CLASSIFICATION = CLARIFICATION

BY

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To all of us, not once but many times, it must have happened that we have wanted to find out if a publication existed that dealt with a particular item of machinery and, in order to find out, have hunted through the various indexes that were available. And, not having found it the first time, have worked through them a second and even a third time (very slowly) before answering the query with a definite negative. Compare this situation with that of a librarian who is asked what books are available on the subject of Marine Steam Engines and, within minutes of the question being asked, from his infinitely greater and much more wide-ranging stock, can produce a list of all the books available. It is done very simply, of course, by means of classification. He would refer to that section of his catalogue which dealt with 623.872 2; his catalogue is in numerical order and each number means one particular subject only so all books on that subject are together.

How does this concern us? Increasingly, and, it would seem, inevitably (though Parkinson has not yet formulated the law) we find ourselves needing more and more paper in order to get our work done. This paper has many forms, B.R.s, Makers' Handbooks, Technical Instructions, Monthly Newsletters, Bulletins, Memoranda, Reports, Parts Identification Lists, Letters, Files, Records, Drawings and even this *Journal* itself, to name only some of them. Each of them is necessary in its place, but apart from being read initially, is of very limited value indeed if the information therein cannot be readily found at a later date. Yet each category has its own index, ranging from the numerical to the alphabetical with no common key, even though they are all concerned with the same major subject—Marine Engineering. To see just how confused it all is let us look more closely at a few of the indexes with which we have to deal.

Index of Parts Identification Lists

The current index is undoubtedly an improvement on its predecessors, which were numerical in order of arrangement but, any 'list arranged alphabetically by principal noun' must inevitably fall short of achieving maximum usefulness, and would never be attempted by a professional indexer, unless well cross-referenced with copious use of synonyms. In this index the principal noun changes, and entries are made under Air Register and Register; Air Cock and Cock; Air Ejector and Ejector, Air; all without a single cross reference or the same item being shown twice.

'What's in a name . . . ?' Quite a lot I should think, especially if you wanted something for what everyone called an Auxiliary Boiler, but which was really a Steam Generator, Vapour; and, does everyone know the difference between a Blower, Forced Draught, and a Fan, Forced Draught; between Evaporators and Distilling Plants or Heat Exchangers and Coolers? We would all realize too that 'Igema' is a eponym, but that would still leave us guessing what it might be indexed under (= Indicator); and there is a P.I.L. on 'Shaft, Burner, Simplex, Atomiser', but I wonder if anyone looking for it would have twisted it so far?

However, the chaos really starts when we look under 'Pumps', there being 202 in the Main Section, 77 in the Domestic Section and 182 in the Ship and Hull Section. Although the alphabetical arrangement of manufacturers does help we cannot always be certain into which section some pumps might fall

(e.g. is a Hot Fresh Water Pump in the Hull or Domestic Section?). Having struggled through that, under 'Valves', despair and hysteria must inevitably set in; there are 920 in the three sections arranged by manufacturers, which is not very helpful if we don't know the maker's name at the outset; as is often the case with a valve, though we always know its function.

There are other anomalies which, though minor, must make such an index fall into disrepute. The odd single entry for an Ejector, Air in the Ship and Hull Section; the Engine, High Speed Steam F.L. Fan among several Engines, Diesel; the random usage of Soot and Sootblower (important when compiling an index) and the entry for Flowmeter in both the Main and Domestic Sections are some of the more noticeable faults.

Ship Equipment List

Before I saw one of these lists I had heard that a numbering system was being developed to identify the various pieces of equipment in use. Searching through the list reveals that each piece of equipment has its own number, and that equipments which perform similar functions have similar numbers, but the logical classification system one might have hoped for is not there. And it certainly is no help publishing an index based apparently on some arbitrary system with no introduction or foreword explaining what that system is.

The following short list indicates the sort of things that lead one to frantic page turning instead of a logical search. The Gas Turbine Patternator falls between the Main Feed Checks and the Main Condensers; Pumps are grouped together in no readily discernible order instead of being with the system they serve; Steam Turbine Alternator is between Centrifuge and Steering Gear; Forced Draught Blower is between Compressors and Capstans (which is right if we thought of it as a compressor); and the Closed Feed Controller is between a miscellany of Filters and Compressors.

Since the Planned Maintenance Schedules use the same numbering system the ready guide we might have had has been lost, especially when 4-figure numbers occur in the middle of a 3-figure system with the additional number as a prefix instead of as a suffix, which logical notation demands.

'Journal of Naval Engineering'

This is our professional journal and is, in general, no exception to the rule that exists in other professions where the relevant periodicals contain information which is 2 to 3 years ahead of the books. Additionally, our own journal contains much information which never appears in books, and can certainly be very helpful in a lot of situations provided that the information can be readily found. The last index published is a good one, regarded merely as an alphabetical index but who now, except the authors, will ever know what some of the articles were about? Yet they might well contain the answers to someone's problems if he could find them. A few examples chosen at random illustrate the point. What were the following about—'An Unusual Repair'; 'Be Fair to Flash'; 'Wet Cleaning'; 'Paying the Piper'; 'A Surgical Repair'; 'That Yellow Stain'; and 'Ingenuity Tasks'?

If it is required to look up a particular subject, a classified index brings them all together regardless of their title, but an alphabetical index requires a considerable amount of thought and searching for synonyms and related ideas, and even then cannot be considered completely exhaustive. For instance, if someone were seeking information on Gearing, he would find 'Modern Marine Gears— Heat Treatment' and 'Meshing Marks and Surface Defects on Gears', together under 'Gears', but not 'Naval Propulsion Gears' (though this can be considered as a cross-indexing error) and nor would 'A Review of Progress in Naval

Propulsion Engineering' be easily discovered though this contains much relevant information. A classified index would have uncovered all these at once.

The 'Notes from Sea' do have a partially classified index but it does not, unfortunately, go far enough. The main subject headings are far too general (e.g. Boats, Boilers, Condensers, Diesel Generators) with several articles listed and no complete guide given as to their content (i.e. What sort does it deal with and does it concern a particular defect or general operating experience?). Again we have similar subject articles entered by their title and, 'Boiler Cleaning', 'External Boiler Cleaning' and 'Water Washing' are well separated instead of being grouped together as a fully classified subject index would require.

The Office Systems

In any technical office there is an index to all the books held, another to the filing system, another to the D. 787, and at least one other to the drawings, and each of these indexes will be laid out differently from the others in some degree or other. So, once more a protracted search or, at best, a different order of search is necessary in each of them to find the relevant information. A lot of this information should, of course, be available in the Master Record, but the index to that has, at the very least, the same shortcomings as the Ship Equipment List mentioned previously; nor could the searching of the Master Record alone ever be considered exhaustive of all available sources. It is in any case much more natural for an individual requiring a book, a file, or a drawing to go direct to that particular index. And it is hardly necessary to detail the faults that exist in these latter indexes, as everyone must have used them frequently enough to be able to recall frustrating time-consuming periods that have been spent looking for some elusive item that wasn't where it was thought to have been.

And this is the crux of the matter, all these indexing schemes are quite arbitrary, depending on the choice of name, a particular word order, a random numbering system, or some other whim of the originator. Even this would be acceptable if everyone was using the same scheme but, as we have seen from the above and from our own experiences, this is clearly not the case. And the problem becomes even more acute when another person has to fit a new piece into the existing scheme, and does so in *his* way which may not accord at all with the manner in which the next person may seek for it. (The simplest example of this is the filing of a new set of drawings in any office.) This is what, over a period of time, causes any of these arbitrary schemes to fail. Any scheme which does not have a logical pattern that is clearly discernible and precisely defined must inevitably suffer at the hands of its users and become a time-consuming drag.

Information Retrieval

This is the name of the subject which, briefly, deals with the filing away and recovering of facts; and this subject is receiving a considerable amount of attention in the world today. There is so much work going on in every field of human endeavour: thinking, research, experimenting and operating; and most of it published somewhere, so that enormous efforts are made to make sure that all necessary information can be found when it is wanted. As an indication of the magnitude of the task a simple index to the world's scientific literature of 1965 required 4 million entries in 8 volumes; to cover any subject fully, more than one year would have to be searched, and various aspects of the subject would need to be sought for in each year—a major undertaking before the work even started. Computers and electronic memory units are being used increasingly, but they are only partially a solution; they can deal with the mechanical processes of storing and recovering the information, but it is still very much a

human task to decide how best to feed the information in. Though we are hardly likely to require an ADA of our own for the job, in ships, anyway, our task of information retrieval is becoming more and more time-consuming (and necessary) and something needs to be done to aid us in quickly finding all that we need in our own paper jungle.

The Solution

One way of bringing order to this chaos is the development of a major classification scheme that everyone (compilers and consumers alike) can use. There is no point in outlining any particular scheme here since it has been said, with some justification, that 'there are as many classification schemes as there are classifiers'! It might, however, be helpful to return to the example given in the opening paragraph and see how that number was derived. In that particular case the Dewey system was used (this is one commonly used in general libraries) which divides, and keeps on dividing, subjects into 9, each group of 9 springing in a logical manner from the one heading before, thus:

6	= Useful Arts (one of the 9 basic headings)
62	= Engineering (one branch of useful arts)
623	= Military and Naval Engineering (one particular form of Engineering)
623.8	= Naval Engineering (includes Hull, Electrical, Ship-building, etc.)
623.87	= Marine Engineering
623.872	= Engines for Main Propulsion
623.872.2	= Steam Engines

And so the number that our librarian used has grouped under it all the books dealing with Marine Steam Engines for Main Propulsion. Now it might look to be a long process to build up such a number, but in practice it isn't. Even a comparative newcomer to the scheme would only take a few minutes to arrive at it, and this would then reveal all the books on that special subject in a general collection that could number a million or more covering all sorts of subjects.

That particular scheme was used only as an example; it would not answer our need since it does not divide finely enough within our own particular subject. Provided, however, certain rules are followed, it is only a matter of logical application combined with a study of one's needs to build up a classification scheme to cover a particular subject or, in our case, a group of subjects. Set out briefly, the basic rules necessary to ensure that a classification scheme will work properly are, that it shall be:

Comprehensive

In a consistent and recognizable order

As minute a statement of things as is possible (and necessary)

Flexible enough to keep abreast of changes

As logical and as simple as possible in its notation, and

Fully indexed.

So, when our own scheme has been devised it could give us a number like this:

3	= Main Propulsion, Steam
36	= Feed Systems (includes pumps, deaerators, valves, etc.)

362	= Feed pumps
362.1	= Turbine Driven Feed Pumps
362.18	= Type of Turbine
362.184	= Governing Arrangements

With such a classification scheme all indexes would be produced to that order. All books and papers would also bear (apart from any other B.R. or reference numbers) a classification number and their place would be fixed for everyone. This form of notation has the advantage that one need only use as much as is sufficient for one's needs without any confusion arising. Thus, the originator of a memorandum concerning the inspection of Turbo Feed Pump Governors would classify his paper at 362.104 ('O' is used for the general case in most classification schedules, and in our example, would indicate that *all* Turbo-driven Feed Pumps were being referred to); a ship receiving it would only have a file marked 362 for its own Feed Pumps and everything relevant would go in that pack with no further sub-division. However, a section in S.M.A. that dealt only with Feed Pumps would have several packs and would require to use at least 5 numbers or even all of them. A detailed class number, as that given above, together with the date, would also be sufficient to identify a paper in even the largest organization, and it is certainly shorter than most reference numbers with which one is also expected to give the date in any case.

In addition to allowing the book or paper to be placed correctly it also provides a ready-made guide to distribution. So we reach that tidy state of the small-boat sailor who has 'a place for everything and everything in its place', though, of course, the second part will still depend on the people using it. However, there should be no need for frantic page-turning, always provided that people learn the scheme, and that would seem to be the biggest drawback. No comprehensive scheme can be simple; there must be rules, and the users must learn and follow these rules if it is to work. But they would only have to be learnt once, they would apply to all cases, and the final convenience would make it very worthwhile.

ENVOI

This has been written while thinking entirely of the needs of the Marine Engineering Department, but I am sure that much of what has been said is applicable to other Departments, and it is not difficult to expand and produce a comprehensive classification system for the entire naval organization. I am sure everyone will see how much this would improve the D.C.I. index! It could go even further and be tri-service as our delivery indicator groups already are. And perhaps the day might come when anyone seeing the group D 792.593.V008 at the head of a paper will readily be able to work out that the subject matter is a Diesel fuel injection pump fitted to a Perkins engine in a 40-foot R.C.T. launch on loan to the R.A.F. at Changi!