INSTITUTE OF MARINE ENGINEERS

INCORPORATED.

SESSION  1917-18.

President: CAPTAIN RICHARD H. GREEN, R.D.C.

VOLUME XXIX.

Engineering Training.

The following memorandum outlines the origin of the proposal to form a Central Organisation for improvement in and better co-ordination of Engineering training, to which is related the purpose of the meeting at the Institution of Civil Engineers. A report of this meeting will be found on page 294:—

1.—The proposal to form a Central Organisation for improvement in and better co-ordination of engineering training originated in an informal conference of engineers and educationalists, which held several meetings at the Board of Education during the early months of 1917. The object of this conference was to consider certain problems of engineering training more particularly from the industrial point of view, but it soon became apparent that the amount of useful work to be accomplished was

altogether beyond the scope of a temporary conference, although well within the power of some permanent organisation.

2.—In ceasing its work, therefore, the informal conference presented to the Board of Education a memorandum embodying the suggestion that a bureau might be established within the Department. At the wish of the Board, the suggestion was communicated to as wide a circle of engineers and educationalists as possible, and elicited strong support. A marked feature of this support, however, was an expression of opinion on the part of many engineers that it would be preferable to establish the proposed organisation on an independent footing, so that while co-operating closely with the Board of Education and other educational bodies, it might be free from the need of Government finance. Mr. Fisher, President of the Board of Education, concurred warmly with this view, and his Department has taken a very close interest in the initial steps of its development.

3.—On the evidence of this nucleus of opinion, those more immediately concerned requested the Council of the Institution of Civil Engineers to lend their theatre for a meeting, at which the real need for such an organisation might be confirmed and some definite proposal formulated after discussion of the subject by the principal engineering and educational interests invited to attend. Inasmuch as the broad purpose of the proposed organisation is to provide the engineering industry and profession with a representative brain and articulate voice on educational matters, it is obvious that any such scheme essentially depends on the combined assistance of the various institutions, not only in creating and in helping financially to maintain the organisation, but in enabling it to perform its functions efficiently through the principle of devolution. Primarily, it will co-ordinate things that exist, for although it must exert a live and progressive influence, it is in no sense intended to be competitive with institutions that have already done and are still doing most useful work in their individual spheres. Rather will it endeavour to bring them together in conference so as to avoid overlapping of effort, and to take steps that will ensure a more widespread knowledge of and interest in such

admirable memoranda as those, for example, issued by the Institution of Civil Engineers and the North-East Coast Institution of Engineers and Shipbuilders.*

4.—There are three objects in particular on which the proposed Central Organisation might usefully concentrate its attention.

The first is the co-ordination of engineering training, including the fostering of apprenticeship as a National institution, and the consideration of means by which the work period of an engineering pupilage may be increased in efficiency, and a wider appreciation secured for the value in industry of education of University rank.

The second is the maintenance of a Central Bureau, where parents and educationalists can obtain accurate and comprehensive information relating to the engineering industry, and the proper course to pursue on behalf of boys who are desirous of making engineering their profession.

The third is the promotion of scholarships, or other equivalent means by which the best talent may be enabled to rise to its proper level under the stimulus of educational opportunity.

5.—With regard to the first of these objects, co-ordination refers primarily to encouraging a proper relationship between school work and shop work for all classes of engineering students. No plan for extended school work, such as the new Education Bill foreshadows, can possibly bear its full fruit unless it is supported by a workshop instruction that is effective in fitting a boy to make the best of his future manhood, and no training for engineering management can hope to be efficient unless the clear thought that it confers by higher education is coloured with the human sympathy and understanding that is born of personal experience in the shops among the men. Nor is it only a vocational training that has to be considered. It were short-sighted indeed to overlook the citizen and the man in trying to make the mechanic, or to forget the importance of good health and the value of a mind with many interests.

* For Report of the Council of the Institute of Marine Engineers see page 314, Vol. XXVIII.

6.—Incidentally, there is a widely recognised need for encouraging lads to become apprentices as distinct from mere members of the vast community of child labour, and this recognition extends also to the need for effecting improvement in the educational value of the works period of engineering training, whether it be for the apprentice who seeks to learn a man's skilled trade, or for the pupil who is qualifying for ultimate positions of management. Admirable as are the efforts made in some works to afford really effective facilities for a thorough engineering training to those young persons who are capable of profiting by it, in many other directions little or no interest is taken in the development of this potential industrial man-power. What with the inconvenience of instituting educational methods in industrial establishments, and the narrow-minded objection that the fruits of such labours are often apparently plucked by others, much of the field of engineering industry has remained untilled in the educational sense, and equally in industry as in agriculture such a state is alike unprofitable to the individual and to the nation. The significance of the works period in an engineering training cannot be too strongly emphasised, for not only are the shops the natural nursery of the majority of the charge hands, foremen and superintendents, on whose efficacy and efficiency so much of our engineering economy depends, but there is an immensely important section of higher engineering education for which the productive works, or the equivalent civil engineering enterprise, is an indispensable class-room.

7.—And in this respect it is important to make clear from the first that the scope of the proposed Central Organisation, as it has appeared in the minds of those who have been more prominently associated with this movement, has not been restricted to the field of engineering science. The work of the technologist is the foundation on which the engineering industry, in the broader sense of the term, develops, but the problems of economic production, as they appear to the Works Manager, and, in the higher aspects of business, to the Director of Engineering Commerce, must equally receive attention if any organised scheme for improvement in and better co-ordination of higher engineering training is to have the success that it deserves.

8.—That the time is ripe to bring into existence a Central Organisation to which engineering firms and others could apply for information relating to apprenticeship systems and methods of training that are actually in operation may be judged from the number of letters in support that have been received from various sources, and as to any further need for an information bureau (the maintenance of which is the second of the specified objects of the organisation), the answering of the daily letter from the perplexed parent whose son is approaching the completion of his last term at school, may in itself seem to be sufficient justification to the many Engineers who would be relieved thereby from the onus of replying to this mass of correspondence. To advise the parent sympathetically and well is a work of first-class importance, because it is of real consequence that every boy should be helped to attain to the highest level of service of which he is capable. As a link by which parents, schools, and Universities are enabled to get into direct touch with the engineering industry and profession, the proposed Central Organisation will be performing one of its most important rôles. The letters of support that have been received from the Head Masters of practically all our Public Schools are in themselves sufficient evidence of the useful service that such a scheme could render in this direction, and, considering the importance of engineering to the nation, the value of attracting into this field a proper proportion of the country's most promising youth can hardly be overestimated.

9.—And the need for making the most of those who do enter engineering is equally vital, and leads logically to the inclusion of the third of the above-mentioned objects of the organisation. Without doubt, much potential talent is prevented from developing either as quickly or as widely as it could through lack of financial assistance, and it would be a worthy endeavour on the part of the engineering world to attempt some improvement in this direction by fostering the establishment of proper scholarships. This interest of the proposed organisation would not be restricted to any one class of engineering student; indeed, it would inevitably become one of the main supports of a new "educational ladder" which many hope to see extend from the bench to the University for those boys,

irrespective of social distinction, who are able to climb thus high. The day has long passed, if it ever existed, when rule of thumb methods were considered to be good enough in engineering, but some widening of view is still needed to obtain a general appreciation of the University standard of education as an asset of real value in practical life, and if the closer association of the academic and industrial worlds that such a scheme as this would tend to bring about, resulted in a better understanding of their ideals and ideas, the proposed Central Organisation would have gone far towards achieving one of its principal objects, which is to make the best possible use of our educational resources in the interests of the engineering industry and profession.

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The Training of Engineers.

The following report, editorials and letters appeared in the Liverpool *Journal of Commerce*. As several enquiries have been received from members on the subject of education, these articles are re-published in our Transactions for the general information of our membership:—

EDUCATION OF ENGINEERS.

The meeting held at the headquarters of the Institution of Civil Engineers, briefly reported in Friday's *Journal of Commerce*, has been one of the most remarkable gatherings of British engineering interests which has ever come together in the pursuit of a common object. The writer, who has been in the habit of attending the meetings of engineering institutions for many years past, can recall nothing which in any way approaches the really representative assembly which has been in conclave for the purpose of laying plans for the better education of engineers, and in so doing laying the foundations of a greater engineering industry in Great Britain than ever before. Scientific engineers, consultants, educationalists from the Universities and the schools, manufacturing engineers, representatives of business organisations, delegates from the Board of Education and from the Research Branch of the Privy Council, all these were present on what is likely to prove an historic occasion.

The preliminary work in connection with the meeting had extended over many months. It originated with Mr. A. E. Berriman, the Chief Engineer of the Daimler Company, and Mr. A. P. F. Fleming, of the British Westinghouse Company. These enthusiastic pioneers of the new movement called a number of informal meetings, at some of which the writer was present, and the question of the training of engineers was discussed from many points of view before presentation to the industry. The Board of Education was consulted and many representatives of manufacturing interests. Thus little by little the scheme presented at the meeting was built up, and it was not surprising that the resolution for the appointment of a committee was unanimously adopted. Steps will now be taken to elect the members of the committee and to constitute the proposed central bureau.

The Objects Sought.

There are three objects in particular on which the proposed central organisation might usefully concentrate its attention.

The first is the co-ordination of engineering training, including the fostering of apprenticeship as a national institution, and the consideration of means by which the works period of an engineering pupilage may be increased in efficiency, and a wider appreciation secured for the value in industry of education of University rank.

The second is the maintenance of a central bureau, where parents and educationalists can obtain accurate and comprehensive information relating to the engineering industry, and the proper course to pursue on behalf of boys who are desirous of making engineering their profession.

The third is the promotion of scholarships, or other equivalent means by which the best talent may be enabled to rise to its proper level under the stimulus of educational opportunity.

Sir Maurice Fitzmaurice, the President of the Institution of Civil Engineers, said, in opening the proceedings, that the Council of that Institution felt that nothing but good could result from a meeting of that kind. The question of the improvement in and better co-ordination of the training of engineers was one that must appeal to all. If that meeting could agree to appoint a committee of those who had to deal with all the different stages of engineering training, education and apprenticeship, a great step forward will have been taken. So thoroughly representative a meeting had never taken place

before. There was a great gap at present between the time when it was arranged a boy was going to be an engineer and when he became an engineer. The industry lost many engineers on that account, and many of those who did enter the industry would be better engineers if they had more guidance than they received under present conditions. There were several elementary propositions in connection with this subject on which he believed there was unanimity. The manufacturing and trade interests of Great Britain depended mainly on engineers, and a full supply of young engineers was necessary to recruit the ranks. It was essential that these young engineers should have the training necessary for them to prosper in their profession and to be the means of causing their profession and industry and country to prosper. He hoped the result of that meeting would be a great improvement in education and training of engineers, as well as a drawing together of educational, professional and manufacturing interests. It was necessary to-day to act together, and not separately, for the needs of the war, and he hoped that meeting would form a bond to keep them together in peace, as Great Britain would have to fight quite hard to maintain its commercial position.

Mr. Fisher, President of the Board of Education, who it was hoped would have been present, had written to the effect that the Board would be glad to co-operate in any well-considered scheme.

Mr. A. E. Berriman, in explaining the memorandum which had been circulated, said it was considered absolutely necessary to have a central organisation. Co-ordination was a great need, and the work of the organisation would be to establish the proper relationship between school work and shop work for all classes of engineering students. The two things were both absolutely necessary. It was also important to encourage lads to become apprentices and to foster the apprenticeship system as a part of the life of the nation. Another question which must be tackled was that of securing a wider appreciation in industry of education of University rank. The proposed central organisation would not confine its attention to purely engineering training, but would also tackle the problems of economic production from the point of view of the works' manager and the commercial aspect. They realised the importance that every boy who had the necessary ability should be helped to attain the highest level of service of which he is

capable, and with this object it was vital that he should be properly advised at the outset of his career. It was proposed to promote scholarships so that promising boys could receive the necessary financial assistance at the right time. The proposed organisation must in the first place be a permanent body, must be absolutely representative of the engineering industry, must co-operate with the interests of which it was representative, and co-ordinate their work. Originally it was hoped that something might be done within the Board of Education, but it had been decided that it would be preferable to establish the scheme on an independent footing, so that, while co-operating with the Board of Education, it might be free from Government control.

Sir Dugald Clerk referred to what he believed was at the present time a considerable difficulty, and that was the indisposition of many works to give positions to those coming from the Universities. The reason for that was rather peculiar. There are many proprietors of engineering works who do not like young men to come into their establishment, to remain there for a short training, and then seek appointment elsewhere. Many firms preferred to train their own staff. It was necessary for the future of the engineering industry to get rid of that idea if we intended to raise the body of highly trained young men essential for the prosperity of this nation.

Wages Problem.

Mr. Michael Longridge (President, Institution of Mechanical Engineers) expressed the opinion that the success or failure of the scheme outlined in Mr. Berriman's memorandum depended very largely on the attitude of the manufacturing mechanical engineer. He hoped he was drawing the correct inference from the letter accompanying the memorandum from the Secretary of the British Engineers' Association that the industry would support the scheme. Personally, he believed the Committee would be able to do useful work so long as it confined its activities to advice, consultation and the drafting of schemes, and refrained from any attempt to force its plans on the engineering industry. He would point out, however, that the future prosperity of engineering in Great Britain was largely a financial question. Wages had risen to such a level that the industry would be ruined unless by increased efficiency, a larger output, and consequently larger income, the higher working expenses could be met. His only criticism was in connection with the scholarship proposals, the

cost of which would apparently fall on manufacturing firms, whereas in his view it was the business of the State, working through the Universities and technical schools, to provide the necessary funds.

Mr. C. H. Wordingham (President, Institution of Electrical Engineers) supported the scheme in a general sense, as the Council of the Institution which he represented were awaiting details of the proposals. They would, however, give the strongest possible support to any scheme to promote the better training of engineers. It was rather a case of co-ordinating existing resources than the creating of new institutions which was required, and he believed that the plan outlined by Mr. Berriman contained the elements of success, and that the engineering industry would rise to the needs of the present occasion and take the necessary steps for the training of those coming into the industry to ensure Great Britain her place in the world's markets.

Attitude of Employers.

Mr. W. H. Ellis (Master Cutler, Sheffield), speaking from the point of view of the employer, said that the success of the scheme clearly rested upon the attitude of engineering firms. Hitherto the granting of an apprenticeship had been regarded as a favour to a boy entering a works, but it was time that the employer recognised that he had responsibilities in the matter, and that what he might term "welfare" work, of which so much had recently been heard, should be extended to apprentices. It seemed clear to him that the resolution would be unanimously adopted, and he and others in the same position as himself could be of more use when the various details had been worked out rather than at the present time. As an old member of the University Appointments' Board, he felt it was very necessary to provide additional facilities for those who had received school training to pass into industry.

Mr. H. B. Rowell (President North-East Coast Institution of Engineers and Shipbuilders) briefly supported the proposal, as did Mr. W. H. Hichens (Chairman, Cammell, Laird, Ltd.).

Mr. R. T. Nugent (Federation of British Industries) said that the Federation was ready to assist the scheme in every way, and would co-operate with the new organisation which it was proposed to set up.

German and British Methods Compared.

Professor W. E. Dalby said it was gratifying to one who had spent a large part of his working life in the education of engineers to be present at that meeting. It was not so many years ago when to have had a scientific training in engineering was to be banned in any engineering works. That state of things was now passing away, or it would not have been possible to hold the present meeting. Ten years ago he went to Charlottenburg to make some investigations into the training of engineers, and it was then stated that there were over ten thousand students of engineering over 18 years of age, who before they started on their engineering courses were as well educated as if they had taken an English University degree. In Great Britain he could only find about 900 men to set against the 10,000 of which Germany could boast, and the position of Germany in this respect had probably improved during the intervening years. His own view was that whatever might be said in regard to the number of trained men in British engineering, there was very little wrong with the quality, and he did not hesitate to say there was no country in the world where better engineering training could be given than in our modern University centres. The fundamental need was for the schools to build up a strong pedestal of engineering scientific knowledge, on which could afterwards be constructed an edifice of any specialised knowledge which was desired. To start specialised training in the first place was clearly a mistake. In connection with the difficulty of getting employers to take men from the schools, it was now ten years since Sir Alfred Yarrow altered his system to make room in his works for scientifically trained men, and he was glad to say that the old system of receiving pupils for payment in engineering works was gradually being abandoned, and the principle of taking men from the schools who had had scientific training introduced, largely, he believed, owing to the influx of American firms. It was necessary, however, to establish a scheme by which shop work was co-ordinated with school and college work, and the plan which had been put in force at Messrs. Allen's, of Bedford, was a case in point.

The Voice of Criticism.

Lieut.-Commander C. F. Jenken (Oxford) criticised the scheme from one or two points of view. His impression was that when the hot air was eliminated the whole proposal boiled down to very small proportions, such as were stated in the

memorandum. These were the co-ordination of engineering training, maintenance of a central bureau, and the promotion of scholarships. These were excellent suggestions in themselves, which had often been discussed before. The point in regard to the scholarship suggestion was that the cost was to be borne by the manufacturer, who has always been disposed to refuse any responsibility in this direction. It would be necessary to convert the manufacturer before that part of the scheme could be made practicable. It was a very simple matter to put forward a general scheme of this character, but these plans were apt to come to grief at the point where it became necessary to lay down definite lines of action. As Professor Dalby had indicated, there was really nothing wrong with the education provided at our Universities and Colleges.

Sir A. Selby Bigge (Board of Education) said that his Department welcomed the new scheme, as the Board had always been hampered in the organisation of education from the want of a representative body connected with industry with which they could deal. He emphasised the opinion of most educationalists that the co-ordination of industry and education was a most important and necessary work, in order that students might be trained with the ultimate use that was going to be made of his education generally in mind. The Information Bureau which it was proposed to establish ought to prove of great value both to education authorities and to parents. His own view was that its functions would be somewhat analagous to the Appointments Board, which had done good work in connection with Universities, and that it would not degenerate into an employment agency.

Mr. J. Phillips Bedson (Manchester) agreed that the scheme meant that the employer would have to put his hand deeper into his pocket than hitherto. It was very essential to give the better class boy who showed aptitude an opportunity of improving his position, as unfortunately many boys could not afford to become apprentices at the low wages which were paid. He could confirm the disadvantages under which such boys laboured, from his own experience, and it seemed to him to be unreasonable to expect a boy who had already spent long hours in the workshop to be in a position to devote his evenings to study at the schools.

British Engineers' Association.

Sir Wilfrid Stokes (British Engineers' Association) expressed the deep interest of employers in the subject under

discussion. He assumed that the Committee would be representative of engineering institutions and the industry. From an analysis of the supporting bodies it would seem that about eleven members of the Committee would be representative of manufacturing interests, and he was, therefore, prepared to leave the Committee to decide what was necessary to be done in the national interest.

Training the Industrial Army.

Sir John Wolfe Barry, in moving the resolution for the appointment of the Committee, said that the tone of the discussion indicated that it met with the approval of that representative gathering. His connection with engineering education had extended over 40 years, and went back to the time when facilities were extremely limited. Rankin, in his opinion, did more for scientific engineerng than anybody else. Good work had also been done by the City and Guilds of London, who had spent upwards of one million, and were still spending £25,000 a year on technical education. It seemed to him that what he might term the education of the officers' training corps of engineering was fairly well provided for, and that what was now necessary was to provide the necessary training on the technical side for the rank and file of the industrial army. He believed we could produce an industrial army second to none in the world, and for reasons which were fairly obvious the work would have to be done. One of the great problems in arranging for the education of the great body manning the workshops was to get over the antagonism between conflicting interests. He had had some experience of the clash of interests between manufacturers and purchasers in the work carried out over a number of years by the Engineering Standards Committee, and although that work had been difficult they had been fairly successful in reconciling the various interests concerned and in reaching a general agreement. He hoped and believed that the organisation which it was proposed to create would be able to solve some of the difficult problems involved in the training of engineers. A point of some importance was that those who were to be leaders of the industry in the future should be so trained that they could come to the top at a fairly early age, as was the case in the American engineering industry.

Dr. W. H. Hadow, Principal of Armstrong College, Newcastle-on-Tyne, in seconding the resolution, drew attention to the gradual convergence during recent years of indus-

trial activity and scientific training. Within not very remote memory the heads of great industrial firms in England were rather disinclined to admit academically trained men into their works. Now the tide was turning, and such admissions were becoming far more frequent. This was due to two causes: first to the recognition on the part of industrial leaders that scientific training was a valuable asset in their work, and that they could not longer meet foreign competitors on equal terms with the resources which a generation ago had seemed sufficient; and partly to a movement among Universities and other teaching bodies in the direction of meeting the practical requirements of the districts in which they were situated. There was one defect in scientific training as carried on under academic conditions. It was too much sheltered from practical difficulties and obstacles; in other words, it produced its results not in the workshop, but in the laboratory, with unlimited time and under conditions which did not necessarily make for economic success. Hence by itself it had not always been the best training for dealing with problems which had to be done within a limited period of time and at a limited cost. The Universities had come to see this, and were adapting their teaching to the necessary requirements of economic production.

This, however, was only part of their work. The business of any educational institution was to turn out not only good workmen, but good men, and it was important that while vocational teaching was fully recognised and given its proper place, it should not be allowed to exclude the larger and more liberal cultivation of the whole mind and character. Hence the great advisability of securing as far as possible free intercourse between students working in different departments and on different kinds of subject. Each had something to learn from the others, and their teachers had something to learn from them all. This was of special moment in view of the tendency now observable through the industrial world to secure for the wage-earner larger opportunities of general cultivation. There was no fear that this would make men dreamers or amateurs; there was no question of sprinkling their minds with a smattering of many half-understood topics or of turning their attention away from the main issues with which their lives would have to deal. But within the limits of a clear and coherent scheme of education it was obviously common sense to hold that the fuller a man's equipment the better service he would be able to render both to his industry and to the

State. In short, an education was wanted which would turn out at the same time good engineers and good citizens. To secure this neither of the two sides was in itself sufficient. There was no need to be afraid of the old antithesis of theoretical and practical; theory rightly understood was a guide of practice, as practice was the test of theory. The truest educational method was a combination of the two, and for that purpose such an organisation as was proposed would be extremely valuable.

Attitude of Government Committee.

Mr. A. H. D. Acland, referring to his connection with the Committee of the Privy Council, said the work had brought home to him the need of an organisation of the kind it was proposed to set up, where parents and educationalists could obtain accurate information on the opportunities open in engineering. His own impression as a former Minister of Education was that most parents wished their boys to become engineers. On the subject of scholarships, there was good reason for believing that Mr. Fisher would shortly introduce a scheme of Government scholarships, a subject which had received the consideration of the Consultative Committee of the Board of Education, of which he was Chairman, and to which this question had been referred as a matter of urgency two years ago. The recommendation of that Committee was that £100,000 should be allocated to State-aided secondary schools. They recognised that it was necessary to fill the gap in the lives of boys between 16 and 18 years of age, and that a system of scholarships would assist in bridging over the educational gap. His Committee had also recommended an increase in the number of scholarships at Universities, and that £100,000 be applied to that object. They also recommended the granting of scholarships for research work at Universities.

The resolution was then put and unanimously adopted.

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*THE FUTURE TRAINING OF MARINE ENGINEERS.

Although probably obscured by the larger issues of the war, no one associated with shipping matters will fail to realise the importance of the Conference, which has just been held in London, relating to the training of Engineers. The gathering was probably the most powerful of its kind that has ever come

* Leading article *Liverpool Journal of Commerce.*

together. It consisted not only of individual engineers of distinction, but of the representatives sent by nearly thirty leading institutions, who were gathered together at the invitation of the Institution of Civil Engineers. The primary object of the meeting was to establish a central organisation to co-ordinate engineering education both in the Universities and in the privately-owned engineering works. There are two points aimed at, namely, to encourage young men to join the various phases of the engineering profession, and to formulate an advanced plan of training and of education, so as to anticipate the demands of the future. It is well known that, so far as Marine Engineering is concerned, activities have been in progress, and are still in evidence, with the object of reforming the old and conservative process governing the apprenticeship and the qualifications of Marine Engineers. The Conference to which we have referred has very sensibly taken this matter into account. It should not be forgotten, however, that the urgency underlying the whole question was vigorously called attention to as far back as 1906 through our shipowning associations and by the Marine Engineering Society.* The present and past Governments were on many occasions asked to take some action in the matter, and we remember that vigorous steps were taken shortly before the war to persuade the authorities that some measure should be passed which would rectify in our schools and colleges the inability of existing systems of education and training to cope with the complex requirements of engineering. It was then, as now, pointed out that a more gradual and extended method of apprenticeship should be insisted upon, and which should embody the period of training in technical schools so as to abolish the pernicious practice of "cramming" for Board of Trade examinations. It is significant and enlightening that this early agitation embraced a representation to the authorities of the policy adopted by Germany.* At that time, according to the data submitted to us, all the senior engineers in the noted German liners were Britishers; and, having gathered the benefit of the training and experience of these men, the German Government, at the instigation of its shipowners, founded the Flensburg and other colleges for the training of Marine Engineers, with a result which to-day is too obvious to require elaboration. It is, therefore, a welcome sign that steps are now being taken in this country to reassert our leading position in practical engineering matters.

* See Institute of Marine Engineers Transactions January 1893, October 1898, October 1904, October 1906.

THE EDITOR, *Liverpool Journal of Commerce.*

SIR,

The marine engineering world is very greatly indebted to you for the efforts you have made on behalf of Marine Engineers, but I am anxious that the sentiments you expressed in your second leader on Saturday last may not be misinterpreted into the belief that all is well.

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It is, of course, impossible to emphasise too strongly the views set out in Memorandum No. 2, which you published in last Thursday's issue. Two are of outstanding importance: First, "That some widening of view is still needed to obtain a general appreciation of the University standard of education as an asset of real value in practical life"; and, second, it was pointed out that engineering training should not stop at engineering science, but that the commercial and industrial sides should receive due consideration.

Naturally, the details concerning the many branches of engineering were not discussed, but a further point was emphasised, and evidently agreed to by the meeting—that engineering works will need to do a great deal more in the future for their engineering apprentices than they have done in the past.

As far as the Marine Engineer is concerned, I have foreseen this, and have emphasised it in articles in your journal, but the shipowners and Chambers of Commerce have evidently not grasped what this will mean. The "problems of economic production as they appear to the works manager" will not tend in the direction of training engineering apprentices as suitable candidates for sea-going service.

I would again repeat that I am deeply conscious of all the good work done by Liverpool shipowners in the direction of education, but it would appear that this question of the training of Marine Engineers is already drifting into obscurity, because no crumbs of comfort could be garnered in this particular direction at the Conference on Thursday last.—Yours, &c.,

J. WEMYSS ANDERSON,

Dean, The Faculty of Engineering.

Liverpool University, October 29, 1917.

*WANTED—A STRONG LEAD.

The shipowner of to-day is confronted with many anxieties. These not only involve the constant strain of living up to the almost anomalous position of supervising ships which are not his ships, but which are practically confiscated by the Government; but he must of necessity be obsessed with the great problems awaiting the shipping industry of the future. How far in bending his energies to meet the confused conditions of the times, in more or less patiently bearing the injustices and contumely of official arrogance, he is failing to assert himself, is a subject which we leave to the conjectures of other critics. It is sufficient to say that he is a much harassed member of the community.

It is, therefore, with some trepidation that we draw attention to an emphatic assertion contained in a letter by Professor J. Wemyss Anderson, the Dean of the Faculty of Engineering of the Liverpool University. He finds occasion to say that the Conference on Engineering Training, which was held in London last Thursday, affords no reason to believe that all is well on the subject of training Marine Engineers. He definitely hints that shipowners, and those bodies of commerce whose interests are relevant to shipowning, have not grasped the immediate desirability of reforming the practical and theoretical methods of apprenticeship training. We quote an assertion from him which, in its importance and weight, must be balanced with his unique and exceptional position to gauge the circumstances of the future in the interests of the shipowner himself, and, therefore, being conceived in such good spirit, may be exonerated of being captious or impatient. He says:—

> "I would again repeat that I am deeply conscious of all the good work done by Liverpool shipowners in the direction of education, but it would appear that this question of the training of Marine Engineers is already drifting into obscurity, because no crumbs of comfort could be garnered in this particular direction at the Conference on Thursday last."

We have recently been favoured with the carefully considered opinions of some eminent Marine Engineers and Superintendents of Shipping Companies, and they emphatically coincide with the appeals and expositions laid down on many

* Leading article *Liverpool Journal of Commerce.*

occasions by Professor Anderson. They assert that an entirely new practice is desirable in apprenticeship training if an efficient and adequate body of sea-going engineers is to be provided for the British Mercantile Marine under post-war conditions. Probably most shipowners are also aware of this. It may not be, as feared by Professor Anderson, that they are, from neglect, allowing the subject to "drift into obscurity." More likely it is, as we hinted above, that they are immediately anxious of greater points which are claiming their attentions and energies. The thought is, therefore, engendered that a timely opportunity affords itself to one or two powerful personalities in the shipping world to disentangle themselves from the present octopus grip of controlled shipping and to establish a vigorous, continuous and practical lead in the direction indicated by the professors of engineering colleges and by the cream of the Superintendent Engineers of the country!

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Education of Engineers.

The following is a report of an interview which took place on October 18th between a deputation of the North-East Coast Institution of Engineers and Shipbuilders and the Minister of Education. This report is from the *Liverpool Journal of Commerce*:—

The Duke of Northumberland, introducing the deputation, informed the President that the North-East Coast produced over one-half of the kingdom's warship and mercantile tonnage, and over one-third of the kingdom's total output of marine engines. The marine engineering and shipbuilding industries employed about 14,000 apprentices.

Mr. Herbert Rowell stated that the deputation desired to emphasise certain features of the Report on the Education of Apprentices which was issued recently by the North-East Coast Institution, and to submit several recommendations. The Education Bill which Mr. Fisher introduced to the House of Commons in August paved the way to a serious consideration of that important side of education, and encouraged them to believe that their representations would be sympathetically listened to. The report sprang from a demand for an efficient system of technical education for their apprentices. It rejected developed elementary day schools and laid it down

that the most suitable type of school for the prospective engineer was the junior day technical school. It requested that the latter should be regarded as a distinct type of higher school, in no sense inferior to a secondary school, which boys could enter direct from the elementary schools at 12 to 13 years of age for a full-time three years' course of directed preparatory education before beginning their apprenticeship. It demanded that adequate provision of these schools should be made in the North-East Coast area. In the establishment, management and general supervision of these schools it was hoped that the North-East Coast Institution (representing the employers' associations already enumerated) would act on a body, which should also be representative of employees, in consultation with the local education authorities. The Institution endorsed in the strongest possible terms the regulations of the Board of Education, which required that a reasonable proportion of the members of the teaching staffs of such schools must have had practical trade experience of the occupations for which the schools furnished educational preparation. The Institution regarded it as equally important that the inspection staff of the Board of Education charged with the supervision of the work of these and allied schools should be technical men with experience in the industries. It was also urged that the advisory body just referred to should have full opportunity of consultation with the inspection staff and with the chief administrative official immediately responsible to the Secretary of the Board of Education. Mr. Rowell referred in detail to the Board's regulations for junior day technical schools, and expressed the view that the declaration in the regulations that they were "not intended to promote the establishment of courses planned to furnish a preparation for the professions, the Universities or higher full-time technical work" was open to grave exception, as viewing the work of such a school as lying within a *cul-de-sac*. The Institution's scheme regarded such schools as places where the preparatory education of a prospective engineer or shipbuilder should be well and truly laid, and where provision was made for the continuance of that education in a senior technical school during the apprenticeship of the brightest pupils and continuing to the University. The point was, surely, one of spirit rather than of administration, for he could not imagine that the Board would deliberately arrest a sequential scheme of development such as that set out in the Institution's report. Nevertheless, the deputation thought it desirable to have a definite assurance on the point.

They realised that, if the scheme of education indicated in the report came into force, the engineering and shipbuilding companies concerned would be called upon to bear not only the cost of providing their apprentices with the facilities necessary under the scheme, but also a heavy share of the increase of taxes thereby entailed. They believed, however, that the extra expense involved would be returned to the community in a far higher degree, on the one hand by the greater skill of the workman, and, on the other, in the broader mental outlook, balance and initiative of the individual. They would like to see such a scheme adopted nationally, but if that could not be done at first they were prepared to recommend its adoption on the North-East Coast. The old family relations of master and apprentice, which raised craftsmanship to a dominating height, were gone, but they could at least see that the neglect and exploitation of apprentice labour that had largely prevailed for half a century died also. The close personal instruction of the old days of the guilds could, at any rate, be replaced by a high standard of collective training with, where the size of the works allowed, a suitable person to act as mentor and guide to the apprentices. They earnestly hoped that their work in that matter would not dissipate like a cloud of escaping steam, but that, through the machinery Mr. Fisher would set up, it might become a source of energy and inspiration to the rising as well as to future generations.

Sir Percy Girouard said that, on behalf of the North-East Coast Engineering Trades Employers' Association, he endorsed in every way, generally speaking, the proposals of the Institution. He realised that the scheme would mean a great addition to the number of apprentices in some departments, but he thought that most companies were prepared to meet that expense as the Institution's proposals, if carried through, would give them much more highly-educated apprentices, who would have much greater chances of going into the higher spheres in engineering, in management, and even administration than in the past.

Colonel R. Saxton White endorsed the report and described the progress of the apprentices' school in connection with Messrs. Armstrong, Whitworth's Walker Shipyard. That school started about three years ago with 40 students, and now had 74. The training was voluntary on the part of the boys, but he thought they were beginning to appreciate its possibilities of advantage.

Mr. W. H. Dugdale, Mr. George Jones and Mr. M. C. James spoke in endorsement of the Institution's scheme.

Sir Johnstone Wallace, on behalf of the Newcastle Education Committee, said that authority heartily and enthusiastically supported the scheme, and was prepared to carry it out.

Principal Mundella and Mr. Percival Sharp adduced valuable argument in support of the aims of the deputation.

Replying, the President of the Board of Education said he regarded that deputation as a very encouraging sign of the interest large employers of labour were taking in the promotion of technical education in this country. He was sorry to say that he found all over the country a very considerable amount of suspicion among working people so far as technical education was concerned. However, it was part of the duty of that Board, in co-operation with the industries and with local education authorities, to dispel that suspicion. He would give very careful consideration to the points raised by the deputation as to the regulations governing the junior day technical schools. The point with respect to finance could not be settled without consultation with the Treasury, and he should have to review the whole circumstances of the case before arriving at a decision. Hitherto a certain number of forward and intelligent employers had provided continuation schools for their workmen, and he had never heard an instance in which an employer who had taken that step had regretted it. Employers who did take that step were, of course, exposed to the competition of other employers who had not taken the step, but he believed that, when the obligation of providing day continuation classes for pupils who had left school before the age of 16 became general—as was proposed by the new Education Bill—and was imposed upon the whole country, there would be many more employers ready to take advantage of the facilities given them under the Bill and to provide classes in connection with their work. He took it that he was right in supposing that the deputation was very clearly of opinion that it was desirable, in the interests of the industry, that apprentices should have at least a full-time education in a junior day technical school or elsewhere in a secondary school up to the age of 16.

Mr. Rowell interposed that that age was mentioned as being within the time and the period of apprenticeship. The education should be up to the time the apprenticeship began.

Mr. Fisher remarked that that was, of course, a most important step forward in English education. He considered that it was the most important step that had been taken by anybody, because if it was generally known that it was the considered opinion of a great industry, such as the engineering industry, that boys should have a full-time education, if possible up to the age of 16, it would create an immense improvement in the education of this country, react upon a great number of other industries, and conspire in a very remarkable way with one of the purposes of the Education Board, which was to put a special premium upon full-time education up to the age of 16, any boy receiving such a full-time education being exempt from any further part-time education. He was particularly glad, therefore, to have received that assurance from the deputation.

NOTES.

The Education of Engineers.—This subject is of considerable interest to all Engineers, and several of our members have referred to it in the course of their visits to the Institute premises and in their letters. One member, referring to the Report of the Council issued last Session, emphasises the first clause, and advocates that "boys at the ordinary schools up to the age of 14 should be well grounded in the three R's, also mathematics, one language, Latin or French, drawing and physics. Arithmetic to include book-keeping."

The following comment occurs in a letter from another member:—"There must be a great many like myself who have not had the benefit of a University education, and who feel very much the need of a thorough engineering technical training. Really, what we want is to have our engineering studies properly directed by some competent authority, which might be convened by an Institute such as our own, and the work mapped out either in the form of lectures or a course of study. I was much impressed by reading 'Eclipse or Empire,' and I am firmly convinced that it is very necessary that we as a nation should excel in the way of education in view of what lies before us."

There is no doubt that the present is an opportune time to make an urgent and decided move in the direction of creating a desire throughout the engineering section of the nation for a more advanced general and technical education,

and in order to stimulate the desire and satisfy it steps should be taken to meet the requirements by advocating the more thorough teaching of certain subjects which are lacking in the ordinary school curriculum. The weight of the Institute added would considerably help the forces at work towards improving the whole system of national education. The subject of an improved education for Engineers has been discussed in past years in several directions, including our own Transactions, and notably a few years ago by the Institution of Civil Engineers, the report of the discussion is of considerable interest and worthy of study.

Now that a strenuous period in our history has arisen and a severe self-examination has been entered upon, energetic action is necessary to face what is ahead, and a combined effort on the part of every section of the nation will be required to meet the situation. Several excellent addresses have been delivered on the subject of education; discussions have also taken place throughout the country during the last two years dealing with general and technical teaching, industrial training, research work and handicrafts, these it is hoped will bear fruit.— J. A.

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Correspondence.

The following letter was addressed to the Secretary of the Admiralty:—

6th November, 1917.

DEAR SIR,

Referring to the services which the Engineers of the Mercantile Marine are patriotically rendering in many different directions, and to the request of the Admiralty conveyed to the Institute for Engineers to offer themselves for the Royal Navy, the Auxiliary and Transport Services, —a request which has been heartily complied with—WE DESIRE TO INVITE ATTENTION TO THE FOLLOWING POINTS, IN THE HOPE THAT THE ADMIRALTY WILL CONSIDER THE POSITION OF THE ENGINEERING PERSONNEL, WITH THE OBJECT OF PLACING THIS DEPARTMENT OF THE ROYAL NAVY ON A MORE EQUITABLE FOOTING, AND THUS BRING ABOUT GREATER HARMONY.

Many of our members, on the outbreak of War, volunteered for the Army; some of these, in response to your request, applied for transfer to the Sea Forces, where their

technical training could be at once usefully employed; others remained in the Army, where they qualified for Commissions, and, without exception, obtained promotion, while their fellow members who transferred find themselves in the Royal Navy placed in invidious positions as Engine-Room Artificers, without prospect of promotion.

There are, however, several members who were given Commissioned rank on joining the Royal Navy, and have acquitted themselves with distinction when opportunity has offered. The larger number of our members are serving in the Auxiliary Forces with the R.N.R. designation. Distinctions have also been awarded to some of these, while a number have lost their lives on the field of battle, or on the sea, in the execution of their duty.

It is suggested that from the results of examination open to Engine-Room Artificers—many of whom have proved themselves well qualified for responsible duties—entrance to the Commissioned ranks might be given, irrespective of seniority of service—we are aware that opportunity is given to Artificers who have qualifying service to sit for the Board of Trade Examinations; this is good, and ought to be encouraged. We also know that examinations are held for the grade Mate-Engineer, with the rank Sub-Lieutenant to those who pass.

There are Engine-Room Artificers in the Royal Navy who hold Board of Trade Certificates, and whose position is relatively inferior to that they occupied in the Merchant Service, and these we specially have in view as worthy of full consideration—from our better knowledge of their capabilities.

We desire to emphasise our view from our experience that Merit is more commendable and suitable for promotion and advancement than seniority of service or social distinctions—emphasised by the factor that promotion by merit is an incentive to study and improvement. We believe that this is best both for the Directors and those who serve them.

To sum up the foregoing, we beg that you will kindly place the whole subject before the Lords Commissioners of the Admiralty with an expression of our views.

We claim that Marine Engineers have had no small share of the work done by the Mercantile Marine, as was recently officially recognised in both Houses of Parliament.

We have personal knowledge of, and are proud of, the services rendered by Marine Engineers; therefore, we feel it is our duty to state our opinion that those who joined the Royal Navy as Engine-Room Artificers have not had an equal chance to be promoted to Commissioned rank as their brothers and friends have had who joined the Military Forces. The same applies to Engineers of Warrant rank who were in the Navy before the outbreak of War. We understand that a few receive Commissions, but that the proportion is very small.

We recognise that the duties and conditions of the Royal Navy and those of the Merchant Service are to some extent dissimilar, but we do claim that we have many young men in our profession who could qualify for Commissioned rank, and beg to give our opinion that the best type of officer is the one who is promoted according to his ability, and that the adoption of a scheme embodying such a principle would be the means of enlisting into the Naval Service more of the right type of Marine Engineer.

I am,

On behalf of

The Institute of Marine Engineers,

Yours faithfully,

JAS. ADAMSON, Hon. Secretary.

The Secretary,
The Admiralty,
Whitehall, S.W.1.

ADMIRALTY,
19th November, 1917.

SIR,

With reference to your letter of the 6th instant, regarding the position of Marine Engineers serving with the Naval Forces, I am commanded by My Lords Commissioners of the Admiralty to acquaint you, in regard to your statement that those of your members who joined as

Engine-Room Artificers are without prospects of promotion, that the following avenues of advancement exist for them:—

(1) E.R.A.'s, R.N. Permanent List.

Engine-Room Artificers, R.N. Permanent List, are eligible for advancement to Acting Artificer Engineer, and for promotion subsequently to Chief Artificer Engineer, and later to Engineer-Lieutenant. They are also eligible for promotion to Acting Mate (E), with advancement later to Engineer-Lieutenant.

(2) E.R.A.'s, R.N., Entered for the Period of Hostilities Only.

These ratings can be advanced to the higher grades of Engine-Room Artificer and to Chief Engine-Room Artificer after considerably less service than in the case of permanent service Engine-Room Artificers. Many have been so advanced, the advancement being in accordance with their ability. These ratings are also eligible for further advancement to Temporary Acting Artificer Engineer (period of hostilities only) and to Temporary Acting Mate (E) (period of hostilities only).

(3) E.R.A.'s, R.N.R.

1.—These ratings are eligible for promotion to Chief Engine-Room Artificer, R.N.R., Warrant Engineers, R.N.R., and Engineer Sub-Lieutenants, R.N.R., and to Engineer Lieutenants, R.N.R., the proportion of officers to ratings being greater than in the case of the Royal Navy.

2.—Engine-Room Ratings entered for the period of hostilities, either in the R.N. or R.N.R., are considered for commissioned rank irrespective of seniority of service.

3.—I am to add that My Lords fully realise and appreciate the value of the services rendered during the War by the Marine Engineers who have entered the Royal Navy.

I am, Sir,

Your obedient servant,

(Signed) Charles Walker.

The following letter has been received, and is published in order to give it greater publicity than it has on the Notice Board in the premises:—

"The Metropolitan Carriage, Wagon and
"Finance Co., Ltd.,
"Saltley Works, Birmingham.
"*Nov. 23rd, 1917.*

"At the request of the Director-General, Mechanical Warfare Supply Dept., we are applying to you for extra Drawing Office assistance, required by us for the preparation of drawings we have undertaken for the above-named Department. We require immediately three Senior Draughtsmen, fully qualified, three Junior Draughtsmen, not under 25 years of age.

"We shall also require in about a month's time a further four Senior Draughtsmen and four Juniors, with qualifications similar to the above."

Applications should be addressed to the Managing Director, The Metropolitan Carriage Wagon and Finance Co., Ltd., Saltley Works, Birmingham.

Notes.

FUEL ECONOMY.—A paper on this subject was read by Mr. J. A. Robertson to the Incorporated Municipal Electrical Association, in the course of which he urged the conservation of our national supply of coal, and pointed out where economy can be effected.

RELATION BETWEEN THE PHYSICIST AND THE ENGINEER.—A paper on this subject was contributed by Mr. Ed. Buckingham to the Bureau of Standards, Washington, from which the following is quoted in connection with Education:—

"Try to stop being superficial; lay more stress on quality and less on quantity; give the student less teaching and make him work more; save some of the time he wastes in running from one class to another and of the energy he wastes jerking his mind from one subject to another; and let him burn more midnight oil. Our whole system of schooling—it can hardly be called education—from the kindergarten to the university is full of sham, bluff and superficiality; quantity has altogether

got the upper hand of quality; thoroughness is out of the question because 'we do not have time for that,' as is the constant cry of the teachers. One of the silliest of these superficial notions, and one of the commonest, is that a high passing mark means a high standard. The sort of examination or other test of the student's work which jams three-quarters of the average class into the space between 70 and 100 per cent. is an absurdity. It is a rare class in which the best man is not at least three times as good as the man who is just good enough to pass, and tests which conceal this are misleading and unfair. If every college and technical school in the country would put its pass mark at 30 or 40 per cent., and then set examinations on which only a Maxwell or a Kelvin could make over 90, students would begin to notice that brains and hard work counted. As long as the man who just scrapes through is rated, on paper, as seven or eight-tenths as good as the real star, students are not going to care much about doing their work really well. A great many people decry what they call 'working for marks,' but I never knew anyone to do so who had ever had any high marks himself. Students who have brains and work hard always get high marks, and ninety-nine times out of a hundred the students who just scrape through could not do much better no matter how hard they tried.

To come back to suggestions for teaching—there is not much to be said to the physicist. After a while they will find out that it pays to be practical, and that it does not at all interfere with one's being scientific. Then they will begin to understand why there are so few big endowments for physics and why physics get such low pay. Specific suggestions as, for instance, to make sure of the elements even if it takes the whole four years of a college course, would probably get lost in the mists of relativity before they reached the ears of our physics teachers.

And specific suggestions to engineering teachers will hardly be expected from one who has never had any engineering training and who has only a little book knowledge of a few parts of the subject. But there is no possible doubt that our engineering schools make far too many demands on the student's time in comparison with those they make on his brains. For example, shop work is given in an exaggerated amount because it is 'practical'; and mathematics and physics suffer because they are 'theoretical.' The student will never again have leisure to study these more difficult subjects, while his whole life is to be spent in practical work. Anyone who has it in

him to be practical will learn the practical side of things fast enough when he gets his jumper and overalls on and has to work for a living; but after he has had them on for ten hours a day he will never have brains enough left at night to study the things he might have learned in college, but now can never have at his command. I have tried it, and I know. Again, it is the shortsighted superficial view that prevails: the student must be prepared to earn as much as possible the first year after he graduates, so, of course, no time at all can be allowed for learning in practical life—he must know all about practice when he graduates. If this were really possible, things would not be so bad, but everyone knows that it is not possible. No matter how good the 'practical' part of the college course may be, it is still a long way from the real thing, and the gain is not enough to offset the loss of something which is irretrievable and which is worth while, in spite of its not counting for much in the first two or three years' earnings. The gap between engineering schools and trade schools is nowhere near wide enough."

Machine and Fitting Shop Practice.—An interesting series of articles on this subject, with illustrations, has been appearing in *The Mechanical World*, beginning in the issue of August 17th.

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Election of Members.

Members elected at the meeting of the Council held on Tuesday, 6th November, 1917:—

John Brassino Clarendon-Hyde, 49, England's Lane, Belsize Park, Hampstead, N.W.

George Kenwright, Belleville, Alexandria, Dumbartonshire.

Peter Alexander Maitland, c/o Mr. D. Cameron, 7, Levengrove Terrace, Dumbarton.

Frederick Wm. Parkinson, 17, Christchurch Street, Greenwich, S.E.

Associate-Member.

Arthur Smith, 6, Cheltenham Road, Blackpool.

Associate.

Joseph Vickers Hutton, 18, King's Terrace, Southsea, Hants.

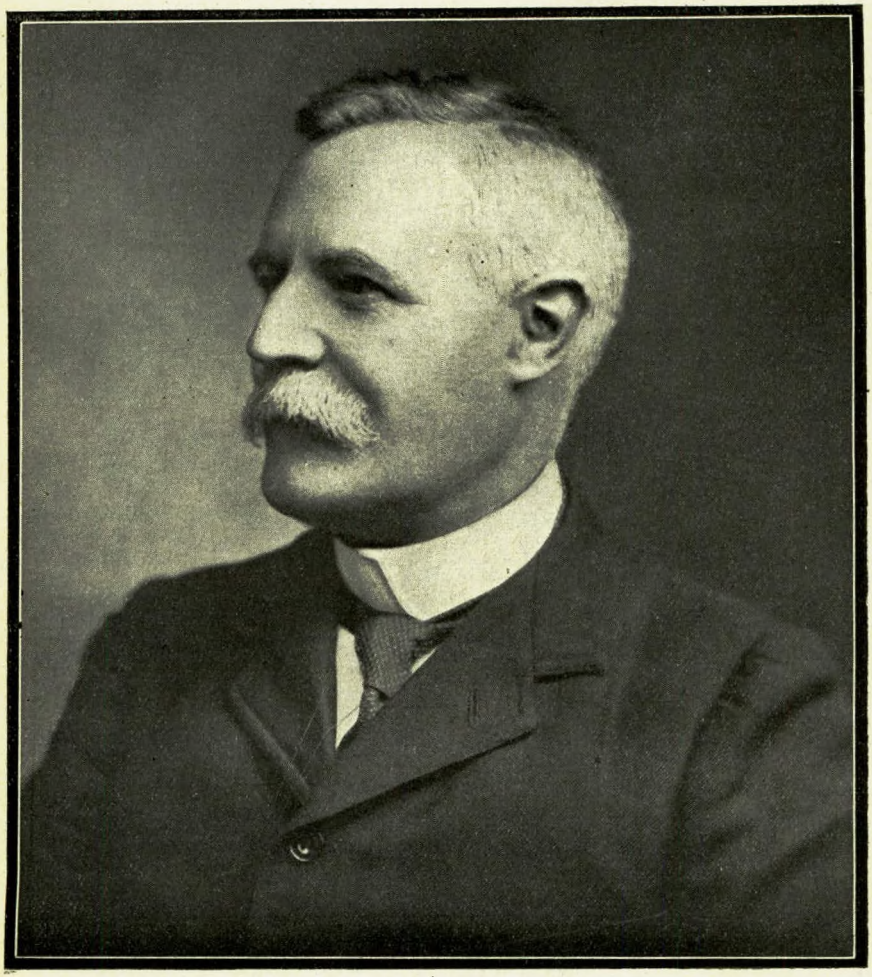
Graduate.

George Edwin Metcalf, 109, Evelyn Street, Deptford, S.E.

Transfer.

From Graduate to Associate-Member.

G. A. M. Brown, 59, Carmunnock Road, Cathcart, Glasgow.



Mr. PETER DENNY (Vice-President).

WE much regret to have to place on record the death of Mr. Peter Denny, member of the well-known shipbuilding firm of Messrs. William Denny and Brothers, and of the closely associated engineering firm of Messrs. Denny and Company, Dumbarton. His *demise* took place with distressing suddenness from heart disease on the morning of Monday, Nov. 19th (he having been at the works as usual, in apparent good health, on the Saturday) at his residence, Crosslet House, Dumbarton.

Deceased, who was in his 65th year, was the second of the five shipbuilder sons of the late Dr. Peter Denny, of Helenslea, who, with three brothers, founded the shipbuilding business of William Denny and Brothers, Leven Shipyard, in 1844; and in 1850, along with several outside partners, the engineering and boilermaking business of Denny and Company, Dumbarton Engine Works. Throughout his whole business life the deceased was associated with both firms, but more particularly with the engineering concern. He was the one of the five sons of Dr. Denny who elected to take up the engineering side, and after being educated privately he started his apprenticeship at the engine works in 1871, though for some little time he had been on the counting house staff. Passing through the various departments he secured his journeyman's credentials and thereafter served as a marine engineer on board his father's steamer *Nemesis*, making voyages from this country to Australia and back. He then rejoined the staff at the engine works, taking charge of the department for fitting the engines on board the hulls turned out from Leven shipyard. In 1879, eight years after his cousin, Mr. James Denny, became manager, and the late Mr. Walter Brock joined the firm as managing partner, the deceased was taken into partnership. In 1883, along with his brother, now Sir Archibald Denny, Bart., he was also assumed a partner in the shipyard, his other brother, Colonel John M. Denny, C.B., having been made a partner two years earlier.

During the thirty-nine years Mr. Denny was destined to be connected with the two firms he took an active part in the conduct of practical affairs, witnessing and sharing in the progressive development of the works, and proud of the many notable successes achieved. He saw his firm's steamships—mercantile and naval—increase in sea speed from under twenty knots to well on to forty knots; the process exhausting the possibilities of the reciprocating engine in its triple and quadruple expansion stages; adapting the Parsons steam turbine to fast channel passenger and ocean-going steamers; and associating the turbine with the reciprocating engine as a prelude to the more generally accepted geared-turbine machinery for even moderate-speed vessels.

Outside his professional work and interests Mr. Denny warmly identified himself with the public affairs of his native town and county.

He was a member of the Town Council, was promoted to the magistracy, and sat in the County Council. It is difficult to note all the local connections he made and offices he held. Highly artistic in temperament, a patron of the fine arts, one of the earliest positions he assumed was in succession to his deceased brother, William, as head of the Dumbarton School of Science and Art. He was also a Past-president of the Dumbarton Philosophical Society, recently held the position of Hon. President, and was one of the original members of the Dumbarton Choral Union, and Hon. President of the Dumbarton Mechanics' Institution. He was also an original member and office-bearer of the London-Dumbartonshire Association, and an enthusiastic patron of all healthy kinds of sport and pastime. Making friends wherever he might be, many abroad, as well as at home, will learn of his death with a feeling akin to personal loss. In 1884 Mr. Denny married Arabella Jane Frizell, who survives him, and to whom our sympathy goes forth, daughter of the late Charles Frizell, J.P., of Castle Kevin, Co. Wicklow, Ireland. The interment of Mr. Denny's remains in Dumbarton Cemetery, on Nov. 22nd, was attended by a very large company of mourners and sympathetic friends.

The members of the Denny family have been closely associated with the Institute of Marine Engineers, and have taken a personal interest in its progress and development. Mr. Peter Denny was a Vice-President of the Institute.

DAVID EDMUNDS REES.

It is with regret that we record the death of Mr. D. E. Rees, second engineer, *Camerata*, when serving in the engine-room on duty, in the month of May. The following, translated from the local paper, gives a report of the funeral:—"At 10 o'clock this morning the funeral of David Edmunds Rees, second engineer, *Camerata*, now in our Port, took place, a victim of the sad event of May 2nd. After 24 hours' search, the body was recovered yesterday at 10 a.m. Mons. Barbedette, mayor of our town, decided that the funeral expenses would be borne by the community, and had made all arrangements to this effect. The whole population decided to pay a last respect to this son of our Ally. The body, which was carried on a gun carriage, was wrapped in an English flag and surrounded with flags of America, Italy and France. It is impossible for us to give a complete account of the quantities of wreaths and bouquets given by the Italian colony, by the Corporation, and by the French women, who were so kind as to decorate the cross and give their help in the sad circumstances. The chief mourners were the captain and the crew of the steamer and two Colonels of the English Army. The funeral prayers were said by Captain Morris, then three volleys fired over the grave ended the touching ceremony, after which the mourners departed, deeply affected."

In acknowledgment of the kindly courtesy of the people, the following notice also appeared in the local paper, signed on behalf of the captain, by the maritime agent:—"Captain Morris, commander of the *Camerata*, deeply affected by the solemn rites paid to his second engineer, begs me, on his behalf, in the name of the family of the late David Edmunds Rees, and of the crew of the steamer, to thank publicly all the kind persons who have generously given wreaths and who accompanied the body of their respected comrade to his last resting-place. He particularly thanks the Mayor of Djidjelli and the military commandant, the President of the French women, the Governor of the Port, the Seamen's Syndicate, and the Italian Colony."

He was born at Burry Port, Carmarthenshire, in 1892, and was the eldest son of the late Captain David Rees, who was lost with his ship, *Cedric the Saxon*, in 1896, on a voyage from New York to India. Educated at Llanelly County School, he also attended the technical evening course of studies while he served his apprenticeship with Messrs. Allott's Metal Co., Burry Port, and in June, 1912, he joined the *Canadian Transport*, receiving promotion to third engineer in October, prior to entering on a 17 months' voyage, on the conclusion of which he obtained his second-class certificate and joined the *Lynton Grange*, sailing to the River Plate. On his second voyage the German cruiser *Dresden* hailed them near Barbados, and announced that war had been declared. The *Lynton Grange* was allowed to proceed on an undertaking being signed that no contraband of war would be carried against Germany. On arrival at New York they loaded a cargo of wheat for Bordeaux, and arrived in London without mishap. He afterwards joined the *Kenman*, and sailed to the Persian Gulf run; but he was not long in the East before a severe attack of rheumatic fever developed and necessitated home treatment. Meantime he prepared for the Board of Trade examination, and when sufficiently recovered he passed for the first-class certificate. In September, 1916, he joined the *Camerata* as second engineer. He was accorded a military funeral, as noted in the account given in the local paper.

Mr. Rees, who was a member of the Institute of Marine Engineers, was a nephew of Mr. A. E. Bowser, of the Limes, 47, Mercer Gardens, Grange, Cardiff, by whom he was brought up from the early age of four, when his father lost his life. Our earnest sympathy is extended to Mr. Bowser and family circle in the distress and grief caused by the loss of one who had endeared himself to them by his disposition and merit.