sink a boat, until you remember the great buoyancy and broad, flat bottoms of these craft. The sides of the boat being built up, progress is then made with the interior fittings: the air-cases, the water-ballast tanks, the seats, and the valves. Here is a boat nearly finished, and the tanks have been covered with black varnish to hold water; in another boat close by, the tanks are filled with water in order to test their water-tight construction. The several air-cases are made separate, not less than fifteen cubic feet in capacity; they are of different shapes to fit their various positions in the boat, and being separate,

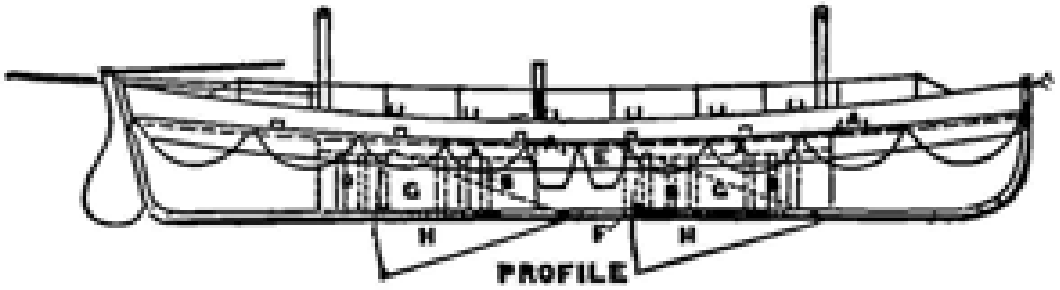
they cannot all fill with water and lose their buoyancy if one of their number should be broken.

The great size of the air compartments at the ends of the self-righting boats appears very striking when you see the craft being built. They look something like large caverns yawning open, fore and aft, and you are not surprised when surveying these, and also the general construction of the boat, that it is so buoyant as to float eleven and more tons of weight. In the centre above the keel, you can notice the narrow channel being built up of wood for water-ballast tanks, for such as are fitted with them. Side by side with the self-righting boats you see a couple of the Watson type. They are for Wexford and Dungarvan respectively. Now that you see the self-righting and the Watson types being built close together, you notice how much lower the end air-cases are in height, in the Watson boats than in those of the self-righting type.

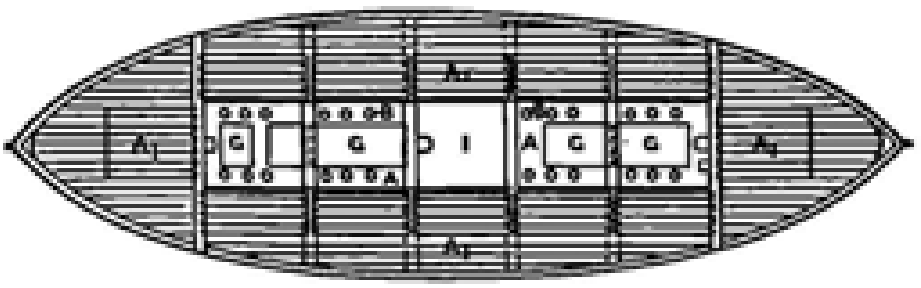
You notice also how much broader are the Watson boats. Thus, this forty-three feet long Watson boat measures twelve and a half feet beam, while on reference you find that the forty-five feet long self-righting boat at Harwich measures only eleven feet broad. The most usual size of a self-righting boat is, however, thirty-four feet long by seven and a half feet broad.

Specimens of various types of boat are being built here, and the next one you climb aboard may be one of the Norfolk and Suffolk type. These are about as broad in proportion as those of the Watson class. Thus a thirty-four feet long Norfolk

and Suffolk boat measures ten feet broad, that is two and a half feet broader than the same length

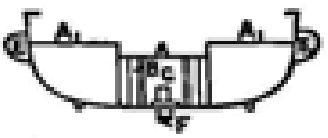


PROFILE



DECK PLAN

BODY PLAN



MIDSHIP SECTION

NORFOLK AND SUFFOLK TYPE.

A.—Deck.
A[1].—Side deck.
B.—Relieving valves for the automatic discharge of water off the deck.
E.—Wale or fender.
F.—Iron keel.
G.—Water-ballast tanks.
H.—Drop-keels.
I.—Cable-well.

ordinary self-righting boat; and a forty-three feet long Norfolk and Suffolk type has been built for

Kessingland, twelve and three-quarter feet in breadth.

The chief distinctive feature, however, which would probably strike you first on board a Norfolk and Suffolk boat is its shallowness. The seats seem placed just below the gunwale, and the least sea could apparently break aboard at once, and heavy seas such as a lifeboat would encounter would apparently dash the men overboard at once. To guard against this calamity a rope is rove through stanchions above the gunnel—the rope, of course, not being in place during the construction; while you must remember, of course, the men have lifelines and lifebelts. As for the quantities of water these boats must ship aboard, they are supplied with a remarkable number of relieving valves for the automatic discharge of such water. Thus you will notice that while a self-righting type of boat is constructed with eight of such valves, a Norfolk and Suffolk boat has no fewer than twenty-four. A Watson boat is fitted with eight, and a Liverpool type, of which one lies yonder on the slipway ready to be launched, has ten; a Cromer type, again, has ten. The Norfolk and Suffolk type is alone in being fitted with so many, owing, no doubt, to the shallowness of the build.

But they are fine, large, roomy boats; and the next point you will notice, as you examine them, is the large fender or wale projecting all round the sides, just below the top of the boat's sides. This fender, which you would perhaps not imagine to be so large until you actually saw it, is hollow, like a continuous air-case, or, it may be, is made of cork, but

it adds to the buoyancy of the boat. This type, it will be remembered, is not fitted with any end air-compartments, large or small. Whether the large fender may be regarded as a lineal descendant of Lionel Lukin's side air-cases we cannot say, but it remains a remarkable feature of the type. No other class has such large fenders, though the Liverpool and the Cromer boats have larger wales than the self-righting or the Watson type.

Then, again, on board the Norfolk and Suffolk boat, you observe the large water-ballast tanks. They are placed fore and aft of the cable well, which lies in the centre of the boat. They are not of the narrow shape such as those on board the self-righting type close by, but by comparison are broad and capacious, and can hold a great quantity of water. They can, however, be quickly pumped empty when necessary.

Being, popularly speaking, a very flat boat, the Norfolk and Suffolk type is more suited for work on shallower coasts than is the usual self-righting type. These Norfolk and Suffolk boats have treacherous sandbanks to surmount; they have to thrash over the Barber or the Scroby Sands in a roaring surf and terrible smother of rough water that would soon bring to grief a craft, however stout, that required a greater depth of sea. At low tide, indeed, the Barber becomes dry, so that men can walk upon it, and even in rough weather the sea may sink so low upon it as to be little more than a seething mass of boisterous foam. Having, therefore, to work often in shallow water, it is necessary these boats should be of shallow draught.

One of this type, the 'Beauchamp,' of Caister, had a terrible experience in November 1899. It may be premised that she was built in 1892, and was presented to the Institution by Sir R. Procter Beauchamp, Bart. She is not so large as some of the Norfolk and Suffolk class, measuring thirty-six feet long by ten and a half feet wide, instead of the forty, forty-four, or forty-six feet length of some of these boats.

It happened that at four o'clock in the morning of the 8th of November, watchmen at Caister, on the Norfolk coast, noticed signals of distress in the direction of the Cockle Sand; these signals were followed by others from the Cockle light-ship. A strong gale was blowing from the south-south-west, and the sea was very heavy; but, as soon as possible, the 'Beauchamp' was launched, and under storm canvas she proceeded across the Barber Sand and bore away toward the Cockle Sand.

The flare signals had now disappeared, but the shipwrecked crew had hoisted a small lantern to the mast; and, guided by this light, the lifeboatmen bore down to their assistance. As the boat drew nearer the cries of the wrecked crew could be distinctly heard, shouting for help.

Coxswain James Haylett now caused the lifeboat to be anchored and veered down towards the wreck, intending to cast a rope to her, but the after-part of the boat touched the ground and she became almost unmanageable; a tremendous sea then struck her on the port bow and she was dashed on to the deck of the wreck, which was partly submerged on the sand. The fore part of the wreck was above

water, and the crew of eight persons were clinging to this portion, and were drenched by the heavy seas which dashed over them.

Happily, the lifeboat got clear of the wreck, but her bow was smashed, and she had received other injuries. The lifeboatmen, however, were able to approach sufficiently near again to pass out a rope to the shipwrecked mariners and to take them off. One man and a boy had a very narrow escape, as in jumping from the wreck, they missed the boat and fell into the sea; but, notwithstanding the mountainous water which continually broke over the boat, they were grasped by the lifeboatmen and taken aboard. The crew were in a very exhausted condition, and ten minutes after they had been rescued, the wrecked vessel entirely disappeared.

In the darkness the coxswain thought it best to anchor the lifeboat, and when daylight was clear, the steam-tug 'Gleaner' was signalled for. She came and towed the lifeboat into Caister, where all were safely landed. The lifeboat was found to have sustained serious damage, and she was taken to Great Yarmouth for repair.

The wrecked vessel was the lugger 'Palestine,' of Banff. She was bound for Lowestoft from the fishing grounds, when she stranded on the Cockle Sand in the strong gale. It was most fortunate that when the flares went out the crew hoisted the lantern, for this light, though small, directed the lifeboat to their assistance, and thus avoided the terrible loss of time, —which might have proved fatal,—in searching for the wreck in the dense darkness.

In recognition of their specially admirable services

on this occasion the Management Committee of the Lifeboat Institution granted the lifeboatmen an extra reward, and they had also the pleasure of receiving the following letter from the rescued crew:—

"Mr. James H. Haylett,
Caister-on-Sea,
Coxswain of the Lifeboat 'Beauchamp.'

"DEAR SIR,—We, the undersigned, being the crew of the Scotch boat 'Palestine,' which was wrecked on the Cockle Sand during the night of Tuesday last, gratefully and sincerely tender to you and your brave crew our thanks for the courageous way in which you came to our rescue, and after many dangerous attempts succeeded eventually in saving one and all of us from a watery grave. We further beg to assure you that we shall remember your heroic services as long as we are spared, and would be much obliged if you would give publicity to this, our thanks, in the 'Yarmouth Independent.'

We are, gratefully yours,
(Signed) GEORGE MAIR, WILLIAM MAIR,
for ourselves and remainder of Crew."

This boat, the 'Beauchamp,' used her canvas in reaching the wreck, and the large lifeboats of the Norfolk and Suffolk and of the Watson types are exclusively sailing crafts. But as a matter of fact, all boats under the Institution have provision for sailing, and you may see the arrangements for stepping masts in all the various types. On the other hand, all the boats—except possibly the steamers—are also furnished with oars—eight, ten, twelve, and

fourteen in number. The difference is this,—that whereas the chief motive power of some boats is their sails, and the oars are only auxiliary; with others, the oars are principally used, and the sails only occasionally—if at all.

There are no fewer than twenty-one lifeboats now being built at these works. The crafts are in different stages of construction, from the bare keel and keelson up to the finished hull, ready for launching on the slipways. They vary in type as we have seen, but they also present features of great similarity.

They are buoyant, but at the same time stable; they have power to reach a wreck in heavy seas and in bad weather; they are also able to lie alongside a wreck in rough breakers, to take off the shipwrecked people aboard; and they are believed to be either not capsizable, or in the case of the self-righting boats, to right themselves if they should be capsized. Judged by their results, as well as by the great skill and ingenuity shown in their construction, and bearing their size in mind, they rank among the finest craft afloat.

One of the last pieces of work, in constructing them, is to test the water-ballast tanks. Water lies in these hollows for hours, to reveal if any unsoundness exist; and when the last finishing touches have been put on the whole structure, then the craft, bright in its fresh blue and white, is launched into the Creek for the Lifeboat Institution's Yard on its way to its life-saving work on the coast.

CHAPTER IX.

THE LIFEBOAT IN ACTION—SOME STORIES OF LIFEBOAT WORK.

In all weathers, and at all times, a lifeboat is liable to be called out to her work. The wind may be blowing great guns, the snow and rain may be lashing the face like whipcord, the heavy sea fog may be brooding like a visible miasma over the deep; but away must go the boat to the saving of life.

How does she know, in the darkness and the blinding storm, that she is wanted?

Signals by vessels in distress are generally made by 'flares.' A vessel finds herself damaged and helpless in a howling storm, or drifting to destruction on a reef or bank of sand, and she forthwith burns a light, or, to use seamen's language, she shows a flare.

It may be a blue light, vivid and brilliant, it may be a blanket steeped in naphtha or tar, or it may be a rocket. But if the day be dull, or the night black, what better means of attracting attention could be devised than that of burning a light?

Some vessels are furnished with small cannon, which boom out signals of distress at intervals, while

in the clear light of a fairly bright day they may trust to flag signals. A 'want assistance' signal is usually a ball hoisted over a square, and a rough and ready method of making this signal is by hauling up a bucket over a hatchway cover, or even to turn the British flag upside down. Sometimes a vessel is reduced to an old sheet for a signal. It was thus with the fishing cutter 'John' off Dungarvan, County Waterford, Ireland, on 8th January, 1892. The mast had fallen and injured several of her crew; but they rigged up a jury-mast and flew an old sheet from it. The signal was sufficient. The lifeboat 'William Dunville' was launched and she took off one man whose arm was badly injured, the other men deciding however to remain, as another craft with the owner on board came to their help.

There are generally watchers on the look-out, who will soon espy a craft in danger. Men on board the lightships, which are so often moored near dangerous sands; the coastguard ever on duty; and seafaring men of the neighbourhood, with eyes keen as hawks for anything unusual on the broad strip of sea within their far-reaching sight—one or all of these are likely to soon notice a ship in danger by day, even if she made no signal.

A reward of seven shillings is given by the Lifeboat Institution to the man who brings the first intelligence of a wreck, so placed as to be out of sight of a coastguard on duty, or of any other responsible look-out.

His alarm soon spreads, and the booming of a small cannon at night, or the hoisting of a flag by day, or maybe the ringing of a bell, soon calls the life-

boat crew together. The men run in hurriedly from all parts of the little village, and those who secure a

RINGING THE ALARM BELL.

lifebelt first, being registered as members of the crew, make up the number. Everything is soon ready; men don their lifebelts, clap on their sou'-westers and run out the boat on its carriage. The coxswain knows his work and knows his men, the horses are

harnessed, and away they go. They are bound for the best spot for launching near to the wreck.

At a lifeboat launch, you see the value of many of the stores supplied from headquarters; you see the great use of the transporting carriage, which, with boat on board, is being whirled along the beach by hurrying horses; you see the value of the skids and the grease for smoothing and oiling the ways; you see the use of the numerous lanterns and ropes and launching tackle. A score of helpers who seem to have fallen from the clouds, they have come so suddenly, are ready to assist; they help to back the carriage down to the water; the lifeboatmen are seated each in his place with his oar ready, the coxswain holds the steering lines in his hand and waits his chance. The water boils and foams and dashes around so that it would seem impossible the boat could ever force her way through the breakers, foaming and tumbling on the beach.

Now! The practised eye of the coxswain sees the right moment and he gives the word. Whizz, the launching ropes are pulled by the assistants, the boat rushes down to the tumultuous water, the crew dip their oars and struggle and strain at them for dear life; the buoyant boat rises like a bird, and while the broken, green and foamy waters dash on board, she cuts through them, shakes herself free from them, mounts the crest of the next great billow, and gathering speed from the disciplined and well-directed efforts of her stalwart crew, makes her way onward to that piteous signal yonder amid the tempestuous seas.

No matter what water break on board, it runs away through the self-emptying relief valves; no matter

what huge wave rise in front, the large bow air-case rises to meet it, or cuts through the top of it. Tossed hither and thither in a smother and a swelter of tumbling, thumping, dashing billows that seem to treat her like the veriest little cork, yet she lives, and she thrives, for she rises buoyant to the waves, and she fights her way nobly onward.

Well is it that the flare is still burning, well is it that the coxswain has clearly taken the bearings of the wreck before he started. Otherwise, how could he distinguish her in this storm of spray and rain, and amid these mountainous seas; so high they foam and dash, they seem to touch the sky.

But at last the boat draws near. Amid the scream of the gale can be heard the shout of the storm-tossed men she has come to save, and then amongst the foam and the spray can be seen the black masses of the broken ship. The wind, screeching through such rigging as is left, gives her a cry like a living creature in distress, and the roaring, dashing, angry seas that beat upon her, and thump and grind her on the sand-bank, give her a movement as though she really were alive.

The men—perchance half-a-dozen, or even more—have climbed up the broken masts as high as they can reach, and some have been tied to the rigging, to prevent them from falling. The space between the boat and the wreck is full of broken pieces of the ship, and huge yeasty waves dash hither and thither, while currents and eddies swirling round fore and aft of the wreck would catch the boat at any moment, if she should become unmanageable, and crush her against the wreck or the sand.

THE LIFEBOAT IN ACTION.

The actual rescue from a wreck is sometimes the most perilous of all a lifeboat's work. Sometimes heavy seas repeatedly wash the boat away from the wreck, in spite of all efforts. The 'Andrew Pickard' lifeboat of Wexford had a terrible experience of this kind when rescuing the crew of the ketch 'Marys' of Aberystwith on 16th January, 1892.

The boat went out in a whole gale of wind from the south-east to the 'Marys,' which was showing signals of distress; and after meeting a very heavy sea, which at times broke over the boat, and filled her to the thwarts, she reached the ketch.

The vessel had now become stranded, and repeatedly as the boat endeavoured to approach her, she was dashed away by the heavy seas, which broke over the ketch, and filled the boat. Again and again she approached, but was driven away. At length determined perseverance and skill triumphed, and after a hard struggle, the crew of three men, who were nearly exhausted, were rescued.

The lifeboat has to draw sufficiently near the wreck to take off the men, and yet she must keep a sufficient distance away, to prevent a collision. So, on such occasions, while part of the crew back the boat toward the wreck, others are ready to pull literally for dear life to take the boat out again. A line is thrown on board, sometimes by a grapnel and sometimes by a heaving cane. Some of the wrecked men try to jump into the boat, others may fall in the water, and are plucked out by the lifeboatmen, or they clutch the lifelines hanging in festoons round the boat; sometimes they are taken off by the jib-boom, or the coxswain may see fit to anchor the boat

a short distance from the wreck, and then veer down to it; sometimes the lifeboatmen have to board the vessel to take off exhausted members of the crew. Methods are various, but with the crew rescued, the lifeboat joyfully turns her head to shore, where an anxious crowd is eagerly awaiting her. Again and again cheers break forth as she is seen nearing the beach, and there are plenty of willing hands to help when she reaches home again. The shipwrecked men are generally tended at the Sailors' Home, or by agents of the Shipwrecked Mariners' Society.

The greatest determination and perseverance in reaching a wreck are often displayed by the lifeboatmen, even when the task seems hopeless.

A lifeboat at Holy Island, Northumberland, named the 'Grace Darling,' had a terrible experience on 6th March, 1883, which called forth all the dogged courage and repeated efforts of the men, and indicates the great difficulty sometimes met with in reaching a wreck. During a stormy northerly gale, the ketch 'Mary Tweedlie' of Berwick was observed driving before the wind in a very heavy sea; the whole bar and the sea being a mass of broken water. The lifeboat was launched, but the difficulty of reaching the vessel was so great that the crew were wrestling with the sea for more than three hours before they reached the ship.

The men, indeed, became almost exhausted, and on every occasion that they seemed sufficiently near to cast a line on board, a tremendous wave hurled the boat back again like a toy a hundred yards, or so, astern. Repeatedly the determined men laboured near, and repeatedly they were dashed back.

A SELF-RIGHTING BOAT RESCUING MEN OFF THE JIB-BOOM OF A WRECK.

a short distance from the wreck, and then veer down to it; sometimes the lifeboatmen have to board the vessel to take off exhausted members of the crew. Methods are various, but with the crew rescued, the lifeboat joyfully turns her head to shore, where an anxious crowd is eagerly awaiting her. Again and again cheers break forth as she is seen nearing the beach, and there are plenty of willing hands to help when she reaches home again. The shipwrecked men are generally tended at the Sailors' Home, or by agents of the Shipwrecked Mariners' Society.

The greatest determination and perseverance in reaching a wreck are often displayed by the lifeboatmen, even when the task seems hopeless.

A lifeboat at Holy Island, Northumberland, named the 'Grace Darling,' had a terrible experience on 6th March, 1883, which called forth all the dogged courage and repeated efforts of the men, and indicates the great difficulty sometimes met with in reaching a wreck. During a stormy northerly gale, the ketch 'Mary Tweedlie' of Berwick was observed driving before the wind in a very heavy sea; the whole bar and the sea being a mass of broken water. The lifeboat was launched, but the difficulty of reaching the vessel was so great that the crew were wrestling with the sea for more than three hours before they reached the ship.

The men, indeed, became almost exhausted, and on every occasion that they seemed sufficiently near to cast a line on board, a tremendous wave hurled the boat back again like a toy a hundred yards, or so, astern. Repeatedly the determined men laboured near, and repeatedly they were dashed back.

A SELF-RIGHTING BOAT RESCUING MEN OFF THE JIB-BOOM OF A WRECK.

These terrible rebuffs occurred about a dozen times, until at last the boatmen were able to get a rope fast to the ship and took off two men in a very exhausted and benumbed condition by a lifebuoy. One of the crew it was stated, belonging we presume to the ketch, had been struck on the head by a falling spar and had died shortly afterwards.

That was a sad experience, but a Brancaster crew had one even more sad. A vessel was seen on the morning of 18th April 1892 stranded on the Burnham Flats, but she suddenly disappeared. The lifeboat 'Lily Bird' of Brancaster, Norfolk, was launched at seven o'clock, but she did not sight the wreck when at sea until half-past eleven. The sea was heavy and a strong north wind was blowing, and she proceeded under canvas to the spot where the vessel had been seen, and when the men did sight her, she was on her beam ends, with the sea breaking over her.

A quarter of a mile distant the men saw a heartrending sight, which, however, with the assistance they could render, amply repaid them for their trouble. They found a man lashed to the mainmast-head. They rescued him, though with difficulty, and found that he was the owner and the captain of the vessel, which was the 'Felix' of Stettin, bound for Wisbech with oak wood. He was the sole survivor. His crew of seven had all perished, some falling from the rigging numbed with wet and cold, and others having been dashed overboard when the ship suddenly fell over. It is a sad tale of the sea, relieved, however, to some extent by the bravery and perseverance of the lifeboatmen. They meet with most varied

experiences, and are happily frequently able to rescue the whole of the shipwrecked crew.

A daring rescue was acccomplished by the lifeboat 'Mark Lane,' stationed at Gorleston, Suffolk, on 30th September 1899. She is a large boat, forty-six feet long by twelve feet nine inches broad, and of the Norfolk and Suffolk type. She is known as the 'Mark Lane,' the donors being the London Corn Exchange. The dangerous nature of the coast, and the quantity of shipping in the neighbourhood, is indicated by the fact that the Institution have three boats stationed here, Gorleston being, of course, near Great Yarmouth.

About five minutes past twelve at night the coastguard on duty informed the coxswain of the lifeboat that a vessel off Great Yarmouth was showing signals of distress. A heavy gale was blowing at the time from the south-east, and the sea also was very rough, while rain was falling, and the weather was thick.

But the crew of the 'Mark Lane' were summoned, and a message was sent by telephone for a steam tug to take out the boat. The tug, however, could not come until daylight.

Nothing daunted, the men endeavoured to sail out, but the boat was driven back, and they therefore made for Yarmouth. Here they were more fortunate, and found a tug to take the lifeboat out. She was thus able to proceed to the distressed vessel, which she found to be the schooner 'Lorne' of Aberystwith, bound for London. She had left Yarmouth only two days previously in ballast, but had been obliged to put back by stress of weather. She had anchored,

but the anchors were dragging, and the windlass was broken.

The lifeboat took off her crew of four men, and was then tugged to a windward position for the purpose of enabling her to sail back to her station. The report says that the lifeboatmen stated, the sea on the bar and for half a mile out was the heaviest they had ever experienced. In returning, with the drogue out, the sails furled down to a goose-wing, and the forward ballast tanks empty, one terrible sea pooped the boat; every man on board was under water, and it was estimated that the boat—the behaviour of which the men warmly praised—was carried by that sea a distance of at least two hundred yards. But she bravely arrived home safely with her gallant crew and the rescued men.

On another occasion, however, one of the Gorleston lifeboats got out without a steam tug. On 13th October, 1891, when a severe gale was blowing from the south and a heavy sea was running, signals of distress were observed at about seven o'clock in the evening, in the direction of the Scroby Sand. No steam tug could be obtained, and many persons expressed the opinion that any endeavour to cross the bar would prove disastrous.

After consulting two pilots, however, who volunteered to accompany him, the coxswain decided to make the attempt, for out there on the raging sea still flashed and flamed the signals of distress.

The lifeboat was therefore launched, and by the help of men on the pier was worked to the south pier head, when she went forward under double-reefed storm sails. But as she was crossing the bar a heavy

sea broke on board, and forced her head to the wind. She was so surrounded by the terrific waves that she was invisible to those on the pier, who feared the worst, but happily, to use the language of the report, 'she paid off, and got safely to sea.' When she reached the distressed vessel she found her to be the ketch 'Ada,' bound to Portsmouth from Seaham with coal, and insecurely anchored. The vessel had struck twice on the Scroby Sand, and the captain, finding the anchor would not hold and that the vessel was leaking, burned blankets steeped in paraffin and other things to attract attention. The water was still gaining, and the crew of four men were taken off into the lifeboat and landed at a quarter to four in the morning.

The action of the coxswain and of the two pilots and crew was highly eulogised by those who witnessed their gallant conduct. For a time very great anxiety was suffered on their behalf, for the boat could not be seen, and it was feared she might be driven on to a bank called the North Sand, when it was only too likely that she would have perished. Afterwards, when the weather moderated, the lifeboat put out again to the vessel and brought her into Yarmouth harbour.

An incident, showing the difficulties sometimes of taking off the crew from a wreck, occurred to the Aldeburgh lifeboat on 11th November 1891. On that day, when a great gale was blowing from the south-south-west, a barque was seen coming north. She had lost her main and mizzen masts, and a flag was flying from her forerigging. The lifeboat was quickly launched, but the vessel

struck on a sandbank in the bay and filled with water.

She proved to be the 'Winifred' of Laurvig, bound for London with wood, and she had grounded on the outer edge of the shoal, where a very heavy sea was breaking. The lifeboatmen, therefore, experienced great difficulty in rescuing the crew, some of them having to be hauled to the boat through the surf, and others were taken from the jib-boom. She was able, however, to return to her station with the whole crew of sixteen men and a pilot, while the ship became a total wreck.

For determined perseverance in reaching a wreck, the following incident, based upon a report in the 'Lifeboat Journal,' would be hard to beat. On the morning of 30th March 1883 it was reported at Holyhead that a ship had gone ashore on the Cymeran Beach, and the vessel being submerged and her mainmast carried away in a heavy south-westerly gale, the crew had taken refuge in the fore-rigging.

The lifeboat at Rhosneigir was the nearest, and put out to their assistance, but unfortunately she became disabled by the fracture of some rowing crutches, and one of the boat's crew was dashed overboard by the heavy sea, and only rescued with difficulty. The boat therefore was obliged to return.

The Holyhead lifeboat was then launched, and was presently taken in tow by the steamship 'George Elliot' as far as to the north-west of the South Stack. The boat then proceeded by sails until about half-past twelve, when she met a steam-tug called 'Challenger,' which towed her in the direction of the wrecked vessel.

But the sea was so heavy that the tug could not

steam within a mile of the wreck, and the lifeboat continuing her course by oars made three attempts to reach the wreck but failed, owing to the broken water and the heavy surf. The wind was rising, and as there was no spot to safely beach the boat she returned to Holyhead.

The Rhosneigir boat then made further attempts to reach the vessel, but she also failed, and efforts to save the shipwrecked men by the rocket apparatus were also unsuccessful.

The rescue of these men now seemed impossible. The Rhosneigir men were exhausted by their efforts, and Holyhead was some distance from the scene of the wreck. Nevertheless, it was suggested that the Holyhead men should come over to Rhosneigir and endeavour to reach the vessel in that boat. An application therefore was made to the railway authorities for a special train, which was at once granted, and the Holyhead crew were speedily conveyed to the spot nearest the wreck. It was now quite dark and the men had scarcely any knowledge of the situation of the hidden rocks on that part of the coast, but they nevertheless bravely took out the boat, and this time succeeded in reaching the wreck and taking off the twenty men on board, their determined perseverance being thus at last rewarded.

All parts of the coast yield stirring stories of Lifeboat work. One of the most remarkable instances in recent years was the rescue of three hundred and seventy-nine persons from the North German Lloyd steam-ship 'Eider,' which, on the night of Sunday 31st January, 1892, stranded on Atherfield Ledge, Isle of Wight.

She was bound for Southampton from New York, on her way to Bremen, when, in a thick fog and a heavy sea, she crashed with a grinding noise on to the reef of rocks. She had made a good passage across the Atlantic, averaging sixteen knots an hour, and must have missed her way in the fog, in endeavouring to pass the Needles Lighthouse at the extreme western end of the Island. The officers on watch, it is believed, mistook the light for that of Hurst Castle Point, on the Hampshire coast, and kept it on their left hand, or port bow, as they would have done the Hurst light, instead of on their right hand.

Still, they were evidently uneasy, as the vessel was kept under slow steam. It was about nine o'clock at night when she passed the Needles, and instead of making her way up the Solent to Southampton Water, she ploughed along slowly in the fog and darkness of the winter night to the reefs of Atherfield and Blackgang.

All the passengers were below, and the leadsman was actually about to sound the depth of water as he had been doing at intervals, when suddenly at ten o'clock the engines stopped, an alarming shock ran through the vessel, causing, as it were, every plate to shiver, and a grinding noise was heard as the huge vessel grounded on the reef.

Quickly the officers and crew were at their posts, soothing the fears of the passengers, who were instructed to remain below as there was no immediate danger. Most of the passengers did remain below, but in a state of terrible anxiety. There was no panic, however, and perfect discipline was maintained.

The tide was high when the vessel struck, and the officers hoped that the vessel would return to deep water on the ebb. But the tide flowed back and she settled down fast. Efforts were made to lighten her, but with no result. She seemed to be damaged on the port or left side looking forward, and leaned slightly in that direction.

The great four-masted vessel lay over peaks of the reef, and it was feared that she would break her back, as she lay without sufficient support for her huge bulk.

Shortly after she struck, the captain began firing signal-guns and discharging rockets, or burning flares; and about half-past ten, the coastguard at Atherfield were alarmed by the guns. The night was very thick, and they could see nothing except occasionally a flare. In response they sent up rockets to assure the stranded vessel her signals were seen; and then a number of men, under the chief officer Captain Burt, went down to the shore with the rocket apparatus.

A strong wind was now blowing, and the weather was clearer, but the sea remained calm. The great vessel loomed large in the dim darkness, and she was seen to be in a very dangerous position. She was too far distant for the rocket apparatus to be of service, and the wind blowing direct on shore also frustrated any such efforts. Captain Burt sent messages to the nearest lifeboat stations, and also telegraphed to Portsmouth and Southampton for tugs.

Meantime the Atherfield lifeboat 'Catherine Swift' was launched about eleven o'clock, and put off to the vessel. She was of the self-righting type, thirty-one feet long by seven and a quarter feet wide; the boat

at present at Atherfield being somewhat larger, but of the same type. The captain requested the men to telegraph for steam-tugs, though at that time he thought the services of the boat in landing passengers were needless, as he fully hoped his vessel could be towed off by the tugs.

As the hours passed, however, the gale increased. The wind still blew direct on the shore, and the position of the big steam-ship became more perilous. As the wind increased, the sea rose, and heavy waves now began to break over her; and when an unusually big sea struck her she bumped alarmingly on the rocks.

The coastguard manned a boat and went to her about two o'clock, but the captain would not abandon hope. A few hours afterwards, however, signals were made for assistance, and toward eight o'clock the lifeboat from Brightstone Grange—a self-righting boat slightly larger than the Atherfield boat—made her way to the vessel and took off a dozen passengers and about a dozen bags of mails, though with considerable difficulty. It is said that many of the passengers feared to enter the first lifeboat as a very heavy sea was running at that time. By ten o'clock a storm was raging. The lifeboats from Atherfield and Brightstone Grange had been joined by the lifeboat from Brooke, and several tugs had appeared, but none could approach the steamer sufficiently near to take off any of the passengers. The vessel's bow was turned to the shore and the water was rough all round her. Further attempts were made to use the rocket apparatus, but to no purpose. At two o'clock the situation had become very serious, for heavy seas struck the great ship and even broke over her; but

FIRING THE ROCKET APPARATUS.

an hour later, when the weather moderated somewhat, the ever watchful lifeboats were able to get near.

The Brooke lifeboat, also a self-righting boat of almost the same size as that of Brightstone Grange, got alongside, and several women and children were passed into the craft and safely landed. The other lifeboats were also successful, the three boats making eighteen trips and landing 233 persons, also mail bags and specie, at Atherfield.

The first lifeboat had a very rough passage, the sea breaking over her repeatedly and drenching everybody to the skin. Four children covered with sacking were placed at the bottom of the boat. The landing was very difficult, and was only accomplished by the aid of fishermen and coastguardsmen. Loud cheers were raised as time after time the lifeboats landed with their human freight and steadily returned again to the stranded vessel, the rescued persons joining in the shouts.

Atherfield is a quiet and remote spot ten miles from a railway station, not far west from the famous Blackgang Chine which attracts so many visitors, and also three and a half miles north-west of St. Catherine's Point; while Freshwater is about eight or nine miles to the north-west. As soon as possible the rescued persons were conveyed in carriages to a railway station, and most of them were sent to Southampton to be cared for by the representatives of the North German Lloyd Company.

The lifeboats continued their work until nightfall, when they had rescued all the passengers and indeed some of the crew. Considerably more than a hundred persons still remained on board, the captain hoping

that the vessel might be taken off by tugs, as she was being so greatly lightened.

During the day the position of the vessel had greatly altered. She had struck on a rock called the 'Black Slopper,' but had become twisted several times on the hard, clayey rock, until she became cradled between two reefs.

That night was a wretched experience for the crew. A hundred and sixty-six persons remained on board to obey their captain's orders; but in addition to the large number of passengers, some tons of cargo had been unshipped. The engine-fires were kept burning and the steam was up, but unfortunately the vessel sprung a leak and the stern became filled with water, and all efforts to lower it by pumping were fruitless.

Again, therefore, the plucky captain had to signal for assistance. This was at seven in the morning, and alarm guns boomed for the gallant lifeboat crews. Away went the 'Catherine Swift' again in a most dangerous sea, and brought off several of the officers and men. So wild became the sea, however, that the risk of remaining on board was even less than the risk of the perilous passage in the boat.

The storm now blew in fury. Squalls of rain and hail burst over the scene and the wind was terrific. Some time after the tide turned, however, the weather moderated slightly, and the resolve was made to renew the efforts at rescue. With the aid of numbers of willing helpers, the Atherfield boat was again launched through the surge, though it occupied about three quarters of an hour to fairly get her afloat.

The breakers were terrific, tossing the fine boat about like a cork. "Time after time," says a writer

in the 'Times' who seems to have been an eye-witness of the scene, "she was carried back by the waves. In one instance her bow was lifted high up in the air for a moment, and she seemed to stand erect on her stern. Then, with an alarming sweep, the fore part of the boat flew over and crashed into the water, head landward and close to the beach. The spectators stood almost breathless during the struggles of the crew in the breakers, and sent up a ringing cheer when the boat's head again put to sea.

"At length the men reached the comparatively smooth water on the lee of the 'Eider' and were soon alongside her. The coxswain would not take any of the crew on board for nearly half-an-hour, as he considered they would be running greater risk in the lifeboat than on the vessel, while the sea ran so high.

"The sea was sweeping the deck from stem to stern, the promenade of the latter being some depth under water. The lifeboat at length took in a complement of men and began to move from the ship's side just as the third lifeboat, 'William Slaney Lewis' of Brooke, was pushed off from the shore; the Brightstone lifeboat, the 'Worcester Cadet,' had started in the meantime. After the first couple of journeys each of the lifeboats had comparative ease in getting to and from the ship, as the wind abated a little and the tide went down, leaving a fairly clear channel between the now exposed rocks from the shore to the doomed ship. By seven o'clock the whole of the crew of a hundred and sixty-six officers and men were rescued, the captain being the last to come away."

The scenes on shore were most touching as each boat-load reached the beach, the rescued men em-

bracing one another in joy for their escape. Men and boys of the lowest rank in the service went first, the officers following in order of rank, and Captain Heincke the last of all and most reluctantly.

Afterwards the Lifeboat Institution gave permission for the use of their boats for the saving of mail bags and specie, and early on the morning of 3rd February eight and a half tons of silver bars and half a ton of silver coin were landed, hauled up the cliff and placed in charge of armed coastguardsmen, until, with all necessary precaution, it was conveyed in waggons to Newport for Southampton. Again the sea rose and communication was cut off, but afterwards the saving of the mail bags followed, while sixty bales of cotton thrown into the sea were also recovered.

The greater number of the crew had been sent to Southampton to be taken by the ship 'Havel' to Bremen, but the indomitable captain with twenty-five of his crew returned to the 'Eider,' and it is gratifying to be able to relate that after extensive salvage operations and the stopping of the leaks she was floated, and on 29th March was towed off the rocks and taken, though in a greatly damaged state, to Southampton docks.

Altogether forty-one trips were made by the brave lifeboat crews, who were suitably rewarded, as they richly deserved. The Queen expressed her warm appreciation of their conduct, and the Institution voted them a total of £565, 10s. to defray the expenses of launching the boats and rewarding the crews; the second service clasp was awarded to Mr. William Colton, coxswain of the Atherfield boat; the third service clasp to Mr. Hayter, coxswain of the

Brooke boat; and the silver medal to Mr. James Cotton, coxswain of the Brightstone Grange boat.

Further, the Emperor of Germany presented a gold watch, bearing his portrait and initials to each of the coxswains, and gave £200 with his thanks to the funds of the Institution; while the North German Lloyd Company expressed their appreciation and thanks, and gave a hundred guineas to the Institution's funds. An expression of thanks inscribed on vellum was also presented by the Institution to the honorary secretaries of the three boats, namely, the Rev. F. B. Lipscomb and Messrs. Charles Dabell and William Hillier. The present boat at Brightstone Grange is not the boat of the rescue; but it is similarly of the self-righting type and of the same dimensions, namely, thirty-four feet long by eight feet broad; the Atherfield boat is not the same, but the Brooke boat has not been replaced by another.

What a striking contrast the whole story affords to the terrible loss of the ship 'Adventure' in 1789, when the crew were lost off the mouth of the Tyne in face of crowds of spectators; and how remarkably it illustrates the development of the Lifeboat and of Lifeboat work in the hundred or so years intervening between the two scenes. In 1789, there was no help for the shipwrecked mariners of the 'Adventure'; in 1892, there were three splendid lifeboats to save some hundreds of human beings, as well as valuable property, from the great steam-ship 'Eider.' The contrast, with all that it implies in the skill and ingenuity of constructing such boats and organizing their crews, is most striking and instructive.

CHAPTER X.

ORGANIZATION OF THE INSTITUTION—LIFEBOAT SATURDAY.

ARE the lifeboatmen paid for their work?

The question leads us to consider the organization of the Royal National Lifeboat Institution and of its crews, a subject which is as necessary to its general well-being and efficiency, as are the skill and bravery of its men.

The Institution is centrally governed by a committee, whose headquarters are at the office of the Institution at John Street, Adelphi, London.

The Prince of Wales is President of the Society, succeeding the sixth Duke of Northumberland on his death in January 1899. Sir Edward Birkbeck is chairman, Colonel Fitzroy Clayton deputy-chairman, and Mr. Charles Dibdin secretary. The committee of management is prepared to place and maintain a lifeboat and to build a house for such boat at any spot on the coast, where it can be shown that the boat is likely to be needed, and that a suitable crew can be obtained for her.

But while the committee at its headquarters in London is thus prepared to act, and is, so to speak, the owner and manager on behalf of the

subscribing public, it works with local honorary committees who exercise a general superintendence on the spot. There is thus a combination of central and of local control, which is generally conducive to good government in most undertakings.

Each boat has its appointed coxswain or captain, who receives a salary of £8 per annum, and an assistant at £2 per annum, with further allowances under certain circumstances. The boats, which, as all visitors to the seaside know, are kept in roomy and substantial boat-houses under lock and key, are in definite charge of the coxswains and their assistants. There is also a bow-man, who receives 30s. a year, while the crew consists, in addition, of as many men as there are oars to row the boat. The majority of the boats have ten oars, but there are others with twelve and fourteen. A full boat's crew therefore consists of thirteen, fifteen, or seventeen or eighteen men.

The crew, including coxswains, are paid ten shillings each by day and a pound each by night when going afloat to save life, and they receive this money whether they are successful or not. Further, they usually receive four shillings each when going afloat for exercise. The payments are increased by one-half during winter months, that is, from 1st of October to 31st of March. There may possibly be some exceptions to these payments, when the owners of vessels remunerate the crews for saving property; but the rule is that the Institution pays its crews for their efforts whether successful or not in saving life.

Moreover, a signalman is appointed, as well as a coxswain, and receives a fee of a sovereign a year,

and payment as a helper every time that he is on duty.

Nor does this complete the list of payments. The Institution not only gives a reward of seven shillings to the person who brings the first news of a wreck in such a position as not to be in sight of a coastguard on duty or other responsible look-out man, but also grants rewards for the saving of life to fishermen and others who may not be connected with its staff. Such men during 1899 rescued no fewer than one hundred and eight lives. Thus the sum of £14 was granted to fourteen men who put off in two boats and saved a crew of six from the fishing boat 'Temperance Tar' of Kirkcaldy, stranded off St. Cuthbert's Island in a heavy gale in October 1891. Still further, the Institution grants silver medals and clasps, binocular glasses, aneroid barometers, and certificates of service, by way of prizes and recognition of merit, which add up to a respectable and inspiring total.

In fact, it proceeds on the eminently commonsense and worthy principle that all labourers, even voluntary, are worthy of their hire, and that brave deeds are deserving of recognition. It seeks to encourage the saving of life from the horrors of shipwreck, as well as to provide efficient means for doing so.

Women have on occasion been granted rewards by the Institution, for they often give ready help when the lifeboat is called out to its arduous task. The Prince of Wales cordially acknowledged the help of brave women in lifeboat work in a speech he made at a subscription dinner of the Lifeboat Saturday Fund in May 1899. "I am anxious," said His Royal Highness, "to draw your attention to the fact that cases of gallantry

rewarded by the Institution have by no means been confined to men. On some parts of our coast, I am informed, the fisherwomen and girls help to launch the boats, and encourage in every way their husbands and brothers to man them. There are several gallant British women, of whom we may well be proud, now alive, who have been decorated with the silver medal of the Institution, and you probably all know that the celebrated Grace Darling was rewarded with the silver medal for her heroic services."

The lifeboat crews are volunteers, and are registered as being ready and willing for service when called upon. They are generally boatmen, fishermen, or coastguardsmen living in the neighbourhood. Whenever possible at least double the number of men actually required are entered on the roll, so that there shall always be a full crew ready should any of the men by chance be absent when required.

For many years the Institution has also given compensation to any man injured in its service, and granted liberal assistance to widows and dependent relatives of those who may have lost their lives while endeavouring to save others. When, unfortunately, six out of the eighteen men of the Aldeburgh lifeboat were lost in December, 1899, the committee granted £1000 to the local relief fund for the widows and orphans. And when, during June of the same year, the coxswain of the Southport lifeboat was lost with two men, being capsized in a small punt when relaying the moorings of the lifeboat, the Institution gave £700 to the relief fund.

But in addition to such payments of compensation, the Committee of Management introduced a Pension

and Gratuity Scheme on New Year's Day 1898, under which brave and worthy coxswains, bowmen, and signalmen of long service receive special allowances on retirement through old age, accident, or abolition of office. The scheme gave the utmost satisfaction at all the stations, and not only does it encourage the men to do their best in the Lifeboat Service, but also assists the committee in obtaining the best men.

Altogether, in the year 1899, the large sum of £29,790 was paid by the Institution to coxswains, bowmen, signalmen, and crews for exercising the lifeboats and for services rendered, for special rewards and recognitions for services, for grants to the relatives of men lost on service, for injuries, pensions and retiring allowances to coxswains and signalmen, for medals and inscriptions on vellum, also for payments to Inspectors.

This large sum, about £30,000 in round figures, represented more than a third of the year's expenditure, which thus, it will be seen, went directly in payment to men for services rendered. The cost of building, equipping, improving, and repairing lifeboats, lifeboat carriages, lifeboat houses, and slipways absorbed the large sum of £34,149; while £16,040 was paid in subsidies to non-self-supporting stations, branch-payments, aneroids for fishermen and coasters, lifebelts and other stores. The balance, which raised the entire expenditure of the year to very close on £86,000, was expended on printing, advertising, rent, and other necessary payments.

The highest cost, it will be noticed, is for lifeboats themselves and their necessary equipment, also for their maintenance in a high state of efficiency. As the Institution has 290 lifeboats, the maintenance

alone necessarily involves a heavy expenditure. In short, to replace worn-out boats, to suitably reward the men and officers and others for life-saving work, and to maintain the lifeboat fleet in a high state of efficiency, the Institution needs an average income of at least £80,000 a year.

With regard to the remuneration of crews by owners of property, it must be borne in mind that on reaching wrecks the preservation of life is the sole and only consideration. So stringent is this rule that the Institution authorizes its coxswains to throw goods overboard should they be put into the boat in spite of their remonstrances. Nevertheless, occasions arise when the boats do render very valuable service in assisting to save ships and cargo.

Thus the 'Mary Somerville' of Deal was called out about nine o'clock one morning, in a heavy sea, by signals fired from the Gull lightship. She found the steam trawler 'Euphrates' of Hull stranded on the Goodwins. But high water was rising and the lifeboat helped to get the vessel afloat, when she was able to resume her voyage to Yarmouth.

A similar and in this instance a more arduous service was rendered by the Clacton lifeboat 'Albert Edward' in February 1892. One bitterly cold night signals were shown by the Middle lightship, and on arriving at the vessel, the lifeboatmen were informed that a ship was ashore on the Maplins. The lifeboat proceeded to the sands and found a ketch, the 'Don' of Great Yarmouth, stranded some three miles north-west of the Swin lightship, and with her rudder lost. The lifeboat remained until the tide rose, and actually got her afloat. But the wind and tide were against

them, and the vessel was almost unmanageable until a jury-rudder had been rigged. The pumps were kept going and the vessel was then taken into the river Crouch, near Burnham. So severe was the weather that the rigging of the boat was covered with ice, and the men suffered much from cold and snowstorm. They were engaged about forty-two hours.

A few days later, the crew of the lifeboat 'William Dunville,' of Dungarvan, rendered a similar and much valued service off the Irish coast. In the morning, through a severe snowstorm, a bright light was seen shining as a signal, and the opinion was expressed that the trawler 'Christian' of Dunmore, which had been anchored off the shore, was in distress. The snow cleared, and the vessel was observed rolling heavily, and seas breaking over her.

The lifeboat house was surrounded by snow five or six feet deep, but the crew and launchers were summoned, and they wrought hard to clear a passage for the boat. In due time she was floated, and the crew proceeded to the trawler. They found no one on board. She had been abandoned. They searched for the men of the trawler along a bank, but could not find them, when, on returning to Dungarvan, they found the men had landed in their own boat. But the master, who was also owner of the craft, begged the coxswain to assist him to recover the vessel, as it formed the only means of support of himself and his sons, who were the crew. The coxswain agreed, and the weather having moderated, he boarded the ship with four of the lifeboat crew, and helped to bring her to Dungarvan. Without such help the owner and

his family would probably have been deprived of their means of subsistence.

So do the lifeboats around our coasts continue their noble work of life-saving, and on occasion, of property-saving also. Whence comes this noble fleet of lifeboats—how have they all been purchased?

Many have been built by means of legacies—or special gifts—and the name of the donor, or some member of his family, is perpetuated in the boat. The long and inspiring list of lifeboats with the names of their givers amply illustrates this fact. In the old days people used to give churches, and doubtless do still, but in the nineteenth century many have given lifeboats, and in some cases endowed them. Donor after donor in the lifeboat list is put down as Mr., Mrs., or Miss So-and-So's Legacy, and it is certainly an excellent method of disposing of surplus wealth.

But many large towns, and also Societies, have recognized the great value of the work, and have nobly taken their share in supplying boats. 'Co-operator No. 1' at Cullercoats testifies to the gift of the Co-operative Union Limited; 'Co-operator No. 2,' also given by the Union, being at Ilfracombe, North Devon, and 'Co-operator No. 3' at Thurso. The 'Forester,' No. 1 boat at Tynemouth, is in the same manner the gift of the Ancient Order of Foresters, who also gave the 'Foresters' Pride' at West Hartlepool; the 'Cyclist,' No. 3 boat at Hartlepool, was presented by the Cyclist Jubilee Fund; the 'Ellen and Margaret of Settle' at Hornsea was paid for by the Settle Fund; the 'Admiral Rous' of Withernsea by the Admiral Rous Fund; the 'Manchester Unity,' No. 1 boat at Grimsby, by the Oddfellows' Society

at Manchester; the 'Baltic' at Wells, Norfolk, by the 'Baltic' Lifeboat Fund; the 'Hearts of Oak,' No. 2 boat at Palling, by the Hearts of Oak Society; the 'Covent Garden,' No. 1 boat at Caister, by the Covent Garden Fund; the 'Samuel Plimsoll,' No. 1 boat at Lowestoft, by the Plimsoll Lifeboat Fund; the 'Stock Exchange,' No. 2 boat at Lowestoft, by the Stock Exchange Lifeboat Fund.

So also the 'Bolton,' No. 1 boat at Kessingland, was presented by the town of Bolton; the 'Albert Edward' at Clacton, by the Freemasons of England, who also gave the 'Alexandra' at Hope Cove, South Devon; the 'R.A.O.B.' at Lydd (Dungeness), by the Royal Antediluvian Order of Buffaloes Lifeboat Fund; the 'Michael Henry' at Newhaven, by the Jewish Scholars Lifeboat Jubilee Fund; 'Sunlight,' Nos. 1 and 2 at Llandudno and Brighton, from Messrs. Lever Brothers' Competition; the 'Honourable Artillery Company,' at Walton-on-the-Naze, by their Dramatic Club; the 'City of Glasgow,' the steam lifeboat at Harwich, by the Glasgow Lifeboat Fund; the famous 'Bradford' at Ramsgate, by the Town of Bradford; the 'Boys' Own,' No. 1 at Looe in Cornwall, by 'The Boy's Own Paper' Lifeboat Fund; the 'City of Manchester' at Ferryside, Carmarthen Bay, by the Manchester Branch; the 'Oldham' at Abersoch, Carnarvonshire, by the Oldham Lifeboat Fund; and various others in a similar manner. The Civil Service Fund has done remarkably well, and seven boats bearing its name and the number of the gift are scattered about the coast. All the lifeboats given by this Fund, which was established in 1866, have also been endowed by it.

But numerous as the gifts and legacies have been, the work of stationing new lifeboats is never at an end. The boats encounter very rough weather and cannot last for ever, and need frequent renewal. The fact that over £34,000 was spent in building, equipping, improving, and repairing the boats, boat-houses, and appurtenances in 1899, is sufficient evidence of these facts.

The general income is largely maintained by annual subscriptions and donations, not only individuals contributing, but also societies and churches, organizations such as golf clubs, glee unions, and collections on board passenger ships.

Lifeboat Sunday and Saturday collections also afford a substantial source of income, the Lifeboat Saturday Fund having indeed now risen to be of most important assistance to the Institution. Thus, during the year 1899, it was able to pay over nearly £19,000 to the Committee of Management of the Institution, being about £3500 more than in the preceding year, and the largest sum handed over to the Institution in any year since Lifeboat Saturday was inaugurated.

The money was applied entirely to grants and allowances made by the Institution to lifeboatmen and relatives, namely, grants of no less than £100 to widows and £25 for each dependent child of lifeboatmen who have lost their lives in the service; grants to men injured in the service; pensions and allowances to meritorious coxswains, bowmen, and signalmen who have retired, and payments, special rewards, and recognitions to coxswains and crews.

The Lifeboat Saturday movement was instituted in 1891, and the list of towns which are adopting

it is gradually extending. Its origin may perhaps be found in a special appeal which the Institution issued for funds in that year. The committee pointed out, that while every year the efficiency of the service increased and new stations were established, the income did not keep pace with the needs, and the expenditure was greater than the receipts.

Generous response was made from many parts of the kingdom, but the counties of Yorkshire and Lancashire rose remarkably to the occasion, and during the year contributed about £20,000 to the funds.

The commencement was made at Blackpool, Manchester, and Leeds. At Manchester and Salford about £5000 was raised by a Lifeboat Saturday Fund under an influential committee. At Leeds, Mr H. J. Palmer, editor of the 'Yorkshire Post,' strongly advocated the cause, and opened his columns for contributors. By this means he received over £3000 for the Institution. Other towns followed suit, with the result of a great accession to the funds of the Institution.

It was from this special effort, or revival of interest, that the Lifeboat Saturday movement seems to have sprung. Generally speaking, the celebration consists of a street procession in which the exhibition of one or more lifeboats on their carriages forms a prominent part; with, if possible, a launch of the boats and a demonstration of their powers of sailing, while authorised persons receive subscriptions in boat-boxes or other receptacles. The boat-boxes are made to resemble a self-righting boat, numbers of the boxes being kept in store at the Institution's yard on the Limehouse Canal.

To show, however, more in detail the arrangement

of a Lifeboat Saturday demonstration, we condense from the 'Manchester Courier' an account of a 'Lifeboat Saturday' celebrated at Manchester and Salford. On the Friday the Southport and St. Anne's Lifeboats perambulated the principal streets, to prepare the people, as it were, for what was to come, and on Saturday, the day of the great procession, the words 'Help the lifeboatmen,' and 'England expects every man this day will do his duty' greeted the eye pretty well everywhere in Manchester and the adjoining borough. There was also a plethora of public collecting boxes, varying from the small wooden handbox to the huge sideboarded lorry, and the purse-poles.

A purse-pole is a long, wide-mouthed pocket attached to a tall staff, with which the collectors could reach the persons viewing the procession from balconies, high windows, and the tops of tramcars.

About noon the procession formed in Albert Square, headed by a mounted body of the City Police. They were followed by an open carriage containing the promoters of the movement, or members of the committee, after whom came music in the shape of the mounted band of the 14th Hussars. Then came a cart containing the rocket apparatus and brigade; after which another band from the Ardwick Industrial School heralded the St. Anne's Lifeboat and the crew in their oilskins, and followed by one of the numerous collecting lorries.

A set piece next claimed attention, in the form of Grace Darling and her father in character. Grace was sitting with her father in a craft which was buffeting its way through some artificial billows; then came a brave show of a number of boys and the

band from the training ship 'Indefatigable,' armed with cutlasses and rifles, and followed by the Manchester fire brigade, the Newton Heath Steam-shed brass band, the Southport Lifeboat and crew, Colonel Thompson's Miniature Volunteers, another collecting lorry, the Salford fire brigade, the Alexandra band of the carriage and wagon department of the Lancashire and Yorkshire Railway, while the Volunteer fire brigade of Messrs. Rylands & Sons brought up the rear.

The weather was brilliantly fine, and the procession passed along to Belle Vue Gardens, collecting the contributions of the people on the way. A large number of persons followed the procession into the Gardens, and found a great crowd already there, the entrance-money being generously given by the proprietors to the Lifeboat Fund. The Mayor and Mayoress of Manchester and the Mayor of Southport were present, and an entertainment was given by the boys of the 'Indefatigable,' the lifeboats were launched on the lake, and the rocket apparatus worked, while in the evening a display of fireworks took place. During the day also a meeting was held, at which the Mayor of Manchester presided.

Inland towns at which no lifeboat is stationed have usually one conveyed to them for the purposes of the demonstration, the conveyance of boats, carriages, and stores to a number of towns in 1899 costing the respectable sum of £307. But the money is doubtless well spent, for the display of a lifeboat, especially in an inland town, is calculated to be its own best advertisement.

The Lifeboat Saturday movement, in the shape of demonstrations or collections, was organized in 1891

in no fewer than one hundred and fifteen towns—a remarkable growth for its few years of existence. Of these, eighteen towns adopted the movement for the first time, including such towns as Winchester and Wolverhampton, Coatbridge and Colchester, Brighton, Salisbury, High Wycombe and Ilkeston.

The movement has a central committee in London acting in conjunction with local committees. The Duke of York is the President, while the Duchess of York is the President of the Ladies' Auxiliaries. Sir Edward Birkbeck is the chairman of the central committee, while representatives are appointed by the Lifeboat Institution, by the London District; East and South District; Midland, which has placed its office at Birmingham; North of England, which has its headquarters at Manchester; Scottish and Irish, with offices at Glasgow; and Western District committees, the Western office being at Bristol. There is also an executive committee, of which Mr. A. P. Smith is the secretary, there being also several organizing secretaries; while the fund has its representatives on the committee of management of the Institution.

Thus, in less than ten years the Lifeboat Saturday Fund movement has arrived at the position of a highly-organized enterprise, capable of rendering substantial help to the National Institution. It affords an admirable means not only of arousing interest in lifeboat work in inland towns, but of collecting the pence and the shillings of the multitude, most of whom would never think of obtaining a postal order to send so small an amount to the head office direct, but which yet, collected together, reach a total of several thousands of pounds.

These encouraging results are no doubt largely due to the generous and well-organized efforts of the local committees, who, with knowledge of their respective towns, have conducted the celebrations in varied methods calculated to yield the best results. In some cases careful attention has been given to the development of subscription lists, a course which secures remittances to the central office, even should processions or other displays be thought inexpedient year after year.

Most valued help has also been given by ladies' auxiliaries, who, by indefatigable work, have strengthened the efforts of general committees, and obtained substantial collections. The Lifeboat Saturday Fund owes much to the help of its lady collectors. They have assisted in the gathering of funds, even as in some places wives of lifeboatmen and other brave women have assisted when the lifeboat was launched.

So we find in existence a flourishing and voluntary life-saving organization, maintaining on our coasts nearly three hundred splendidly-built and efficient boats suited to the varying peculiarities of the shore and to the preferences of the men; suitably rewarding these men and others for their life-saving efforts, and supported in its turn by purely voluntary contributions to the extent of many thousands of pounds a year. It is a splendid testimony to the value of voluntary effort.

CHAPTER XI.

THE ROCKET APPARATUS—LIFE-SAVING BRIGADES.

A VESSEL is sometimes wrecked in such a position that a lifeboat cannot render her any assistance. Shoals and reefs and sandbanks may surround the doomed ship so that no boat could approach, and the wreck may be so near the shore that a lifeboat could not float to her. Yet the sea would be raging and beating so violently about her that the men would almost certainly be drowned if no help were afforded them.

In such cases the rocket apparatus is of great utility. Its principle is very simple. It consists of a rocket with a line attached, the rocket being fired over the wrecked ship. The crew then haul on board by means of the line a pulley and a circular or endless rope, by which a thicker rope and hawser can be hauled to them; also a lifebuoy or breeches' buoy, which can then be pulled to and fro with a man clinging to it.

That is, in brief, the principle, but, like other simple principles, the application is not quite so simple. The rocket consists of a strong metal cylinder, about

one and a half feet long and a couple of inches or so in diameter. Like the rockets of the playground, a stick is attached to it, and for the life-saving rockets the stick is a long one.

When fired, the rocket is placed on a tripod stand adjusted to the proper elevation to enable the rocket to fall over the wreck; the light line which it carries is attached to the stick and neatly coiled in a box on the ground.

The proper adjustment of the rocket so that it shall fall correctly is a work requiring great skill and judgment. When it is accomplished, the man fires the instrument, which, with a flash of flame and a loud whistle, rushes on its journey, leaving a momentary train in the air like a huge serpent or fiery meteor.

If successful, the line falls over the wreck or sufficiently near for the crew to grasp and draw the pulley-rope on board. Fastening this pulley to the mast or some substantial part of the wreck, the thicker ropes can be hauled out to it, and afterwards the breeches' buoy. This piece of apparatus can be hauled either way, and the hawser should be strong enough to hold it while the men are being rescued through raging waves to the shore.

The breeches' buoy is a large, round lifebuoy with a bag attached, or may be a bag somewhat shaped like a pair of breeches, the rescued person creeping into this bag and being retained there in comparative safety while he is being hauled through the sea. All the appliances are kept neatly packed in a cart ready for instant use. The rocket apparatus has on many occasions been extremely valuable in saving life; and when once the communication has been firmly

fixed, it is as comparatively easy to rescue a hundred persons as ten.

Since 1855, the rocket apparatus has been under the Board of Trade in conjunction with the Coastguard, but the idea of the apparatus and its forerunner dates from many years previously. In 1791 the idea of firing a rope from a wreck to a place of safety by means of a mortar and shell occurred to Sergeant Bell of the Royal Artillery. In 1807 Captain Manby introduced an ingenious mortar apparatus, on which the rocket apparatus system is based. The shot had barbs attached to it, which would cling to the rigging or bulwarks of the wreck. A number of mortar stations were established, and Manby was rewarded in 1814. But in 1807 a rocket had been proposed by Mr. Trengrouse of Helston; and Mr. John Dennett of Newport, Isle of Wight, introduced a rocket apparatus, and in 1826 four places in that island seem to have been furnished with his appliance. Colonel Boxer and others also made improvements, so that in the rocket life-saving apparatus, as in so many other things, several minds have been at work.

The coasts of the United Kingdom are divided into coastguard and wreck-registrar's districts, and the coastguard control all the rocket, mortar, buoy and belt apparatus in their district; while the Board of Trade grant rewards for lives saved, and confer medals for special acts of gallantry.

On 30th June 1899, the number of life-saving stations under the Board of Trade were 313, of which 297 were rocket apparatus stations, eight cliff ladder stations, and eight heaving-line stations. Thus Government has provided an organization of life-

saving appliances round the coast, while voluntary effort has supplied and maintained the Lifeboat work.

In addition to the lifeboat and rocket stations, there are in existence several Volunteer Life Brigades which work in conjunction with the coastguard, and use the rocket apparatus for saving life.

The first Life-saving Brigade originated at Tynemouth; and even as the wreck of the 'Adventure' in 1789 at this place gave a great impetus to the building of lifeboats, so it was the lamentable wreck of the steam-ship 'Stanley,' on 24th November 1864 at Tynemouth, which led to the establishment of the first Volunteer Life Brigade.

Numbers were lost by that wreck, close to the shore, chiefly for want of organization among the spectators, and also because they did not know how to work the rocket apparatus. Thereupon a meeting was held, and it was decided to establish a volunteer brigade. One of the chief leaders was Alderman John Foster Spence, who was its honorary secretary from the beginning. Volunteers were enrolled, and were regularly drilled, so that they could in emergency act together with efficiency. Thus started, the movement grew and spread to other places.

At Tynemouth, the arrangements for receiving the rescued persons are most complete. Hot baths, berths, blankets, warm clothes, and quite a crockery-ware shop, for the serving of hot food and drink,—all are here. The names of many vessels whose crews have been saved adorn the walls of the Brigade House, and an American, impressed with the completeness of the arrangements, caused a silver medal to be struck

for acts of bravery in life-saving on the Tyne, the first medal adorning the walls of the house.

But the Tyne has now been made a veritable harbour of refuge compared with its former condition. By the persistent dredging of the harbour bar, there are twenty feet of water at low spring tides, and piers have been carried out from either side of the river mouth to the sea, so that the perils of this dangerous spot have been greatly reduced. But it is perhaps worthy of notice that from terrible wrecks at this place came the impetus for three great steps in life-saving work on the coast. First, the wreck of the 'Adventure,' in 1789, giving an impetus to the construction of lifeboats; the second, in 1849, which led to the building of the self-righting boat; and the third, in 1864, leading to the establishment of the first Volunteer Life Brigade.

And as we began with the Tyne, so we may end with the same grey, dangerous, busy river. Methods of life-saving work on the coast might almost be said to be epitomised there. It is a most wonderful change that has been wrought on our coasts in life-saving work, in little more than a century. There has been marvellous ingenuity to plan the appliances and to organize the services, as well as determined perseverance and splendid bravery in working the boats, the rockets and the lines.

And while these qualities of our race endure, we may believe that a constant succession of the younger men will arise to take the place of the veterans, and that the life-saving service of the coast will go on prospering and to prosper, and continue to win fresh victims over the raging sea.

BELL AND CO., LIMITED, PRINTERS, EDINBURGH.

S. W. PARTRIDGE & CO.'S
CATALOGUE
. . OF .
POPULAR ILLUSTRATED BOOKS.

Classified according to Price.

9 & 9, PATERNOSTER ROW, LONDON, E.C.