NOTES FROM SEA

The following are extracts from letters received by the Engineer-in-Chief's Department from Engineer Officers of seagoing ships, together with comments, where appropriate.

The extracts from the letters and the replies sent to individual ships are not always in a form suitable for publication in the *Journal*. In some cases, therefore, the extracts have been slightly altered in form but not in substance, and the comments have been amended and amplified.

Readers are invited to comment in the correspondence columns of the *Journal* on the extracts and replies.

Workshop Tools—H.M.S. ' Albion '

The deficiency and poor quality of tools supplied becomes noticeable during a self refit period. Examples are :—

(*a*) No stellited lathe tools are allowed, although there are many stellited valves to be skimmed; the hard steels used in flight deck equipment cannot be turned with normal tools.

(*b*) No portable grinder is allowed although this machine would be invaluable and would save many hours in remaking steam joints, etc.

(*c*) The quality of the spanners supplied from Naval Stores is very poor and compares most unfavourably with the tools supplied to the Air Department.

Comment

(*a*) The provision of tungsten carbide tools for dressing valves has not been approved for the following reasons :—

(i) The stellited valve seats are estimated to go from refit to refit without reseating.

(ii) The use of W_2C tools requires special techniques with special grinding and lapping facilities.

(iii) These tools require extremely heavy duty machines.

(iv) They should never be allowed to run without a definite cut on, i.e. should not be allowed to rub. In these circumstances, the thickness of stelliting on the valves will be considerably reduced.

In view of (i) it was considered that any dressing or grinding of stellited seats would be undertaken by dockyards at normal refits and for this reason the supply of W_2C tools has not been approved.

Regarding the flight deck equipment tools, it was considered that where the material was such that W_2C tools would be required for repair purposes, any replacements necessary could be made under the ' repair by replacement' system, thus avoiding the carrying of special steel billets as well as W_2C tools.

(*b*) Regarding portable grinders, a small pneumatic hand grinder, A.P.12911 is allowed to *Albion* vide A.F.O.866/54.

(*c*) As far as is known, there is only one range of spanners in the rate book which is used by everyone. The question of the quality of spanners was investigated in 1950, and the best obtainable are now supplied. This point would be worth further investigation.

Manœuvring Valve Seats—H.M.S. ' Theseus '

The locking arrangements of the flexible seats of manœuvring valves do not rigidly lock the seat for grinding in, upward movement not being prevented. Shims of the appropriate thickness can be fitted above the flexible seat before securing the locking ring to the grinding position : the seat is then rigidly fixed.

Comment

The instructions regarding grinding in the valve lids to the seats, as given on drawings of the ahead and astern manœuvring valves, state that the flexible disc mounted seat is to be screwed hard down to the valve body thus eliminating the 0·010 in clearance. Present practice, however, is to retain the 0·008 in clearance between the seat and valve body when machining and grinding or lapping the valve seats. This is applicable in *Colossus* Class carriers and it appears, is already carried out in *Theseus*. A general article on the refitting of Cockburn manœuvring valves is being prepared for inclusion in B.R.1988.

Turbo Generators—H.M.S. ' Theseus '

The governor of one of the Fraser and Chalmers turbo generators had an excessively large speed variation with change of load. The trouble was cured by restoring the main and relay pistons and cylinders to the original makers clearances. The instruction book for the machine states that excessive clearances between the main piston and cylinder would not affect the governor performance and some time was wasted by this misleading information before it was checked. The piston referred to is of cast iron, the cylinder of gunmetal ; an oversize piston had to be made and the cylinder bored—an operation which could have been avoided had a renewable liner been fitted originally.

Comment

The makers instructions regarding clearances between the governor relay piston and cylinder generally state that over-sensitiveness is not necessary because there is an ample supply of oil to cover any leakage. These instructions

could, no doubt, be misleading but should be regarded as an assurance that the clearances are not made too fine, so preventing binding between the piston and cylinder.

Steam Valve Stellited Seats—H.M.S. 'Theseus '

Leakage past the false seats of steam valves still persists even in valves recently refitted by the dockyard.

Comment

A general A. and A. is now under consideration to modify all steam valves to stellited seat type, priority to be given to unit valves. Leakage past false seats has been solved by the present policy of seal welding. Instructions on the refit of valves is shortly being promulgated in B.R.1988.

Hull and Fire Pumps—H.M.S. ' Theseus '

The automatic air pump cut-in device has not proved reliable in operation and is considered too complicated. The primary bellows have continually to be reset, and the seat of the dumb-bell valve needs frequent attention.

Comment

The shortcomings of the bellows actuating arrangement of these pumps was realized by D.N.C. shortly after their introduction into service. Pumps of subsequent design were fitted with a simple piston arrangement in place of the bellows fittings.

Pressure Gauges—H.M.S. ' Theseus '

Two Patt.2004M pressure gauges fitted to the discharge of an auxiliary feed pump had a life of 21 days. They were found to have interior parts badly worn by vibration.

Comment

Further information on any difficulties experienced with pressure gauges fitted to H.M. ships will be welcomed. To be of value the information should include :—

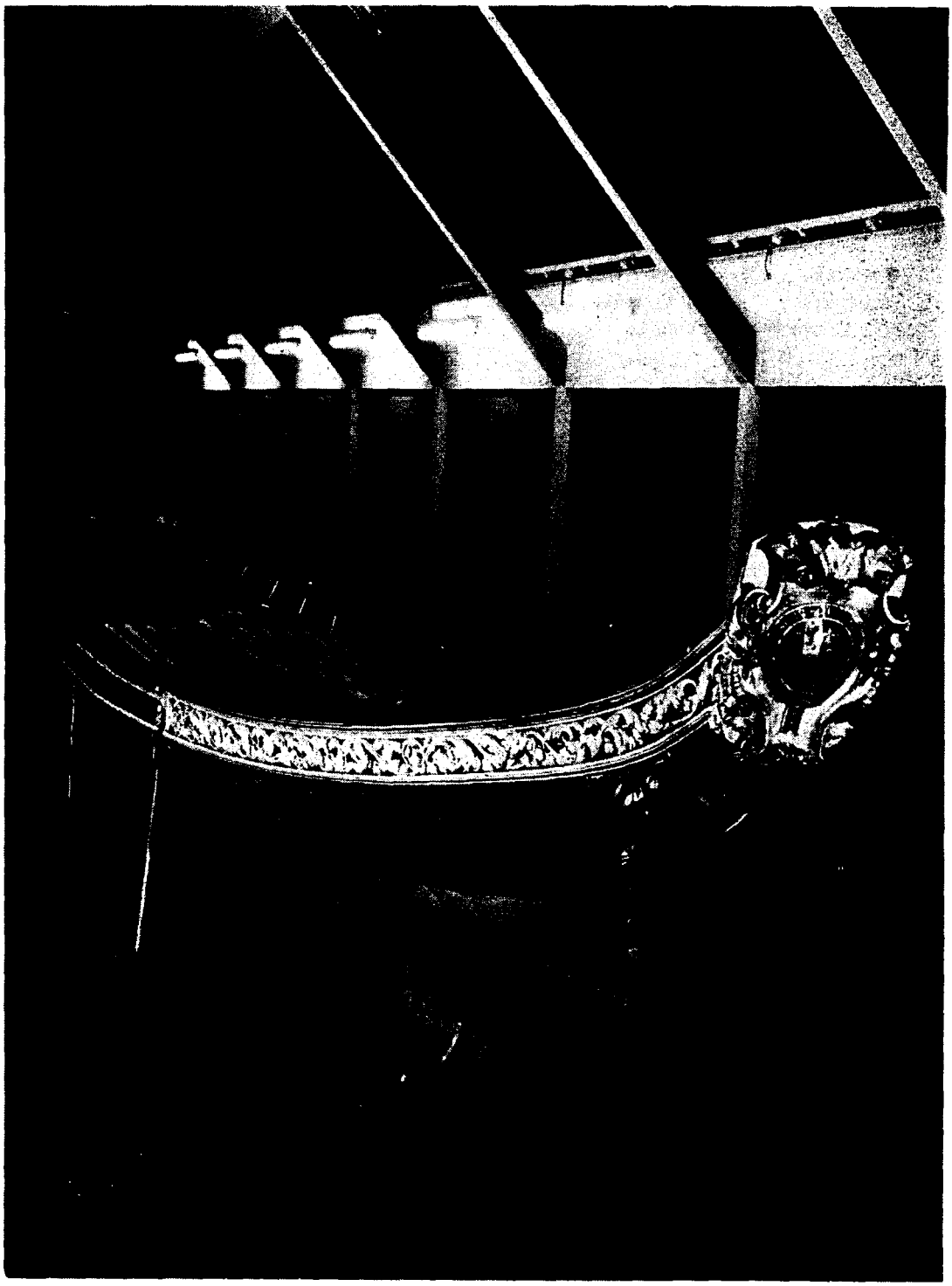
(*a*) the maker's name
(*b*) the size and pressure range
(*c*) the normal working pressure
(*d*) the life or age of the gauge
(*e*) the service for which it is used and whether subject to vibration or rapid pressure changes, etc.
(*f*) any recommendations for improvement.

Saturated Steam Reducing Valves—H.M.S. ' Glasgow '

Since refitting both saturated reducing valves, eight months ago, they have worked quite satisfactorily despite warnings from other ships that they had never worked and never would. They seem to require being brought back to standard sizes and clearances with very fine fitting limits imposed. One has just started to fail again, and it is hoped to cure this by fitting new piston rings.

Comment

Any further information on difficulties experienced with these valves would be welcomed.



THE QUEEN'S SHALLOP, 1689, PRESENTED BY KING GEORGE V TO THE NATIONAL MARITIME MUSEUM (*National Maritime Museum*)

Pulsation—H.M.S. ' Gambia '

Combustion of fuel is a continuous problem, as pulsation in the furnaces of all boilers occurs, in some degree, at all powers. It can be reduced to a ' flutter ' by using excessive fan speeds, but it has not been eliminated. This pulsation flutter may be caused by the rearrangement of the air supply in the boilers, after the removal of the preheaters, as this is the only change that has been made in the combustion system. The leads of air in the boiler room to each

boiler intake are now disimilar and, as the intake openings on each boiler oppose each other and the internal supports are not in the line of the air flow, it is possible that excessive turbulence is set up in the air supply to the boilers in the furnace fronts. It is thought that the following factors, brought about by the removal of the preheaters, may be responsible individually or collectively for the difficulty in obtaining stable combustion :—

(*a*) Lower temperature and increased turbulence of the air supplied to the registers.

(*b*) The restricted air path for the escape of burnt gases in the boiler uptakes.

' Aertite B ', supplied by the A.F.E.S. is being used on the boiler casings to reduce air leakage. It is easy to apply with a grease-gun, sets hard within a few hours and stands up well to heat.

Comment

This is of great interest. It is thought, however, that the pulsation is probably largely caused by leakage in the air casings, and it will be of interest to know what effect is noticed when the casings have been completely stopped with ' Aertite B ', or other methods.

Brickwork—H.M.S. ' Daring '

A recent check of bricking stores and materials held on board showed that nobody had the vaguest idea what to look for, and the E.O. was not able to help much. In these days of plastic brickwork, ceramic keys, etc., a B.R. on the subject is becoming essential. A brickwork report is not yet worthwhile because of lack of steaming time, but the renewed plastic fronts in ' A ' boiler continue to wear well. Plastic chrome ore baffling has been examined by Babcocks, who assure us that there is nothing to worry about.

Comment

The Book Writing Section have in their programme a B.R. on brickwork.

Establishment of Sea Stores—H.M.S. ' Daring '

The *Establishment of Sea Stores* make no provision for En.20 materials and none are carried, except when supplied after special demand.

Comment

The First Outfit Schedule of General Consumable Stores (A.F.O.1266/54) shows, on pages 7 and 8, the En.20 allowance for *Daring* Class. This allowance is not shown in the *Establishment of Sea Stores*—see B.R.4, Art.3.

Spiral Wound Gaskets—H.M.S. ' Daring '

Trial gaskets were received, in accordance with A.L.D.24470/54 of 15th December, 1954. We have no fault to find with the rate book articles, which give us no trouble. However, the majority of the gaskets received were fitted either by ship's staff or by Swan and Hunter. In addition to this, the gaskets normally fitted by Swan and Hunters seem identical with them, being Walker's ' Metaflex ' spiral wound gaskets, supplied in packages identical with those received in accordance with the letter quoted. It now seems, therefore, that we will be an excellent subject for trial of these gaskets since they are fitted roughly as follows :—

(*a*) The last two lengths of steam and exhaust pipes to extraction pumps.
(*b*) ' A ' main bulkhead valve and the pipe coupling it to the bulkhead.
(*c*) Saturated steam Hopkinson reducer to ' A ' evaporators.
(*d*) ' A ' main stop cover.
(*e*) Both main feed check valves throughout.
(*f*) Steam from manifold to F.L. pumps, and most of F.L. pump exhaust piping.
(*g*) All steam traps.

Comment

Admiralty Letter D.24470/54 asked that 8 in number $2\frac{1}{2}$ in bore S.W.G.'s be used in F.F.O. discharge systems. If, in fact, some have been used in these systems, or are in the future, the reports should include them. Apparently S.W.G.'s have been fitted to exhaust steam systems. There have been no reports of trouble with these systems, which are supposed to be jointed with C.A.F. If *Daring* has trouble, which has called for the use of S.W.G.'s, a report on it would be appreciated. There have been few reports of failures of Dewrance main stop valve cover joints and the use of a S.W.G. for this valve cover should not be necessary.

Fire Fighting and Damage Control—H.M.S. ' Daring '

Enquiries from H.M.S. *Phoenix* elicited that the ship is only allowed a radiac slide-rule, and the policy is not to fit out a small ship with the usual big ship equipment. This seems a great pity. The ship's staff are doing what they can to make an Incident Board, a Sensitive Inchrometer and an Opening Centre Board.

Comment

Consideration is being given to the supply, to destroyers and below, of the following boards :—

(*a*) Incident Board.
(*b*) W.T. Door and Hatch Board including diagrams of firemain, main suction and F.F.O. suction.
(*c*) A.B.C. State Control Board.

Demands for Refrigerants—H.M.S. ' Daring '

We find that there is no freon available in Devonport Dockyard, and that this is the rule rather than the exception, and that one is supposed to get one's own freon from Park Royal. This seems peculiar.

Comment

It has been confirmed by D. of S. that demands for refrigerant should be placed on the Storing Yards in the normal manner. Unusually large quantities may have to be obtained from Park Royal, but the dockyard should undertake this. It is also understood that Devonport Dockyard now has ample stocks of 'Arcton 6 ' and no further difficulties in obtaining supplies should be experienced. The Department of D. of S. endeavours to arrange that ships obtain their just requirements with a minimum of trouble and any further difficulties of this nature should be reported, with supporting details.

The expression ' Arcton 6 ' is the correct description of this gas, the numerical suffix shows its characteristic.

Main Steam Bulkhead Valves—First Destroyer Squadron

On two occasions, ships have been unable to connect the second boiler because the handwheel square has sheared from the spindle of the steam bulkhead valve (the short horizontal spindle carrying the lever gear, not the main spindle). This is no doubt due to the excessive force used when shutting down. The square is, however, smaller than necessary in relation to the diameter of the spindle and has been filed into sharp corners instead of a radius being left where the section changes. Unless this has been provided as the deliberate ' weak link ', it is suggested that the square should be the same size across the corners as the diameter of the spindle and rounded at the change of section.

Comment

When the bulkhead valve is being closed there should be equal pressure on either side of it, and it should be easy to arrange for this when the valve is opened. (A. and A. 218 will take care of all contingencies). No undue effort should therefore be necessary, unless there is some mechanical defect.

The drawing (No. 8—6265/42) of the 7-in Cockburn streamline emergency valve held in this department shows the square for the handwheel with diagonal size equal to the diameter of the spindle in its bearings and with rounded corners. There is no objection to this being arranged in the ships concerned. It is possible that the handwheels in some ships will not accept a larger spindle head, in which case new handwheels will be required when the correct shaft is fitted.

Fire Fighting and Damage Control—Portsmouth Squadron

Aircraft carriers are supplied with Ingersoll Rand portable air driven pumps. These are easily portable and most efficient, and an air supply is always available. Neither the Snorer nor the Diesel fire pump can really be considered portable, a term which should imply that it can be moved quickly in an emergency.

Comment

Trials of various light-weight emergency fire pumps are in progress. So far, it seems doubtful whether a Diesel driven pump, with a total weight of less than 400 lb can be found and consequently a gas turbine driven pump is being considered. It is hoped that it will be available for trials in 1956.

Dockyard Engineering Stores—Portsmouth Squadron

From a purely marine engineering point of view, the lack of an engineering store in H.M. dockyards is keenly felt. All dockyards have a gunnery equipment store where one can actually shop with a 134 *Book* in one's hand. This greatly eases the work on headquarters and suitably disperses stores round the country in the event of emergency.

Comment

This is agreed. It has always been hoped that the S.P.D.C.organization, which is still relatively young and expanding, would eventually include such an engineering spare parts store in, or adjacent to, H.M. dockyards. This has been done in some dockyards abroad. At home, it is not possible at present owing to financial limitations, since it would involve increases in staff, buildings

and total quantities of parts stocked in the country. Certain major changes in the S.P.D.C. organization are pending and it is hoped that they may make it easier to introduce the dockyard engineering store.

C.S.A. Smoke Making Apparatus—H.M.S. ' Tumult '

The flexible hose from the valve group of the C.S.A. tank to the deck piping, fractured. Is it intended that this piping should be removed completely and cleaned after a smoke cloud discharge ? The interval between making smoke was three months and pipes were thoroughly blown through and blanked after use.

Comment

It is not necessary to remove piping after making smoke. It is suspected that a localized fault may have existed in the pipe and, should the fault recur, the matter should be reported to the Admiralty, when the designers will be requested to establish the cause.

Hull and Fire Pumps—H.M.S. ' Tumult '

The Worthington Simpson 20-ton hull and fire pumps give continued trouble, in a seaway, by flooding the messdecks with water from the air pump. It is believed that, since these pumps were first designed in 1941, a modified float-operated valve has been produced to overcome this. Details of the modification would be invaluable, if the work could be carried out by dockyards.

Comment

This has been discussed with D.N.C. So few official complaints are on record that general action is difficult. Complaints should therefore be raised officially. A tip for reducing stickiness in the float gear, is to relieve the lands between the ports on the unloading piston, thus minimizing the area of metal in contact.

Special Stores—H.M.S. ' Tumult '

Engineers special stores are still a considerable nuisance. The commissioning outfit, ordered by the ship in July and August, 1954, have still to be received. It is difficult to understand why these items cannot be naval stores or spare gear and, therefore, more readily obtainable.

Comment

Special stores in pre-*Daring* Class ships are being progressively reduced as S.S. lists are reviewed. The special stores are being transferred either to naval stores, by addition to the rate book, or cutting from service material, or by making the items spare gear. The work involved will not allow the complete abolition of special stores in these ships. *Daring* and later ships will not have any special stores. Providing demands were made in the proper way and were accompanied by the appropriate sketches, the delay in delivery is not understood.

Stowage of Portable Diesel Pump—Type 15 A/S Frigates

The stowage for the portable Diesel pump is just inside a possible citadel access door (2 K). It needs about six hands to move it. If it is to run in its present stowage, it fills the compartment with fumes besides blocking the gangway and, if taken outside, the suction hose has to be led through the gas citadel door. It is considered that it should be stowed outside with a sea suction stand pipe near it.

Comment

D.N.C. has remarked :—

' It is considered that the difficulties encountered in using the portable Diesel pump under closed down conditions can be met by :—

(*a*) Fitting Patt.1518 and 1518A flanged A.S.B.J. connections with caps in convenient positions on the bulkhead at station 68, and on the forecastle deck at station 32.

(*b*) Providing trunked combustion air via the Patt.1518A connection, two lengths of Patt. 405 armoured hose suitably reduced at the end to fit the induction pipe of the engine, the air filter being temporarily removed.

(*c*) Trunking the exhaust gas from the citadel via the flexible metallic hose, provided by the pump makers, and the Patt.1518 connection. An A. and A. for the above is being introduced for the Class.'

It will be noted that arrangements for disposing of cooling water still have to be made.

Cement for Damage Control—H.M.S. ' Urchin '

The cement supplied with the first outfit of sea stores was ordinary Portland cement Patt.N12858 instead of cement ' rapid hardening ', Patt.52. In addition, only 56 lb was supplied. As cement is one of the most important D.C. stores it is suggested that the allowance should be increased to 2 cwt, and that D. of S. should be advised that Patt.N12858 is not acceptable as a substitute for Patt.52.

Comment

It is agreed that ordinary Patt.N12858 cement is not acceptable as D.C. stores in place of Patt. 52 rapid hardening. B.R.373(2) for A/S frigates allows 1 cwt of Patt. 52 in peace time and 5 cwts in war. These quantities are considered sufficient.

Paxman 12 R.P.H. Diesel Generator—H.M.S. ' Wizard '

The fracture of a fuel injection pump plunger spring and the subsequent rotary movement of its associated pump plunger, caused a failure. In view of the heavy power requirements at Londonderry, it is felt that one spare fuel pump for each bank of cylinders, and even fuel injection pump calibrating and phasing equipment for squadron use, if it is fairly easily obtainable, should be supplied.

The solenoid operated trips, fitted to these machines, are very liable to damage by inexperienced personnel, who attempt to use the resetting lever for shutting down the machine. In *Urchin*, where no spare gear or drawings are held, all three automatic watchkeepers are out of action.

Comment

E.-in-C. agrees generally with these proposals and the matter is being investigated. It has also been proposed to supply drawings to each ship. D.E.E. is responsible for the panels and is arranging supply of spare gear.

Furnace Fuel Oil Heater Valves—Third Training Squadron

The steam control valves are extremely difficult to keep steam tight, because the wiredrawing of steam damages the valve lids and seats. It is suggested that gunmetal should be replaced by stellite, thus preventing steam leakage from carboning up heaters not in use.

Comment

E.-in-C. is investigating the problem of leakage from non-ferrous steam valves. It is suggested that, in the meantime, defective valve seats should be repaired where possible by screwing in seats of monel, or other nickel bronze alloy. Valve lids should be replaced in the same material.

Water Washing—Third Training Squadron

A set of water washing equipment has been manufactured in the naval yard and has been used successfully in *Wizard* and *Urchin*. In *Urchin*, to conserve feed water, fresh water from the port fresh water tank was used, a temporary connection being made with the overflow tank suction line, and the system isolated in order to avoid contamination of the feed system. The tank was heated by means of a pipe from the main stop-valve drain. It is noted that, in B.R. 1988, article 0428, the term distilled water is used in the first paragraph. Is it considered necessary to use distilled as opposed to shore water ?

Comment

Provided the brickwork is properly sealed, there is no objection to using fresh water.

Preservation—Third Training Squadron

It is suggested that a section on spare gear preservation could well be included in B.R. 1988, to provide sufficient detail for ships wishing to preserve special tools, etc., after use.

Comment

Action is being taken to include brief preservation instructions in the various departmental Books of Reference.

Adaptors for Admiralty Screwed Hose Connections—Third Training Squadron

These connections are not Admiralty pattern items. As this type of connection is invariably used in main suction systems, boiler running-down valves, test connections, etc., there is a definite requirement for a complete range for these adaptors.

Comment

It is agreed that a requirement for such adaptors exists. It would be helpful if a suggested list of essential adaptors could be provided.

External Micrometer—Third Training Squadron

The largest external micrometer supplied to destroyers and frigates is 2-in, although a 12-in internal is allowed. It is suggested that an 8-in external micrometer would be of very great value, particularly to those squadrons where local maintenance facilities are poor.

Comment

E.-in-C. has submitted proposals for increasing the variety of micrometers for all ships and Board approval is now awaited. The proposals include 0-2 in, 0-4 in and 4-8 in outside micrometers for destroyers and frigates.

Steam Windlass—H.M.S. ' Mounts Bay '

The present siting of the capstan valves makes it almost impossible to take adequate measures to prevent corrosion of the underside of the valve boxes and it would seem that, if cast iron is to be used for the differential valve box, the box should be made fully accessible for maintenance. The general condition of the exposed steam leads is not helped by the use of absorbent lagging material to cover them.

Comment

All high temperature laggings are necessarily absorbent, but a waterproof skin of P.V.C.-coated asbestos cloth, or other waterproof material, could be made. The former material will be covered by the latest edition of E.-in-C. Material Specification and is included for A.B.C.D. purposes. Supplies are not yet available, but dockyards should be able to supply some form of waterproofing similar to that used on deck steam lines in tankers.

Main Engines—Fourth Frigate Squadron

Pukaki reports the loss of all whitemetal from one eccentric strap in the course of prolonged high-speed running. The ship ran with a very noisy engine for over a week and finished up with two days at 156 r.p.m. After all this, only 0·036 in had to be skimmed off the eccentric to restore its contours. The reason for this failure, and other eccentric trouble, was badly fitted eccentric pans which would not contain the oil and water mixture. In *Cardigan Bay*, a more glutinous mixture is used in the pans by adding a little soft soap to the oil and water and mixing well before use. The bin used for mixing also has the watery drainings from the fans, dynamos and other sump drainage added to make the oil go further.

Comment

It is interesting to note that eccentric straps will run with the loss of all whitemetal. The advantages of the use of soft soap in the eccentric troughs has been noted on previous occasions with these engines, the soap apparently assisting in the formation of a stiffish paste which is not readily thrown out of the troughs.

Main Engines—H.M.S. ' St. Bride's Bay '

A discrepancy in the slipper clearance, which was noticed when erecting one unit after refit, was traced to one of the holes, locating the crosshead bearing to the fork end of the connecting rod, being 0·025 in out of position. This unit had been repeatedly checked for alignment in the course of years and many visits to different dockyards. The occurrence, and the *Oakham Castle* report (Devonport Yard Letter No. 3916), indicate that most of these engines are running with considerable building and erection errors in them and that they will perform amazingly well under these conditions. It is doubted whether many of the smaller firms that built them were even equipped to detect the error mentioned above and its existence for ten years has not affected the ship's excellent service.

Comment

A rather similar case of this was found in *Loch Fyne* where an error in one bolt hole of 0·034 in between connecting rod and bottom end bearing caused severe overheating of the crosshead guide.

Stern Tubes—Fourth Frigate Squadron

St. Bride's Bay experienced considerable heating up and greasing in the stern tubes after refitting. After some running, they settled down satisfactorily. These ships have long suffered from excessive stern tube bush wear and *Cardigan Bay* is now fitted, on one side, with a positive grease supply to each bearing instead of a common supply to the space between the bearings, which requires 6 cwt of grease to fill it before there is any likelihood of the grease reaching the bearing surfaces. Experience to date indicates that the experimental system (Admiralty Bath Signal DTG.201547Z. May, 55) is performing well and no heating up has been experienced, compared with occasional warming up, for no apparent reason, of the old type.

Comment

Noted with interest.

Auxiliary Machinery—Fourth Frigate Squadron

The drawings supplied for the majority of machinery in the ships consist of just sectional arrangements with very few details of glands, valves or bearings. This may be the reason for *St. Bride's Bay* twice, and *Cardigan Bay* once, suffering from mysterious evaporator breakdowns a few weeks after leaving a dockyard. In each case the fresh water section of the combined pump had been fitted with springs on both the suction and delivery plate valves. Under these circumstances the pump will work perfectly for a while and then the output of the plant just starts falling steadily. With no gauge glass on the distiller, the reason is not immediately apparent, but normal performance is restored on removing the springs on the suction valves.

Comment

Springs are not shown on the sectional drawings of the pumps although, admittedly, valve details are not given with sufficient clarity to avoid such a mistake being made.

Unfortunately, drawings of the valves only are not available, and it is suggested that a notation that springs are not to be fitted on the suction side should be made in ships' drawings of the pump.

Boilers—Seventh Frigate Squadron

The only difficulty has been with the sprayer quarls, which require frequent renewal. A contributary cause of this, although probably a minor one, has been the wide variation in dimensions of the bricks supplied, necessitating much cutting, and giving inferior results.

Comment

Action has recently been taken with the brick manufacturers to ensure that throat bricks are made to the correct sizes. It would, however, be of interest to know whether the bricks in question were laid up with bonding mixture since this is a common mistake which does lead to cutting the bricks to make them fit. The dimensions of the quarl bricks are such that they should be laid up dry, there being no allowance for bonding.

Electric Welding Equipment—Seventh Frigate Squadron

It is appreciated that the case for supplying frigates with electric welding equipment has often been submitted before, and rejected after due consideration

Nevertheless, the lack of it has been severely felt and has resulted in a very high expenditure of oxygen and acetylene. An electric welding outfit has been made in one ship, and successful work has been done by using the 20 in lamp resistances and emergency-run cable.

Comment

Further investigations into the supply of electric welding equipment are being made.

Spare Gear—Seventh Frigate Squadron

The increase in bulk of the spares outfit due to packaging, especially with a machine having a large number of spare parts, such as a Diesel generator, is alarming. This is largely because the $2\frac{1}{2}$ in $\times$ $2\frac{1}{2}$ in box appears to be the smallest used and causes, in the aggregate, a considerable waste of space when containing one item such as a $\frac{1}{2}$ in $\times$ $\frac{3}{16}$ in spring.

Comment

The increased bulk due to packaging is recognized and means of limiting the size by, for example, specifying ' ships storage packs ' are being considered. This pack would be sufficient to preserve the item and protect it from physical damage when stowed but, for transit, further protection would be required which could be removed on arrival. An attempt is also being made to provide improved stowages in ships, so that the maximum use of space available will be made. In this connection, development of standard racking and a standard range of sizes of spare gear boxes is in hand.

Examples of gross over-packaging or waste of space would be welcomed by E.-in-C.'s Spare Gear Section, giving details of item, contract number and packer's label.

Turbo Generators—H.M.S. ' Loch Alvie '

The 100 kW. Allen's turbo generators have both to be run at sea and in harbour as, with sea temperatures of 80 degrees and over, the armature temperatures reach the maximum permissible (140 degrees) on 50 per cent load. The armature temperatures at full load are between 155 and 160 degrees. From readings taken, it has been found that there is a temperature rise of 10 degrees in the sea temperature between the condenser inlet and the inlet to the cooler. The pipe line is about 30 ft and the ambient temperature 110°. The temperature rise across the coolers is only 4 degrees.

Comment

This matter is being dealt with by D.E.E. In view of the high temperature rise throughout its 30 ft length, the pipe should be lagged, if this has not already been done, in accordance with Material Specification No. 2 L.1 Part 2 Para. 4(b).

Diesel Engine Valve Grinding—H.M.S. ' Loch Alvie '

The Paxman Ricardo 12 R.P.H. has been under top overhaul while the ship has been at sea, but this could not be completed as the valves cannot be ground-in on board. The valve seats are cut to an angle of $45\frac{1}{2}$ degrees while the valves are 45 degrees. It is considered that a dummy for grinding the valve seats should be included in the equipment for top overhaul, list 'A'.

Comment

The provision of a dummy for top overhaul is not considered necessary for ship use, and it probably would not retain its teeth for long. Where good seating of the valves cannot be obtained by normal grinding, dockyard assistance should be sought.