

CORRESPONDENCE

SIR,

Chartered Engineers

Readers of the *Journal* might have noticed that an article on 'Chartered Engineers' which I contributed was apparently not written by a Chartered Engineer! Whatever the Ministry of Defence current instructions may be on the use of 'C.Eng.' in the Services, it should be appreciated that the title is being increasingly used elsewhere by the profession (quite correctly) with or without the grade of Institution membership. May I suggest, Sir, that civilian and retired contributors to your columns should be designated 'C.Eng.' when appropriate.

(Sgd.) I. G. AYLEN
Rear-Admiral

Note: Readers will have noticed that the designation 'C.Eng.' has been used throughout this edition of the *Journal*. It is intended to use this designation, when appropriate, in the future. We offer our apologies to Admiral Aylen.—(EDITOR).

APPENDIX

EXTRACT FROM TYPE 81 MACHINERY CROSS-REFERENCE INDEX

Main Contractor		Sub-Contractor		PIL No.	B.R. No.	Machinery	
Name	ADREF Code No.	Equipment	Name			Equipment	'M' No.
PAXMAN	678	12 YHAXZ Diesel/G A6 YHCAZ Mk2 Diesel/G	NAPIER DRYSDALE VOKES SELF PRIMING PUMPS & ENGINEERING CO. REAVELL S.P.E. CO. LTD. TEDDINGTON AUTO CONTROLS	Supercharger	1332 (15) 3612	371a	56
				'J' Diesel S/W circ Pp. Air intake filters		371f	56
				NAP 10		326f	56
				CB 6E		2422e	56
				Hand operated fuel Pp. Starter Motors		371f	56
				P.18.A Mk II Hand priming pump	SPR/1 EB 34835	371a 371a & f	56 56
				Auto cut out	CCL/P12/12	(Pil held by W/E)	
PEARLESS	676	Tea machine			PAE/1	621c	83
PLENTY	677	Diesel transfer Pp. G6 prime & boost Pp. Pilot burner pump Simplex filters		(Fuel lines)	PTY/5	433b	29
					PTY/4	3405	1433a
					3405	434k	109
					PTY/6		
					PTY/1 (V)		
REAVELL	737	H.P. air compressor	I.V. PRESSURE CONTROLLERS TEDDINGTON AUTO CONTROLS	Surplus air Vv.	3388	311q	65
		H.P. air separator column Starter motor for Diesel generator		Auto cut out		DID/6/4	551a
			PAXMAN	Diesel generator	EB 34 & 35	371a & f	56
RHODES & WESTLAKE	760	Drying tumbler Washing machine			RWP/2	662e	87a
					RWP/1	3807 3806	661d

SIR,

Classification = Clarification

Lieutenant Tapson's article entitled 'Classification = Clarification' in the June issue of the *Journal* will have been read with sympathy by all those who have experienced the same frustrations in attempting to extract information from the mass of publications carried in H.M. ships. As he points out, there is no suitable index which gives common access to BRs, PILs, D787 entries, planned maintenance items, correspondence, etc., and the task of hunting through lists of machinery and components can be most time consuming. For example, one finds that having determined the required 'M' number from the Maintenance Schedule Index, it does not help when looking in the D787 since this is often compiled in ascending 'E' numbers. Neither the 'M' nor the 'E' number is of any use when looking for the relevant PIL, and to locate the BR one has to start running through yet another random list.

Much of this difficulty has been overcome in H.M.S. *Eskimo* by compiling a simple alphabetical machinery cross-reference index based on maker's names. Under each manufacturer is listed the equipment fitted of that make together with any sub-assemblies and their manufacturers. For each machine and sub-assembly the following information is tabulated: ADREF code number, BR number, PIL number, 'M' number and 'E' number. A typical extract is shown in the Appendix on p. 366. In addition, correspondence, S.2022s, S.2022(a)s, signals, etc., are filed under the corresponding 'M' number.

The maker's name was used as a reference since it avoids ambiguity and, in addition to being displayed on nearly all machinery, is in many cases already well known. In the case of small items such as valves where the maker is not known, the choice of manufacturers is limited to two or three and little time is wasted in running through the list made by each.

The index, which is kept in a prominent stowage in the Combined Technical Office, has been widely used by all sections and levels of the department and has become the most 'thumbed' book in the office. It was compiled in its basic form in some eight man-hours and has been in use now for nearly a year, during which time it has been amended and brought up to date as necessary.

It is not suggested that this is the answer to the Fleet's indexing problems but if a simple index of this type could be compiled for each class of ship and issued as nothing more than a handy cross-reference, a great deal of ships staff time might be saved.

(Sgd.) R. A. BALLER,
Lieutenant, R.N.

SIR,

The Lead Balloon Club

While not, I fear, qualified for membership, I welcome Commander McKee's proposal to form an anti-organization organization; the Lead Balloon Club.

He calls for suggestions for a motto and I would like to offer him Archimedes' classic 'Eureka!'.

This cry heralded, as we all know, the sudden perception of this archetype of bathroom inventors that he could determine the honesty of the King's goldsmith by immersing the crown in a tub of water; a suggestion that must have seemed so egregious to his contemporaries that great credit is due to him for having established his principle in the face of the current bureaucratic establishment.

Furthermore, this principle is not irrelevant to the title of the Club, indicating as it does that anything, even a lead balloon, will ascend if what it displaces is even more ponderous.

(Sgd.) J. SIDGWICK
Captain, R.N.

SIR,

Equipment Failures

An error in reproduction of FIG. 1 on p. 149 of Vol. 17, No. 1 gives the impression that the rate of incidence of random failures which occur between the 'primary' and 'wear out' stages of equipment life is negligibly small.

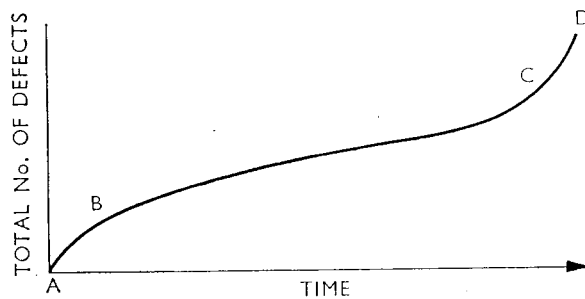


FIG. 1

All experience of the real world of multi-component equipment and systems designed, manufactured, operated and maintained by human beings indicates that this is far from the truth. The curve looks more like that shown in FIG. 1.

The slope of BC is a measure of the unreliability of the equipment (or, more precisely, the system comprising the equipment

and its environment of operators, unforeseen shocks and stresses, occasionally dirty oil cans, etc.). BC will be horizontal when the designer has precisely foreseen every possible change in the environment; the manufacturer has made no mistake; and the operator and maintainer have never deviated from the instructions in a perfect handbook—a situation difficult to envisage in an imperfect world.

(Sgd.) J. L. SPANYOL
Captain, R.N.

SIR,

Designing CVA 01

In addition to expressing sincere condolences on the political abortion of the above, I should like to make three brief comments on the most interesting outline design summary in your December, 1966, edition.

- (i) Does not water consumption tend to escalate, cf. *Eagle's* evaporator capacity and the approximate 50 per cent increase in personnel in CVA 01?
- (ii) I am glad to see the machinery design philosophy is unchanged, but the real crunch is clinging to the philosophy and meeting the Staff Requirements. Unfortunately we can't see the results which only emerge at sea subsequently.
- (iii) I wonder if the idea of secondary reduction gears (epicyclic) with main thrusts well aft was investigated. The shafting weight with full power revs at 178 would be considerable.

(Sgd.) J. G. C. GIVEN,
Rear-Admiral

Author's Comment

- (i) Water consumption does tend to escalate. CVA 01 met all the requirements, taking into consideration the reliability expected from flash evaporators on 24-hour operation—against H.M.S. *Eagle's* mixed plants on 20-hour operation. H.M.S. *Eagle's* capacity as quoted was after her recent major refit, and the increase in complement in CVA 01 would have been nearer 20 than 50 per cent.
 - (iii) High-speed shafts to after secondary gearboxes were considered—particularly in the earlier 4 and 5-shaft layouts—but were ruled out in order to maintain the 'power pod' concept of having everything for one shaft in one machinery space. The idea would not have been possible on the very short starboard shaft.
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