

A 'DARING' THROUGH A CHIEF E.R.A.'s EYES

BY

CHIEF ENGINE ROOM ARTIFICER M. G. SKINNER

Joining and Standing By

It was with mixed feelings that I joined *Decoy* at the yard of Messrs. Yarrow & Co. in Scotstoun. Naturally there was pleasure, the anticipated pleasure of watching something grow from raw steel to a sea-going ship of Her Majesty's Fleet. There was also some trepidation at the thought of the main and auxiliary machinery, the design of which I had heard was somewhat revolutionary.

The first few days were spent in becoming acquainted with the ship's engineer officers, the assistant engineer overseers, and the various yard foremen concerned with the building of the ship and installation of the machinery. There followed a long period during which I slowly learned the design and layout of the machinery, and came to realise that, if everything worked to plan, the Navy really 'had something' in the *Darings*.

The boilers, tail shafts, and a few auxiliaries were installed and various odd sections of pipe systems had been fitted when I arrived. Slowly the other necessary bits and pieces were tested and fitted, and the various tests on pipe systems carried out by the builders and passed by one of the assistant overseers. I found myself almost a constant companion of this particular overseer, and of course was able to learn a lot from him of the liaison between the Admiralty and private contractors.

Of course there were snags ; particularly, as I thought, in the lack of appreciation by the civilian staff of the steaming and maintenance problems we should face in service. I often found myself arguing about the position of a pipe, or the operating position of a valve, in order to give accessibility for removal or ease of operation. In most cases I have been able to convince myself that I was right.

At last the machinery was all installed, and steam was raised in the boilers. It seemed that dozens of civilians were employed in steaming one boiler ; the principle seeming to be 'one man—one valve'. Of course, all the sub-contractors had representatives there, each to care for his particular bit, and, all in all, there seemed to be less co-ordination than I had grown to expect in the operation of a ship's boiler room.

However, these were but impressions, and we progressed to our contractors' sea trials, during which we had our first real experience of what the machinery would do. I was very impressed, particularly by the main turbines, which could be, and were, treated quite violently when manœuvring, and whose acceleration needs to be seen to be believed.

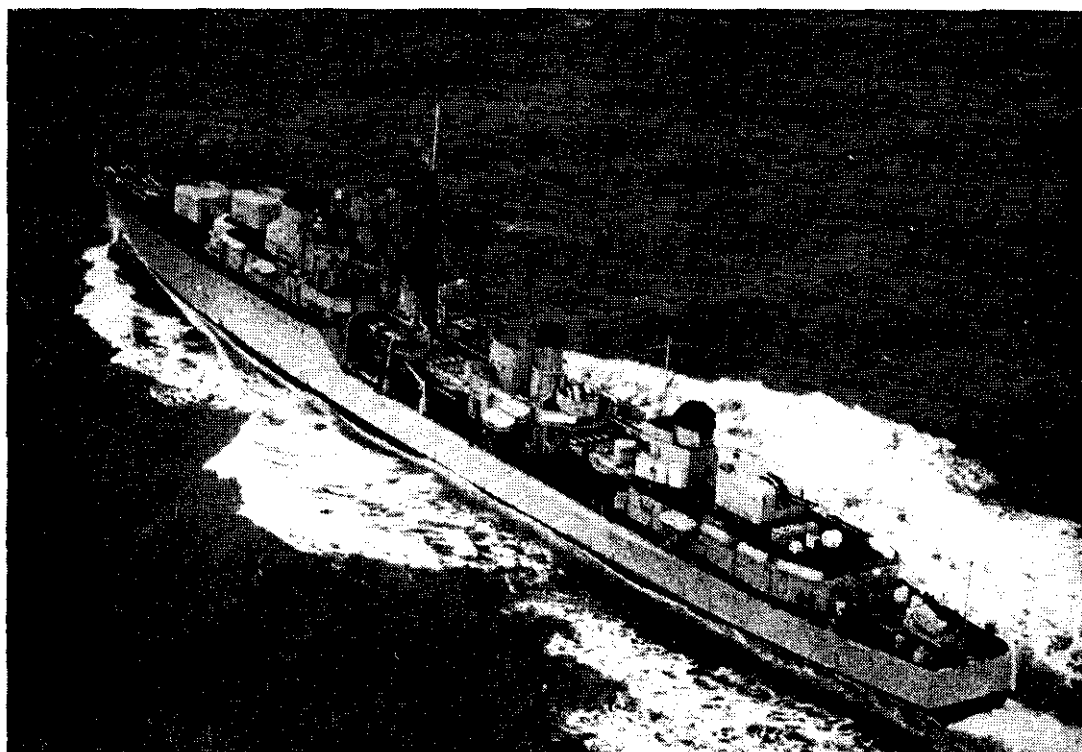
There were four E.R.As. with me by now, and we were all a little startled by some of the methods used by the contractors in the handling of the machinery. After some friendly wrangling, we were content to leave it that the Navy's way was not the same as the contractors', but that there might be something to be said for each. The general liaison with the contractors' representatives was excellent, and I for one made many good friends on the Clyde.

After contractors' sea trials came the general opening up of all machinery, and this was a rather hectic period for all concerned, because there were only eight weeks between the completion of these trials and the final acceptance trials. During this opening up period I had my first glimpse of what lay in store for us, when in the future we tackled an internal boiler clean, and until one has seen the apron plates, cyclone separators, manifolds, and the internal feed and steam pipes in place, it is almost unbelievable that the steam drum will hold them all. The boiler manufacturer's employees had quite a struggle to fit all the internal gear back correctly, due mainly to errors in original manufacture. It also became apparent that in some cases, when machinery had been installed to give better habitability, the accessibility for maintenance was sacrificed, especially in the boiler rooms, the turbo-blower rooms being an outstanding example. It is quite a task to get into these compartments and almost impossible to turn around inside.

Despite all the little drawbacks we eventually came to the commissioning day, and the period set for our acceptance trials.

Commissioning and Acceptance Trials

The personnel who had been standing by embarked on the 20th April, 1953, and the rest of the ship's company joined on the following day. The new E.R.As. were pleasantly surprised with their mess because for the first time we have a comfortable billet and a decent sized locker in which to stow our kit, the only snag being the access trunking to the port gland space.



H.M.S. DARING

Now came the acceptance trials, and all went well until we had been at full power for about 20 minutes, when the turbo-driven F.L. pump in ' B ' Engine Room tripped. The time lag before the motor-driven F.L. pump picked up the pressure caused the wiping of the bearings in the H.P. turbine, and by the time the order had been given to shut down the engine, the rotor had moved aft $\frac{1}{8}\frac{5}{4}$ in. In my opinion, if the correct action had been taken at the right moment, this calamity could have been avoided to a great extent, in fact I am sure that if this had happened with service personnel steaming, the damage would have been slight, if any at all. This delayed us for about three weeks, but what happened in those three weeks was really marvellous. The deck was cut above the turbine and the engine lifted out, the port H.P. turbine originally destined for H.M.S. *Diana* became our port H.P., and the acceptance trial was carried out without further delay. The speed with which this job was done was a credit to any marine engineering firm, and the old Clydeside engineer foreman on the job deserves a special mention for his thoroughness and planning ; he was all I ever imagined a Scots engineer to be.

In Commission

The ship was ours now, and we of the Engine Room Department knew we had a big job on our hands. The senior ratings were a good bunch and although knowledge was somewhat sparse, there was keenness and willingness in abundance. The first big task was in the boiler rooms where the layout and the boiler were entirely new to the P.O.S.Ms. and S.Ms., and it became apparent that it would take a few months of gentle guidance and training before the watch-keepers would be absolutely efficient. One of the main difficulties was the avoidance of smoke making, a feature which seems to be prevalent in all ships of the Class, but at this stage I can say that we are fairly smoke free, on the whole. In the engine rooms things were a lot easier, and in a matter of weeks

we were proficient in this department. Now, after our first year in commission, I would say that we of the Engine Room Department are an efficient unit.

Boilers

These have done all that has been required of them, and the brickwork is still in wonderful condition. We internally cleaned both boilers during the Christmas leave period, and found that some of the bolts for securing the chevron dryers had broken away from the welding on the brackets, and the internal feed pipe in 'A' Boiler had lifted the front saddle bracket clear away from the welding on the steam drum. While we had the internal gear out, we correctly type marked it, a most necessary job that should have been done in the original assembly. We have externally cleaned the boilers three times, twice by the old method and just recently by the water washing process. The latter is highly efficient, using much less man power, and each boiler can be done in one full working day, provided that the furnace is prepared the day before. One feature of this process as applied on board, was that we found that by raising the temperature of the washing water to 190°F, it became easier to break down the carbon scale on the fire row tubes.

Boiler Mountings

To date we have experienced very little trouble with any mountings except the water level indicators. The joints between the outer cover and the glasses have less durability than I expected, and extreme care has to be exercised when refitting a water level mounting to ensure that the joint is pulled together evenly, the slightest error results in a leaky joint. Some words of praise now for the following :—the main stop valve, the auxiliary saturated stop valve, and the steam flow steadiflow feed regulator ; the latter especially, properly operated and maintained, seems almost to achieve perfection. The soot-blowers are by far the most efficient I have seen, but the poppet steam valve spindles seem to grow in diameter after two or three months use, thereby seizing in the guide, and considerable force is necessary when refitting to drive them through the guide.

Boiler Room Machinery

The turbo-blowers themselves have behaved well, though we have experienced one failure in the turbine bearings, due to the corrosion of a steel pipe fitted in the suction of the hand oil pump. After this incident, an examination of the pipes of all the other blowers was carried out, and it was found that four blowers had steel pipes fitted and the remainder had copper ones. The steel ones were replaced by copper pipes. The accessibility of the blower rooms is very bad, and they are most appropriately named 'Hell's Kitchens' by the department ; this became evident when we fitted new bearings to the port after blower in 'B' boiler room ; it was a grand performance judged by contortional standards. Another point is the poor drainage of water away from the blower room itself, but it is hoped that this will be remedied in the near future.

Distilling Plant

This has been a good piece of machinery and has come up to specification in every way, apart from the trouble with the turbine ends of the combined pumps which have suffered from the same disease as all the turbo-driven auxiliaries in the engine rooms. But at last we seem to have cured this by various methods and really careful watchkeeping, the latter being a point that cannot be too heavily stressed. The use of Admiralty evaporator compound is a great asset,

it gives many more working hours per set of coils and breaks down the scale into a composition that can be dealt with most satisfactorily by the normal blowing down process. There is one particularly bad snag, and that is the position of the brine pump suction filters. It is quite a feat to change from one filter to another, but it can be done with a certain amount of struggling.

Turbo-Generators

These machines have given us outstanding service, although during the autumn cruise we had a particularly bad crack on No. 2 machine. The machine was on full load, with the feed heater drain, evaporator coil drain, and auxiliary exhaust led into its condenser and the closed feed controller in the closed feed position. The condenser then seems to have filled, this cooled the rotor and subsequently caused distortion, and then both bearings and the thrust pads wiped. All this would have been avoided with a little assistance from the *main switchboard and better watchkeeping by the stoker mechanic concerned*. The closed feed system fitted to the machines seems to provide some difficulty to the watchkeepers, although it has at various times been explained to them in detail. Of course, some of them are better than others, and in my opinion it requires a S.M. of a little above average ability to be a good watchkeeper on these machines. The machines are situated in the extreme corners of the boiler rooms and are quite difficult to get around, another six inches further from the ship's side would have made an enormous difference.

Reciprocating Pumps

These are dependable and do a good job. The joints between the Glissard valve chests and the cylinder have given a little bother, but it is hoped that we have cured this complaint by the fitting of copper rings in place of C.A.F. jointing.

Main Engines, Gearing and Shafting

This design is a definite advance and its performance is really amazing, while the noise is negligible even at high powers. The only weakness here is the thirst the engines have for O.M. 100, but this, it is hoped, will be greatly quenched at the next refit.

The Cooper roller bearings, fitted to the starboard main shaft, give excellent service, all that seems necessary is cleanliness and adherence to the makers' instructions on lubrication.

Engine Room Auxiliaries

All the turbines on the auxiliaries have given trouble, with the exception of the main circulating pump in 'A' Engine Room. This was mainly due to the contamination of the lubricating oil with water, caused originally by the excessive clearance in the top bearings, which allowed wobble on the turbine shafts, causing the labyrinth packing to rub away, and water to pass through the packing and oil seal into the lubricating oil system. By the end of the autumn cruise we had systematically washed through all these turbines, fitting new labyrinth packings, oil seals, top bearings with correct clearances and thrust pads. Also, a drain was fitted below the thrust to drain any water that might get into the system. All this gave us plenty to think about in the first six months of the commission, and involved a lot of overtime which was done very cheerfully by all concerned.

Automatic Gland Steam Control

This is a great boon to the E.R.A. on watch, and, except for the reducing valve on the steam supply to the glands, has given little or no trouble.

Lubricating Oil Temperature Control

This automatic device is also a good piece of labour saving machinery, and is held in high esteem by the engine room watchkeepers.

Summing Up

The *Decoy* is a definite step forward, and our living conditions are reasonably comfortable, which has a great bearing on general happiness.

There is always plenty of work for all in the department, and maintenance is not always easy, due mainly to the situation of some of the machinery. I am convinced that it takes fully three to four months for an E.R.A. or P.O.S.M. to become thoroughly efficient in this class of ship.

On the whole, I am pleased with the ship, and would not like to go back to one of the old design. We have also managed to maintain a fine *esprit de corps* within the department, and have found it a great asset.
