

THURSDAY, FEBRUARY 10, 1916.

## DEFECTS AND REMEDIES.

WHEN, thirteen years ago, Sir Norman Lockyer delivered before the British Association his address on "The Influence of Brain Power on History," it is not too much to say that his statement of the need for the promotion of intimate relations between statecraft, industry, science, and education fell mostly on inattentive ears. The lessons in modern history taught by that address were unmistakable, and the statement of consequences of continued neglect of scientific factors of national progress was prophetic, yet little heed was given to these subjects until the outbreak of hostilities revealed the weakness of our industrial position in comparison with the powerful and highly-organised forces fighting against us. War has caused an awakening which the pleasant times of peace failed to bring about; and our newspapers and magazines—general and technical, trading and scientific—are now giving attention to the subject and are publishing articles by men of science, manufacturers, and others on the provision to be made to ensure that close co-operation between scientific research and industrial development which is essential to the advance of a civilised community.

The points which are being discussed, and the views expressed, have been familiar to most men of science for many years; and Prof. E. B. Poulton was good enough to say in his recent Romanes lecture: "It would not be right to speak on the national neglect of science without acknowledging with gratitude the patriotic position taken for many years by the journal NATURE. If only the warnings given again and again in its pages had been heeded, I am confident that long before this time Germany's complete defeat and the freedom of the world would have been achieved."

We have waited a long time for public enlightenment as to the relation of science to national affairs, knowing that while consideration of the subject was confined to scientific circles, it would remain outside the realm of practical politics, where measures and administrative action are not determined by foresight so much as by expediency. Now that the war has shown the truth of the predictions of our scientific Casandras, there is more reason to believe that action will be taken to avert the consequences of neglect in the past and to provide the conditions of advance in the future.

A letter signed by a number of distinguished

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men of science, published in the daily papers a few days ago, and referred to in our issue of February 3 (p. 640), directed attention to some of the defects in our national organisation as regards what may be termed scientific equipment. Though science enters into every part of modern life, and scientific method is necessary for success in all undertakings, the affairs of the country are in the hands of legislators who not only have little or no acquaintance with the fundamental facts and principles signified by these aspects of knowledge, but also do not understand how such matters can be best used to strengthen and develop the State. Our administrative officials are also mostly under the same disabilities, on account of their want of scientific training. They and army officers are educated at schools where science can receive little encouragement: "Of the thirty-five largest and best-known public schools thirty-four have classical men as headmasters"—they do not take up scientific subjects in the examinations for the Civil Service, because marks can be much more easily gained by attention to Latin and Greek; they need not take science for entrance into the Royal Military College, Sandhurst, which is "probably the only military institution in Europe where science is not included in the curriculum"; and the result of it all is that science is usually regarded with indifference, often with contempt, and rarely with intelligent appreciation by the statesmen and members of the public services whose decisions and acts largely determine the country's welfare.

The defects of a system that places the chief power of an organisation which needs understanding of science in every department, in the hands of people who have not received any training in scientific subjects or methods, are obvious. Some remedies are suggested in the recent statement to which we have referred; and the signatories anticipate the time when the Board of Trade will be replaced by a Ministry of Science, Commerce, and Industry, while leading scientific men and inventors are admitted to the Privy Council, and are given influential positions in the State service.

We are in complete sympathy with the views to which the men of science who signed the statement have given their support; indeed, all the points to which public attention has now been directed have on many occasions been dealt with in these columns. The British Science Guild was founded to urge all responsible authorities to give science its rightful place in national affairs, and it has persistently put forward these claims for

the past ten years or so. It is not a scientific society, or a Chamber of Commerce, or an educational association, but a national organisation in which the activities of all these bodies are united by the common bonds of scientific efficiency for the good of the State. While, therefore, the publication of the letter on the neglect of science is opportune and welcome, it seems unnecessary to form a "Reorganisation Committee," to which communications are to be addressed. The executive and other committees of the British Science Guild include leading representatives of all departments of pure and applied science, of many branches of commerce and industry, and of educational work from the primary school to the university. It is not unreasonable to suggest, therefore, that the new and anonymous Reorganisation Committee, which has secured the signatures to the recent statement, should exert its activities through the British Science Guild, instead of acting independently of the guild, and thus presenting a divided front to the forces to be overcome.

It is satisfactory to note that the White Paper [Cd. 8181] on British trade after the war, published last week, refers to the valuable work done by the guild with the object of promoting the manufacture of laboratory glassware in the country. Shortly after the outbreak of the war, the Technical Optics Committee took up the question of the supply of optical glass and instruments, and a committee was formed with the Association of Public School Science Masters to deal with the matter of laboratory glass. This committee found that glass manufacturers were disinclined to invest in new plant without some security against foreign competition after the war, but the difficulty was overcome by the guild sending a circular to more than a thousand schools and education authorities asking if they were prepared to undertake to use British-made glass during the war and for a period of three years after, provided that the prices were not prohibitive. The list of hundreds of schools and authorities which have given this general undertaking is published in the journal of the guild, just issued, and it should be of the greatest service to British manufacturers of laboratory glass. The same committee of the guild has rendered like valuable assistance by specifying the chief sizes and shapes of glassware required for laboratory purposes. These reports, and the enterprise of the Institute of Chemistry in determining and publishing formulæ for the manufacture of glasses of many kinds hitherto

obtained mostly from abroad, have done more to give practical and scientific support to British glass manufacturers than any Government Department has accomplished since the outbreak of hostilities.

We give elsewhere the main points and recommendations of the recent White Paper, in so far as they relate to scientific matters. It is encouraging to find that the influence of scientific research upon industry, and the need for the State to make adequate provision for its promotion, are generously acknowledged. The nation has been ill-prepared against industrial expansion in the modern sense, and therefore it has found itself in an inferior position in times of war. The British manufacturer is now called upon to become an industrialist, and to co-operate with the scientific investigator in the promotion of industry as a whole. The British man of science must similarly cultivate a fuller interest in industrial applications, and appreciation of technical experience; and the change of attitude will act progressively both on science and industry. Finally, science should speak with a collective authority, and demonstrate by the conduct of its own affairs that it is capable of organised action and clear leading. We want to preserve the practical character of the British nation and yet to develop it to meet modern needs. That there can be successful organisation in manufacture is shown by the Ministry of Munitions; that the people can organise is proved by the position of the Trade Unions; that they can co-operate is evident from the success of the Co-operative Wholesale Society. It remains to develop still further the great principles—to organise and co-operate—among artisans, manufacturers, and scientific workers in order that our national capacities may be employed for the utmost good.

#### PSYCHOLOGY.

*The New Psychiatry: being the Morrison Lectures delivered at the Royal College of Physicians of Edinburgh in March, 1915.* By Dr. W. H. B. Stoddart. Pp. iv+66. (London: Baillière Tindall, and Cox, 1915.) Price 2s. 6d. net.

IT is the accepted duty of this journal to recognise all interests in natural knowledge, and as problems of the mind are included in this group we may fittingly and appropriately refer to the above volume. Mental problems are not easy to solve, and the old methods of observation and induction—hitherto called psychological analysis—have of late given way to what has been described