THE SALVING OF H.M.S. " INFLEXIBLE "

The following account of the damage sustained by H.M.S. *Inflexible* and the subsequent operations was written by an Officer present at the time.

During the attack of March 18th, 1915, on the Chanak Forts at the Dardanelles, and just at the close of the day's operations, H.M.S. *Inflexible* had the misfortune to strike a mine.

The mine exploded just abreast the foremost turret on the starboard side and well-below the water line. A large hole about 30 ft. by 26 ft. was made in the ship's side and a number of adjacent plates and rivets were started and damaged, the damage extending right down to the keel. Two main athwartship water-tight bulkheads were also involved, with the result that the following compartments were flooded :—Forward submerged torpedo flat with gun cotton, warhead and other stores below, and the refrigerator flat and bread room above. Forward of the submerged flat the 4-in. magazine was flooded out, whilst the Diesel dynamo room was partially flooded. Aft of the submerged flat the following were completely flooded out, the forward 12-in. shell room magazines and handing rooms ; the 4-in. shell room, the small arm magazine, the gunner's stores, the two engineers' stores, the forward air compressor room, the transmitting station and plotting room and the lower conning tower, whilst a considerable quantity of water obtained access to the foremost boiler room and one of the starboard bunkers.

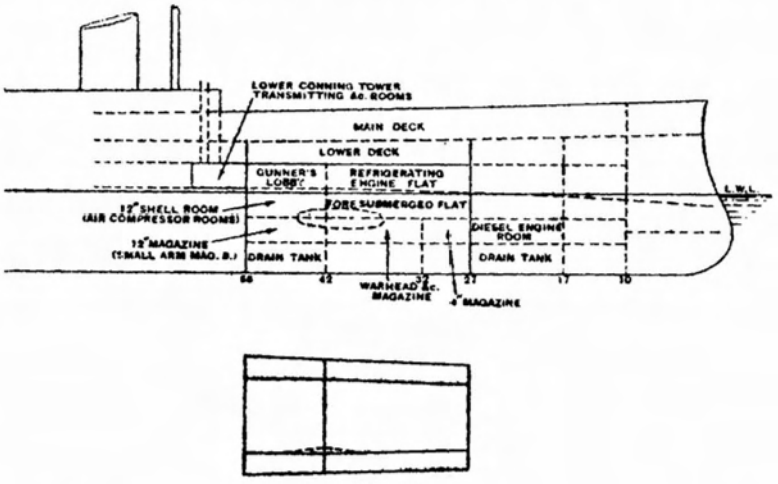

FIG 1.

Fig. 1 shows a profile of the ship in the vicinity of the damage and indicates the size and position of the hole made in the ship's side. Considerable structural damage was done in the various compartments, and to add to our difficulties the circuit for the ship's lighting system was cut in two, so that the ship was in darkness fore and aft.

The ship settled down considerably by the head and with a list to starboard, and as it was feared that she might sink altogether the first aim was to get her out of range of the enemy's guns and, if necessary, beach her. She was therefore steamed down and out to the straits and managed to reach the island of Tenedos where she was anchored close inshore.

A short account of our experiences below whilst steaming to Tenedos may be of interest here.

On the mine exploding the ship appeared to be lifted bodily and to quiver fore and aft, and then slowly to list over to starboard. The noise of the explosion was very loud, and the sudden silence and pitch darkness which followed seemed more intense by contrast. As I have already said, the ring main was severed forward and all lights were out fore and aft the ship. In addition, the sudden jar to the ship had put out the oil lamps of the secondary lighting, but on the latter being relighted it was found that the engines were still running smoothly, and that the requisite steam was available, in fact, the steam pressure gauges never even flickered, which speaks well for the nerves of the boiler room personnel.

The worst effect of the damage to the electric main was felt in the engine rooms, where, the ventilation fans being electrically driven, all ventilation suddenly ceased and the temperature rose rapidly to an uncomfortable height. In my own engine room, the port one, I found that flushing the floor plates from the fire main, and also occasionally sousing one's head and wrists under the hose gave some relief.

The behaviour of the petty officers and men below was superb. They were absolutely unperturbed, and even when the word was passed to send up on deck all but those really necessary for steaming the ship, those told off to go begged to be allowed to remain below to help if they could.

Our troubles in the engine room were not finished even when we had got safely to Tenedos, as soon after anchoring, we found that salt water was showing in all condensers. Our first impression was that the tubes and ferrules had been shaken by the shock, and had commenced to leak, but further investigation and a happy thought on the part of the engineer officer of the watch located the trouble, his suggestion being that the auxiliary exhaust pipe from the forward capstan might be damaged (we knew that it was now under water). His suggestion proved correct, for whilst we were under weigh the auxiliary exhaust had been closed, and the pressure in the pipe acting on the non-return valve at the forward end of the

boiler rooms had kept the sea water from entering, but on anchoring the exhaust pressure had been reduced, and in consequence salt water came in and went direct to the condensers. As we had no means of shutting down the N.R. valve mechanically we immediately put up the exhaust pressure to 20 lb., and kept it there, and in about two hours the condensers were clear again. When we eventually got the submerged flat pumped out we found that the exhaust pipe had entirely disappeared.

When the mine exploded the ship had listed considerably to starboard, but as the water found its way across the ship this list was reduced. She would have been even more down by the head and over to starboard, but that, earlier in the day, we had been hit on the port side, just abaft the engine room, with the result that a provision room and two large wing spaces were damaged and flooded, putting us down aft, and with a list to port.

As soon as we were safely anchored action was taken to endeavour to prevent any more water getting in to the ship and to get rid of that which was already in. As night had now fallen it was impossible to ascertain the extent of the external damage, and efforts were made to get collision mats over the hole which we knew must be there, but all the mats we had in the ship, or in the fleet, were as much good as so many pocket handkerchiefs, and the attempt was eventually abandoned. Inboard the first care was to isolate the flooded compartments and shore up the adjacent bulkheads and decks, especially where damaged, also to plug up any leaky joints, rivets, ventilating trunks, etc. Our troubles were now increased by it coming on to blow with a nasty sea running, and we had considerable anxiety regarding several bulkheads and decks which threatened to give way. It was found necessary to correct the trim of the ship by flooding various compartments aft with a view to bringing her up forward and so relieving some of the pressure forward.

Throughout the operation we were continually hampered by dirty weather, and twice had to shift billet in the endeavour to obtain shelter, first from the north to the south side of Tenedos, and then to Mudros. Each shift was attended by considerable difficulty and danger, and each time we had to lose an anchor, as we had no means of getting up the one that was down, the fore capstan being out of action, so that when we arrived at Mudros we had the sheet anchor only left. The roughness of the sea outside was reflected inboard and caused us further anxiety regarding various damaged bulkheads and decks, and considerably hindered such pumping as we were able to do. It was an extraordinary sight to see the water surging and heaving inside the ship right up to level of the deck from which we were working. Our operations were conducted from the flat two decks above the submerged flat as the various escapes and hatches from the worst damaged compartments led on to this flat.

In the meantime various pumps had been got going in an endeavour to get rid of some of the water, but here again we were handicapped in that some of the pumps in the vicinity of the damage had been put out of action by the explosion. It was therefore necessary to run hoses from other pumps further away. By these means one or two of the smaller compartments were pumped out, but we soon found that no impression whatever was made on the bulk of the water which had obtained access to the ship and we realized that the external damage must be considerable. As soon as it was light enough the next morning divers were got over the side, and we then got some idea of what we had to contend with.

As soon as the extent of the damage was realized a wireless signal was made to Malta to send up immediately various stores and any portable pumping machinery available, and in the meantime we pegged away with our own resources. A brand new salvage steamer, which had escaped from Constantinople a short time before, happened to be in the neighbourhood and was requisitioned and got alongside. She was fitted with a large centrifugal pump and 10-in. suction hoses, and with her aid we managed to isolate and pump out several more compartments. It is interesting to note here that with this pump we succeeded in getting a lift of 28 ft.

Another salvage steamer was also obtained and secured alongside on the opposite side to the first one.

These two salvage steamers proved of inestimable value and enabled us to deal with large quantities of water, in fact, I do not know what we should have done without their aid. Considerable trouble, however, was experienced in respect to their crews. Both were manned by natives of the locality, officers and men, and these were of no use in an emergency, or had any idea of working the 24 hour round as was necessary. They attempted to slip off on the slightest excuse, and we eventually had to put an armed guard on the bridge and engine room ratings below to keep the crews up to scratch.

Both steamers were fitted with suction hoses of large diameter, and great care had to be exercised in jointing up the hoses to avoid leakage of air with consequent spoiling of the suction, as in many cases a big height of lift was necessary. The hoses were led in through the lower deck scuttles and had to be carefully secured and watched to prevent them being damaged through the movements of the ships. Flexible voice pipe communication was also rigged between the flat from which operations were directed and the salvage steamers.

In addition to the salvage steamers two pumps were eventually received from Malta, one a steam driven centrifugal, and one an 80-ton pulsometer pump. These we rigged in the flat above the damaged compartments, and brought steam to them from our auxiliary system by means of temporary connections and flexible hoses.

Two dockyard subordinate officers also arrived from Malta, one from the constructive department and one from the engineering department, and proved of valuable assistance during the salvage operations. An officer of the R.C.N.C. also arrived from the Admiralty a few days later and supervised the fitting of the temporary patch, etc.

By this time a number of planks, spars and other stores had been obtained from Malta and from other ships in the neighbourhood, and the construction of a wooden patch to go on the outside of the ship was commenced. This patch was built up of 3-in. planks, and was made large enough to well overlap the hole and the worst damaged places in its vicinity. Each plank was secured to steel flats running the whole width of the patch, the planks being well butted up to each other throughout their length.

A large bolster of approximately circular section was then made out of canvas, fearnought, oakum and tallow, and this was attached to one side of the patch so as to form a continuous joint round its boundaries. The patch was built on the quarter deck, and when ready was launched over the side, and then one edge was weighted with fire bars until it floated vertically. It was then placed abreast the hole and sunk until in line with it, the bolster being next to the ship's side. Bottom lines going under the ship were then put on the outside and the two ends married on this upper deck with chain blocks. The patch was got into its exact position by divers, and then the whole was frapped close to the ship's sides by means of the chain blocks. As the method of construction of the patch rendered it very flexible it readily conformed to the contour of the ship.

Fig. 2 shows the patch being launched over the side of the ship.

When the frapping lines had been hauled as taut as possible the divers caulked all round the edges of the patch with oakum and wedges, and also caulked the seams of the planks where they had opened out in taking up the shape of the ship.

By the time the patch was in position we had got all possible pumps ready inboard and all hoses rigged from the two salvage steamers. These latter were led first into the hatch to the flat above the 12-in. handing room, whilst the centrifugal pump inboard was led to the submerged flat escape. By this arrangement we avoided opening any of the big hatches to the flooded compartments. As the water level was reduced the salvage steamer hoses were shifted about as necessary, but the centrifugal pump was always kept in the one position, as its suction and delivery pipes were of the solid variety and not readily transferred. The discharge pipe from this pump was led up through a 4-in. ammunition supply hatch on to the quarterdeck and thence overboard. The pulsometer pump could not be brought into use until later, but then proved very useful as it could be slung on chain blocks and arranged to deal with position where it was awkward to lead the other hoses. This

class of pump, however, is very tricky to work, and requires some experience and attention to get the best out of it.

The scene in the flat when all hoses were rigged and pumps working defies description, and I wish that I could have obtained a photograph of it, but we had no time for doing anything of this sort.

As soon as everything was ready, at a given signal all pumps were started together at full speed, the idea being to lower the level of the water inside the ship as quickly as possible so that the sea pressure outside should force the patch on to the plating and make a tight joint, and should also keep the patch in position.

It was a long and weary vigil before we saw any sign of the water level going down inboard. The pump suctions were continually getting choked with debris from the wrecked compartments, and each choke meant partial unrigging of the suctions to clear them, with subsequent recharging and picking up of the suction, and each time this happened we lost a part of what we had gained.

Our perseverance was at length rewarded and the water at last started to go down, but after gaining several feet the patch slipped, the water poured in and all our labour was lost and we had to start afresh.

The second time it held, however, and we continued pumping steadily and cautiously, and gradually lowered the water. Our plan was to isolate each compartment as we got rid of the water and make temporary repairs to render it watertight, so that it would be so much to the good if the patch gave way again.

We eventually succeeded in getting rid of the whole of the water in the ship, and were able to get at the inside of the patch, which we proceeded to stiffen and secure from the inside as much as possible.

Fig. 3 shows the appearance of the inside of the submerged flat after it had been pumped out.

We next built a dam fore and aft between the bulkheads that were undamaged and up to the lower protective deck. The dam was built up with a double line of baulks and planks, the space between being filled with concrete made of cement, fire bricks and ashes.

The suction of the centrifugal pump in the flat above us was then led through the submerged flat escape to the space between the patch and the dam, and the pump kept running as necessary to keep any leakage from accumulating. Various other pumps were arranged to deal with leakage in other compartments, and all being made as secure as possible we cast off the salvage steamers and set sail for Malta.

We found that any speed over four knots caused the patch to pant and leak badly, and so we had to proceed at that speed. We had to be continually pumping to keep the leakage down even at this speed, and several times it nearly got the better of us, but our

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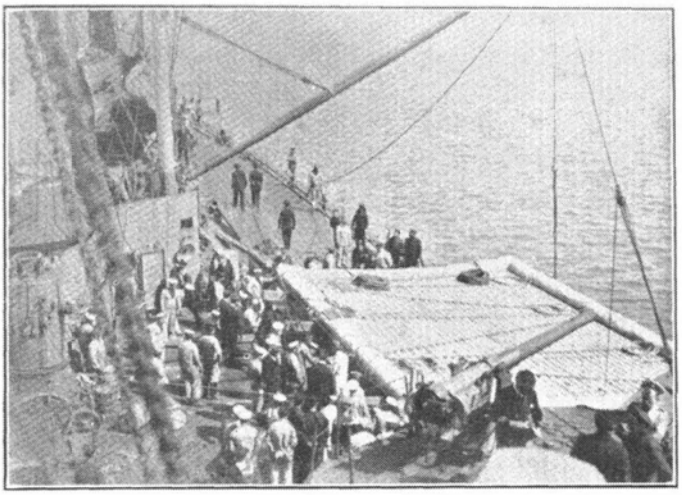

FIG. 2.

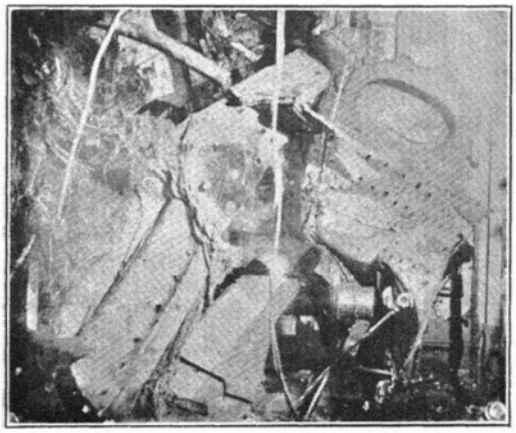

FIG. 3.

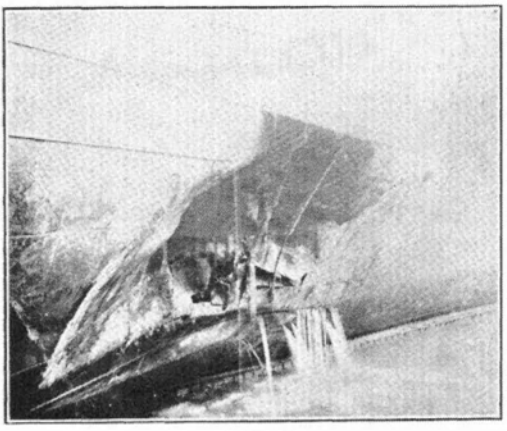

FIG. 4.

worst time arose when we were within sight of Malta, when the weather, which had been steadily getting worse, got very bad, and eventually the heavy sea carried away the patch completely. Fortunately the dam held though the movement of the ship in the sea made it leak considerably, and again the water nearly got the better of us.

At one time the submerged flat was nearly full, and the only pump that could be brought to bear on it was an electrically driven portable 10-ton pump, and this we had to sling by chain blocks through the hatch with a wandering lead connected. This little pump behaved nobly, however, and we just kept the water under until the other pumps could be got going. The centrifugal pump was now direct on to the sea so we shifted it over to the inside of the dam, and by continual pumping eventually got the flat clear again.

The ship was turned round and steamed stern first to ease the pressure forward, and eventually after many weary hours crawl in this fashion we made the Grand Harbour at Malta just after dark, and on being put into dry dock our three weeks' struggle to keep the ship afloat was over.

Fig. 4, taken with the ship in dry dock, shows the external damage sustained.