THURSDAY, SEPTEMBER 28, 1916.

INDUSTRIAL ASSOCIATIONS.

WITHIN the last few days we have been given further evidence by manufacturers and commercial men of their intention to organise themselves for the protection and development of British trade and industry, and to provide substantial funds for the promotion of these objects. A circular has been issued by the Executive Council of the Federation of British Industries, which includes many leading representatives of manufacturing and producing industries, inviting firms to join the federation, and to pay an annual subscription of 100*l.* until at least the year 1919. The main objects of the federation are the organisation and development of industry now and after the war, in co-operation with labour and in conjunction with the Government and Government departments. In furtherance of like interests, the Committee of Financial Facilities for Trade has just recommended to the President of the Board of Trade that a British Trade Bank should be established with a capital of 10,000,000*l.*, with the objects, among others, of establishing an information bureau, co-operating with merchants and manufacturers, and affording financial support to promising enterprises. It is suggested that any financial assistance given by the Government to undertakings in connection with what are known as "key" industries should be granted through the medium of the commercial information bureau. A couple of months ago we described the formation of the Association of British Chemical Manufacturers, with a subscription based *pro rata* on the size of the subscribing undertakings; and the steps taken to organise the British engineering industry into an association were outlined in our issue of August 24. At a meeting held at the Mansion House on September 20 to promote the organisation of British electrical and allied manufactures it was pointed out that the approximate aggregate capitalisation of our engineering works is now 400,000,000*l.*, so that an annual subscription of one-tenth of 1 per cent. of the capital would provide an income of 400,000*l.*

These and other signs show that our leading business men are prepared to do their part towards strengthening British industry and commerce for the competitive struggles of the future. In the case of most of the recent organisations reference is made to the necessity of providing facilities for scientific research; and this point was particularly mentioned by Sir Oliver Lodge at the Mansion House meeting. The inter-connection between science and every branch of engineering is already largely recognised, but we still await the production of a scheme which will show exactly what should be done to promote their practical co-operation. We have had a number of committees and advisory councils appointed, but most of them have devoted themselves chiefly to the collection and collation of opinions, and have originated little in the way of constructive plans of procedure. It is perhaps not so necessary now as it was to convince men of business that scientific research is the basis of progressive industry; what is now required of scientific men and their committees is the preparation of practical plans of campaign which can be placed before associations of manufacturers. We believe that when these schemes are available there will be little difficulty in securing the funds to put them into practice.

One such plan, national in scope and bold in conception, was sketched by Dr. Kenneth Mees in an address printed in NATURE of July 13 and 20. It asked for the establishment of a national industrial research laboratory with a staff of two thousand men, half of whom would be scientifically trained, while the other half would be assistants and workmen. The annual upkeep was estimated to cost about 800,000*l.*, but after a few years the laboratory would probably be self-supporting, and might, indeed, make an annual profit on the original investment. Several years ago Sir Oliver Lodge showed how the University of Birmingham alone could make profitable use of five millions, one million of which would be for a real attempt at scientific research in all departments. He pointed out that hitherto the ideas of this country in education and scientific research have been conceived on a wholly inadequate scale, and without proper appreciation of the vast extent of territory awaiting exploration. The most useful thing that could be done at the present time would be to concentrate attention upon the construction and details of schemes of this kind instead of lamenting the assumed indifference of manufacturers to the help which science can give them. The various committees now in existence would then be in the position of boards of directors having before them for consideration definite plans for the development of their businesses, instead of mere letters of complaint at want of enterprise.

There must, of course, be a joining up of those who are attacking the industrial reorganisation of the Empire with those who are working for educational reconstruction; and we look to the Science Committee recently appointed by the Government to assist in this end. The Right Hon. F. Huth Jackson, who was one of the members of the committee recommending the formation of the British

Trade Bank already mentioned, acknowledged in his speech at the meeting on the neglect of science held last May at the Linnean Society that, as a banker, he had found it a serious drawback to be ignorant of even the most elementary knowledge of the natural sciences. "Perhaps," he added, "if my education had not been neglected on those lines, I should in some cases have been able to avoid supporting some processes of manufacture which were in themselves wrong, or futile, while in other cases I might have been tempted to depart from the very rigid banker's attitude of refusing to give support to any new idea." It is to be hoped that the day is near when no educational course will be considered to be complete unless it includes instruction in the broad facts and principles of natural science, so that men in all walks of life may be able to appreciate possible directions of advance. Scientific thoroughness in detail, and sound factory management, are no doubt two of the conditions of industrial success, but banking facilities are another, and whether they are rightly or wrongly offered often depends, as Mr. Huth Jackson said, upon the possession of sufficient scientific knowledge either to discriminate between undertakings, or to know when to call for expert advice.

It is neither desirable nor necessary that every pupil in school or student at college should be compelled to take up science courses of a specialised kind, but it is essential that they should understand something of the place of science in modern life. Business cannot be learnt in a university or in a technical college, but breadth of view can be gained there, and all can learn that the attitude of mind induced by scientific education is just what is required for the successful development of industry. The changes which have taken place in the condition and needs of business life in recent years render it absolutely necessary to employ men of scientifically trained minds, not only among the captains of industry, but also among what may be termed the non-commissioned officers, and even in the rank and file. Our manufacturers are combining in their own interests, and are prepared to co-operate with education and science in national reconstruction. The time has come for the production of schemes of scientific instruction and research, practical enough to appeal to manufacturers and commercial men, and intended to promote the advance of the organised community. We look to the various committees, boards, and advisory councils lately established to see that the opportunity is not wasted in the further statement of axioms and postulates which are now taken for granted by all intelligent people.

SCIENCE AND THE SAVANT.

Les Allemands et la Science. By Prof. Gabriel Petit d'*Alfort* et Maurice Leudet du *Figaro*. Préface de M. Paul Deschanel. Pp. xx + 374. (Paris: Librairie Félix Alcan, 1916.) Price 3.50 francs.

THE articles collected in this volume were written by twenty-eight prominent representatives of science and art in France to amplify and enforce for the general public the protest made by the Academy of Sciences in November, 1914, against the German manifesto of October 30 of that year, wherein ninety-three "German intellectuals" claimed for their *Kultur* the hegemony of the world of science.

The book reminds one of an "air with variations." The theme is an oft-quoted remark of Pasteur's: "La science n'a point de patrie; mais l'homme de science en a une." The aria is the admirable preface by M. Paul Deschanel, President of the Chamber of Deputies. In the twenty-eight variations, along with a good deal of repetition about scientific ideas as distinguished from scientific material, there are very marked differences of treatment according as the writer envisages *la science* or *l'homme de science*. The tone ranges from extreme bitterness in an article on "La Thérapeutique Commerciale des Allemands," by Gaucher, and mordant irony in Delage's "Histoire Naturelle du Doctus Bochensis," to an amiable letter by Grasset, who insists that science has no country and will not follow the German savants in their excursion outside the region of science into that in which political or national animus is possible. In the circumstances it is difficult to regard so cosmopolitan an attitude as quite fitting the case. There is more ring of sympathetic resonance in Prof. A. Dastre's views about German mysticism and materialism in relation to science and its progress.

Emile Picard raises the practical question of international co-operation in science after the war, and thereby reminds us that science is not independent of the savant. Science has no country, but the progress of science can only find expression through organisations which have national characteristics. In the long run, truth is the only consideration; but the truths of science are not recognisable at all while they are still in embryo in the researcher's brain, and are not always recognised when they have reached the stage of manuscript or print. The spectacles of prejudice may bring some aspects of truth into brilliant focus, but may distort others beyond recognition; and prejudice may be characteristic of nations as of men. It never helps the progress of science; but unfortunately it may affect the development of the truths of science in other ways. The life of true genius may be too short for the struggle against prejudice, for genius is not always sufficiently self-conscious and self-assertive to make headway in a prejudiced environment.