# NOTES FROM SEA

*Readers are invited to discuss either the extracts or the comments in the Correspondence Section of the* Journal.

## MARINE ENGINEERING

*Comments by D.M.E.*

**Main Boilers—Fishery Protection Squadron (Arctic Division)**

H.M.S. *Duncan*—Generally satisfactory, slight deposits of scale remained on the superheater tubes despite a most aggressive water-wash by the ships staff.

H.M.S. *Malcolm*—Internal examination showed a generally good condition, but careful water-washing left slight deposits of scale at the superheater tube bends.

H.M.S. *Russell*—Generally satisfactory. Again, however, deposits of scale remaining after water-washing.

H.M.S. *Palliser*—When the boilers were opened up, large deposits were found at the base of generator tubes on the far side of the superheaters. These deposits were very hard and resistant to hot water and scrapers. Most were eventually removed but some still remained.

*Comment by C.S.O.(Tech.), F.O. Scotland*

It is evident that the visible portions of these boilers lead to misplaced confidence. It has been found necessary to retube *Russell's* superheaters ; almost complete choking of the tube nest by hard scale, quite impervious to water-washing, resulted in overheating of the tubes and low steam temperatures. It is considered that these superheaters should be withdrawn for examination and cleaning at intervals of 2 to $2\frac{1}{2}$ years in addition to being retubed every $4\frac{1}{2}$ to 6 years. Alternatively, consideration should always be given to withdrawing superheaters whenever it is found that water washing is not giving satisfactory results.

**Comment**

The whole question of external deposits is being actively investigated. An amendment to B.R. 3001, Article 1206 is being printed and it is hoped to publish an article on this subject in the next issue of this *Journal.*

**Boilers—H.M.S. ' Torquay '**

On opening the starboard boiler for water washing, water was seen fountaining from the superheater near the top of the tube end bends, between the support and the monolithic wall.

Identification of the burst tube proved impossible until a small fitting was devised for testing each tube individually. The device, which is self explanatory, is shown in FIG. 1.

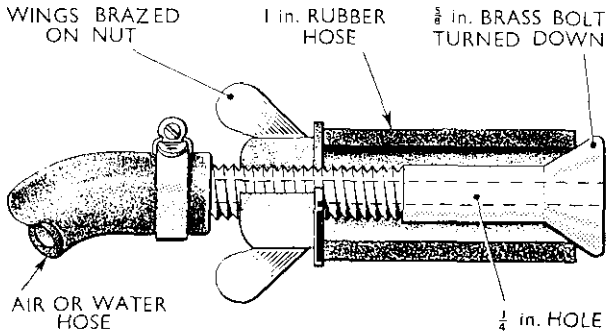


FIG. 1—TWO IN NO. ARE REQUIRED : 1 IN NO. WITH ¼ IN. HOLE AND AIR OR WATER HOSE ; 1 IN NO. BLANK

**Comment**

In *Blackwood, Whitby* and similar classes with very compact superheaters it may indeed be difficult to locate a leaking tube and this device would appear to be an excellently simple and effective means of doing so. It is recommended to other ships of the same or similar classes.

**Firemain and Auxiliary Circulating Water Systems—H.M.S. ' Duncan '**

Large portions of these systems are unlagged which leads to considerable condensation, a nuisance not only in itself but liable to corrode objects beneath and damage electrical equipment. Some lengths have been lagged by ships staff and some by Rosyth Dockyard, but much is still outstanding. It is suggested that this should be incorporated in Admiralty Specifications and that all such pipes should be lagged when building.

**Personnel—Fishery Protection Squadron (Arctic Division)**

It is considered that the advancement rate is very satisfactory excepting those qualifying for the Auxiliary Watchkeeping Certificate. Due to the short length of service in these ships (approximately 11 months) many would-be candidates are unable to complete their course ; this is abetted by the recent withdrawal of supernumerary ratings and the high proportion of juniors received straight from *Raleigh.* It is unfortunate that several keen and intelligent young ratings are unable to take part in courses for A.W.K. Certificates because, of necessity, they must be used for jobs which preclude them from ' auxiliary watchkeeping knowledge '.

*Comment by C.S.O.(Tech), F.O. Scotland*

A small ship Navy without supernumeraries requires a new approach to A.W.K. courses. It is considered that these must be progressive and if necessary continue through successive drafts, records of progress being passed from ship to ship. It is also considered that some inducement should be offered to the successful rating such as part or all of Scale ' A ' pay on obtaining the A.W.K. Certificate.

## ORDNANCE ENGINEERING

### 6-inch Mk. 23 Mounting—H.M.S. ' Belfast '

The main hydraulic system of ' Y ' turret became badly contaminated with salt water due to a leaking spiral-tube oil cooler. The system was drained by gravity and refilled with new oil. After running the system, samples of the oil were tested and it was apparent that all the contaminated oil had not been removed by draining. The system was again drained by gravity for about two days and yielded about 80 gallons of contaminated oil.

An H.P. air hose was then connected between the H.P. air bottle drain valve and the lowest stop valve on the hydraulic system pressure tree. Medium pressure was applied (100-200 lb/sq in.) and admitted carefully to each hydraulic engine causing it to run slowly when its control valves were operated. During the operation there was no evidence of overheating of the engines. In this case each pressure and exhaust line was cleared of dirty oil. On completion the system was filled with new oil, the cooler checked for leakage and all pumps and engines run. Tests showed that no salt was present.

It was proposed that at each refit spiral-tube oil coolers should be completely overhauled and pressure tested by dockyard. Between refits they should not be disturbed unless found defective. Also at each refit, all hydraulic systems should be blown through with medium pressure air as described above.

**Comment**

The proposal to omit examination of the coolers is not acceptable. The periodic overhaul referred to in Item 91 Table A of B.R.292, Chapter 13, is an essential part of maintenance and assists in prevention of major defects developing.

With reference to the proposal to overhaul the oil coolers at each main refit, the necessity for complete overhaul must be at the discretion of the ships officers but, subject to satisfactory performance of the cooler, it is considered that the five-yearly overhaul specified in B.R.292 is adequate.

The method of exhausting the contaminated oil as devised by the ships officers has obvious advantages when clearing an assembled system. Such arrangements are not necessary during a main refit since complete draining can be effectively carried out by stripping the system at some convenient point. It is not therefore intended that this procedure should be normally adopted.

### A.F.C.B. Mk. 10, Mod. 3—M.H.S. ' Caesar '

When applying tests prior to a shoot, it was noticed that the gun range counter drum did not coincide with selected range and it remained permanently at 6,000 yards. On investigation it was discovered that a taper pin in a bevel wheel in the gun range drive had sheared—it was later found that the screwed shaft and pinion in the range-to-elevation mechanism had seized.

Although no foreign bodies were found it was considered that there must have been either swarf or other hard matter present to cause seizure.

**Comment**

This is the third report of failure of this particular unit and the matter has been investigated with the manufacturers. The component involved is identical to that used on the fire control boxes of the Mk. 2 and Mk. 6 series which gave long and satisfactory service in some hundreds of applications dating from 1939 to the present day.

The principal difference between the use of the unit in the AFCB 10 and its use in all former applications is that the disc is mounted vertically in the AFCB 10 whereas in former cases it was mounted horizontally. It is possible that with the normal method of spray lubrication, the vertical mounting leads to a much quicker loss of oil and it is certain that unless particular care is taken, the rather inaccessible position, in the case of the AFCB 10, could result in the component not receiving an adequate spraying. To prevent this, maintenance schedules for AFCB Mk. 10 will be amended to call for spray lubrication at intervals not exceeding one month and a note added—' Particular care should be taken to ensure that range-to-elevation mechanism pin and screwed shaft are adequately lubricated '.

Arrangements have been made to modify the material of the sleeve gear, detail DNO7651/81, for components of new manufacture from steel to aluminium bronze to give improved frictional qualities but, pending further experience, it is not intended to make the modification retrospective because of the considerable amount of stripping involved.

**C.R.B.F.D. Mk. 5 Mod. 10—Tachometric Box—H.M.S. ' Hermes '**

The reflector sight spot would not respond for vertical acceleration displacement and investigation revealed that the vertical acceleration displacement servo valve was stuck in its liner in the vertical acceleration displacement and lag oil differential.

On stripping it was found that the dumb-bell servo valve was secured to the screw head by the valve spring and spacer rod and also secured by a piece of fine wire. These wires had not been seen before on servo valves and were removed.

**Comment**

The fitting of the fine wire to the servo valves has been authorized in order to provide a means of freeing seized valves.

Many directors have been operating with these wires fitted for a considerable time and this report is the only defect on record caused by the wire.

It is considered that the advantages to be gained in cases of freeing seized valves far outweigh the unlikely eventuality of wires causing trouble.