

CORRESPONDENCE

SIR,

Photographs or Sketches of Machinery in Previous Royal Yachts

I am anxious to obtain any photographs or illustrations which may be available of the engine rooms or machinery installations in previous Royal Yachts. Apart from their historical interest, it is intended that a selection of about half-a-dozen such photographs (if available) will be suitably mounted in the entrance to the engine room of the present Royal Yacht.

If any reader can assist in any way, I should be most grateful, and I would be happy to defray any cost of reproduction, postage, etc. which might be involved. For information, the vessels concerned and their dates of commissioning are as follows:

<i>Victoria and Albert I</i> (renamed <i>Osborne</i> in 1855)	1843
<i>Fairy</i>	1845
<i>Elfin</i>	1849
<i>Alberta</i>	1863
<i>Osborne II</i>	1874
<i>Victoria and Albert II</i>	1855
<i>Victoria and Albert III</i>	1901
<i>Alexandra</i> (sold and renamed <i>Prince Olaf</i> in 1925)	1908

(Sgd.) R. L. HEWITT,
Commander, R.N.
(H.M. Yacht *Britannia*)

SIR,

L.O. Hygiene in Steam Driven Auxiliaries

The note from Headquarters on the above subject in the June, 1963 issue of the *Journal* is an admirable resume of the present philosophy on the above subject.

The provision of 50 micron filters should be a big improvement, but the 'ultimate' 5 micron rating can hardly be too fine a cut-off if there is truth in the belief that the thickness of the thin end of the oil wedge in Michell thrusts is as little as 1 micron.

I presume that the 5 micron filter projects is based on the U.S.A. Pall Corporation's Ultipor 9 Triphane which employs two stages. The primary stage is a disposable element made of epoxy impregnated cellulose sheet over which has been applied multiple layers of fibrous materials, all bonded to each other to prevent media migration.

The second stage consists of a woven stainless steel wire mesh with a fine stainless steel powder layer on its upstream surface, all integrally sinter bonded together. As the powder size is larger than the mesh holes, media migration is eliminated. Since such a filter for a 30 g.p.m. flow is only about 4 in. diam. \times 17 in. long, application to auxiliary machinery is feasible, but I suspect that some re-thinking must be done to provide F.L. pumps with available discharge pressures nearer 150 lb/sq in. than 30-40 lb/sq in. which is current practice.

The newsletter makes no mention of initial hygiene at makers' works and at refitting shops. In my opinion, it is more important to achieve nearly absolute removal of solids before installation on board than to collect the dirt in service. Admittance of dirt during service amounts to slackness of supervision and can be easily controlled, whereas 'industrial' dirt is more insidious, and needs more detailed attention.

Some dockyards have attempted the provision of flushing units, but so far as the writer is aware, these have at best, been based on felt element filters, which tend to choke when water is present in the oil. It would be interesting to learn Headquarters' views on the possibility of developing a flushing unit based on the Ultipor 9 Triphane—the use of which could be made mandatory on all manufacturers and refitting authorities concerned with steam-driven auxiliaries. I suggest that the use of such a unit combined with Millipore test equipment now becoming available would provide a welcome reduction in S.2022 reports.

(Sgd.) H. J. BEER,
(Singapore Dockyard)

SIR,

(Intended for Part II—'Not necessarily endorsed by Admiralty')

The Metric System

In May, 1962, at a time when Britain's entry into the Common Market seemed to be a possibility, the British Standards Institution published a pamphlet entitled 'Change to the Metric System?' This document was discussed in a general way at the September, 1962 A.B.C. Unification Conference in America. There was no doubt at all that any proposed move by Britain towards the Metric System would not be welcomed by U.S.A. or Canada, and there was no indication that any such move was contemplated by those countries.

Since the time of the pamphlet of May, 1962, the prospect of Britain's entry into the Common Market has receded and the question of going Metric therefore might have lost impetus. This, however, has not been the case. Certain sections of British Industry wish the question to be pursued and it is understandable that those who manufacture for consumption at home and for export, do not wish to be saddled with two systems.

The British Standards Institution has followed up the pamphlet of May, 1962, with 'A Report by the B.S.I. on British Industry and the Metric System', published in October, 1963. This Report states that a decision must come from leading organizations in industry, trade and H.M. Government. The Report is

by no means conclusive, but performs a service by having the matter kept before those upon whom the responsibility for decision must rest. As there is no doubt that forces are at work to cause a decision to be made, it seems to me that Defence interests should be expressed or that the repercussions of any change should be realized. Admiralty, and the Royal Navy, are to no small extent dependant upon the resources of British industry. We are also closely linked with our North American allies, and we shall find ourselves in some difficulty if left with a foot in each of two camps—Metric and Imperial units.

Protagonists of both systems can point to advantages and disadvantages, and it is not part of this communication to express a preference for either. Nevertheless, the views of others would be most welcome. If the democratic processes of discussion and debate are now employed, that decision which is reached when the right moment arrives, is more likely to be the best decision for the greatest number of people. Is that the same thing as the best decision for the country?

There are many of us now working towards the achievements of a greater measure of international understanding and until decision is reached we are being torn apart by the conflicting loyalties of trying to advance with Europe and Asia on the one hand and with U.S.A. and Canada on the other.

(Sgd.) A. H. L. TRAPNELL

Cleanliness of Lubricating Oil

Although not strictly 'correspondence', the following departmental comment is published in answer to the several points raised by Lieutenant-Commander Woods in his letter on the subject of lubricating oil cleanliness which appeared in the 'Correspondence' of Vol. 14, No. 3 of the Journal.

Department Comment

There is substantial agreement at Headquarters with most of the points that Lieutenant-Commander Woods makes. It is probably true that most ships' E.O.s who pay great attention to the quality and the use of their lubricating oil follow much the same procedure as was apparently adopted in *Lowestoft*. It should be borne in mind, however, that until comparatively recently the lubricating oil in most auxiliaries was covered by a six-monthly oil-change period. In 1962 it became quite clear to all interested Sections in Bath that lubricating oil in the auxiliaries in modern ships was neither as clean as it should be nor was it operating as satisfactorily as it might be expected to. Action to rectify this situation in several directions was taken immediately. One result was the issue of an A.F.O. (1364/62) which has subsequently been repeated almost verbatim in B.R. 3001 as Article 2011. Among other things this resulted in the halving of oil-change periods, and although it is known that some E.O.s change their oil in various auxiliaries even more frequently, it is still considered to be a reasonable enough guide.

It is now recognized that it is highly desirable to develop a lubricating oil test kit similar to the Diesel engine lubricating oil test kit already held by every ship, for use with turbine lubricating oils. This is, however, not an immediate possibility, partly because the research which must be put into such a proposition is appreciable and partly because the need for certain types of test, e.g. for the presence of salt in lubricating oil, is acknowledged but cannot be effectively met at the present time.

One tool which is at the disposal of every engineer officer is the Speedy Moisture Tester, which must be used regularly. While the appearance and 'feel' of an oil might contribute something towards a decision as to whether it is satisfactory, a more scientific approach must now be employed. It is known that OEP-69 will look cloudy after only minute amounts of water are added. It is emphasized, however, that the water content must be reduced, or the oil changed,

if this water content exceeds 1.0 per cent. The best general guide as to the performance of the oil with regard to its other characteristics is that it would be best to change it at a maximum of every three months in auxiliaries. (*N.B.* Where this routine has been written into Maintenance Schedules it is known that present requirements have been changed to 4-monthly, and this is concurred in.)

Judging from the number of reports from sea of sludge in the oil and poor lubrication in general in steam driven auxiliaries, the situation in 1962 was comparatively dangerous. Fewer similar reports have been received in the last year.

D.M.E. concurs in the thesis that 'built-in' dirt can hardly be completely eradicated. It is hoped that this will be progressively more effectively collected by the finer filters now being fitted to most auxiliaries. The requirements of B.R. 3001, Art. 2011, are being met to some extent in all dockyards by the use of flushing units. These should help to make certain that lubricating systems in machinery are clean when equipment is put into service after refit. Several portable flushing units of commercial design should be available during 1964 for prototype trials on board ship. These compact and, it is hoped, easily operated units should go a long way to meeting the needs of the average E.O. in both large and small ships. It is thought to be essential that such a flushing routine should be followed prior to putting a newly refitted machine into service, and that it would be prudent to flush most systems at intervals during their operational life. Until standards of hygiene improve very greatly it would seem desirable to flush thoroughly the system of any auxiliary which has been partially opened up even for minor inspection or refit. It should also be borne in mind that quite appreciable quantities of dirt are undoubtedly introduced into every lubricating oil system whenever it is filled using present techniques.

B.R. 3000, Article 2006, gives adequate instructions as regards the use of centrifuges with main lubricating oil systems and, in general, the E.O. of the ship is well advised to use his centrifuges as much as possible. To this end, the portable flushing units supplied to certain ships for trial will probably also incorporate a DeLaval separator.

The procedure of washing an oil continuously with a quantity of distilled water every day cannot be completely concurred in. Although evidence on this matter is still slender, it is considered undesirable to introduce unnecessary quantities of water into either OM-100 or OEP-69, even though this is soon to be separated out. It is known that the rust-inhibiting additives contained in both these oils might be leached out to some extent in this process.

The continuous renovation system, fitted only in H.M.S. *Torquay*, is now to be fitted in all *Whitby* Class ships. This gives ready access to a centrifuge for the oil charges in every auxiliary, and will also ensure higher standards of cleanliness when refilling the system.

Although not covered by Lieutenant-Commander Wood's letter, it has recently been noticed that some ships regard a thorough renovation of their auxiliaries' oil charge as being equivalent to an oil change. This is most certainly not the case. The life of an oil is dictated by its rate of oxidization and by the depletion of the numerous additives in the oil. These factors depend to a great extent upon operating time and temperature and are quite independent of whether the oil has been centrifuged or not, except that the presence of water or dirt can accelerate deterioration.

Summing up, it is widely recognized throughout the Navy and Headquarters that current procedures leave a lot to be desired in respect of the cleanliness of lubricating oil and lubricating oil systems. Every engineer officer would be well advised to be as alert to the possibilities mentioned above as Lieutenant-Commander Woods.