

PRESIDENTIAL ADDRESS

By SIR ARTHUR DUCKHAM, K.C.B.

Ours is a new Institution founded to meet the growing demand made by industries for men trained technically on broader lines than have been available up to the present. An Institution of Chemical Engineers has existed in America for a good many years, and the curriculum of many educational establishments has been drawn up with its advice. In consequence, America to-day is better equipped with men capable of technical administration than this country. We in our Institution have taken the American Institute as our model, and I trust we may be as successful as they have been. It is fortunate for us that at so early a date after our formation we have been honoured by a visit from members of the American Institute. We are an extraordinarily self-confident people because we have formed "*The Institution of Chemical Engineers*," whilst our American friends, who formed their Institution a considerable time before us, call theirs the *American Institute of Chemical Engineers*. I cannot imagine us calling ourselves the *British Institution of Chemical Engineers*; we are *The Institution of Chemical Engineers*. (Loud laughter.)

These international meetings, however, put strength and driving force into the home body and increase our knowledge and broaden our views. In the chaotic and depressed condition of the world to-day these meetings of the representative citizens of different nations have a far greater significance than the discussion and enlightenment of technical industrial problems. We are citizens of our home countries but we are also citizens of the world. We are all imbued with a passionate longing for peace and goodwill between all men. Therefore, I feel that no occasion like this should pass without all present registering a solemn and inward undertaking that we, individually and as corporate bodies, will use our best endeavours at all times to induce goodwill between nations and that we will never, thoughtlessly, use words or take action which may prejudice the progress of the world peace.

We have enjoyed welcoming our American colleagues. We trust our meetings have given them food for thought and an appreciation of our endeavours. I trust that future meetings may comprise chemical engineers from other countries and that our places of meeting may cover all countries aiming at true industrial development. By this means world progress will be attained and good fellowship cemented.

As I have indicated, the chief responsibility of our Institution is to organise courses of technical education and institute examinations which will develop and stamp students as chemical engineers. We have had many meetings and have taken the advice of the leaders in chemical and other industries. We have

drawn up a course of training and are now submitting this to teachers and educational authorities in order to obtain further criticism and to get approved schemes adopted in the appropriate institutions.

Many people have asked "What is a chemical engineer?" and your Council has had the temerity to attempt a definition:—"A chemical engineer is a professional man experienced in the design, construction and operation of plant and works in which matter undergoes a change of state and composition." Our definition is rather wide, and I think, rightly so. In order to give the man in the street a more concrete idea of the chemical engineer, I propose to show how men trained on the lines laid down, are essential to the rehabilitation of our staple industries, coal, iron and steel. I feel that this nation is in such a critical state to-day that you will forgive me if in dealing with this subject I deal with it a little outside the chemical engineer, and more from the economical and personal point of view, at first, finishing by showing you how the chemical engineer could be one of the chief factors in saving our coal industry to-day.

To-day we are faced with a national crisis, a coal strike. During the last two years the condition of the coal trade has been growing gradually worse, partly due to the decreased purchasing power of our foreign clients, partly to the falling off of home trade and partly to the lack of confidence and goodwill between those concerned in the production of coal. A reduction in the price of coal is the only immediate means of increasing exports. That is the fundamental point in the whole coal industry. Some of you who are connected with the coal trade know that individual action or agreement could be taken which would improve the working conditions and enable us to get more economical conditions. Such agreements are not promoted, however, because they run counter to some national agreement, and those of you who know the coal industry must realise that with the colossal variation in the coalfields throughout the country it is almost impossible to get any national agreement either as to hours of work or pay which could cover properly all districts or get the best effect in every district.

A reduction in the price of coal is the first step in the improvement of home industries and trade. A reduction in the price of coal would follow the introduction of any scheme of co-operation in the coal industry. At present there is lack of confidence on both sides. The owners feel that they have been more than generous in the past in agreeing to participation of profits. They feel that they have not been met in the proper spirit by the worker, and that a crisis must be passed before general conditions improve. The worker, on the other hand, feels that he has not been fairly treated by the owners, that

profits accruing from businesses ancillary to the colliery have not reached him. The mine worker is subject to the full blast of international competition, and resents receiving lower wages than men engaged in other trades, sheltered from competition, less arduous and less skilled. Frankly the miner does not appreciate why he should be penalised because he is a miner, and instinctively turns to the State either for subsidies or nationalisation. Cheap coal can be produced in this country, but not by uneconomical subsidies or national control. The cure for the industry lies within the industry; all the Government can do is to bring the parties together, sympathetically study their difficulties and help development by extending financial support to approved schemes.

Dealing with co-operation, the first necessity is to induce confidence. The ultimate aim of all parties must be the same—a prosperous industry. Owners and men fully realise that this aim can only be attained by reducing the selling price of coal. Co-operation must commence in the individual mine or groups of mines. Legislation or national agreements must be framed so that such co-operation is possible in the different areas and under varying conditions. The same conditions of hours and work cannot run through all coalfields. Given freedom of action—with proper safeguards—and confidence, I am sure that satisfactory arrangements for pay, working hours and operation of the pits would rapidly follow. The owners must be prepared frankly to show to the men the financial position of the industry and to ask for their assistance in reducing costs, &c. They must also be prepared for a limitation of profits paid to capital. I am certain we have got to face a definite restriction of profit on mines. Very often one hears complaints as to the methods of working a pit. These complaints should be sympathetically examined and the causes remedied when found to exist. Now to speak of development.

I would emphasise definitely to you that the salvation of the coal industry must be from within. The only way in which the Government can really help the coal industry is by assisting the development of the mines. Listening to-day to the statements of our politicians one is struck by the fact that they talk subsidies, but, gentlemen, subsidies are a bad thing. (Hear, hear.) Subsidies can never bring an established industry through a bad time to prosperity. Subsidies for such things as sugar are allowable because that is a virgin and a new industry which has to be built up, but what has done more to bring this crisis to the present position has been the whisper of subsidies by the Government. We hear of the wonderful electric scheme which the Government are going to put before us this autumn and we see estimates of immense sums of money to be paid for that development. There is a good deal of criticism as to the lines of that development, and it is quite possible that the line of development may be economically unsound. You hear other talks of subsidies and money advances for other things, but there is one fundamental industry in this country and that is the coal industry, and I think the Government, instead of considering the development of electrical supply, the question of low-temperature

carbonisation and these other industrial questions that are before them, would be better advised to study how they can cheapen the price of coal and coke by assisting financially, on economical lines, the development of the coal industry. That would be the quickest way to bring prosperity and to help prosperity back to this country. And here the chemical engineer comes in. The development of the mine, the reconstruction of the shafts, and the putting in of new machinery is more an ordinary engineer's job, but there are many mines to-day which, if they could get assistance in the form of loans from the Government, could be developed with a consequent lowering of the price of coal. We have discussed at our meetings this week the necessity for cleaning the coal that comes out of the pits, and that becomes a chemical engineer's job. I am certain that a proper development of coal cleaning in this country could be assisted by Government money just in the same way as electrical schemes could. I do not mean that the Government should give money but that it should lend money for the purpose, because I am convinced that the development of coal cleaning would immediately help the country as a whole. Then there is the question of coke ovens, which is entirely a chemical engineer's job. If this were tackled properly I am quite certain that the development of coke ovens would enable the price of coke to be reduced by 3s., 4s. or even 5s. per ton as compared with the coke from the ovens put up pre-war or during the rush war period. Our chief competitors are Germany and America, although America does not interfere directly very much, but those who have visited those countries must be amazed by the tremendous development that is going on in those countries, especially in regard to coke ovens and improved by-product working. If you get economical by-product working, if you can get an economical run all the way through and a proper use of the gas made in the coke ovens and a proper use of your tars and by-products, the price of coke will immediately come down, and the price of coke is immediately reflected in the price of pig-iron and steel. How is it that Germany can build coke ovens to-day? She is building them in large quantities. We are not building any coke ovens. Only one or two orders for coke ovens have been placed in this country during the last fifteen months. The trouble is that in this country the colliery owner does not know what is going to happen. He has felt that a crisis must come and he has rather welcomed—I will not say welcomed a crisis because I do not think he has, but he has rather felt that we have got to come to grips. On the other hand, the miner, ill-advised by some of his leaders, thinks the only thing is socialisation or nationalisation of the mines and that it is not for him to improve the present conditions and spoil the argument. There you have the two sides that have been doing nothing really constructive and, doing nothing, have driven the matter to a crisis. Now confidence must be restored and, as I say, I am positive that with restored confidence, with proper technical knowledge applied to the development of our coalfields and the ancillary industries such as coke, pig-iron and

steel, where the chemical engineer can do so much to help—provided we have that we can become a prosperous nation. But until we have confidence there is no hope for us.

Incidentally, I cannot understand how the Government can dare to talk subsidies when our taxation is so high. If further subsidies mean higher taxation, do not let us have subsidies at any price, because taxation is certainly the greatest burden of industry to-day.

I think I have said all I wish to say on this industry but we must all realise that whatever industry we take, whether it is the fundamental industries of coal, iron or steel, or whether you take the cotton industry or the woollen industry or any other industry, the services of the chemical engineer are wanted throughout. We want the chemical engineer as the administrator of our factories. I do not think it is at all necessary that a chemical engineer should only have a chemical engineering knowledge and not a commercial or financial flair. I have great hopes that chemical engineers will take up the big administrative jobs, and what I want to put to you is that if the chemical engineer does take the big administrative job he is better equipped for it than the man who has only had a commercial training or an industrial training in the normal way. Our real great leaders have had technical training. In an industry with which I am closely associated, the gas industry, our great leaders in the past, men like Sir Corbett Woodall, Sir George Livesey, Mr. Charles Hunt and others who have led the gas industry and made it what it is, have all been technical men, and I think to-day that one of the great dangers of the gas industry is that our leaders are not technical men. Men like Mr. Milne Watson have done most wonderful service, but if Mr. Milne Watson had associated with him men of the stamp I have mentioned I am certain their technical training would be of the greatest value and would assist Mr. Milne Watson in the very difficult work which he has to do.

The future is extremely promising for chemical engineers. I am now getting an old man and shortly will be laying work aside, I hope. I told my friends last night that I should like to give up work but my boy will be a chemical engineer, I trust, and I am certain that we have the plums of industry before us and those who are coming after us.

Prof. D. D. JACKSON (United States) said there was a note in the speech which would appeal to Americans. Hitherto America had sent all her

young graduate men, or a very large proportion of them, to Germany for their higher degrees, but since the war the practice had almost discontinued. Very few now go abroad for their doctorates since they are properly obtainable in the United States. It would be a great advantage on both sides of the water if America could send some of her young men who had taken their chemical engineering degrees at home, to England for their research work, and, alternatively, it would be an advantage if some of the young English chemical engineering students were to go to the United States for their post-graduate work. They were much better equipped for that now in America since the war. Therefore such an interchange of students would not only help the students themselves, but would assist in bringing about international co-operation. In proposing a hearty vote of thanks to Sir Arthur Duckham, he said he wished also to express the sincere obligations of his fellow countrymen for the very great kindness which had been extended to them since they had been in this country.

Prof. E. BARTOW (United States) seconded the vote of thanks. In America it is not the custom to criticise or discuss Presidential addresses, but Sir Arthur Duckham's address contained many useful and valuable points and suggestions which should assist in bringing about that international unity which had been referred to.

The vote of thanks was carried with acclamation.

Dr. REESE, referring to the statement made by Sir Arthur Duckham as to the Institution of Chemical Engineers being called *The Institution of Chemical Engineers*, whilst the Americans called theirs *The American Institute of Chemical Engineers*, said the reason why the American Institute of Chemical Engineers had been given that name was that it had a good many political functions to perform. They had to meet Congressional Committees in relation to the protection of the interests of the chemical engineer and the interests of chemical industry generally, and as an institute it had to protect industrial alcohol and a large body of men who were interested, not financially except indirectly. Therefore, it was very important to have the word "American" in the name of the Institute. At the same time, he did not see why there should not be an Institution of Chemical Engineers for both countries with, if necessary, a subsidiary name for the American Institute.