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INSTITUTE OF MARINE ENGINEERS  
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SESSION



1899-1900.

President: SIR JAMES LYLE MACKAY, K.C.I.E.

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Volume XI.

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EIGHTY-SIXTH PAPER

(OF TRANSACTIONS)

The Engine Room Telegraph,

BY

**Mr. JAS. MACARTNEY**

(VICE-PRESIDENT, QUEENSLAND).

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READ AT

THE INSTITUTE PREMISES, 58, ROMFORD ROAD, STRATFORD

ON MONDAY, NOVEMBER 27TH, 1899.



## P R E F A C E .

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58, ROMFORD ROAD,

STRATFORD,

*November 27th, 1899.*

A Meeting of the Institute of Marine Engineers was held here this evening, presided over by Sir JOHN DURSTON, R.N., K.C.B. (Past President), when a Paper contributed by Mr. JAS. MACARTNEY (Vice-President, Queensland) was read, and in part discussed.

A resolution conveying a vote of sympathy to the relatives and friends of the late T. H. Ismay (Liverpool) was proposed by the Chairman, and carried in silence by the Members present upstanding.

The Denny Medal was also presented this evening to Mr. R. D. KEAY (Member) for the Paper contributed last session on the Thermodynamics of the Steam Engine. The presentation was made by the Chairman.

JAS. ADAMSON,

*Hon. Secretary.*



# INSTITUTE OF MARINE ENGINEERS INCORPORATED.

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## THE ENGINE ROOM TELEGRAPH.

By MR. JAS. MACARTNEY (Vice-President).

READ AT 58, ROMFORD ROAD, STRATFORD,  
MONDAY, NOVEMBER 27TH, 1899.

CHAIRMAN:

SIR JOHN DURSTON, R.N., K.C.B. (Past President).

I forward this description and accompanying sketch of an electric tell-tale, in the hope that it may benefit some of our members if thought worthy of adoption.

The most modern telegraphs, fitted with hand reply and automatic direction indicator, only appeal to one sense—that of sight. A mistake is easily made, especially when orders are given in rapid succession; ahead and astern, at intervals of a few seconds, when swinging in a river or berthing. At such a time, the coolest of men may get flurried and make a mistake, so that anything tending to safety is worthy of all attention. I found on making this arrangement public (about two years ago) that another engineer in our fleet had been fitting a similar arrangement, an accident on board a steamer on the coast which ended in a Marine



Board enquiry and the censuring of an engineer, having directed our attention to the need for such an arrangement. Since first fitting, it has been adopted in our steamers, is being fitted in the vessels of an over-sea line, and may be in many others that I know nothing of, as it has been freely spoken of and shown to anyone who cared to see it; it may be an old idea, or a better one may be in the market, I give it for what it is worth.

In the arrangement shown, an ordinary bell (Fig. 4) and battery (Fig. 5) are used, the bell being of sufficient size to be distinctly heard above the rattle of the machinery, and placed as near to the telegraph and starting gear as convenient—on the telegraph casing if it can be fixed. On the face of the telegraph (Fig. 1) and under the pointer, contacts are fixed, consisting of light bars as shown, one (2) being continuous with wire leading to bell, those on either side marked 1, 1' covering the sectors from slow to full and connected, 1, that on the ahead to the astern side, and 1' that on the astern side to the ahead side of the engine contact, a short bar (3) covering the sectors Stand By to Finished with Engines, being unconnected, is silent, it merely acts as a guide to the rubbing contact maker, which is fixed to the underside of the pointer at 4. A similar contact (Fig. 2) on a wood or other insulated base is fixed to the engine column, with a rubbing contact maker (Fig. 3) pinned to the upper shaft, this contact maker being carefully insulated, the continuous bar of the engine contact is connected to one terminal of the battery, the other side of the battery being led to the bell in the usual way. It will thus be seen that with the Telegraph pointer between Stand By and Finished with Engines, and the valve gear in mid position, the circuit is open, move the Telegraph into ahead position, put the Engines in ahead gear, it still remains open, but should a mistake be made, and the Engines be put in astern gear (the contacts being crossed) the circuit will be closed, the bell will ring and continue ringing until the mistake is rectified. With

this reminder it should be impossible for a man, however flurried, to run the engines the reverse way from that ordered. Of course all reversing gears do not lend themselves to this way of making the contacts, but some part of the valve gear or starting engine can be found on which to fix them. Both contacts and the engine contact maker require to be carefully insulated, as the telegraph with its chains and wires is as a rule in contact with some part of the hull or ironwork.

I trust that this arrangement may be thought worthy of adoption if nothing better is on hand; any safeguard is better than none, this by appealing to the ear will act as a check on the eyes; it would be of great assistance to a man in a strange job when things may be quite the reverse from what they were in his last ship. I remember a case in point when a comparatively new man forgot for the moment and started the engines running in the direction to which he had been accustomed in his last job, and so brought about a collision and the sinking of another vessel. Had he had a bell going at his ear his attention would have been drawn to his mistake in time to avert accident.

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## DISCUSSION

AT

58, ROMFORD ROAD STRATFORD,

ON MONDAY, NOVEMBER 27TH, 1899.

CHAIRMAN:

SIR JOHN DURSTON, R.N., K.C.B. (Past President).

Mr. J. T. SMITH (Member of Council): This is a very nice little paper; in fact, I think it is the shortest that we have had yet, but it is a style of paper that ought to be encouraged. The whole thing seems very simple, and is easily fitted. There is only one drawback that I can see to it. It says here that the bell must be of sufficient size to be distinctly heard above



the rattle of the machinery. It seems to me you will want a good big bell in some ships for the purpose.

Mr. SHEARER (Member): In the first place, as far as my experience goes, I do not see that it is necessary to go further than the ordinary telegraph we have in use now. The signals are distinct, as far as bells go, and you have everything before you in black and white, but it would be a distinct improvement, I think, if gongs or bells of different tones were used to signal "ahead" or "astern." A double bell for going astern would be better still.

The CHAIRMAN: I think that different toned bells for going astern are already fitted in some ships.

Mr. SHEARER: Yes, but the difference in tone is not sufficient, in my opinion. I think a double bell would be better. When a man is attending to his duty under the present conditions, I do not think that there is the slightest occasion for a mistake to be made. But I would certainly suggest a double bell for going astern, as it is an important move at all times.

Mr. J. T. SMITH: There is one thing about this that occurs to me. Disputes occasionally arise as to whether the engines have really been moved in the direction indicated by the engine room telegraph. The tell-tale arrangement suggested by the author of this paper would go far to settle disputes of that kind. As I understand, it is only when the gear is moved in a direction contrary to that indicated on the telegraph that this bell would come into action. If the bell did not ring it would be a clear indication that the engines had been moved in the direction ordered. At present there is nothing by which an engineer can prove that he has moved the engines as directed, and it often comes to be a question of evidence after an accident.

Mr. SHEARER: Most large ships have tell-tales or indicators on the bridge, so that the officer in charge can tell which way the engines are going.



The CHAIRMAN : That is so in all men-o'-war.

Mr. SHEARER : Some engineers, I know, object to those tell-tales, and think the captain on the bridge knows too much of what is going on in the engine room. But any such objections are, I think, a great mistake. The captain ought to know the movements of the engines. He is in command of the ship, and he is responsible for the movements of the ship, through the engines.

Mr. J. B. JOHNSTON (Member) : This is a very good paper. But, with all due deference to the author, I really think we are admitting too much. If we admit that we require something in the engine room to put us right, because when we ought to put the engines ahead we may put them astern, we admit liability. Mistakes have more often been made through the wrong order being telegraphed from the bridge. The engines have been ordered ahead, when, in point of fact, they were wanted to go astern. I have been called up on some occasions, and found that the man who was ringing the telegraph was so excited that he did not know what order he *had* signalled; while we, in the engine room, perhaps not knowing the danger, were perfectly cool, and were less liable to make a mistake.

Mr. HULME (Member) : I myself quite agree with the author of the paper as to the necessity for something of this sort in the engine room. Engineers serve in different ships, and all ships are not fitted alike. An engineer may be suddenly drafted into another steamer of the same line, where the conditions may be very different from those in his previous ship. The starting platform may be on the other side, and while in one vessel the engines when going ahead may be turning from him, when he gets into another ship he will find the engines turning towards him. It is thus very easy to make a mistake. For instance, suppose a signal comes from the bridge to go ahead. On many occasions in the olden times, especially with compound

types, it has been absolutely necessary to give the engines a turn astern before they could be set ahead. In such a case the man is naturally in a hurry, and it is quite possible for him, in the hurry, to continue going astern. There is something, however, provided by this paper which will then tell the engineer that he has made an error. I think it is a very good arrangement which is proposed in the paper.

Mr. W. McLAREN (Member): I would like to go further than the author of the paper. I think that the telegraph and the starting handles ought to be linked together, so that there could be no mistake.

Mr. R. D. KEAY (Member): There is one little point I should like to mention. In ordinary marine jobs a lot of trouble arises owing to the chains connected with the engine room telegraphs getting slack. I think the Naval practice is to connect the bridge with the engine room by shafting, which, I think is the plan that ought to be carried out in all vessels. You may often have serious accidents owing to the chains getting slack, and the want of correspondence between the indicators in the engine room and on the bridge is frequently a great nuisance. They ought to be driven by gear which will ensure that the relations of the two hands will be positive.

Mr. A. H. MATHER (Member): Mr. Hulme raised a point about having to turn engines a little astern before going ahead. Supposing this gear was fitted to a ship in which that had taken place, the question would be raised at once that the engines had been going the wrong way, and this tell-tale would be evidence against the engineer. If the system is fitted in a vessel so as to inform other people what is going on in the engine room, it might tell very heavily against the engineer, and unjustly.

The CHAIRMAN: Perhaps Mr. Adamson will deal with the reply to the discussion now.



Mr. JAMES ADAMSON (Hon Secretary): I quite endorse Mr. Smith's view that our members might favour us with a few more papers like this one that has been read to-night, and I am sure that Mr. Ruthven, the Convener of the Papers Committee, will be very glad to take the names of any members who will contribute papers of the kind. This paper of Mr. Macartney's, from my reading of it, was written, I apprehend, not with a view to admitting errors in the engine room, but rather to prevent engineers being brought before marine courts of enquiry, charged with offences which they had not, in fact, committed. I only gather that from the remark by the author about an engineer who was condemned by a marine board because he had no proof that his engines went astern when they were ordered astern from the bridge. There is a system of linking the telegraph with the engines, such as was referred to by Mr. McLaren, but I do not know that it has been generally adopted, largely for the reason that it is sometimes necessary to put the engines the reverse way to what you may want them to go, until they clear themselves. I heard recently of a case of one steamer in which strong complaint was made of the extreme frequency with which the river pilot caused the engine room telegraph to be rung "ahead" and "astern." The chief engineer complained to his owners, but to obtain evidence of a convincing character, he rigged up an indicator in the engine room, attached to a clock, by means of which he was able to register every movement made by the engines during the time the ship was in the river in charge of the pilot. The next time the engineer made a complaint he was able to produce this register in proof of his statement, and, if I mistake not, the register showed no fewer than 90 movements of the engines within three-quarters of an hour. It was also an indication to the pilot, and he was more careful, I understand, on future occasions. This was a method adopted by a chief engineer in his own defence to show that the pilot was, perhaps unwittingly or thoughtlessly, causing the engines to be worked in a way which was detri-



mental to the machinery. It is with the same object in view that this paper has been written. We knew well that whenever the human element comes into play there is always liability to err, and I have in my mind at this moment at least three cases of which I have heard where it was impossible to ascertain the truth of a dispute between the engine room and deck, as to whether mistakes had or had not been made in carrying out the intended orders. With engines fitted as described in the paper, there would be no doubt whatever, because if the engines were moved as ordered from the bridge, no bell would ring, but if the engines were moved the wrong way, the bell would give the warning. I dare say there are as many mistakes made on the bridge as in the engine room, and I apprehend that Mr. Johnston did not quite follow the reasoning in the paper, although it has seemed clear to Mr. Smith and others. I quite endorse Mr. Shearer's remark as to the position of the commander of a steamer. But it seems to me that the objection which may be urged by an engineer against the movements of the engine being automatically transmitted to the bridge is mainly for the reasons already referred to and emphasised by Mr. Hulme and Mr. Mather, that it is sometimes necessary to reverse the engines for a revolution or two before starting on the intended movement, an indication of this on the bridge undoubtedly would, in some cases, cause trouble and confusion, more or less, according to the disposition of the officer, and the reasonableness, or otherwise, of his attitude.

The CHAIRMAN then proposed a hearty vote of thanks to Mr. Macartney for his paper, and said he fully endorsed the remarks that had been made as to the value of a short paper of this kind.

The motion was seconded and carried unanimously.

Mr. T. F. AUKLAND (Companion) proposed a very cordial vote of thanks to Sir John Durston for presiding. He said it was always a great pleasure, and

cause for congratulation, when a past president attended and presided over one of the ordinary meetings of the Institute, because it showed two things. It showed that he must have taken an immense deal of interest in the work of the Institute during the year that he was president, and it showed also that his interest in the Institute continued to the present day. Sir John Durston lived a long distance from the Institute, and having regard to this fact, and the multitudinous calls upon his time elsewhere, he was certainly entitled to a very hearty vote of thanks for his kindness in presiding on the present occasion.

Mr. R. ADAM (Vice-President) seconded the motion, which was carried by acclamation.

Sir JOHN DURSTON, in acknowledging the vote, said it had been a great pleasure to him to attend and preside over this meeting, and he only wished that he could attend more frequently; but, as they knew, he had a good deal of work in hand, and that was the only reason why he was not at their meetings more often.

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### DISCUSSION CONTINUED

AT

58, ROMFORD ROAD, STRATFORD,

ON MONDAY, DECEMBER 11TH, 1899.

CHAIRMAN:

MR. T. F. AUKLAND (Companion).

The HON. SECRETARY: I have been able to procure the actual clock and indicator to which I referred at our last meeting, and am glad of the opportunity of showing it, and at the same time confirming the remarks made regarding the use made of the clock and indicator. I regret that the diagrams which were



taken have not been kept, so that they might be reproduced. I have also learned that another special reason, which led to the timed movements being recorded, was exactly similar to that which led to the recording bell described in the paper—namely, a dispute as to the ahead or astern movements of the engines. In this case a floating stage was run into and damaged. The officer on the bridge maintained that the telegraph had been rung full speed astern, and the engineer on watch maintained the engines had been set to work according to the telegraph, which indicated ahead, and then astern; the contention by the officer on the bridge being that both rings were for astern, the second one being given because the first ring had no effect in checking the way of the ship. There were no witnesses to either side, and therefore no evidence, as by the time the chief engineer reached the engine room the second ring had gone, and the engines were being altered.

Mr. SHEARER: Since reading the paper, and considering the subject, I have altered the opinion I expressed as to the value of the indicator described. I see the object and intention more clearly, and now consider this to be a very valuable contrivance; it ought to be fitted to every engine room telegraph. From its simplicity it is impossible to make a mistake. I suggested the double bells for going astern, but I think this is even better. Of course with the double bells there is a difference in tone, but there are many people who cannot discern it. I must say that this is a most ingenious contrivance. It is also exceedingly simple and ought to be applied in all cases.

The discussion on Mr. Macartney's paper was then declared closed.











