

THE HUMAN FACTOR IN INDUSTRY.

BY ALEXANDER RAMSAY, OF LINCOLN.

The prosperity of an industrial community is largely governed by the efficiency and energy of its wealth-producing classes. Of these the brain-worker is not the least important. To him we owe the comforts and refinements of modern society; he has been eager to wrest from nature the secrets she carried in her bosom and mould them to the use of man and the progress of humanity. He has devoted himself with enthusiasm and sacrifice to the patient and laboured elucidation of scientific truths which have added much to the knowledge and resources of the world. He made possible the marvellous productive capacity of a machine and labour-saving age. His place in industry, his training, scope, and encouragement would afford an interesting and profitable study. But the most perfect piece of mechanism is without value unless guided by labour. The most brilliant product of the mind cannot become material until labour has performed its function. The whole structure of industry is ultimately at the mercy of those who work with their hands. Their attitude towards the problems of

[THE I.MECH.E.]

production is of supreme importance, and inasmuch as that attitude at the moment gives rise to some anxiety, it is to this phase of the subject that attention will be directed.

The country is still in the aftermath of the War. Over a considerable period it became accustomed to a prodigal expenditure of wealth without particular scrutiny of the value received. Employers and workers alike were dipping into a purse which seemed bottomless; expectations were high; rewards were high; the art of spending was tremendously encouraged. It is obvious, of course, that during this period the nation was disposing not of its revenue but its capital, and that to such a process there must be a definite and speedy end. Moreover, the continued expenditure of capital resources has the effect not only of dissipating wealth but of rendering it impossible to create more. The employers are very rapidly appreciating this truth and taking suitable action; sections of the workers appear to act as if the national wealth were illimitable and bore no relation to that which is produced.

The activities of the workers are divided in two main channels which are rapidly converging—the industrial and political. In the industrial sphere attempts are made to secure better conditions from the individual employer or group of employers, and in the political to obtain general advantage, and to effect ultimately a fundamental change in the organization of industry by the nationalization of the means of production and exchange. These ambitions are perfectly understandable and legitimate, and if the workers believe in them they are entirely justified in pursuing them; but there is an unfortunate disposition amongst a section of the leaders of the labour movement to regard the employer as one who stands between them and their reasonable aspirations, and who must accordingly be fought by every weapon at command. No apparent regard is paid to the fact that the institutions he represents are the foundations of the State, and that such merely destructive activities immediately react on the prosperity of the community. There is a tendency to seek the fulfilment of the new idea, not by the cumulative effect of sound constructive work, but by the destruction of the present system on which, until something

better is evolved, the livelihood of the whole nation depends. In other words, these doctrinaires are consciously at war with the present organization of industry, and their attitude is expressed in a general encouragement of mistrust, impatience, antagonism, and complete indifference to productive efficiency. It would not be true to say that the bulk of the workers are dominated by this idea, but the application of their unreasoned philosophy leads to very much the same thing.

The past six years have witnessed a tremendous development in the status of labour—against which there is nothing to be urged. Wages have largely increased, hours of work have been lessened, and the organization of the workers has been enormously strengthened. But with this new sense and experience of power, certain irresponsibilities have resulted which are most disastrous. In a certain industry, for example, subsidized by the taxpayers, the wages have increased 300 per cent, and individual output, it is alleged, has fallen at least 50 per cent. Most of the great trade unions of the country have declared against working a system of payment by result in spite of the most complete safeguard for the inefficient, and in spite of the fact that this system is beyond all question the most effective to induce production and in principle the most equitable to all concerned. Over a considerable period there has been a national embargo on the working of overtime. Avoidable overtime is an evil which cannot be defended. Overtime on a key operation is on occasion an essential, which it is sheer folly in these times to refuse. Overtime to pour a casting to provide work for a gang of men or to release a cargo steamer to catch a tide, are instances which would have been acknowledged, had there been any disposition to examine the question on its merits; and still demand follows demand for further and increased advantages.

These circumstances are not referred to by way of recrimination, but because they indicate an attitude of mind. They indicate that the workers do not believe that the country is now in such a position that only greatly increased production can save it from industrial disaster. They do not realize that their well-being can

only be assured, provided they are able to exchange freely the manufactured articles they produce for the commodities which they must obtain from other peoples; and that, too, in competition with other manufacturing communities similarly situated. They do not appreciate the fact that the cost and bulk of our production must determine the cost and bulk of those things we desire to import for our maintenance or comfort, and that to this extent the cost and standard of living would appear to be factors largely governed by themselves. They are holding out both hands to grasp at privilege and do not count the cost.

This in brief is the pressing problem with which industrial statesmanship is faced. Many of the industries of the country, if not already there, are rapidly drifting into a position which is economically unsound. If the tendency to take out of industry more than is put into it is further pursued, or if the destructive theory is more extensively accepted by the workers that the debilitation of the present organization is, in itself, something desirable to achieve, there is before the country a period of grave economic crisis and social danger. Industry cannot be subsidized indefinitely by the taxpayers, or carried on out of capital resources, and unless the nation settles down to work and produces what it seeks to enjoy, it cannot escape the disaster resulting from the defiance of such elementary need. It is desirable that some other means than bitter experience be found of demonstrating that it is useless to evolve theories of distribution if nothing exists to distribute, because in the times we face, disillusionment and distress are evils that will not live alone.

Now the probability is that the situation has not got beyond a point where it can be regulated, provided the mind of industry addresses itself to the problem. A remarkable combination of circumstances, due to the War, and necessitating continuous employment at whatever cost, have given the workers an unbalanced perspective and created illusions which, in the nature of things, cannot be maintained. It is unthinkable that a usually well-balanced community would commit economic suicide if it realized what was taking place. The average British workman in his

individual capacity is pre-eminently a sane and reasonable being, and he will rise to meet a necessity which he understands. The need for educative propaganda therefore is pre-eminent.

It is a first necessity that he should be made to understand that he is getting a "square deal." His spirit of reason can only be approached through his spirit of fair-play. It has been a striking fact that in the seething turmoil of the mining industry, excessive demands have not been justified popularly, on the ground that the miner's conditions of employment were improper, so much as on the ground that he desired a larger share of the profits which he alleged the employers were making. The cotton industry has recently witnessed a financial manipulation whereby stockholders have realised a capital appreciation of remarkable extent. Is it to be supposed that the spinners will be satisfied until they have shared in the spoils? The plain fact is, that the workers are now strong enough to exact a fair proportion of the profits of production, and it would be wise to make it quite clear that the employer shares in their desire. Let the employers attempt to create an atmosphere of good-will, and reciprocated good-will can at least be possible.

If two parties are inseparably associated, and differences arise which cannot be ignored, peace will be best assured by frank and friendly discussion. In this connexion the National Industrial Conference was a splendid conception, and it is a great misfortune that its potentialities have not been more fully developed. But the individual can do a great deal. Those acquainted with the problems of management should, wherever possible, establish personal contact with the worker and keep him in touch with the world factors affecting the particular product on which he is engaged. But one of the main difficulties of laying an effective case before the men lies in the fact that in a large workshop it is only possible for the directional heads to get into personal contact with a very few individuals. These delegates may be perfectly honest, but it is unreasonable to expect them when reporting discussion to accept the employer's outlook and represent it in convincing fashion. The shop steward cannot be regarded as the

best means of propagating information which the employer believes the individual worker ought to know. It is suggested, therefore, that the institution of the factory journal or house organ should be much more extensively developed, either for the individual factory or a group of factories, and that in its columns should take place from time to time a full consideration of the various domestic problems which constantly arise. A wise works director, who could have a weekly talk with the bulk of his employees through such channels, would achieve a work, the importance of which could not be measured.

Some attempt too must be made to demonstrate to the public at large the governing factors on economic questions. It has not been realized, for instance, that the tremendous increase in the price of labour and raw material is making it impossible for the country to finance the volume of output of which it is capable, with a consequent reduction in the purchasing power of the nation. It is not understood that every increase now made is simply making the evil more pronounced, and defeating the very purpose for which it was designed. Subsidized houses, transport, coal and other commodities, have been accepted with the utmost complacency, and a feeling has been created that such political strategies can be substituted for work. There has been no real insistence on the fact that the primary duty at the moment is to produce in the utmost quantity at the cheapest rate, and that instead of the studied indifference experienced, the whole of the community should be mobilized to this end.

The time has come, too, when the mischievous interference by Government Departments in industrial negotiation should be considerably curtailed. It cannot be eliminated, because the Government is responsible for the maintenance of law and order in the realm; it is the custodian of the interests of those not directly affected by a dispute, and, as such, is an interested party whose voice when necessary must be heard. But it has been proved on many occasions that a Government is too susceptible to outside considerations. Expediency is the only recognizable note of its industrial policy, and where it is quite well known that

one party to a discussion will always give way to expediency, the other may well be expected to remain obdurate. The workers are clearly entitled to receive from industry the greatest advantage which industry can afford, but this line cannot be overstepped without grave menace to themselves. There comes a time, therefore, when necessity must govern; and this point can best be determined by the directional heads of industry on the one side and the trade unions on the other.

Finally, our industrial and social difficulties can be eased by the efficiency of the employer. He it is who in a very real sense has to keep running the wheels of industry, and on him depends to no small extent the economic security of the country. But has the inanimate side of production been reduced to the science it might become, or is industry still instinct with the conservatism of old-established practice? Is the art of production studied or does it simply evolve? Much time and money could be saved if the lessons of experience were anticipated or even supplemented by the training of the schools.

It is advisable that employers should cultivate more the practice of the open door. They should develop a community of interest, interchange ideas, treat each other not as competitors but as coadjutors. No individual is strong enough to withstand the tendencies of the times, and these certainly call for unity of purpose, knowledge, and action. The hope of the future lies in the possibility that capital and labour may develop a better understanding and encourage a mutual inclination to further each other's reasonable aspirations. Such an end would have magnificent results, but it will not be attained until the nation consciously strives to bring it about.

Discussion.

The PRESIDENT said the members had listened to a very able abstract of a very remarkable Paper, the whole of which he personally had read with great care. It was a new departure on the part of the Institution to have a Paper on such a subject, but, in view of the fact that the question was of the utmost interest and importance at the present time, he hoped there would be a good discussion. He asked the members to pass a hearty vote of thanks to the Author for his Paper.

The resolution was carried by acclamation.

Mr. P. W. ROBSON, O.B.E., said he had given a very great deal of thought to the aspect of affairs which had been so ably dealt with in the Paper, and he had come to the view that there was much to be gained by realizing the phases through which they had passed, and which might in one respect be considered to have come to a conclusion in 1914. The phase from George Stephenson onwards up till 1914 might be regarded, to put it into concise terms, as a kind of experimental period, during which industry on a large scale was being applied to society. During that experimental period the forms of mechanical appliances and engineering efforts of one sort and another came not by any law; they evolved, and there was no particular sequence in them. That, of course, was a characteristic of every evolutionary period. The broad result of that was that industry had caused society to become accustomed to it and to lean upon it, without there being any guarantee that it was capable of fully supplying the needs of society. In that respect they had not reached the point when the production of wealth was commensurate with the growth of the aspirations of the people. It seemed to him that the war period had brought that experimental time—he was speaking purely from the social standpoint—to a conclusion; and, owing to the general quickening of the aspirations of the masses, which was indeed a healthy sign if

it was used rightly, they now had society demanding that the experimental period should cease and that an organized and intensive effort should be made by industry to meet its needs. Society was now going to demand from engineers that there should be an end of empiricism, and that by organized and intensive effort society should be supplied with what it needed. Putting it more or less in concrete terms, and not calling it philosophy, that, he thought, was what it came to. When the matter was realized from that standpoint, he ventured to think that, however awkward or trying might be the transitional period through which they were passing, there was no ground for permanent pessimism. It was a transitional period, and he thought it was going to lead to something better.

With regard to the attitude of labour, power without responsibility was of no use to society, and, however it had arisen there was no doubt whatever that for the moment there were evidences and frequent exhibitions of power without responsibility. It was clear that that must come to an end. He returned, a few days ago, from visiting Austria, where a new Republic had been established, and where various new laws affecting industry had been brought into existence. The net result appeared to be good; the effect was all in the direction of getting away from that anachronism of power without responsibility. There was a certain amount of power given to the workers, but it was coupled with responsibility. In connexion with each works a small number of the staff and a small number of the workpeople were appointed as representatives, and the various problems of discipline were handed over to them. He was speaking now about that kind of discipline which was so disagreeable to those who had to manage large works, namely, misconduct, unpunctuality, or other breaches of the rules. Those questions were handed over to the Committees and were being dealt with extraordinarily well. That kind of thing might appear unusual if they looked backwards, but he was not at all sure that it was unusual if they looked forwards. He had no doubt that developments of that sort would be seen in the future. What he would venture to emphasize in viewing all those matters

(Mr. P. W. Robson.)

was that there was a demand that those in responsible positions in industry should view the situation with great patience and from a very large and broad standpoint. By patient guidance he thought they would emerge from the present unhappy position and reach something better than they had ever had before. What must be avoided was any idea that it was possible to go back to the old methods of control of industry which formerly existed.

He thought the War, and the feelings and ideas which it had stimulated, had put an end to what might be termed the Victorian methods of running industry. The workers possessed different ideas, and he thought people in general ought to be glad of that fact; to some extent they were in the position of a hobbledehoy. He said it with deep respect, because he was only speaking of their mental evolution. A youth was often seen with all the physical strength and the energy of a man but without the mental experience rightly to guide that energy, and he then did some rather extraordinary things. In his opinion, that was the position with regard to labour thought. They had taken that thought collectively; it was in the position of having a great deal of power and strength which it liked to throw about, but it had not yet obtained sufficient wisdom and experience to know how to use them best. But was not that natural when the whole thing was considered as a period of growth? When one remembered what the country passed through, did not one realize that all those things were natural? Some natural things were none the less disagreeable, and he thought they all looked forward to that period passing away. As the War went on, he estimated that it would take at least four to five years before the country reached normality again. He did not mention that as making a claim to any particular wisdom, but most of his friends in industry, who were then looking forward to a great post-war boom immediately the War was over, felt that it was an extreme view. Personally, he felt it was going to take all that period, and if some of those who had given great thought to the matter estimated that to be the period, and if it looked as if that would turn out to be correct, there was cause not for alarm but for courage and patience. It

was in that spirit and temper that he ventured to think the matter should be approached. At the same time he thoroughly endorsed and supported the note of earnest warning which the Author had given. Coupled with it, however, he ventured to suggest the attitude he had put forward, courage and patience, and if those were adopted he thought the country would come through all right. If the question were looked at in that way, and if both sides would endeavour to look at the matter in that spirit, he felt sure that a happy solution would be found to all their difficulties.

Mr. WILLIAM REAVELL (Member of Council) thought it was an admirable thing that the members of the Institution, who had in the past limited their discussions to purely technical affairs, should recognize, not only as engineers but as human beings, that they must consider more and more in the future the demands of those other human beings, much greater in point of numbers, who worked with them, to have a larger life. He thought it was most fitting that, arising out of the admirable Paper which had been read, some record should go forth of the opinion of members generally of the Institution on such a subject. There was no employer of labour who had not given a great deal of anxious thought to the problem. He did not know how it struck other members present, but personally he had always resented the dividing of the great productive industry of mechanical engineering in this country into the two camps of labour and capital. That seemed to him to be entirely wrong; it gave wrong impressions to all the employees and wrong impressions to the public. Although engineers became capitalists as their business grew, they did not look upon themselves as capitalists in the same sense that bankers and stockbrokers were capitalists.

He was quite sure that those who found themselves at the head of engineering businesses were more proud of their position because they were engineers and had created something, and had done some good to the world in that way, than because they might have in the process accumulated something which the workmen regarded as "filthy lucre." It had always been a difficulty to his

(Mr. William Reavell.)

mind to know how that side of the question could be made clear to the people whom they employed—the skilled men especially. He had given a great deal of thought to that point which, however, seemed to become increasingly difficult, and he believed it was the experience of all who had given much thought to the social side of the business. He found it was more and more difficult to get into touch with labour, even the men employed in his own shops and who had grown up with him. Many of those men knew that such engineering employers were not capitalists in the sense in which the public to-day regarded the word. They recognized that these engineers had been trained with them and grown up with them, and that they wanted to train their children in order that they might keep in actual touch with the work in the workshop. Nevertheless, he found it increasingly difficult to get into really close touch with his employees and to discuss serious problems with them, such as the growth of the shop steward movement, the method of defining just what subjects such a movement should discuss with them, and what subjects it was wise they should leave alone.

He did not think that engineering employers generally from the first saw any inherent difficulty or unwisdom in the working, for example, of the Whitley Council scheme in engineering shops. The delay in establishing Whitley Councils did not arise from the engineering employers; it was caused largely from the fact that the Craft Unions themselves objected to the introduction of Whitley Councils into the engineering shops. He had followed Whitley Council matters very closely indeed, and he believed he was correct in saying that the unskilled unions, such as the Workers' Union, were more willing earlier to see the Whitley Council scheme introduced between themselves and their employers than were the Craft Unions, such as the A.S.E. He thought the delay in getting into touch with important matters between workmen and themselves was more due—with all respect to the great organization of the A.S.E.—to their attitude than to the employers' attitude. Although he was not quite certain how it should be done, he was of opinion it would be a good thing if

it went forth from the Meeting of the Institution that employers generally did recognize that their workpeople—their skilled workpeople especially, but all their workpeople—were entitled to a bigger share of the good things of this life.

He agreed with Mr. Robson that none of them must contemplate the possibility of going back to the long hours and persistent overtime which were worked before the War. There must be longer periods during the twenty-four hours in which the machinery was turning round. That was obvious, particularly now that both machinery and buildings cost so much more, but it must be done by some method of double-shift system, which took into consideration the leisure which the worker himself wanted, and was entitled to have, so as to enjoy life more, rather than by a system of overtime.

It had been his experience that the great difficulty in dealing with his own people was to get rid of that suspicion which seemed to come into their minds when the head of the firm wished to call them together to discuss social matters in relation to the business. If the engineer put his views down in the Press the workers either distrusted them or did not read them, because the same Paper was not read by the engineer and by the worker. If the head of a firm asked the men to meet him during working hours, they probably replied: "The governor has got some game on or he would not do that." If the workers were invited to meet the head in their own time they replied: "Our time is our own, and we are not coming to hear the governor talk." Colloquially he thought that put the situation as many of the members had found it to exist. If it could go forth from the Meeting that employers did not regard themselves so much as capitalists but rather as co-workers with their men in helping to get the increased production which was necessary to keep in the forefront this country of which we were so proud, and that they were as ready as the men, and more ready than the men appeared to have been in the past, to discuss works problems, he thought it would be all to the good.

The PRESIDENT said he was very sorry to have to close the

(The President.)

discussion on such an interesting Paper, but as two other Papers still remained to be read he would ask those members who desired to make any further remarks to send them in in writing for insertion in the Proceedings. He hoped the members of the Institution in general would take the matter up and thus help in solving a most difficult problem. He would ask Mr. Ramsay to reply in writing to the whole of the discussion.

Mr. F. R. WADE, M.B.E., asked if the discussion on the Paper could not be adjourned and finished in London.

The PRESIDENT said the suggestion was quite a good one, and it would be considered by the Council.

Communications.

Mr. LOUIS W. SMITH wrote that he took it for granted that such Meetings of engineers as the present one were held primarily to further the developments of engineering production in every way, and therefore he thought that Mr. Ramsay's Paper was singularly opportune. The greatest handicap to the progress of engineering at the present day was, perhaps, not the lack of good engine or ship design, efficient machine-tools or labour-saving devices, all of which had been brought into a higher plane during recent years, but the lack of real confidence between the organizers of industry and the manual workers. Engineers always felt the greatest pride and satisfaction in the achievements of members of their profession who showed more than average ability in research and design. Should we not at the present time also congratulate any member who was giving time and thought to the solution of this, the greatest problem of the moment? The apathy of some members of the Civil Service was, he feared, some handicap to

industry, as they now had much more responsibility than formerly, and nothing irritated the manual workers more than to see well-paid officials able to retain billets, when little trace of real energetic work was noticeable.

They all should set their face against the employment of any but the most efficient in the management or organization of industry, whether in private or Government employ, and he thought they should bring any influence to bear on Government departments to leave the leaders of industry to deal in an unhampered way with the men direct. All the leaders of industry naturally wished to assist increased production to the greatest extent possible, and he believed by example they could do so as much as by the intelligent use of propaganda (more of which latter was now needed). They should give the maximum of effort to their respective jobs, and show labour that they meant to fight hard for the reinstatement of the British position of pre-war days, which could only be obtained by increased production.

The individual British worker was all right at heart and would, if dealt with sincerely and sympathetically, respond quickly to the nation's greatest need and give this increased production, and he thought that the very small Bolshevik influence which now might exist amongst the men would soon become extinct. The welfare work, already now much in evidence in numerous larger works, would do a great deal to convince the workers that the organizers were endeavouring to give a happy and comfortable environment. The Works Magazine, which had been sold by the thousand amongst the employees of the various works associated with the writer's company (Clark's Crank and Forge Co., Lincoln), had been productive of extremely good results. The "recognition" of the Welfare Supervisor by the men, assisting to preserve good relations with the Management, had been found frequently useful. This was one essential link in any scheme which aimed at the happiness and contentment of the Human Factor with its inevitable good effect on industry generally. The various competitions and sports events gave the men encouragement to make themselves more efficient in that direction, and one seldom found that a good

(Mr. Louis W. Smith.)

"sport" was not a satisfactory workman. The atmosphere of any shop would certainly be helped by the rules of such a game as cricket.

Captain G. H. SAVAGE, R.A.S.C., wrote that he thought the subject of Mr. Ramsay's Paper was now of vital importance to the country, but very little concerted action was being taken. The writer had hoped that labour would gradually come to see and admit that, for prices to go down and for living to improve, there must be more production; instead of things getting better, however, they had become worse. The average man in the street could not judge; but employers of labour and men who came into touch with the working man, knew that there was a strong undercurrent of dissatisfaction. He thought that the majority of labour, by far, was not in support of Bolshevistic and extreme labour principles, but with so much extreme labour propaganda about, and with labour conditions in other countries so unsettled, this majority of labour was very unsettled, also very uncertain; they did not know what to think, nor what principles to accept as right.

Many of the working men knew that there was something wrong with the extreme labour view; but they did not know what it was. Meanwhile they were being continually bombarded with this extreme labour propaganda, and a man who was uncertain and unsettled could not be happy, and could not work. He thought the remedy was to give these men, in the *very simplest language*, an explanation of the economic laws and problems which affected them, and point out the duty of the individual to the community. This should be done by propaganda on a large scale. This view might be criticized as merely theorist, but it was not so. In the writer's opinion the tendency was to underrate the intelligence of the labour man. As Mr. Ramsay said, "the average British workman in his individual capacity is pre-eminently a sane and reasonable being, and he will rise to meet a necessity which he understands." The propaganda would be directed to the individual. The Author suggested the use of propaganda, but he did not sufficiently emphasize its importance, he would even say, its necessity.

The influence of propaganda had without doubt been proved by the War, and by the War's subsequent history. This propaganda should explain these economic laws to labour, while putting forward as little as possible the employer's or capitalist's point of view. The scheme must be well run, with a definite plan and with a directorate of some considerable driving force. It must on no account be allowed to lapse, just possibly as it was coming to fruition, and it should be kept up for a year, or two years if necessary. The work need not go to extreme lengths; but an article every day could be put in all the cheap daily papers, with a heading that would attract the reader's eye. Such a course would be of enormous value. Practically the only suggestion at present to combat the extreme labour tendency, was that employers should meet their employees for a weekly talk, and should come into touch with them as much as possible. This, he thought, was an excellent idea, and it did good; but for the following reasons he did not consider that it could have any lasting effect:—

(1) The writer did not consider that the average member of a firm, who undertook to speak to his men, had the time to make himself thoroughly conversant with the economic problems, and their influence on the work of to-day. It was absolutely necessary that these explanations should be in the simplest language, incapable, as far as possible, of distortion.

(2) In these meetings, every works directorate would tell its men something slightly different; which points of view the men compared afterwards, possibly at some of their own trade union meetings.

(3) It was an employer's point of view that was being put forward, and the men were more or less suspicious of it.

(4) In every town there was a considerable number of works where these meetings between employers and employed were not held. At present the tendency for labour was toward extreme views, and it was known that one bad influence had an effect quite disproportionate to its size. He considered that the discontent of the men from the works, where meetings were not (perhaps could not be) held, taken in connexion with the specious arguments of

(Captain G. H. Savage, R.A.S.C.)

the extremists, could undermine to a serious extent the sound principles established in the works, where at any rate, to a certain degree, employers and employed understood each other at present.

There was, of course, nothing new in an educative propaganda suggestion; but the schemes that had been started seemed to lack a definite programme and driving force. If a propaganda scheme were initiated which was worked to present a much larger point of view than the employer's only, it would be seen by labour all over the country; it would be the same as a meeting at every works, and it would be one sound explanation of fundamental laws, which could be discussed by everybody. The suggested articles could form a basis for discussion at the various works meetings between employers and employed.

The question arose as to who could finance and work a large propaganda scheme. It lay between the Government, some society or institution, and the employers. He was afraid that it would devolve on the employers; and that, coming from such a source, it would be viewed with some suspicion. Personally though, he considered that after a time, as the articles were not to represent actually the employer's point of view, the working man would be convinced by sound and simple argument. If the Institution of Mechanical Engineers could exercise some controlling influence, and support some such scheme, there should be no lack of funds. There was at present too much destructive criticism going about; what was required was constructive criticism, and it was required quickly. The employer, by his better education, had learnt and could understand the economic laws. It was not his point of view, that he wished to teach to labour. He only knew that if labour could be taught the fundamental economic laws aright and could come to understand them, the working man would, of his own free will, help himself, help production, and help the country.

Mr. JOHN FEARN wrote that the Author of the Paper was to be congratulated, not only upon his able review of one aspect of the industrial problem, but also because of the privilege accorded him

of presenting the first Paper dealing purely with this aspect of the engineers' work since the Presidential Address of the immediate Past-President, in which the declaration was made, in courageous language, that the Institution should play a part in discussing the problems of administration and organization. A precedent was set by the Papers of Miss O. E. Monkhouse on "The Employment of Women in Munition Factories," and Mr. Ben H. Morgan on "The Efficient Utilization of Labour in Engineering Factories," given in March, 1918, but these clearly dealt with abnormal conditions. The Paper on "Jigs, Tools, and Special Machines," given by Mr. H. C. Armitage, touched one aspect of the problem. The broad and scholarly Address of Dr. Hopkinson, however, marked a distinct stage in the history of the Institution, and the promptitude with which his lead had been followed up augured well for the future.

It was certain that a very large proportion of engineers—probably the majority—were more concerned with the problems relating to production than to those of design, and it was therefore very fitting that the Institution should consider production in its various aspects. The engineer was, above all other men, practically concerned with the stresses and strains of inanimate materials, and the logical training derived from the study of the materials of construction should fit him for the stresses and the consequent strains caused in the industrial world by the methods of production and the environment which modern conditions had evolved.

In the short time at his disposal Mr. Ramsay could not be expected to cover the whole ground of the industrial problem, but it was of great importance that various aspects should be considered if a narrow view-point was to be avoided. The idea that the issue was one between employer and employed only (using these terms in the common sense) was fallacious. A third party entered into the problem, that was assuming the consumer was ignored. This third party embraced what, for want of a better term, might be designated the administration class, which included the brain workers alluded to by Mr. Ramsay. A certain number of these

(Mr. John Fearn.)

also belonged to the employee class, as pointed out in the discussion, but their capitalistic function was largely incidental and not an essential feature of their administrative duties. It would be within the knowledge of many Members that the leaders of the workers were fully alive to the importance of the administrative class, and that they were exercising great endeavours to bring them within the workers' movement.

The bad old scheme of dividing the industrial world into "capital" and "labour," which terms were usually regarded as synonymous with "employer" and "employed," would still logically include the administrative class with "labour" as "employed." This should in itself be sufficient to condemn a discussion based on the old division. Use of capital, brain work, and manual work, were all essential to production, but the knowledge and experience how to exercise each was also essential. Neither the owner of capital, nor brains, nor muscle, was of great value to the community without appropriate knowledge. Any discussion which ignored these facts must be largely nugatory, and whatever might be the views of individual business leaders, one might rest assured that the higher type of workers' leaders were well aware of the facts.

Mr. RAMSAY wrote that the Paper was intended as an indication of phases of the problems suitable for discussion, and in this respect it had been considerably successful. It was particularly satisfactory to note that there appeared to be a feeling that a society such as The Institution of Mechanical Engineers should bring such problems within its purview, because there was little doubt that, when the keen minds of the country were brought to bear upon this human problem, with goodwill, some substantial advance would be made towards a satisfactory solution. The discussion generally indicated that the representative employers, taking part, had a very real desire to help the workers to achieve their reasonable ambitions. One found, as a matter of fact, that this was generally true throughout the country, and when employers began really to think, in terms of this goodwill, a very big step

forward would be taken. For the times which the country had to face, there was need of a good deal of patience and wise tolerance. The operation of economic laws would, in the long run, act as the best curb on extravagant demands, and if the industrial ship were steered firmly—yet sympathetically—the country would get safely through into clear waters.
