

CORRESPONDENCE

SIR,

Marine Fouling

Lieutenant-Commander Rourke, whose most informative article appeared in the June issue, and others interested in marine fouling might care to hear of experiences on the China Station thirty years ago in a County Class cruiser. The rate and degree of fouling in certain cases was so great that an increase of power of 100 per cent for given shaft revolutions was not rare. The hull form and consequent resistance curves were such that the greatest percentage increase took place at revolutions corresponding to about 25 knots. Tube worm seemed to be the chief culprit.

One particular case remains in my mind. The occasion was a dockyard refit at Hong Kong in which the ship spent ten weeks alongside after docking when the bottom was scraped and painted. Three days later we found that an increase in the horse power required for 26 knots above that normally required for clean bottom conditions was 108 per cent.

These experiences led the Admiralty to approve, on financial grounds, docking the ships twice a year for cleaning the bottoms instead of once as formerly.

I might add that though many people were disinclined to believe such high figures, I subsequently found reports in the Admiralty records of similar cases of very severe fouling in the West Indies.

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SIR,

Models and Mock-Ups

Lieutenant-Commander Robinson covered the design advantages to be obtained by mocking up machinery, but a few comments may not be out of place from the viewpoint of the first E.O. standing by the building of a surface ship with a full scale mock-up on the premises.

All major points of design and arrangement were decided before the E.O. was appointed, none the less the mock-up is still in daily use by design draughtsmen when deciding details. Small pipes, etc., which would previously have been run on site are better arranged in the mock-up. If the best arrangement requires adjustment to other systems this is done without delay to the ship and at minimum cost; previously a worse arrangement would probably have been accepted. The result is a tidier layout with considerable saving in space, some of it more apparent than real, since there is a tendency to pack all pipe-runs out of sight under floor plates and in remote corners. Physical use of the mock-up to pipe-trace and bilge-crawl quickly demonstrates that large areas of floor plate do not necessarily produce better accessibility. Fortunately the firm ask for and usually act upon the views of the ships staff, so that modifications are made in wood, and not later in expensive hardware.

The positions of controls, gauges, lighting, etc., have all been decided in the mock-up. This is of considerable benefit since various positions may be tried which would not be practical in the ship where cables are run before most pipes are erected. It is important here that the mock-up be lifelike, a wire representing a pipe is less opaque than the pipe itself.

The mock-up is a great help in training E.R. personnel but system-tracing is much more difficult when all the pipes are made of the same material and must not be stood upon. However one rapidly learns the effect on appearance of a pipe of several inches of lagging. An appreciation of the final appearance of the machinery is easily obtained which aids the advance party in keeping abreast of, and anticipating, the work in the ship. The mock-up is always there to aid identification of fittings as they appear in the ship, experience showing that identification by the erector is not necessarily reliable. Prior knowledge of the installation should give more time to study detail, and it is believed that this will result in the advance party being more knowledgeable than would have been the case without it.

We are principally concerned with the main machinery mock-up but the same technique has been extensively used in laying out the whole ship. Example of compartments for which full scale mock-ups have been built are:—

On shore Operations room ; T.S. and annexe ; Enclosed bridge.

On board Engineers and Electrical office ; Ships and Supply office ; P.O's. mess.

It must not be thought that a mock-up is the perfect tool. The majority of installation snags are eliminated but a few still occur. For example, one auxiliary arrived slightly different from the early drawings and fouled the main turbine seat ; another arrived with the dipstick on the inaccessible side of the sump. Fortunately both were easily modified.

In conclusion I would suggest that a mock-up is an excellent tool provided it is used to the maximum yet not expected to do the impossible. In particular the more user experience that can be fed into it the better. As E.O. of the first of the Class I am grateful that the ship will not be used as a mock-up for the remainder of the class.

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