INSTITUTE OF MARINE ENGINEERS

INCORPORATED

SESSION 1908-1909

President: JAMES DENNY, ESQ.

VOL. XX.

PAPER OF TRANSACTIONS. NO. CXLVII.

The Organization of the Personnel of an Engineering Works.

BY MR. MATTHEW LANG (ASSOC. MEMBER).

READ AT

58, ROMFORD ROAD, STRATFORD,

Monday, March 2, 1908.

CHAIRMAN: MR. JOHN LANG, R.N.R. (Member of Council).

CHAIRMAN: I am sure we shall hear a very interesting paper to-night on "The Organization of the Personnel of an Engineering Works." The subject should interest us, as anything that tends to add to the efficiency of a workshop, or an office, or any part of an engineering undertaking should appeal to all of us as marine engineers. I have much pleasure in calling upon Mr. Lang to read his paper.

THE function of any engineering business is to produce certain articles to supply certain needs, these articles being made in the most efficient manner and supplying in the best possible way the needs for which they are produced.

To do this it is essential that the engineering business should

be organized on the best possible basis. The machinery should be of the best kind obtainable and should be working at its highest efficiency. The men should be the best men obtainable and should be working under the best conditions possible.

This is the state of affairs with regard to which it can safely be affirmed that it does not exist in any engineering business to-day. Many such businesses are carried on by highly efficient methods which produce excellent results and which furnish ample proof that a good basis of organization is the line along which progress lies. But it could not be said of any of them that their organization is on the best possible basis.

The best possible basis is the basis which takes into consideration every factor, and which allows every section of the organization to work under the best possible conditions.

There are many factors, but of the many there are two which take precedence over all others, and under which the existence of engineering can most comprehensively be considered. These are—men and machinery. They are the primary and predominating necessities of life to engineering. The innumerable other factors are subordinate to or dependent upon, these two. If these are allowed to work under the best possible conditions the basis is sound and there appears no reason why any engineering business founded on it should not perform its true function and produce the best work in the best manner possible.

Now of these two big factors the one which has up to the present day been made most of is machinery. We have evidences in plenty of the benefits to be derived from careful selection and management of machinery, and it is interesting to note how these are practised among engineers. With what care is a machine selected and bought and nursed after it is bought. It is well preserved from rust and rain, and well lubricated, and works under the best conditions. What we might call its personal comforts are thoroughly looked after. Furthermore, its position in the general system is very carefully thought out before it is installed, and it occupies the place where it can perform its work with the highest degree of efficiency with regard both to itself and to the whole shop in which it is placed.

For the other of the two big factors, viz. men, much less

in comparison to its importance has been done. The man truly has had attention directed to him, and his importance is coming to be more and more recognized every day, but the amount of that attention has been out of all due proportion to his importance as a factor in the progress of engineering. He is the paramount factor, and it is of infinitely greater importance that he should work under the best possible conditions than that the machinery should.

The engineering business, therefore, which would, at the present day, produce the best results and keep in the line of progress, must be carried on on a basis which pre-eminently considers its men—a basis which allows every man connected with it—director, manager, clerk or workman, to work under the best conditions possible.

The conditions under which a man can work best are those under which he can live best. He must have good food, warm clothing, comfortable shelter, health and general satisfaction with his social position and its prospects.

It will not, of course, be affirmed for a moment that men don't look after these conditions for themselves, quite apart from any connexion they may have with any business; in fact, the better a man looks after them himself, the better man he is for the business. Neither will it be affirmed that anything should be done to take from the men the feeling of their own responsibility with regard to these things. It *is*, however, important that the general policy of any engineering business should be such that, as far at least as it effects these conditions, it should effect them only in a way that enables its individual members to obtain and enjoy them to the highest advantage.

Now it cannot be affirmed that in the average engineering business of to-day any such policy is adopted. In many cases little attentions *are* paid to bodily comforts, in which cases they are largely for the benefit of those in highly responsible positions, but the cases are rare where such attentions are paid from a recognition of the principle that good conditions of life, which means good conditions of work, are conducive to the highest interests of the business.

The highest interests of the business are certainly not being furthered when any of the men serving those interests are ill-fed. It could, of course, hardly be affirmed that in any engineering business to-day there are men who are regularly hungry during their hours of work, but there are plentiful

evidences that, even with regard to such an ordinary matter as food, there is still much that could be done towards procuring the best possible conditions of work for a large majority of the men.

In many engineering shops there are large numbers of workmen whose homes are at a distance, and they are often put to considerable inconvenience and expense in obtaining the food they require. Their meals are often, either cold or "cheap and nasty," and they are often compelled, in consequence, to go about their work in an unfit and ill-nourished condition. The work naturally, of course, suffers in consequence.

Towards the improvement of such conditions some practical provision could easily be made. A large stove or perhaps a steam-heated oven could be provided at which food could be easily warmed or water boiled. Also a comfortable place in which the workmen could partake of their food would be an advantage. But further and better a special mess-room might be established on the premises, where cheap and substantial meals would be provided for a small sum, such sum being exacted, not that profits might be made, but that the place might pay its own way, the advantage of profits going to the men.

Further, no more are the highest interests of the business being served when the men are ill-clad and uncomfortably sheltered, than when they are ill-fed. Of course the men must look after their own clothing, but every encouragement should be offered to them to be clean and neat in appearance. A man who is careful of his personal appearance has many chances of being careful over his work. Unfortunately there is a good deal of dirty work which must be done in an engineering works, but it should not be necessary that the men should carry glaring evidences of it with them into the streets or into their homes. Lavatory accommodation might be provided where the men could wash and dress, or change whatever clothing they thought necessary before leaving the works. An allowance of a few minutes before stopping time could be made for this purpose, thus encouraging the men to take advantage of the conveniences supplied. There is no reason why the workmen should not go to and return from work every day well and neatly dressed; in fact, there is no reason why it should be compulsory that they should. They would

not resent such a compulsion. Such an interest taken in them is bound to repay itself in loyalty.

Also with regard to the arrangement of the shops, while convenience and efficiency are being looked for with equipment and machinery, let not the comforts of the men be forgotten. Good light, good ventilation with absence of draughts, and a comfortable temperature should be ensured. When a man is cold he does not work so well as when he is comfortably warm. It is not enough that his foreman should tell him to work and make himself warm. A good heating apparatus is a much more practical solution. A stuffy atmosphere induces drowsiness, and a good ventilating system will often prove a better means of encouraging work than the most vigilant foreman. Plenty of light is also wanted. In general let the atmosphere of the shop inspire a cheerful feeling. A man's nature often gets like his surroundings, and when he is cheerful he usually works with more satisfaction both to himself and his employer.

A still more important condition, and one which has a greater influence morally than those already dealt with, is the man's social position and its prospects. When a man is satisfied with his social position—that is, of course, comparatively speaking, for where is the man who does not want just a little more than he already has ?—when his income is easily sufficient for his needs, and when he can look well ahead of him with confidence that want will not overtake him, he is in a condition to do his best work. It should be the policy of every engineering firm to keep its men as nearly always in this condition as possible. This can and should, of course, be done without interfering in any way with the man's own responsibility in the matter. In some departments it is customary, before dispensing with a man's services, to give him a long warning, while in other departments the man goes often with half an hour's or even less warning. The former practice is a good one and prevails generally among those who are in the more responsible positions in the firm. It keeps the minds of the men free from the worries of not knowing what is going to happen next, and they do their work better in consequence. But it seems unreasonable that it should not prevail in all the departments, shops as well as offices. The work done in the shops is quite as important in its way as that done in the offices, and it is quite as impor-

tant that the men in the shops should be working at their best as that those in the offices should. Why shouldn't a workman be given a fortnight's—or even longer—warning before he is dismissed, and even be allowed off an hour or two occasionally during the time of his warning to go and look for another place? A man working for a firm, and knowing that such fair chances are ahead of him, will surely work the better for it.

Further than even a timely warning before dismissal, the confidence and loyalty of the men to the firm might be secured to a higher degree by keeping them fully in knowledge of their standing with the firm. In the office, for example, the chief would let each man know at intervals exactly what his prospects are, whether he is likely to be required for a month more or six months or a year. He should also let him know with some degree of certainty the amount of satisfaction he is giving, and whether and when he may expect an advance in salary. The highest satisfaction exists on both sides when perfect frankness is indulged in. If a man is not just up to high-water mark his chief should let him know, and if he has done well he should not be too sparing in his praise.

With the workmen in the shops such communications might be left to the discretion of the foreman, but never under any circumstances should the practice of threatening dismissal be indulged in with the idea of getting more work out of the men.

The conditions which have been thus far considered are connected more or less with the personal comforts of the men and of their welfare as individuals, but at the same time it is as highly important that conditions should exist under which it is possible for the men to work with the highest degree of efficiency as a whole body.

It must be, at the outset, granted that for an engineering firm to exist, there must be among the men carrying on its work, some in authority and some in subjection. It is a natural law that some men are endowed with stronger characteristics than others, and it is an economic law of our present civilization that some are endowed by heredity with better opportunities than others, and some have a larger share of power than others. The first law—the natural one—must and will be recognized permanently, as it is a law of life, and the men with the stronger characteristics must and will always

be allowed to govern. The economic laws are, however, of a changing nature, and change as man develops and as civilization advances. Under the present régime the best opportunities and the larger shares of power are often in the hands of those who are not endowed with the stronger characteristics.

These laws must be recognized in carrying on any industry, and it is a regrettable fact that the economic laws are often recognized to the exclusion of the natural law. This tendency, however, shows signs of waning, and the advance of civilization points to a fairer distribution of opportunities and power, and encourages the hope that soon the same opportunities will be open to all, and that the power will naturally fall into the hands of those who have proved themselves best fitted to wield it.

These economic laws must, nevertheless, be recognized at the present day, notwithstanding the unsatisfactory elements in their nature. To carry on any industry three elements are essentially necessary—capital, labour, and skill. Industry cannot stand still, so these must be taken full advantage of as they are, and all reasonable efforts made to neutralize their defects.

An engineering firm, then, may be looked upon as a company of men possessing these necessary elements in varying proportions, and who have various relationships to one another according to their abilities, who have joined their forces in the pursuit of a common aim. It is essential that that company of men should be well controlled. That control should be in the hands of a man who has proved himself capable of controlling. It is unfortunately often the case that control is in the hands of a man who possesses a large proportion or all of the capital of the firm, without possessing the requisite skill or experience in the business he is controlling. Such an arrangement should be as far as possible avoided. While it must be recognized that capital is absolutely essential, and that the man who provides it must take the risks of the success or failure of the business, and on that account may feel himself entitled to the control, yet his experience and capability should be considered. It is unfair, and often very aggravating, to the members of the firm who have had the requisite training and experience.

The man in control, besides being a man of proved character himself, should be a good judge of character in others.

He is the last man in the firm on whom flattery should have any effect, and he should be quick to distinguish between the man who is sycophantic and the man who is thoroughly honest. No respect can be entertained for the man who is one thing before the head of the firm and the opposite when he is dealing with those who are under him. Many such men do hold positions, and get highly satisfactory results, but their presence in a firm must in the long run produce a demoralizing effect. Their influence either fosters the same undesirable spirit in others, or it causes friction between them and those who cannot appreciate their behaviour, both of which are highly undesirable.

It is difficult for the head to know how the officials are dealing with the men. He is seldom in a position to judge them by anything else than results, and is not justified in being too critical of their methods.

For a firm to work successfully there should be the least possible friction among its members. The officials should work smoothly together, and the men should work smoothly with their officials. For this reason, it is highly advisable that a thorough and efficient means of communication should exist between the sections, so that any injustice any one section may be suffering at the hands of any other section, or of the management, may be readily made known and put right.

Many such injustices do exist, quite unknown to those responsible for them, and would be readily put right if those suffering from them had any convenient means of communicating their grievance. Of course for workmen there already does exist a means of communication with their employers, through the medium of the trade union, but this savours too much of outside interference. Something of a more homely nature is wanted. Each section of the firm might with advantage form itself into a sort of social club with a committee and secretary. One of the functions of this club would be to look after the interests of its members as far as their connexion with the firm is concerned. Meetings could take place at stated intervals between the committee and the head of the firm, at which suggestions could be made or grievances stated on either side, and the general relationships summed up. By this means the men would be encouraged to think about and discuss their own best interests in relation

to the best interests of the firm, and would not feel the same restraint in making their suggestions as if they had to make them direct to the head. By these means also, the head of the firm would be better able to judge the methods of the minor officials, and to know to some extent the relations existing between them and the men. He would be able to see whether or not their methods were in harmony with the best policy of the firm. He would also be much less liable to get into the position, which many heads of firms occupy to-day, of imagining that ideal relationship exists among all the minor officials, while really there is endless friction among them, and their intercourse with one another is reduced to the lowest possible minimum.

The ultimate objects of these social clubs, however, should be much wider than those above defined. The common aim which the previously-mentioned company of men comprising the engineering firm have in view, while it is as essentially an aim in engineering, should have as wide a scope in other directions as possible. The aim should be not only to produce great results and make great gains, but to develop character in, and give experience to, the producers and to distribute the advantages of the gains with the greatest measure of justice. To attain to this, men of high character are wanted in the company, and every means available should be adopted to get and encourage and develop them. And the function of the social club should be to supply these means.

Although there would be a club—say—for each section dealing with its own particular interests, all the sections would form one amalgamation, in which the general and higher interests of the men would be furthered. This would comprise the different trades, and the different office staffs and the employers would naturally be closely interested in its welfare. All the essential elements of the ordinary friendly societies would be embodied in it, for the benefit of those who earn comparatively small wages, and these would be kept going by those whom they most concerned. The main interests of the office staffs and employers would be to promote the educational influences. At the general meetings which would be held at regular intervals, discussions might be held on subjects of general interest. Among these discussions, the progress and work of the firm might come in for a share of consideration. The general economic laws governing

industry—the relationships existing between capital and labour and skill and opportunity—might be dealt with to advantage. An intelligent conception of these might make a considerable difference in many a workman's outlook on life. Instead of having crude, so-called socialistic ideas about the unequal distribution of wealth, which only breed discontent, he would be led to see that present economic arrangements are more or less a necessity. Although every effort is being made to improve them, and that improvement can only be slow, they are not the governing factors in success. Individual enterprise must hold the field for all progress, and any system of economic laws which takes away the responsibility from the individual and makes him rely for support, more than he already does, on outside circumstances is a bad system. Although the policy of the firm is to look after its men's highest interests, it is not to make them lose their self-reliance.

In a firm, constituted on such lines, then, the man in control would not be an absolute ruler. The main advantage in having one man who ultimately rules is that the guidance of affairs is centred in one mind, and the firm on that account forms a unity. Every member of the firm should have a measure of control in accordance with his responsibility in deciding questions relating to the big interests of the firm. It is not possible for the head to know many things as well as the minor officials, and his main duty is to direct and concentrate their several activities.

Among the members of the firm there should be no misunderstanding as to the performance of the necessary duties. No one should be in doubt about what are his duties and what are not. A definite arrangement should be made, and always kept definite although not fixed, specifying every man's duties, letting him know as far as possible his responsibilities, who is in authority over him, who in subjection, to whom he may give orders, and from whom he may take orders. With such an arrangement, when anything goes wrong there is no trouble in finding the responsible person and in seeing exactly why it has gone wrong. Besides, it reduces greatly the possibility of things going wrong at all.

The arrangement should, however, be promptly changed when necessary. New ideas and new methods of work are continually creeping in and demanding changes in men's

duties and responsibilities. It is in keeping abreast of these changes that a firm maintains its position, and the arrangement should be changed as quickly as these conditions demand.

In arranging and distributing the work of the firm among the men who are to do it, it is important to make a distinction between the work of the organizer and the work of the technical expert or specialist. The organizer is essentially a man who has a wide grasp of the scheme of the firm's operations. His association with facts is more in realizing their relative importance than in being familiar with their details. His work is to direct and concentrate the many forces which come into play in the particular section of the firm's operations for which he is responsible. The technical expert, on the other hand, directs his whole attention to a particular speciality, and instead of grasping widely he grasps deeply. He is as important a man to the firm as the organizer. His importance is often, however, over-estimated, and because he shows himself brilliant in his own direction, and since he knows more about his own speciality than any one else, he is given the control of the whole organization producing it, sometimes with disastrous results. Great care should be taken that he is not given work to do which demands more organizing ability than he possesses.

It is also important that the men should be well suited to their work and their work suitable to them. The whole work of the firm should be considered, and all the men available should be considered, and the work should be carefully divided so that each man gets a share which he is easily capable of accomplishing and which is suitable to him. A man's character, his temperament, his training, his natural capability, what he has proved himself to be in the past, are the factors which determine what work will suit him best. All men in control of departments should of necessity be good organizers. They should be men of strong character and able to deal firmly and freely and tactfully with the men under their control. The men who are technical specialists or inventive geniuses should be allowed to devote their whole attention to their specialities, and should not be burdened with responsibility outside their own special sphere.

The practice of the firm should be such that every encouragement is given to new ideas. The source of these should not

be confined to the officials. They should be expected from every member of the firm. Every convenience should be placed in the way of the minor members of communicating any suggestions for improvement that may occur to them to the management. For example, the ordinary draughtsman is often in a position to know a great deal more about certain sections of work than any other man in the firm, and is really in the best possible position to suggest where improvements could be made. For various reasons these improvements often are never made. He either does not take a sufficiently keen interest in his work outside the actual carrying out of what is necessary, or he thinks his position too insignificant to justify him in making any suggestion, or he may not be fully aware of the value of his knowledge and may think that if the improvement is of any real value those in authority will be sure to see it. Further, he may never have had any encouragement given him to take any interest in his work beyond what is necessary. This may be the result of the general policy of the man over him in control. There are many men in responsible positions and controlling men who not only do not give encouragement to their men to suggest improvements, but do everything in their power to prevent any suggestions they may make being carried out, or if they do carry them out they take the credit of their success to themselves. They become jealous of their position, and if a man under their control shows himself brilliant, they will be found watching for the first opportunity to get his dismissal. Again, there are men who are continually telling those under their charge that they are there to do what they are told, and not to interfere in matters which don't concern them. They won't entrust the slightest responsibility to their men. The result is that work is never done well, and the man in control is always grumbling because he can't get good men. His usual complaint is that if he wants a thing well done he must do it himself. What is really wrong is that he is not a good manager. A good manager can often get very good results from very indifferent men.

Such practices are very hurtful to the best interests of the firm. They are difficult to deal with once they have arisen, and the policy adopted should be as much in opposition to them as possible.

To get the best results from a man, he should be left more

or less on his own responsibility, and he should be judged on results. Give him a rough outline of what is wanted and what results are expected, and leave him to produce them, and hold him responsible for that particular job to its end.

There should be a system whereby suggestions can be made to the management direct if there is any doubt about the trustworthiness of any intervening official. The man who is jealous of the men under his control would thereby be made to feel his responsibility on both sides. This system should be well explained to, and well understood by, all the men in the firm. The conditions and encouragements should be plainly stated.

When a man does make a good suggestion he should be well remunerated. This remuneration should, preferably, be in the form of an increase of wages in fair proportion to the value of the improvement. If, for example, the improvement effects a definite saving every year of a certain sum to the firm, he should receive a fair proportion of that sum. No limit should be put to the number of suggestions any man may make, and a reward should always follow anything valuable, and every suggestion, however unimportant it may appear, should have its fair share of consideration. The general object aimed at should be to make every man devote his best energies to the firm's interest, and to make it worth his while to do so.

With a firm governed by the principles which have been outlined, every member would feel his highest personal interest closely bound up with the firm's highest interest. Although many suggestions have been made with regard to what might be done in practice by way of improvement, nothing has been laid down with authority. It has been the aim to show that the progress of the engineering firm is closely bound up with the progress of civilization, and is governed by the same general laws, and that the policy pursued should be based on the same principles and obey the same laws.

DISCUSSION.

CHAIRMAN : We have all listened with a great deal of pleasure and interest to the paper Mr. Lang has read. It is one entirely out of our usual class of papers. No doubt many of our young members and the members generally have had the means and

the opportunities of applying their energies in the direction mentioned by the author, and I trust a good number will give their views on the subject.

Mr. F. M. Timpson (Member) : Mr. Lang's paper covers a good deal of ground on an element very difficult to deal with, that is, the human element. Improvements in workshop organization generally have been adopted to a large extent as regards machinery during the last few years. For instance, in the best organized works the machines are properly grouped and everything is done to bring down the amount of labour required to a minimum. In several well-organized works the adoption of the premium system to a great extent increases the efforts of the men. I do not know if this system is in universal favour, but the wages of good workmen are raised in many instances by 10*s*. per week. That is a method which aims at giving encouragement to the best workmen, and I think the shops of that class certainly collect steady workmen. The up-to-date buildings and workshops are well lighted and ventilated, and the good conditions, of course, give a man something to exert himself for. With regard to the points mentioned by Mr. Lang, it is difficult to lay down a rule that a man should get a fortnight's notice, because it depends so largely on circumstances. It might apply in a workshop where it is all new work that is undertaken, but it could not possibly be applied to repair shops. I was at a works some time ago, where I saw a notice that premiums would be awarded to workmen for ideas which they were able to give. There is a box provided into which the workmen put their suggestions. I think Messrs. Denny & Co. give similar awards. I do not know if there is any friction over the premium system, but some of the best shops in the country have adopted it and it seems to have very good results.

Mr. Peter Smith, R.N.R. (Member) : We have listened to a very able paper, one to which the author has evidently given a good deal of thought and also one which forms the basis of a very good discussion. I might just mention a few points that occurred to me. In the second paragraph the author refers to the fact that the men should be the best obtainable, and I presume he means that they should get the best remuneration. But what about those men who object

to that principle and who do not want one man to get more than another ? Employers are forced to pay a large minimum wage, consequently they have to make the maximum wage much lower, which I think is very unfair to the deserving man. A little further on Mr. Lang says : " Neither will it be affirmed that anything should be done to take from the men the feeling of their own responsibility." Now that is just where the trend of many present-day workmen is apparent ; he seems to think that everything should be done for him. The men might do a good deal more for themselves than they do if they did not allow themselves to be blindly led by agitators. The suggestion about the men's food is good. There should be a stove or mess-room for workmen who come from a long distance. It could be provided by the employers at a very small expense and the men could maintain and manage it themselves. It works very well in large works where facilities of this kind are afforded, and I do not see why the practice should not be extended. Then again, there is the question of providing lavatory accommodation so that the men could go to work respectable in appearance and leave it in the same condition. This is done in some of the more modern shops. I was very pleased when Mr. Timpson referred to the works of Messrs. G. & J. Weir of Cathcart. In my opinion that is one of the most up-to-date works in the United Kingdom. I have been over it on several occasions and it is provided with all the latest improvements. There are close upon 1,000 men engaged, and every workman has a small locker in which he can keep his clean clothes during the day, and into which he can put his overalls after his work is finished. He can wash himself, put away his dirty clothes, and leave the works neatly dressed, and can go straight away to keep an appointment. I was very much impressed and thought it a splendid arrangement ; it encourages the very best class of men, which, evidently, these works have obtained. Of course they work on the premium system, and evidently they earn good wages. Workshops as a rule are very uncomfortable, but I think more attention has been given to their improvement in this respect of late years than formerly, and I daresay it will be a matter of even more importance in the future. With regard to the suggestion of having clubs, that again is a good one—it is very important and very necessary. It might include a scheme of sick benefits and old-age annuities, but some men do not encourage arrange-

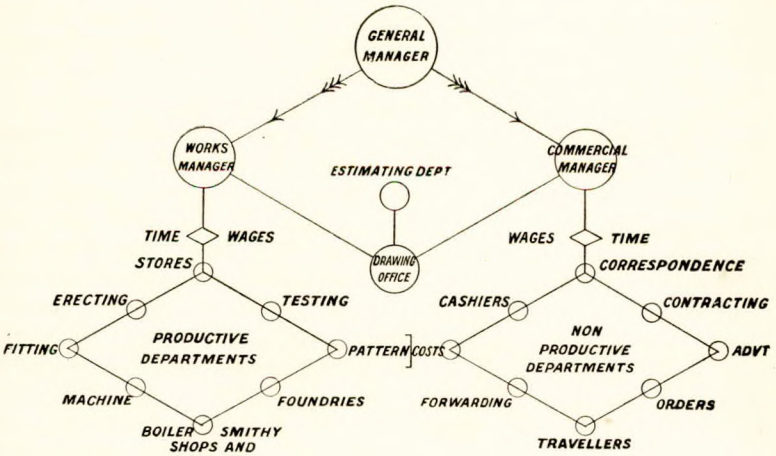
ments of that kind. According to their system a man who has made provision for old age or who has paid into a club gets nothing, it is the man who has made no provision for himself, who has wasted his substance and who has been a drag upon his fellow-men all his life, that is the one whom they expect to be provided for by the country. Another item of importance is the matter of encouragement for suggestions as to improvements in the tools. Some of the firms in this country do carry out this principle, but it has received more attention in America, due, no doubt, to the higher wages paid there. Of course America has the advantage, because of the emigration to that country of the best workmen from all the nations of Europe. They are encouraged to make suggestions. A man will say to his manager, " I know a tool that will do this work in half the time." The manager says, " Very well, let us try it." It is tried, the result is that more work is turned out at the same expense, the employers reap the benefit of it and the man gets a remuneration for his suggestion. If the man were to make a suggestion in this country in many cases he would probably be told to mind his own business. There is too great a gulf between the employer and the workman.

Mr. Wm. Britton (Assoc. Member) : The Chairman, in his opening remarks, pointed out an unfortunate circumstance when he said that it was an uncommon thing for us to have a paper on a subject like this, as where there is an engineer there is most likely a workshop somewhere near. Even on board ship there is a little workshop organization required, and such a subject should be of interest to all marine engineers. I should like to congratulate the author on having the temerity to write a paper on a subject of such a controversial nature as " The Organization of the Personnel of an Engineering Works," because there are so many opinions, and so great a variety of opinions in connexion with it. If we could now listen to a similar paper written by an employer, I am inclined to think we should decide in favour of the employé rather than the employer, as we are apt to look at a matter of this kind with the eyes of the workman rather than with those of the employer. There is a passage in which the author says, " The better a man looks after them—the conditions—himself, the better man he is for the business." That is a sentence which can be

translated in two ways, one the direct opposite of the other. A little farther on the author suggests that sometimes men are ill-fed and are regularly hungry during working hours. Well, I do not think the matter of not having sufficient food comes within the province of the employer, as, if he pays the wage regularly, his contract ends on that score, but I heartily agree with the idea which he suggested in connexion with having a mess-room. I have known one firm where this system was in vogue, and the profits, though small, were given to the men's sick fund. It was not a great success, and one of the reasons was that the men wanted the things on the very cheapest scale; they would not pay 1*d.* for a mug of tea but wanted it for ½*d.* The labouring class especially would go outside where they could get a ½*d.* pot of tea or a glass of beer. I fully endorse the author's views with regard to lavatory accommodation, and also the provision of lockers for clothing. Such a system is in use at the British-Thomson-Houston Company's works at Rugby. Other works have been referred to, and I would point out that these are equally well appointed with conveniences for the men, and in those works from 1,500 to 2,000 men are able to wash themselves before going home at night, and each one has a separate locker. One thing I do not favour is the suggestion to allow a few minutes for the purpose. "A few minutes" seems vague; to one man it may mean five, to another fifteen. Take the case of a small shop with 120 men, for example, and say five minutes was allowed to each before each stopping time—at most shops three daily. It would mean the loss of thirty working hours daily, which would mean a very great amount in the course of the year. For example, thirty hours at 9*d.* per hour=22*s.* 6*d.* per day, or £6 15*s.* per week, and assuming there are fifty working weeks in one year the amount would total £337 10*s.* per annum. My experience is that if you allow the average man five minutes he will take six. I suggest that he be left to change himself in his own time, and what man would grudge five minutes for that purpose? With regard to the matter of giving notice, how would the author apply that to a shop that took on repair work? and also, is it reasonable to expect that a man will give the same return for his wages when under so long notice to leave? I have not found it so myself, and I have had charge of men for eleven years. There are shops where the work is uncertain and where it is only possible to engage men at a few hours' notice. The

same thing applies to the next paragraph where it is suggested that the chief should let each man know whether he is likely to be required for a month or longer, or for six months. I maintain this is impossible so far as the average works is concerned, although, of course, it is often possible with regard to the regular staff in works where the work is in view for years ahead. With reference to the observations respecting the man in control, the man with two faces is often met with, but is it to be wondered at that a foreman is often disliked by the men and distrusted by the employer? He is between two fires and is often a subject for pity rather than contempt. With regard to smoothness of working, first by the officials and secondly by the men. I was for four years with a firm of engineers—a very successful firm—in which the manager had a consultation daily in his private office with each of the foremen, when they discussed the work in hand and other matters, and once weekly he had them all together for the same purpose, often with far-reaching results. With reference to the formation of a social club I was instrumental in having one started and it received support, but the head of the firm declined to take part, his reason being that he employed the manager for that purpose. I should like the author to say when he thinks the meetings should take place, as, if they were not held in the firm's time it is very likely the men would not attend. I like the idea suggested that every one should definitely understand his duties and responsibility. I would emphasize that point. To my mind a good organizer is worth a dozen specialists. I endorse the view, also, that a suggestion box should be placed in every well-appointed shop for the workmen to drop in their ideas of improvements, either in methods of manufacture or machinery, and that any such suggestions be paid for, if used, according to their estimated value to the firm, the box to be opened in the presence of, or by, the manager or chief. This could also be a means of communication between the workmen and the manager. I know of one place where this plan is carried out and the box often used by the men for complaints. It was a good means of intercommunication between the men and the manager and was the only means the manager had of knowing how the men were being treated by the foremen. I smiled to myself when I read the sentence towards the end of the paper, where the author remarks upon the men who are continually telling those

under their charge not to interfere in matters which do not concern them. Some eleven years ago I was once told that. I had a lot of tools to make, I believe about fourteen of them in which there was a considerable amount of marking off to do. I thought out the situation and saw that by a simple arrangement I could mark them all off together and do the job at a saving of 90 per cent. of the time. I told the foreman, when he gave me the job, that I thought I could save time by doing it in another way, and he said, " You are not paid for thinking, do them the way you are told to do them." Mr. Lang has only touched upon the subject, it covers so wide a field. I thought the matter could be brought out very clearly by means of a diagram, which I have sketched on the blackboard, showing



the inter-communication between the works' manager and the various departments. A system like that, I think, ought to be in every workshop and a copy of the plan in the office of every foreman, so that he will know exactly who to look to for orders, and whose orders to carry out. Mr. Timpson mentioned the premium system. It was introduced into Scotland about six years ago by a firm in Glasgow. They offered premium cards to any one who cared to apply and I gave the question some thought at the time. If a man saved 1*s.* he got 9*d.* in the first instance, but since that time the employers generally have not seen eye to eye with the men and have

given the men the 3*d*. and taken the 9*d*., hence the reason why the men may not take to it so kindly.

Mr. TIMPSON : I think Mr. Britton is in error in giving the proportion as 9*d*. and 3*d*. The general plan is to divide the saving, half going to the men and half to the master.

Mr. BRITTON : That is quite true but in some cases the proportion is 9*d*. and 3*d*.

CHAIRMAN : With regard to the box into which complaints about the officials were dropped, were those anonymous, or bonâ fide documents signed by the workmen ?

Mr. BRITTON : Anonymous contributions were never taken notice of, but it did not follow that the manager would tell who had been complaining.

THE HONORARY SECRETARY : There is a paragraph on the subject appearing in this month's issue of THE MARINE ENGINEER and which I will now read :—

" Those who have had the privilege of visiting different workshops both in Britain and across the seas can point out a contrast, which has become very great during the past twenty years, between new methods and old. The care and attention bestowed on the building and the details of a workshop at the present day are very marked. The arrangement of the machines, the store, the tool-dressing shops and the labour-saving appliances, has become an exemplification of method and a fine art, while the provision made for the comfort and convenience of the workmen is such that in most of the reorganized workshops nothing is left to be desired. Cleanliness is a feature which is conspicuous and in some cases rewards are given to the machinist who maintains consistent excellence in keeping his machine and its immediate surroundings in a state worthy of the highest praise. The modern factory is an illustration of the principle that method and cleanliness in unison go far towards a guarantee of success in the direction of carrying on work to the best advantage. More than this is undoubtedly necessary for success in business, the method and organization of the structural portion of the building is only one portion of the whole, the other parts require no less attention, but generally speaking the former part is an evidence

that the remaining parts are not overlooked. The employer who provides a building with all the modern improvements should, and probably does, get better service and better work from his workmen than another who, wrongly thinking that cheapness and economy are synonymous terms, allows old buildings, old tools, old methods and the fallacious policy of "let it suffice" serve. In the competition which every manufacturer has to face now, both from competitors at home and abroad, it behoves one to consider well and wisely where improvements can be made to secure better service and improved output, with room for development, at possibly the expenditure of more capital. That there are largely in use in this country, but manufactured abroad and imported, articles which could be made within the borders of Britain, is well known; in some cases these articles are manufactured abroad for the British market because continental machines have been constructed with a view to the possible requirements of customers present or prospective. This applies more to textile factories, and to some extent it is due to the deftness of handiwork which has been acquired through generations of experience, but beyond this it does seem as if British—or Brirish as has been suggested—manufacturers should be able to cope with these articles did they but rise to the occasion."

That is a paragraph which bears somewhat upon our subject to-night. The general idea given by Mr. Lang, that every one should work for the best interests of the firm with which he is connected, is no doubt an ideal one and we have every sympathy with it. As has been mentioned to-night there are several elements at work which seem to militate against that idea, and although it is difficult for us to discuss matters which are a little outside of our scope, I gather from some of the comments made to-night that we are certainly not in harmony with the tenets adopted by many, who, perhaps, are working for their own benefit rather than for the benefit of those whom they profess to serve. Messrs. Weirs' works have been mentioned. No doubt there are many similar works throughout the country, and I have been in several which come well up to the standard. Messrs. Weirs' is an ideal workshop, and that view has been endorsed by one or two who have spoken. In connexion with the cooking arrangements there was at work in Glasgow many years ago the Great Western Cooking Depôt, which was a very great boon to the workmen and not

only to them, but others, for the idea spread of providing meals in a roomy building at a small cost. In the workshop of the White Star line they have a system under which their apprentices get prizes at the end of the year, and not only prizes but also an addition to their wages if they have complied with certain conditions—that is to say, they must be good timekeepers and must pass certain standards in the technical classes. I think members will read with very great pleasure the report of the meeting at which the prizes were given. The whole proceedings showed a very nice spirit indeed, very much the spirit with which Mr. Lang's paper is pervaded, the spirit that we should all work unitedly for the good of the firm we serve. The system which Messrs. Denny & Co. have carried on for a good many years is that if a workman makes an improvement, or makes any suggestion towards an improvement, he receives a reward and in some cases a patent is taken out in his own name jointly with that of the firm, the workman receiving the profits due to his partnership in that patent. Unfortunately there are unscrupulous employers. One case was brought to my notice where an employé in a certain firm worked out laboriously, in his own time, a certain idea. He brought it to perfection, made his drawings and everything complete, and, trusting to his employer, brought it to his notice, whereupon the employer took the patent out in his own name and denied anything to the employé. One who would so act is unworthy of any job, or of any designation. No doubt there are exceedingly few who would do such a thing, but it shows that one runs a certain amount of risk in showing to another the creation of his own brain. A firm such as Messrs. Denny & Co., and others of their standard, we know, from our own experience and the experience of others, give all due credit to any employé who brings a good idea before them, and such action proves them to be honourable, and it is a position all employers should maintain in their dealings. With regard to the club element, I am much afraid such would be inadvisable to introduce on the lines indicated by Mr. Lang as employés encouraged to meet together to discuss the affairs of the firm might lead to considerable confusion, and I do not know that there would be very much benefit. Mr. Britton's idea seems better, and I know it is carried out by many firms, where the heads of the departments meet together daily in the luncheon hour and discuss the matters of the firm, so that all through the

departments there is harmony and unison. With regard to leaving off work sooner for washing, I daresay from our experience we may agree that the few minutes given would mean many taken. I do not suppose the desire of the majority of the men is to overstep a privilege, but it is the minority who often destroy a privilege of that kind, and one man can do a great deal of harm in that way, harming not only himself, but bringing trouble on the rest, by a curtailment of good things. It is the one man who goes the step beyond what is right and proper who brings about the change in which everybody has to suffer. When we recognize a tendency in the men we deal with to go beyond the limit, it shows that we must be rather drastic in our arrangements, that is to say, with regard to leaving off five minutes earlier, and I should say, as others have said, if a man is anxious to leave his work clean and nicely dressed he will want to do it in his own time in preference to doing it in his master's time.

Mr. A. ROBERTSON (Member) : There is one aspect of this question that I should like to draw attention to and that is more from the master's standpoint. The master has to consider the question of making the works pay. To do that he has to get, to the greatest possible extent, the utmost out of the employé. Now I maintain that with many men, during the time they are serving their apprenticeship, their future prospects are not of a very brilliant nature. The man's ambition is to a certain extent stunted, he sees only so far ahead of him, and cannot see that he will ever rise to earn more than a certain amount per week. This is no doubt deplorable, and, under the present system ruling in this country, cannot be overcome at the present time. In a works, all the men, practically, have to be paid a similar wage, whereas if a man could see that by using his energies more during the time he was at work he would be likely to reap a greater benefit, he would give his best work. In many shops at the present time the tendency is entirely in the opposite direction. All of us know that where a man is conscientiously disposed to do a fair day's work for a fair day's pay some one will come along to tell him he was doing too much. Is it right that such conditions should be imposed upon the men ? The employer takes a man on to do his best possible. If the man is conscientious he will give his best for the employer, and if he will consider the employer

the employer will consider him. I have one case in view where the employers were going to put the men under these various conditions put forward in Mr. Lang's paper. They built an Institute for them, but the men themselves opposed it, instigated, no doubt, by the evil-disposed. To finish the matter, the employers said, " We will have nothing more to do with it," and they turned the Institute into offices. That was due to the fact that the men did not realize what the master was trying to do for them. There is another point in the organization of works which must be attended to before any firm can be successful, and that is in the estimating department. Many firms have a slip-shod way of preparing estimates. If there is one thing essential to the perfectly successful nature of any firm, it is in keeping a correct account of all the work going through the shops, every item being properly booked. By so doing, when tendering for another job of a similar nature it is only necessary to refer back to the accounts to see exactly what a similar job has cost going through the various stages. That is very often an advantage in tendering because first of all one has to get work, and to be able to arrive at a " rock-bottom " price is an advantage which, no doubt, all of you will recognize. As to the controlling of the men, we know that some men work better when grumbled at than when being praised. I know of one man in a workshop who never does his best unless the foreman is continually grumbling at him. When the foreman says, " That is all right," or " That is a good job " he slackens down until the foreman begins to grumble, and then he thinks it is time to waken up again.

Mr. P. Smith : One other thing I might mention. The present-day tendency seems to me to lead to the opinion that it is more important to be a trades unionist than to have served a regular apprenticeship, and be able to do a good day's work. When I was in the workshop, if a stranger came into the shop, before long the oldest apprentice would go up and ask him if he had his lines, and he was given twenty-four hours to produce them, but now, if he belongs to the union, nothing more is considered. We hear that there is a lot of talk in Australia about white men only being employed on board ship ; but it is absurd for them to say anything about the work being confined to white men as any one who has been to Australia will have seen the West Indian negroes at work on the wharves,

but they belong to the union, and that seems to make it all right.

Mr. ROBERTSON : With regard to the remarks about a man being a trades unionist without having served an apprenticeship, I might say that before becoming a member of the union a man is supposed to have served his time and has to produce his lines. But one disagreeable point about the system is that if a man as a labourer is able to pick up ideas from the men with whom he is working he is not allowed to do the work. If a man who has not had the opportunity of serving his apprenticeship comes to that state of perfection that he is able to do a fitter's work, I do not see why that man should be stopped from doing a fitter's wo rk.

Mr. W. E. FARENDEN (Associate) : I should like to thank Mr. Lang for his paper. With regard to having a special mess-room, I think it is a splendid suggestion. I know of several firms in Sheffield where they have a mess-room and the men are able to get good and cheap meals. With regard, also, to the lavatory accommodation, where they can change their clothing and have a good wash before leaving for home, I think that is a capital idea, which should be largely adopted in engineering works. With reference to the question of allowing a few minutes' leave, I do not consider the suggestion a good one, and agree with Mr. Britton that the men should not object to doing this in their own time. I do not think it would be possible to give a fortnight's notice in shops where there is a good deal of repairing work, and where the competition is so keen and the work has to be done very quickly. The custom of receiving suggestions from the workmen is, I believe, extensively adopted in America, where, in many of the workshops, a special box is provided to give an opportunity to men who have suggestions in regard to improvements in machinery to bring those suggestions direct to the notice of the principal—the foreman does not see them at all. Any good suggestion from the workmen is considered carefully, and, if it is found to be of any value, the man gets compensation in some way or another.

Mr. BRITTON : If you will allow me I should just like to give

a case of men taking six minutes where five were allowed. At the works of a well-known firm they used to ring the bell seven minutes and again at two minutes before the starting hour, and it was the usual custom for the men to stand outside in the street until the two minutes bell had stopped, with the result that in many instances it took the men from ten minutes to a quarter of an hour to get to the respective departments. Ultimately the management saw that so much time was wasted in this way that they adopted the time clock in the various departments, consequently the men, instead of gaining two minutes lost fifteen.

Mr. J. L. Hodgson, B.Sc. (Visitor) : I should like to have the opinion of any member as to how he would suggest that the workmen should be remunerated for ideas, whether in extra wages or by a lump sum down, and, again, as to what basis the workman stands upon in this respect in comparison with the drawing-office staff. The workman's idea would doubtless be in a much more crude condition, and yet, it seems to me, it might be much more valuable. Would not, say, 5 per cent. on the profits be a fair sum ? I know of cases where a man has made a valuable suggestion and got £1 or £2 for it, which I think is very unjust. I like Mr. Lang's suggestion that the workman should be looked upon to a greater extent as a human being and consideration shown to his personal characteristics, and yet one has to consider that a foreman or manager has not always the time, or from other causes scarcely finds it possible to look upon the workman as an individual, and drifts into the habit of looking upon him as part of the machine. As has been mentioned, the proposal to give a fortnight's notice depends upon conditions, but the idea is a good one and ought to be carried out where possible. Another good point is the suggestion for greater flexibility in engineering works. Mr. Lang says, " The arrangement should, however, be promptly changed when necessary. New ideas and new methods of work are continually creeping in and demanding changes in men's duties and responsibilities. It is in keeping abreast of these changes that a firm maintains its position, and the arrangement should be changed as quickly as these conditions demand." Of course in the vast majority of engineering works which manufacture standard articles this does not apply, but in a few firms that specialize and are continu-

ally contending with new improvements—in the building of torpedo boats, for instance—it is very necessary to be in the fore-front and to be able to keep ahead of rivals. The practice of many firms does not seem to be to encourage the men who will do this. The tendency is to develop the men who get into a routine. I think Mr. Lang's suggestion is a good one—that the men should be encouraged to work on new lines and adapt themselves to new conditions as they arise. I wish to thank Mr. Lang for his paper, he has made many suggestions which might very well be acted upon.

Mr. LANG : I am very pleased that so much interest has been shown in my little effort. I think in the discussion Mr. Timpson has touched on the main point when he said that the paper dealt principally with the human element. That is where the difficulty of the whole situation arises and that, also, is what makes it most interesting. Mr. Timpson referred to Messrs. G. and J. Weirs' system of lavatory accommodation for the men and that was touched on by others. Here again the " human element " comes in. The average British workman is more or less independent and if he finds the employer providing these good things for him he does not seem to care for them and in some cases the schemes do not work. I have heard it said that even at Messrs. G. and J. Weirs' works the men do not take full advantage of the accommodation provided. With regard to giving notice to workmen, I suggested that in a casual way, in keeping with the whole tenour of the paper. I have suggested nothing definite. Mr. Britton suggested that I should have made a diagram of some scheme of organization, but by keeping in touch with current literature it is easy to find very good schemes to suit works of different natures, and I thought it advisable not to lay down a definite scheme, but to confine myself to principles. If a man is uncertain as to how long his work will last he is anxious, and does not give as good work as if his mind were at rest. In a steady-going workshop it might be possible to give a man a long notice, but of course I quite recognize it is impossible with men working on repair jobs. There has been some difference of opinion with regard to the question of clubs. Mr. Britton has evidently had some experience of them, and I do not see why they should not work. The point I have had in view in writing this paper is in the direction of having an ideal towards

which the tendencies should be directed, and although there would be great difficulty in carrying out some of the things I have advocated, they should be considered and the possibilities of adopting them reckoned up. Mr. Britton asked if I would say when the meetings between the clubs and the managers would be arranged. That would come into the arrangements of the firm's system, whatever system was adopted. With regard to the men getting a few minutes before the usual stopping time, that would also be a matter of definite arrangement. Mr. Britton made a quick calculation of the amount that would be lost in the course of the year by the loss of time, but probably that amount would come back quite easily in some other direction, and if we encourage the men it is bound to repay itself in better work. I must heartily thank you all for the kindly way in which you have received this paper, and also for the information which has come out in the discussion.

Mr. TIMPSON : I have great pleasure in moving a hearty vote of thanks to Mr. Lang for his very able paper. He has aimed throughout at a very good ideal, that all classes should steadily pull together in the one direction.

Mr. W. WATSON (Member) : I have great pleasure in seconding this vote of thanks to Mr. Lang for his interesting paper. I think he has evidently laid down a "plan of campaign" for the day when he will have works of his own to manage, and if they are run as he suggests there will be no doubt as to the happy lot of the workmen—but perhaps they might not pay 10 per cent.

The motion was carried with acclamation.

A vote of thanks was accorded to the Chairman on the proposal of Mr. J. H. Redman, seconded by Mr. A. Robertson, and the proceedings terminated.