

quence; but they are, at any rate, best able to understand its meaning, and to distinguish between promise and performance. It remains for the general public to arrive at the same state of knowledge by experience.

GERMAN METALLURGY AND BRITISH METHODS.

MUCH attention has been devoted in the Press recently to the strong position of the German metallurgical industries, both before the war, and now after a year and three-quarters of stress. It is not too much to say that apart from this metallurgical industrial foundation, the war would have ended in three months. The growth of modern German metallurgy is due largely to two causes, and these are closely connected in origin and result. They are trade combinations, such as are represented by the "Stahlwerksverband," and scientific management and control. As we have said, these are closely associated, for apart from large undertakings, with regular output, there can be no large laboratories, with highly trained and reasonably remunerated scientific staffs. On the other hand, apart from scientific direction the success of large combinations, such as Krupp's, would be impossible. The tendency of the war appears to have been in the direction of unifying and standardising many of our metallurgical industries, and this tendency is likely to continue when peace is proclaimed.

At present, owing to the war, there is a considerable demand for metallurgists in this country, and more particularly for such as have had a few years' works experience in addition to college training. Hitherto, the supply of such men has roughly met the demand, but the number trained has been wholly inadequate to the real needs of the country. The crux of the question is the want of recognition on the part of manufacturers of the value of scientific knowledge in their businesses. Three results may be expected from the work of a properly trained metallurgist, namely, greater uniformity, economy, and originality. But the system adopted in many British establishments, and particularly in those of moderate size, will never yield satisfactory results. A young man straight from college is appointed at a salary of perhaps 120*l.* per annum, placed in a small, ill-ventilated room, supplied with the minimum of apparatus, and kept on routine analyses. No prospect is held out to him of regular advancement, or of profit sharing. He sees office boys, who have had nothing spent on their education, promoted to be secretaries and general managers, because they come into personal contact with the directors; while he remains unseen and unknown to the powers that be.

Some public-school boys and university trained men are, from weakness of character, unfit for positions of responsibility. But the great majority of them are of a different type, and form the very best of our young manhood, as we see in other directions alike in peace and war. The position

of the scientifically trained man in our metal works is very unsatisfactory. He has no trade union to protect his interests, and no professional body which is strong enough to fix a reasonable scale of remuneration. If our metallurgical industries are to be carried on successfully after the war many more properly trained metallurgists will be required. Capable men will only be attracted if suitable inducements are offered; otherwise they will naturally drift into other employments. In the midland counties, for example, the bright son of a local resident can be trained, at the expense of the State, to become an elementary schoolmaster; he will work twenty-five hours per week, and receive a pension. Or he may decide to study metallurgy, in which case he must spend at least 300*l.* on fees and maintenance, and devote three years to study. He will then get no higher stipend than the schoolmaster, no pension, and be expected to work about fifty hours weekly.

In Germany the value of scientific training has been long recognised. If we are to retain our position after the war it will be by development of industrial undertakings which are conducted on a large and comprehensive scale. Such employers alone can, as a general rule, utilise the best scientific training, or adequately remunerate and recognise their properly trained assistants. A man who has been trained on broad scientific lines is not merely capable of conducting, or superintending, accurate analyses. If he is treated as a confidential adviser, like a doctor or a lawyer, his abilities will have free scope. It is by such men that we can hope rightly to direct the large metallurgical operations which will be more than ever necessary in this country after the war.

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A MARKET-GARDEN RESEARCH STATION.¹

FEW people other than those connected with the trade know of the extent and importance of the market-growing industry in this country. The general public is so accustomed to imposing statistics of imported fruit and vegetables that it is apt to ignore the not unsatisfactory fact that a large proportion of the market produce consumed in this country is home-grown. Still less does the public realise the extent of the capital and the skill and enterprise of the growers engaged in this industry. Although it may be regarded as lying beyond the scope of this severely practical first report of the work of the research station recently established by the growers in the Lea valley, we could wish, nevertheless, that the director had prefaced his account of the year's work by a short statement of the "statistics of production" in the market-growing industry. For we believe that such a statement would evoke widespread interest among the intelligent public.

Those who know of the origin and purpose of this new research station believe that it is destined to do a great work, and are anxious that its activities may not be curtailed by reason of insufficient

¹ First Annual Report (1915) of the Experimental and Research Station. (Nursery and Market Garden Industries' Development Society, Ltd.)