

nity. Unfortunately, we are loading ourselves with many such parasites just now. Can any country look upon such a position as satisfactory, or even bearable? In fact, the position is worse than this, for the striker not only does not work himself, but his action interferes with the work of others.

We study economy in our engines, mill gearing, office systems, and many other ways, and yet we accept with a certain amount of equanimity the lavish waste which follows, because we have not yet evolved a method of working harmoniously with our operatives. We have all along neglected the handling of labor as labor. We have allowed it to take its own course; but I think we should have secured better results if, as engineers, we had studied the labor problem as carefully as we have studied technical engineering problems; the more the labor problem has been put to one side as difficult, the further we have, as employers, drifted away from the men. Labor is now more than ever the unknown quantity in the equation. When at school we were being led forward to the intricacies of algebra we used to write "Let x be the unknown quantity," and I have found nothing in after life which had a better claim than labor to be symbolised by " x ."

The old feeling of mutual esteem and confidence in each other which formerly existed between employer and worker is dying fast—if it is not already dead. Probably it never existed to the same extent in Australia as in Great Britain; but in its place has arisen distrust, especially on the part of the worker, and the obsessing anxiety lest the employer should get more than full value for the wages he pays. In fact, it is only too true that in certain employments the worker refuses to do more than the measure of work which has been fixed for him by his union. I have frequently wondered if the worker has ever thought how the employers could compete for the trade of the world if they managed

their business on similar lines. Demoralisation would set in quickly, and no business could possibly live for any period if every section of it were subjected to the same cavalier treatment which labor insists upon giving to its employer. Labor at the present day seeks to make itself complete in itself, and in its effort overlooks the first principles of economic progress, but the manual worker can only look for an increase in his comfort eventually provided he looks for it from more efficient working; and he will only consent to a higher grade of efficiency when it is proved to him that his interest lies that way, and also the interest of his comrades. I believe that the go-slow policy is at the root of most of the ill-feeling which exists between the employer and the working classes; if a fair day's work was assured for a fair day's pay, the problem of fixing the fair rate of pay should not be beyond the wit of man to solve; increased wages and shorter working hours are matters of arrangement, possibly without complete satisfaction to both sides; but these do not antagonise the employer to the same extent as sabotage, and this sabotage has a demoralising effect on the worker himself, who, in course time, is so affected by the disease—for it is no less—that eventually he cannot do a good day's work, even if he wishes to do so. It threatens the industrial supremacy of our Empire, and even the Empire's existence. This baneful system has affected the output of munitions at a most critical period of the war, and if it is not crushed before peace is declared, we shall most certainly find ourselves quite unable to meet the severe competition from other countries which is certain to follow. It resolves itself into another form of idleness, and, as Mr. Justice Heydon said recently, "Idleness and abundance are inconsistent with each other." The limitation of output or the go-slow policy rests on the fallacy that the more work a man does the least chance of employment will there be for others, and on the short-sightedness which cannot recognise that an increase of productivity

tends rather towards the development of an industry than otherwise, with the obvious corollary of a larger demand for labor.

The pernicious policy of lowering the output is the anti-thesis of progress. It resents the introduction of a machine as something designed to snatch away from the worker his chance of making a living. There are numerous instances of this, and the idea seems just as strong now as it was 100 years ago. If, then, the diagnosis is correct, and the limitation of output is the disease at the root of industrial troubles, what is to be the cure if 100 years of education, so-called, have left the worker with the same crude ideas which he has had during that period? We must not say that the problem is an insoluble one, and leave it there. We must find a solution. We cannot consent to the thought that labor disturbances will be a permanent evil, growing worse and worse as time goes on. The solution seems to me to lie on somewhat the same lines as those which I have suggested earlier in this address, namely, in the closer combination of scientist and worker, and in a closer application of our young engineers to those subjects which are going to be so useful in their life's work. Just as there is need of closer collaboration between science and industry, and just as the engineer should extend the scope of his education to cover not only technical, but commercial knowledge, so the relationship between employer and employee must be drawn closer. The old antagonism between the two, if allowed to continue, will be productive of wider breaches; an expressed willingness to fight only produces an equal readiness on the other side. It is absolutely essential that the workers should be brought to see that their interests lie in the fostering of the industry by which they live. It may be said that the worker cannot, and will not, be so instructed; but I believe that this is not so. It is a matter of education at the right time. Supposing that one of

you have a son who, in course of being trained for the profession of engineering, is, for some reason, compelled to take a place among the workers. You would not expect him, unless intimidated, to follow the pernicious go-slow policy. It would be unthinkable that he should do so. Why? Because his education has shown him that such a policy is wrong morally and economically; yet he is of the same flesh and blood as the members of the present-day unions. Fortune might just as easily have placed him among the workers from the beginning of his life. If then such a man by his education, and by his previous associations, sees the fallacy, it is not unreasonable to think that others of the same race can be educated to see it. Consider again our young men at the war, who, by their splendid valor, have won fame for themselves and for us. This has not been done without severe training and discipline, yet many were impatient of discipline when they joined the colors. They have been trained and disciplined with magnificent results. All acknowledge that there are no better workers in the war, and numbers of them are drawn from the laboring classes of Australia. The material is there if it can be worked into proper shape, but we are rather inclined to look upon labor in the same way as we look upon the material of which we make our machines. We know that under certain treatment metals will do certain things, but we have to treat with something higher than inanimate material when we come into contact with the soul of man, and there is the soul of labor just as there is the soul of a scientist. It falls to our duty to be the training officers; just as a regiment takes its tone from its officers, so must we see to it that we set this part of our house in order, and use every effort towards obtaining the coveted result that, among the industrial classes, engineers shall be educated to be not only good workers, but reliable workers, just as our men at the front have shown themselves to be good disciplined warriors.

If a little thought is given to the subject it will not appear altogether strange that the working classes should take up the attitude which they have done. Consider their training from boyhood. They are brought up in an atmosphere of antagonism to capital; in their homes and in their association with their fellows they hear only of ways and methods by which the day's work may be lightened and the remuneration increased. The question of the progress of industry, by improved and steadier labor, does not receive a modicum of attention in the conversations which they hear compared with the attention given to the organising of systems by which they may secure more benefits to themselves. How can a man in such a case be expected to understand anything other than that his wages are the first and only thing to be considered. The educated classes try to bring up their children to be good professional engineers, good doctors, good merchants, and to make them the best in whatever profession is taken up; the best education which can be afforded is considered to be only their due; but we have neglected to ensure that the children of those who have not our opportunities shall also be trained to realise that they and their friends will reap the greatest benefit during their lives if they will bear in mind that the progress of the country means their progress also. In the enemy country of Germany, patriotism is taught in their schools from earliest infancy, and Germany takes so much interest in every man that he is properly trained and directed in his life's work. Would not it be possible to introduce into our schools, in addition to those subjects which receive so much attention, some course of training by which it would be impressed upon the minds of the growing boys that, as no material progress is secured without great effort, they are going to advance not only their country but themselves by the vigor which they bring to bear upon their work, of whatever class it may be? Such a system of education, or rather instruction, would not be introduced with

the object of alienating the children from their fathers, but rather this: that the children should at least have the opportunity of having all the facts of the case properly presented to their minds in a reasonable and clear way from the textbooks. They would thus be in a position to form their opinions with a fuller knowledge of the actual facts and possibilities. Further, in all schools the children should be trained to regard themselves as citizens of the Empire, the extent and resources of which should be explained to them in fuller and greater detail in each successive year. As Professor Hele-Shaw says: "The scientific training of the professional engineer is of vital importance, but the education of the men he may have to control is scarcely less so. The latter education may not be altogether of the same kind, but it is just as vital to the country, and its present condition is a serious evil." And again he says: "A large number of thinking men are convinced that our whole educational system seriously needs reform, not merely with reference to scientific education and technical training, but to the whole attitude of mind of the young of all classes of the community towards the serious work of life when they leave school."

The outlook must be widened; it lies with us to assist others to see further, and men and women will, in their wider outlook, which would follow on the school teaching realise their larger and more serious responsibilities. This would surely be a better policy than to allow them to grow up, as now, saturated with one idea—the idea of higher wages and less work. Such a course of education, if it has any beneficial effect at all, is certainly of equal value to that which takes care of the teaching of subjects which are only likely to be of limited service in the after lives of the workers. I say, then, that we must study our artisans and laborers, get into closer touch with them as individuals, spend more of our time in taking an interest in their doings, not in a perfunctory way, nor with the intention of

turning their gratitude to account, but with the hope of increasing our friendly relations with them, just as the man of commerce endeavours to maintain and extend his friendly connection with his clients. Possibly it may be thought that the workers are too much bound by their trades halls and by their unions, and would scoff at and resent such advances, but human nature responds quickly to kindly feelings, and giving provokes giving, and if the body of workers respond in time to our first advances, the effect would become more and more evident as time goes on, and would tend to even closer relationship; the labor situation, seeing that it affects the progress of our profession so seriously, warrants that at least some such proposition should be considered.

I wish to repeat here that I have perhaps overstepped the lines within which the Presidential address is expected to run.

My object has been to compel your attention to the seriousness of the position, both inside and outside our own borders, and also to the very evident necessity for immediate action towards improving our general efficiency and towards remedying the evils which are threatening and oppressing us. The need for reform is obvious—so obvious that there is no cause for argument. Yet what is the comparison between the amount of reiteration of reasons and the amount of active practical work done to secure the reforms?

One is reminded too frequently of "The Diary of Toby, M.P.," in the English journal, "Punch," which, for many years, gave the gist of the happenings of the British Parliament. In this diary were given criticisms on speeches, arguments, and so on, and also a summary at the end of each day under the heading "Business done." On too many days Toby, M.P., had to report "Business done—Nothing." The problems are here for our individual con-

sideration. We are units of our Empire, every whit as much as the inhabitants of Great Britain and the other Dominions; because we are relatively a small community, and because we are far from the Empire's centre, we are not for these reasons exonerated from the task of solving the economic problems facing us. No one of us personally has any right to neglect this duty. We must find time to give it attention, and we must not put this obligation to one side, and quietly go on with our daily occupation. I am of opinion that there is a call upon us in this direction only second to the call for men to do the actual fighting in the war. The war has directed our thoughts into new channels, has necessitated the development of new policies and the amending of old ones. It has given us possibilities of drawing into harmonious co-operation the contending elements of industry, and our duty now is to make the best of these possibilities.

If what I have said this evening results in an increased effort on the part of any one of us, results in someone doing more and thinking harder than he would have done in the ordinary course of life, then I myself have accomplished something, and perhaps I am thus a benefactor to the country in making, to speak metaphorically, two blades of grass grow where one blade grew before.

I have now come to the end of my year of office as President of this Association—a year which will remain with me as one of pleasant memory—one in which I have certainly had disappointments, but a year which has also held for me many pleasures, and I have been fortunate in forming friendships which I hope will be life-long. I shall always feel a great pride in having held this honor from you, and I shall always have at heart the interests of the Association, and of every one of its members, because they are members.

I have now to ask my successor, Mr. Harricks, to take the chair. We know that he will be a success as President—how great a success he is now going to show us. I can with confidence promise him from every member of the Association that if he needs any assistance at any time during the coming year, such assistance will be available with the greatest good will.

DISCUSSION.

THE PRESIDENT: Gentlemen, it is with very great pleasure that I move a vote of thanks to the retiring President for his address this evening. Although it is rather informal to comment in detail on any remarks which the Presidential address contains, I cannot refrain from expressing my admiration of Mr. Bragg in his bringing forward to-night matters which have called a new bearing, and, so long as the questions impressed upon us of the whole commercial aspect of engineering and the labor problem are handled in a manner he has done to-night, strictly avoiding (as he has done) all political flavour, and dealing with them entirely as matters of economics, I cannot but feel that the frequent interchange of views by members of the Association, and perhaps papers and discussions on the subject in the course of our proceedings will be a benefit to us all.

If we take a strict interpretation of the objects of this Association as described in our Act of Incorporation, there may be some who will take exception to Mr. Bragg's remarks to-night in the matters he has specially dealt with, because our Act of Incorporation states that the object of the Association is for the general advancement of Engineering and Mechanical Science; but nevertheless, when we consider the time that this was drawn up and the change that has taken place since, I think we can all be amply forgiven if we dispossess ourselves of any preconceived notions that we are exemplified by that Act of Incorporation.

You will see that the directions in which engineering is closely allied with industrial management makes a study of these questions which Mr. Bragg has dealt with to-night