

LETTERS OF MACHINERY INTEREST

The following correspondence, together with the comments from the Engineer-in-Chief's Department, is published as an example of the action taken on letters called for by A.F.O. 1581/45. This particular letter from the Engineer Officer, H.M.S. Argonaut, raises many points of general interest.

The following information for the quarter ended 31st December, 1945, is submitted in accordance with A.F.O. 1581/45, paragraphs 5 and 8.

- (i) At the beginning of the quarter *Argonaut* was at Shanghai, and on 19th September, 1945, was the first British warship to enter that port since the cessation of hostilities with Japan. The ship sailed from Shanghai on 9th October, 1945, for Sydney, calling at Hong Kong and Manus for fuel.

Argonaut was in Sydney from 27th October to 20th November, 1945, during which period four days leave was given to each Watch and opportunity was taken to make good defects. The ship then paid an official visit to Adelaide (23rd to 28th November, 1945) and Port Lincoln (29th November to 1st December, 1945), where the officers and men were handsomely entertained. Passage was then made to Freemantle and, after five days there (5th to 10th December, 1945), the ship sailed for Singapore and Hong Kong. *Argonaut* escorted H.M.S. *Duke of York*, wearing the Flag of the Commander-in-Chief, British Pacific Fleet, from Singapore to Hong Kong, arriving there on 21st December, 1945. Christmas and the New Year were spent in Hong Kong. (The total distance steamed during the quarter was 11,986 miles at an average speed of 14·8 knots.)

(ii) MAIN ENGINES

- (a) The general behaviour of the main engines was satisfactory and full use was made of the cruising turbines.

Both inner sets of main gearing require renewal or repair owing to pitting of the main gear wheel teeth and to distortion of the main gear wheels. Details of this defect are contained in The Commanding Officer, H.M.S. *Argonaut's* letters No. 140, dated 25th May and 4th October, 1945, to The Secretary of The Admiralty through the Rear-Admiral Commanding Fourth Cruiser Squadron.

- (b) Joints between manoeuvring valves on the port side in both engine rooms were remade in Sydney but there was no supply of fine-thread high-tensile steel bolts available (A.F.O. 2890/44 refers). These joints have been a constant source of trouble and that between the port forward cruising and astern manoeuvring valves has now failed again.

The fitting of a corrugated athwartships main steam pipe in the forward engine room and the use of chrome molybdenum steel bolts would probably help to obviate this trouble. It is considered, however, that one of the main sources of steam joint defects is the impossibility of tightening them up evenly owing to the difficulty of getting a spanner on some of the nuts. With the introduction of superheated steam and the raising of steam pressures, bolting of steam joints has become closer and nearer to the roots of flanges. This has led to the widespread use of a hammer and chisel for

tightening up some nuts, even when a ship is being built. The drop forged steel spanners supplied through the Naval Store are completely out of date for use with the modern close bolting and, until lighter and stronger spanners made of materials such as vanadium steel are supplied, trouble with steam joints is likely to continue.

(iii) BOILERS

- (a) The boilers have behaved satisfactorily in general. All boilers were cleaned in Sydney. They opened up in reasonably good condition apart from some slight isolated scab pitting on the furnace side of the lower bends of some fire row tubes. It is hoped that this trouble will be arrested by the proper use of United States Navy boiler compound. There has been a tendency in the past for alkalinities to be on the low side, but these are now maintained between 0.3 per cent. and 0.5 per cent. normal.
- (b) The Klinger A.B.18 water gauge mountings are a constant source of trouble owing to corrosion of the gland nut threads, which frequently leads to seizure of the gland nuts and consequent delay in fitting new gauge glasses. It is suggested that these mountings or, at least, the threaded portions for the gland nuts should be made of a non-corrosive material. In the meantime a spare set of mountings should be allowed. Some of the existing mountings have had to be repaired by welding and re-cutting the threads for the gland nuts. The remainder of the mountings will require similar treatment shortly.

(iv) AUXILIARY MACHINERY

- (a) The behaviour of the auxiliary machinery has been generally satisfactory with the exception of the fresh-water pumps.

These are 5-ton Worthington-Simpson rotary displacement pumps and have bakelite bearings which are liable to considerable wear. The wearing of these bearings, particularly at the tail end, causes serious leakage from the gland and heavy wear, and sometimes fracture of the white-metal thrust rings. It has been impossible to obtain spare gear for these pumps on this station.

The after fresh-water pump has now been fitted with ball bearings carried in external housings. So far this appears a satisfactory arrangement and a more detailed report will be made after further trial.

- (b) During the comparatively short time the ship was in tropical waters defects developed on domestic automatic refrigerators, water coolers and air-conditioning plants. The most common complaints are gas leaks and failure of compressor suction and discharge valves, which are aggravated by the necessity of increasing the gas charge in hot climates.

The increase in number of these machines in ships liable to serve in the tropics has led to a very real maintenance problem. Experience with non-moving part machines of the Electrolux type (e.g., "Silent Knight" refrigerators lent to Sick Bays by the Australian Red Cross) have shown that they are quite suitable for hot climates and that they require no maintenance.

It is suggested, therefore, that domestic automatic refrigerators and water coolers supplied to H.M. ships should, in future, be of this type and that they should be permanent naval stores, replaceable by survey in the event of this becoming necessary.

(v) BOATS

The 30-ft. fast motor boat No. 4182, Dorman-Ricardo 8VRM Engine No. 36818, was not used until the arrival of the ship in Hong Kong. The engine had been completely overhauled in Sydney, but after 17 hours running it broke a crankpin bearing bolt which caused the bending of a pair of connecting rods and the breaking of two pistons. On examination the crankpin journal was found to be $\frac{3}{32}$ in. oval.

The spare engine (No. 34668) was left behind in Sydney undergoing refit.

The 30-ft. fast motor boat No. 44436, Dorman-Ricardo 8VRM Engine No. 38256, was supplied by Hong Kong Dockyard and fast motor boat No. 4182, without engine, was returned to Hong Kong Dockyard. Captain Superintendent, Woolloomooloo, was requested by signal to consign engine No. 34668 to The Chief Engineer, Hong Kong, on completion of refit.

Engine No. 36818 was retained on board and the necessary spare parts (1 crankshaft, 2 pistons, 1 centre connecting rod, and 1 forked connecting rod) were demanded by signal from S.P.D.C. (R.N.) Sydney, with the intention of refitting this engine as a spare. These parts have not yet been received.

The behaviour of the motor cutter and 16-ft. motor boat have been generally satisfactory.

A fairly constant source of trouble with fast type motor boats is the damage caused to propellers and shafts by the flotsam found in most harbours at the present time. For starting Diesel motor boat engines in cold weather it is considered that some means of warming the air intakes is required. It is suggested that an instrument such as an electric hair drier might serve this purpose.

(vi) FIREFIGHTING AND DAMAGE CONTROL

It has been found that the containers of "Nuswift" fire extinguishers are apt to corrode through.

(vii) ENGINE ROOM DEPARTMENT PERSONNEL

The messing and accommodation of engine room chief and petty officers is complicated by the fact that engine room artificers may be drafted instead of mechanics and that the drafting authorities are evidently not in a position to keep the numbers of chief stokers and stoker petty officers at the correct scale.

The first case has not actually occurred in this ship as the full complement of mechanics is borne, but the second case is acute as 1 chief stoker and 19 stoker petty officers are borne where 5 and 16 are allowed respectively. This has led to very considerable overcrowding in the Stoker Petty Officers' Mess. A suggestion was made that the stoker petty officers who are paid as chief stokers should mess with the chief stokers but this was not received favourably by either side.

(viii) MISCELLANEOUS

(a) *Pressure gauges.* A number of these have failed and replacements have not always been available. The internal lubrication of pressure gauges is an impossible task with the staff available; it is suggested that the life of these instruments would be increased if some means were provided for lubricating them without having to take them to pieces.

- (b) *Piston type drain valves.* Where a drain from one of these valves, having a solid piston, is led to a steam trap and the valve is therefore normally open, it is found that it quickly ceases to be steam tight when shut off. It is thought that this is caused by the bottom packing ring becoming rapidly scored and rotted by the passage of steam and water. It is therefore considered that all drain valves led to steam traps should have hollow pistons open at the bottom end and with holes in the side. When the valve is shut the holes are masked by the bottom packing rings and, when open, a plain portion of the hollow piston remains inside the bottom packing ring, thus protecting it from scoring effect of steam and water.

The re-packing of piston type drain valves would be simplified if a fine thread was cut on the inside of the lantern rings and suitable bolts and bridge pieces supplied for withdrawing lantern rings and top packing rings in one act.

The types of packing extractors at present supplied quickly wear out or distort and are not considered satisfactory.

- (c) *Rotary pump packing.* Metallic packing for these pumps is now in such common use that it might well become a naval store instead of an Engineer's special store item. The supply of this type of packing is in need of considerable improvement.
- (d) *Withdrawal of MeLeSco superheater tubes.* It was understood that one of the main advantages of this type of superheater tube was the ease with which it could be withdrawn and replaced. In this ship it was found in practice that a large amount of piping, etc., had to be dismantled for the renewal of two superheater tubes. The question of space for withdrawing superheater tubes may be worthy of more consideration in designing the lay-out of boiler rooms of future construction.
- (e) *Spare Part Distributing Centre (R.N.) Sydney.* Very little spare gear seems to be produced by this organisation. It is fully appreciated that stocks are evidently not available in Australia, but it is considered that it would be of assistance if Ship's Officers were informed of the steps taken by the Spare Part Distribution Centre to obtain the spare gear they have ordered.

At present, Officers demanding spare gear do not know whether their demands are being met by local purchase, ordered from the United Kingdom or, for that matter, whether their demands have even been received.

When a ship leaves the Station for the United Kingdom the problem will arise as to whether demands for outstanding spare gear should be made again in the Home Port or not. Considerable duplication of orders may be caused by putting further demands or, alternatively, the ship may never receive its spare gear at all if it is not re-demanded.

Signed : D. A. WILLIAMS.
COMMANDER (E).

OFFICE OF THE COMMANDER-IN-CHIEF,
BRITISH PACIFIC FLEET.

1st April, 1946.

ENGINEER-IN-CHIEF,
ADMIRALTY,
BATH.

(Copy to :—THE ENGINEER OFFICER, H.M.S. *Argonaut*.)

Forwarded for information, particular attention being drawn to the following :—

- (ii) (b) This complaint is fully justified.
- (iv) (b) The proposal to use absorption type D.A.Rs. is not concurred in. Other ships have found them most unsatisfactory under tropical conditions.
- (viii) (c) Fully agree. The multiplicity of special pump packings at present in use leads to great supply difficulties and few, if any, of the types are entirely satisfactory.
- (e) Agree.

FLEET ENGINEER OFFICER.

Argonaut—Quarterly Report

Summary of Comments by Engineer-in-Chief's Department

Paragraphs quoted refer to ship's report

- (i) Noted.
- (ii) (a) Proposals have been made on official papers to inspect this gearing on arrival in U.K., with a view to probable replacement.
- (b) These joints are a continual source of trouble in the majority of *Fijis* and *Didos*, and where time is available corrugated athwartship pipes are being fitted. The fitting of H.T. bolts when available is a partial answer which has been successful in some ships. Replies called for by E.-in-C. letter E.N. 6/388/45 of 29th November, 1945, are now being analysed in order that general action necessary for these classes can be assessed.
 Chrome vanadium steel ring spanners are being introduced as Rate Book articles, but at present only for ships with advanced steam conditions which will have non-standard nuts. Their general adoption is now being considered for standard hexagon.
- (iii) BOILERS
 - (a) Noted. A further report on the progress of the scabs is requested.
 - (b) Modifications to these fittings are covered by Admiralty Letter N.S. 23214/44/B. 26420 of 11th July, 1944, to Admirals Superintendent of Home Dockyards. These include fitting of stainless steel inserts and gun metal sleeve nuts. All defective items should be returned for repair, replacements of modified type being demanded.
- (iv) (a) This has been referred to D.N.C.
- (b) Our experience confirms F.E.O., B.P.F's. remarks.

- (v) Noted. Arrangements are at present being made for a series of cold starting trials in a refrigerator, which should clear up a lot of those troubles. The use of induction heaters is being considered, as such products are already on the market, but they are not generally suitable for naturally aspirated engines.
- (vi) Containers of "Nuswift" fire extinguishers are now supplied in steel instead of copper, as a result of corrosion taking place in the latter. A.F.O. 5995/45 refers.
- (vii) During the change from war to peace, and until the balance of the higher and lower rates has been regained, these drafting and consequent messing difficulties are inevitable.
- (viii) (a) *Pressure gauges.*

The lubrication of pressure gauges has not previously been recognised as a requirement of these instruments. If it is a requirement the instruments will require re-designing. Further information is requested as to the experience which has produced this complaint and where the wear occurs.

- (b) These are no longer being fitted in new construction, screw-down type valves being fitted in lieu.
- (c) The position with regard to packing for rotary pumps is continually changing as better types of packing become available and it would be wrong policy to standardise until some finality has been reached. The question of an A.F.O. reviewing modern developments is under consideration.
- (d) The shortcomings of this design are fully realised and will, so far as possible, be avoided in new construction. The original boiler room layout was for Admiralty type superheaters and congestion was such that a re-arrangement of the boiler room could not be achieved to suit the MeLeSco superheaters.
- (e) Concur in the implications concerning S.P.D.C. Sydney which is now closed down.
Action is being taken to tell S.P.D.Cs. to keep demanding authorities informed of actions taken on their demands.

June, 1946.
