

## ADMIRALTY OVERSEEING SERVICE EXPERIENCE

by

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Due to the second world war, the writer of this article was enabled to complete several years of continuous service as a shipyard Admiralty Engineer Overseer, thus gaining a fairly extensive experience of this side of naval activity, which would not be possible under peace time conditions, when extended tenure of a particular appointment would react unfairly on other officers.

As this article is being written, the conditions of the Engineer-in-Chief's overseeing service are changing in certain particulars, and this factor should be taken into account when reading it, but the basic principle of the overseeing service in general remains the same, namely, to ensure that contract built vessels shall be constructed and completed in accordance with the conditions and terms of the various specifications and their associated documents, i.e., conditions of contract and the schedules thereto.

### Team of Overseers

Whilst this article deals mainly with the Engineer Overseer, it should be very clearly appreciated that he is but one of the *team* of overseers, who work—or should work—in complete harmony and unanimity of purpose to attain the common end, which is a *good* “ship or vessel” in all respects. These overseers are the local representatives of the technical departments of the Admiralty, viz., D.N.C., E.-in-C., D.N.O., and D.E.E. ; and although the composition of the staffs of overseers varies in these departmental outposts, the general principles are the same.

As far as the Engineer-in-Chief's Department is concerned, the scheme of dissemination of duties for new construction work is briefly as follows :—

At the Admiralty, a Deputy Engineer-in-Chief is responsible to the Engineer-in-Chief for the Overseeing Service, and he deals with the various overseers for staff and routine details. He is the main channel for correspondence to and from the outposts. The various sections for the design, etc., of the machinery for the different classes of vessels, comes under the Assistant Engineers-in-Chief, who, in their turn, have Inspectors, whose duty it is to deal with the detail work of their sections, assisted by junior engineer officers and dockyard draughtsmen. At the shipyards and engineering works there are the Resident Overseers, who deal with all the classes of work that are handled in their particular sphere of activity. Thus, some overseers may have two or more works and yards under their jurisdiction, whereas others may have but one large shipyard, where the main and auxiliary machinery is not even made, but supplied from other works, where it has been constructed under the Overseers resident at, or accredited to, those works.

Now, whilst the *design* emanates from the Admiralty, the practical difficulties are usually first discovered by the overseer at the contractors' works, either through his staff or by representation from the contractors. On the smaller points, such as errors in tracings and in manufacture, departures from the

specified requirements, etc., the resident overseer gets in touch with the Admiralty Inspector concerned, and usually the matters are quickly adjusted. If, however, as occasionally happens, a subject of some magnitude is involved, the inspector will refer it to the Assistant Engineer-in-Chief concerned, so that the ultimate decision has the weight of the authority it merits. In normal times, the overseer should not depart from the terms and conditions of the specifications without prior Admiralty approval ; but, in wartime, he is given much greater scope in the interest of accelerated production. To assist further on the production side, in wartime, a series of approved *Relaxations from the specified requirements* are issued to the contractors and the overseers for joint action.

It can, therefore, be seen that a close liaison between the overseers and the Admiralty inspectors is extremely desirable and beneficial, and unless it obtains generally, the lack of timely information from the overseers renders the task of the inspectors much more difficult. Conversely, if the overseers are not kept up to date with decisions which modify the specified requirements, they are sometimes placed in a false position, for the contractors are often quick to pass around a decision favourable to their side of the business. In cases where an overseer discovers an error, or large spot of bother, unless the pertinent inspector is informed, other vessels of the same class or type will possibly not have this detail amended in time to save trouble, or expense, or both.

As regards the Engineer-in-Chief's Department, it has been the practice to have a resident overseer and staff at each of the large contractors' works, the actual number of such overseers and staffs varying with the amount of warship building in progress ; and, on a more permanent basis, to have senior officers in charge of the districts. Great Britain is divided into seven districts, of varying areas, to deal with the activities of firms, other than shipyards and associated engine works, making materials, machinery, armament and electrical gear for the Service, both for fitting into new construction vessels and for replacements of stores, etc., for the Royal Dockyards.

#### **Engineer Overseer's duty**

The scope of the Admiralty Engineer Overseer's duty is very neatly expressed in the beginning of the handbook *Technical Instructions to Engineer Overseers*, of 1913 vintage, which reads as follows :—

*The chief duty for which Engineer Overseers are appointed, is the direct supervision of machinery and materials under construction for H.M. Service at the Works and in the districts allotted to them, in order to secure that such work is completed in every respect in accordance with the requirements of the Specification, and that the materials and the machinery will be thoroughly efficient for the service for which they are intended.*

*In order to carry out these duties, it is necessary for them to examine personally the main and auxiliary machinery during construction and fitting in place, comparing the various parts and fittings with the special paragraphs of the Specification and the approved drawings relating to them, to see that they are in accordance therewith, and to do so in such manner that the advantage of their engineering ability, their experience as Engineer Officers, and their knowledge of Service fittings and requirements, may be applied so as to produce the best possible results.*

The latter part of the second paragraph of the above extract is particularly apt, and, if an overseer takes this as his guide, coupled with the ideal that he would not have any qualms about going to sea as the Engineer Officer of any vessel built under his supervision, he surely cannot go far wrong !

### Civilian staff

In order to assist the overseer in carrying out these duties, he is provided with a civilian staff drawn from the Royal Dockyards. Many years ago, the staffs consisted chiefly of naval personnel, but the frequent changes made necessary by drafting requirements tended to lower the efficiency of the system, so the complete changeover to civilian staffs was made. The staff consists basically of a draughtsman, engine fitter and boilermaker assistants, and last—but far from least—a shorthand typist. The actual numbers are adjusted to cope with the amount of work in hand, subject to the Department's quota not being exceeded.

The manner in which the staff is employed is left to the discretion of the overseer and varies from yard to yard. Generally speaking, the overseer deals with the major matters; the fitter and boilermaker assistants deal with the routine examinations and tests of materials and systems, the supervision of erection work, keeping the overseer well posted on all work, and reporting specifically any deviations from the accepted procedure, failure of tests, etc. The draughtsman, or senior assistant, acts as the secretary and the overseer's deputy, and, assisted by the shorthand typist, he deals with the multifarious office jobs of registration of correspondence, filing, circulation of tracings, etc., and returns. The draughtsman also brings his specialised knowledge to bear on points of design and arrangement details which are queried or require elucidation.

At my particular yard there were no engine works, all the machinery, etc. being supplied by main machinery contractors from their own works. This meant that the outside assistants could devote the whole of their time to the supervision of the erection of the machinery onboard. One assistant was able to cope with the shop tests of pipes and fittings. Under these conditions, and to avoid too much changing round and overlapping, the principle was employed of keeping one fitter assistant to supervise one type of vessel, or one special type of work. This was the general idea, but when it came to the completion stage of large vessels it was found necessary to double-bank and even treble-bank these assistants to keep progress up to the mark, for the contractors should *never* be afforded the opportunity to state that they were waiting for the overseer!

With regard to some special types of work, such as the installation of accelerators, or torpedo tubes of submarines, it is a good plan to have these handled by one assistant, who becomes the expert thereat, which is a far better arrangement than making them "general duty" jobs. With their good basic training, all the assistants could readily step into each other's duties when needed, but the finer detail points—which make much difference to the completed job—are only picked up by experience. This policy, which was in force for the whole time that I was overseeing, seemed to have paid very well to judge by the results obtained. The boilermaker assistants, who are always few in number, present no problem for allocation for work.

### Early experience

When I commenced duty in peace-time, the large pre-war expansion programme of construction was in full swing, and at "Our Yard" we had one cruiser nearly completed, a sister ship about six months off completion, four *Tribal Class* destroyers just beginning, with a large battleship just laid down. Having been a *small ship* and destroyer man for practically all my service, I found that I had to get down to things, read specifications, etc., and study many prints and tracings carefully before I was able to begin to understand thoroughly the points raised by my staff and the Engineer Officers standing by the various vessels. For the first two years I did a considerable amount of the detail installation work with my outside staff in order to become thoroughly

conversant with the procedure and difficulties, such as occasional poor lay-outs in the approved tracings, and *bones of contention* or *fouls*, where the requirements of the various Admiralty Departments have not been correctly correlated.

In these latter cases it is up to the local overseers to settle matters harmoniously, and report the results to the Admiralty so that the troubles may be avoided in the other vessels of the classes. It was in this period of my *apprenticeship* that I realised the absolute necessity for the co-operation between all parties, if good results were to be obtained. My staff had told me about certain spots of bother that they had already experienced, and it seemed to me that most of these could be prevented. On watching carefully, I found that, apart from rare constructional errors in dimensions and erection, the chief source of trouble was unilateral action by the various departmental overseers. This was usually done to comply with the request of the contractor's officials, in respect of *lining off* of systems or in the positioning of large fittings. This single-minded procedure frequently led to other department's systems or *lay-outs* being completely upset. Once the contractor has fitted up a system, erected a large junction box and partially run its associated cables, or positioned a *key* fitting and taken templates for pipes in connection therewith, it becomes an expensive matter to alter such ; and it is a course of action that contractors are extremely loth to take. I have attended some very acrimonious discussions on various *fouls* and bad lay-outs and, in nearly every case, they could have been prevented. The best method of preventing such troubles is to have whole-hearted co-operation between shipyard officials and all overseers. Admittedly, this means taking up the time of many persons—*but*, such time is very well spent if mutual agreement is reached initially ; for considerably much more time and money will be required to correct the matter if it goes astray.

Each overseer is concerned with his own work, and is aware to what use the fittings, etc., will be put, and their requirements for overhaul and repair. This specialised knowledge cannot be expected to be held by all the parties mentioned above ; and unless some joint action is taken *at an early stage*, very considerable trouble can be caused, which sometimes becomes impossible to rectify. In these cases some nasty substitute arrangement *has* to be accepted ; but every avenue should be explored before this latter course is acceded to. It is amazing to see, at times, what a huge difference a very slight alteration or re-arrangement makes to the general lay-out. I have attended cases where a deadlock has been reached by the various contractors' officials concerned ; and then, joint action by three overseers and these same officials has settled the matter well and amicably in some twenty minutes ! This permitted work of several departments to go ahead. Of course, experience is invaluable in this work and I felt very glad indeed that I was able to learn my work in the comparatively quiet times of "pre-war," so that, when war came, with its crescendo of activity, I was enabled to keep my fingers on the pulses of the various jobs, and to give immediate decisions on the problems—within limits—because I felt I *knew* the business through experience, and there is not a better teacher. Speedy and accurate decisions by overseers mean much to the contractors, for they enable the work to go forward, a very important point in wartime.

### **Relations with the Contractors**

This leads on to what, in my opinion, is the chief problem of an overseer, namely, *relations with the contractors*, both with those to whom you are accredited and at whose works or yard you are resident, and with those who work at such yard or works but have their main offices and works elsewhere. Undoubtedly *tact* and *knowledge* are the essential qualities to enable matters to run smoothly and efficiently. Tact is well to the fore, because a wrong approach

or careless handling, can easily result in the desired point being turned down or indifferently performed ; and it is neither desirable nor efficacious to bring the weight of an Admiralty decision to bear on minor matters, which make up the majority of the debatable points that overseers have to solve.

Be sure of your facts, then pick a suitable time to raise the matter, and you are well on the way to securing your point. It is not a bad idea to put yourself in the contractor's shoes for the purposes of the argument, and try and reason out his first and second lines of defence and have your attack ready. It often helps very considerably to have more than one string to your bow of attack. Knowledge is essential to form accurate and speedy decisions, such that can be expected to be upheld by superior authority if questioned—as sometimes happens. This knowledge is not only of one's own profession, but of the other Admiralty and contractors departments' work, the contractors' commitments, supply problems and sub-contractors' positions, coupled with an intimate knowledge of the various specifications for the vessel in question and the approved tracings in connection therewith. This seems a formidable list, but experience helps to get most things rooted in your mind ; and the specifications are very helpful in that they keep to a definite sectionalisation, i.e., similar subjects for different classes use the same group of clause numbers or sequence of arrangement, tracings follow a standard procedure, whereby one can readily note the amendments and pick out the special points that require attention.

In addition to the departmental specifications, there is the copy of the contract and its accompanying schedules ; a careful study of these will afford the overseer good authority for his actions in taking the necessary steps to see that the contractors carry out what they have contracted to perform, and for which they expect to be paid. It is opportune, at this stage, to touch briefly on one very potent weapon that the overseer wields, in ordinary times, over the wily contractor. Contractors are paid in instalments based on certain portions of the whole work being completed *to the overseer's satisfaction*. If the contractor proves unwilling to perform his end of the business, the overseer can mark time until the terms of the particular instalment have been very meticulously met.

### Scrutiny of Machinery Specifications

Whilst the contractors' designers and drawing office staffs are very conversant, in general, with the specifications, their outside managers and under-managers are, broadly speaking, not so well versed, and it is often left to the overseer to bring to their attention the requirements of some particular clauses, especially so when some modification has been introduced. Two cruisers of almost identical design had apparently the same machinery specifications, although that for the second vessel bore a later printing date. A careful study and cross check between the two editions revealed several additional requirements were contained in the later version, and some of these extra points could only be introduced at one special time in the building of the vessel. If that time were allowed to pass, in current phraseology, one had " had it," and that was one up to the contractors, and incidentally, no marks for the overseer ! An example will make this plain. The friction tests of the shafting in the later version were much more extensive than those in the earlier, and it is readily appreciable that for these to be of any value, they *must* be taken when the vessel dry-docked for the first time. In this case the manager concerned had only prepared for the usual set of records to be taken, and was amazed and dismayed, when his attention was directed to the revised requirements.

Further, an ambiguous clause in a specification is often clarified by the

legend in the “ approved tracing,” Alternatively, the approved tracing, which is, by custom, regarded as being the “ last word,” sometimes fails to interpret correctly the terms or spirit, of the associated clauses of the specification. Whilst opinions may differ as to the responsibility for checking such discrepancies, I feel it is part of the overseer’s duty to ensure that the specifications are correctly interpreted. He should take the necessary action locally to ensure this, and should inform the section inspector at the Admiralty if he discovers any errors or omissions in a circulated tracing passing through his office. In connection with this phase of activity, it is sometimes found that apparent departures from the specification have been made with Admiralty approval, or even at Admiralty request and by some oversight the overseer has not been informed. These cases are rare, especially in peace-time, but a few more did creep in during the very busy days of the War.

### **Major differences of opinion**

So far, I have dealt with the procedure in respect of minor differences of opinion, regarding the interpretation of specifications and requirements, between contractors and overseers. Where a major point crops up, the final decision may involve calling in the Admiralty Officers, whose decision—vide contract documents—is final. Such rather drastic action does not often become necessary, for an overseer should not advance a request for work to be done, or refuse to approve of a proposed course of action by the contractors, unless he is *very* sure that his view is perfectly correct. Contractors have the right of appeal to the Admiralty if they query the correctness of the overseer’s decisions ; but, on either side, the Admiralty referees are rarely—in my experience—called in to visit the firm and settle the points of dispute. It is however, a very salutary method of stopping high handed action by the contractors, and I found its effects very lasting when I had to have one of my decisions upheld by the Admiralty Officers. Usually, the contractors agree that the disputed point shall be referred to the Admiralty Inspector by the overseer, and will loyally abide by the decision, whichever way it goes.

### **A touch of humour**

Before I leave this very wide subject, it does contain the germs of humour—viewed from this angle. The overseer knows perhaps of a particular requirement which *has* to be done, and informs the contractor’s manager in good time. He is well aware that it will cause the manager some trouble or difficulty, in view of his lack of progress or other commitments ; \*or, as has been known to happen, because a little bird has whispered that the manager is preparing to slip in a fast one ! After a few well chosen words by the overseer, the manager departs, having promised “ It will be done ” ; and then goes into secret session with his underlings as to the best method of passing this particular request to square leg. Both parties know full well that, if the job is not done by a certain time, or stage in the work, it cannot be done at all ! So, as the days pass, the overseer’s pressure on the manager becomes intensified, until one or other party gives way. Either the manager does the job, with very bad grace, or, the overseer agrees that, in the *very* special circumstances, it may be foregone *this* time but never again ! A few timely remarks about poor organisation rendering such a relaxation necessary may or may not be given, it all depends on the manager. I hasten to say that the second alternative should *never* be agreed to if the matter is really important, unless specific Admiralty approval is obtained—in good time, let me add. It is a case of “ pull devil—pull baker ” (you can take your choice as to which is which !) for a time, and has been productive of some very amusing expedients.

Early on in my overseeing service, I often made a request for some specified thing to be done, to be blandly told that “we *never* do that !” On making enquiry whether the appropriate clause of the specification had been read, the information was originally elicited that they were waiting for the overseer to inform them what was required, and that they did not read the specifications very much. This was pretty evident when a beautifully clean copy was produced from the manager’s safe and the clause jointly read. Finally, the decision was, “Now is the time to make a start,” and—*it was done* !

It is amusing, on looking back, to note how very quickly the contractors seize on a relaxation which an overseer may have granted *for some specific job only*, and take it for the law of the Medes and Persians for ever after for all work of the same nature ; and even for some items which have only a remote connection, provided it eases their work !

Do not form the opinion from the foregoing that all contractors are rogues and vagabonds—some, I am informed are honest and poor ! Seriously speaking, human nature always urges the easiest way shall be taken and if one can get away with it, there is joy in the heart of the getter. Such cases of evasive action are not unknown in the Service, and maybe that is why they keep Naval Officers as Engineer Overseers ! Therefore, let me say now that, on the whole, I had only a little trouble in this respect ; the three firms of main machinery contractors with which I worked, two of them for many years, co-operated very well with my staff and myself. The proof is that we only had a very few trials—either of main or auxiliary machinery—that failed. This is not a bad show when we did upwards of some sixty vessels of all shapes and sizes, from M.L.C.’s to battleships, via a monitor and submarines.

#### **Co-operation between overseers**

I have already briefly touched upon the co-operation between the various departmental overseers, and I would now amplify it by saying that unless this occurs something will be omitted, overlooked or compromised, and, in the end, the ship will not be as good as she should be. Demarcation of work and trade customs in shipyards and dockyards vary, and work during construction that is overseen, for example by a constructor officer, may become the responsibility of the engineer officer of the vessel later. These varying methods of procedure lead to loopholes in the general oversight unless the overseers work as a team, instead of in individual sections. With the rapidly increasing complexity of modern warships of all classes, the utmost co-operation is essential between all those engaged in their construction in order that the complicated machinery and fittings of all departments may be worked in and yet allow the vital maintenance work to be expeditiously performed. In this latter factor, the sea-going experience of the Engineer Overseer is very useful

Finally, when the programme of trials and completion is being prepared, the closest co-operation amongst the various overseers is essential in order that all the departmental requirements and special tests may be catered for without overlapping or causing undue extension of the trial period. It is marvellous to see what a little careful planning and “give and take” between the interested parties can produce. One special case jumps to my memory, and that was when the complete auxiliary machinery trials and basin trial of main machinery of a destroyer were all satisfactorily completed in 36 hours, the one following after the other, or, being carefully dovetailed in, so as to save time. Do not think that this was entirely an engineer’s show, it was only made possible by all working towards the common end.

### Naval officers standing by ships building

The other form of necessary co-operation is that between the overseers and the naval officers appointed to "stand by whilst building." These officers are appointed for service with the Superintendent of Contract Built Ships, and do not come under the immediate jurisdiction of any of the overseers. This is done, I understand, amongst other reasons, to permit these officers to be able to appeal against adverse decisions by an overseer given in respect of their proposals and requirements. Such appeals can be made to the Superintendent, who is the outpost representative of the Director of Naval Equipment, with his headquarters at Newcastle-upon-Tyne. The Superintendent with his staff, watches the progress of construction of all vessels and when they are reported to be complete, carries out the final inspection prior to the acceptance of the ship and her commissioning. If the naval officers were placed under the immediate jurisdiction of the overseers, they would have to abide by their decisions, and overseers, like other humans, *can* make mistakes ! On the other hand, the naval officers should clearly appreciate that they have a watching brief only, and that the responsibility for the work done by the contractors is that of the overseers.

This is not to say that naval officers shall stand by and see work badly or incorrectly performed, for it is their duty in such cases to bring these happenings to the notice of the overseers, and for the latter to take the necessary action with the contractors. It is my considered opinion that the naval officers should *not* issue instructions, etc., directly to the contractor's officials because this leads to a diminution of the overseer's control, and often results in the contractors evading some special test or requirement due to the naval officers not being so conversant as the overseers with the specifications, requirements and relaxations. This applies the more so in the hectic conditions of wartime construction, when the complete instructions are issued only to the overseers concerned. Contractors are quick to take advantage of dual orders, and naturally take the one which affords them the easiest passage.

### Engineer officers

Speaking in respect of the naval officers of my own department, I find they are divided into three groups :—

- (i) Those who work with the overseer in all ways, do their particular portion of the total work in good time, keep a good eye on things all through, and discuss points of difference with a reasonable spirit ; whereby a *good job* is automatically obtained.
- (ii) Those who appear to have such faith (?) in the overseer that they blithely leave it to him and his staff until a very short time before the final inspection. Then they produce large lists of alleged defects and omissions, and feel that the overseer has departed from godhood because he cannot wave a magic wand and get all the foregoing put right in the very few days left for work of any kind !
- (iii) Those who consider the job should be built to *their* ideas, irrespective of specifications and Admiralty orders (all of which are not sent out to officers standing by) and whose tactless handling of the contractors' officials and working personnel lead to much undue friction. Final result—*a poor job* ! Whilst this group is in the minority by far, they make an overseer's lot *not* one to be sought after.

### Necessity for understanding ship construction procedure

Whilst the extreme point of view of the officers coming under subhead (iii) is far from general, in one particular case I was informed when my decision



was questioned by a senior officer that "If we do not like the vessel, we will not accept it," i.e., on completion; thereby arrogating to themselves the prerogative of the Superintendent of Contract Built Ships! Now, this viewpoint is all wrong and is due, in my opinion, to the small knowledge possessed generally by naval officers about ship construction procedure. I readily agree that this lack of knowledge is not surprising; as, but for the two wars, very many officers would never have the chance of seeing a ship built, but it does not excuse their failure to be guided by the experienced overseers and their staffs, who are very willing to help them. The troubles that can be created by the tactless handling of contractors' officials and workpeople have to be experienced to be believed; and this reacts very adversely on all the naval personnel at the particular yard or works. So often, naval officers will devote their energies to obtain some quite minor point, and, whilst so doing, permit a major matter to go quite astray unless the overseers pick it up.

I fear that I have rather dwelt at length on this matter, but it is really vital. When you have the overseers who are supervising the building of the ship and the naval officers standing by that ship working in harmony, a good job generally for that ship is assured. If the contrary obtains, a state of tension arises between all three parties i.e., the contractors, overseers and naval officers, and then very poor results are likely to be obtained. It is easy to take over a ship and then, a few months hence, to allege that this and that is wrong, when the cause of the defect or failure is due to initial lack of attention to learn the correct method of operation during the standing by period, or to the insistence on some personal idea of procedure which was contrary to the accepted practice.

I think that it is fair to say that the ship's officers should be prepared to reserve their judgment until they are up to date with the particular requirements for their job. They should remember that the new ship may be the *first of the Class*, and that the machinery may embody many novel details with new types of fittings and arrangements; all of which the overseer has prior knowledge due to his early acquaintance with the specifications and his study of the circulated approved tracings. It is not feasible, in my opinion, for naval officers to absorb all the finer points quickly and, on old practice they should be prepared to admit that the methods now used are not bound to be failures, simply because they have not used them hitherto!

### Office organisation

A few words about the *paper* side of the work may not be amiss, for much depends upon the way this important matter is handled. The flow of correspondence may falter now and then, but it never stops! Unless good methods are used to cope effectively with the multitude of subjects covered, sooner or later trouble will be experienced in explaining *why* this or that communication has failed to receive "your esteemed attention." A good office organisation is the answer to this problem and this happy state of affairs does not happen by chance, it is the fruit of some considerable organisation and continued attention to details. The office *team* must know its job, and work to the prescribed routine already mentioned. This should not be too hard and fast, but should conform to certain basic principles. It is *so very easy* to lose a paper, unless it has been booked in, or out, in the correspondence register, and it may be very difficult even to recall it when things are busy. Methodical registration of all letters, etc., and adherence to similar file numbers for the same sections of the work for all classes of vessels dealt with, simplifies enormously the work of the staff generally. It is in this sphere that the shorthand typists do such splendid work which is so unspectacular to do! We also found that the idea of using *master* forms of letter for certain recurrent items was a great help and time-

saver, as a newcomer to the staff could be told to copy these—with small adjustments to dates, etc.—and thus save redictating them. Further, once the foolproof master letter has been devised, it often saves one from forgetting the small details that *are* forgotten when there is a rush on. Schedules of periodical returns are useful, particularly so when they are only forwarded at long intervals; the regular ones are easily remembered, as they seem to be, like the poor, always with us. To digress briefly, I recall one monthly return of one of the overseers which grew steadily in the numbers required to be forwarded, until the poor wight had to prepare fourteen copies for each vessel per month; the whole operation taking about one week for at least one member of his staff.

As with the outdoor staff, intelligent anticipation and foresight pay heavy dividends, and if an office can be kept without a large *waiting list* of unexecuted letters, etc., it is good and efficient. Much depends upon the aptitude of one's senior assistant for office routine, as it is not given to everyone to be efficient thereat, or even to find it congenial. To some it is purgatory! We were very fortunate in this respect, as my senior assistant was absolutely first-class at office organisation, and had an excellent memory. I, for my sins, had done more than the normal share of staff and office work, and so we usually managed to keep our heads above water, though at times during the war it was a near thing, and we welcomed the comparative peace of a Sunday to get the baskets clear of the *hangers-on*. It is amazing how, if a letter or report gets sidetracked for a short period, it has the unhappy knack of being completely forgotten by all concerned, and this despite all the best office routine. To avoid this, we endeavoured to deal with the maximum amount of letters and reports as fast as they materialised, even if it did mean some high-speed runs for all hands.

At the risk of being considered dogmatic, I hold the opinion that unless the office side is well run, the whole set-up is not so efficient as it could be. Careful recording of events, tests and difficulties form most valuable foundations for decisions on debatable points; and it must not be forgotten to file these records on a simple and universal system, so that they are readily found by *any* member of the staff, and not by one special member who will, by the law of averages, be "not in our midst" when the item is badly needed. It is of no use to try and remember everything, for it will be found that the main facts are well recollected, but the small details, which are the key to all, have a knack of being forgotten. When you have at your hands the records of a certain job, on similar types of vessels over a period of years, your decision on a current problem can be swift and accurate; and you then realise that the routine office work of recording events, etc., is well worth the labour expended upon it.

In a similar fashion the outside assistants should keep detailed records of their work, especially in respect of test results and important gaugings and clearance readings, etc. It is again useless to try and depend on memory for even major events, when things are moving rapidly in all directions. Further, assistants are not always like the little brook, and when they leave and have not records, of what value is their past? Besides, you can safely bet that, if there is the lack of information due to the sudden departure of an assistant, the first job for which you require information based on experience will be that of which you have not the record. I stress this point as I have found that so much of one's work is making decisions on subjects that keep cropping up; and it helps you, and all concerned, if you can keep to the same style of decision and know from experience that you are on perfectly safe ground.

In conclusion, should the foregoing meet the eyes of some of the very many friends, both civilian and naval, that I made during my very long tenure of the

appointment, will they please accept my very sincere thanks for their help, their forbearance in putting up with me, and forgive me for the work that I caused them to do? Finally, I desire to record my very sincere gratitude to all the members of my staff, most of whom served with me for many years, for their loyalty and assistance, and ungrudging performance of their duties at any hour or any day ; especially so towards the end of my time, when I needed their help most, and found that it did neither fail nor falter.