INDUSTRIAL RESEARCH IN INDIA

MR. J. J. GHANDY'S presidential address to the Section of Engineering and Metallurgy at the thirty-first Indian Science Congress, held at Delhi, on "Industrial Research, with Special Reference to India", reviews the development of industrial research in India and the work of the Board of Scientific and Industrial Research.

Mr. Ghandy said that the Control and Research Laboratories of the Tata Iron and Steel Company at Jamshedpur, completed in 1937, are specially mentioned as among the finest laboratories attached to any single steel-producing unit in the world; yet industrial research in India is still sporadic and unsystematized, although its importance as the chief instrument of progress increases. A review of the position and organization of research in Germany, Great Britain, the United States and the U.S.S.R. leads to the conclusion that the Government, universities and industry in India must be assigned distinct research functions although working in close collaboration. The Council of Scientific and Industrial Research should correspond to the Committee of the Privy Council for Scientific and Industrial Research in Great Britain, and consist of prominent industrialists, economists and scientific men with the main function of laying down broad principles of policy, co-ordinating activities and receiving financial grants from the Government.

The Board of Scientific and Industrial Research should concern itself largely with science, while the industrial application of scientific research would be the concern of the Industrial Research Utilization Committee. In Mr. Ghandy's view, the broad functions of the Board would be to plan national, scientific and industrial research in collaboration with the Industrial Research Utilisation Committee under the general direction of the parent Council; to develop facilities for executing the national research programme, by setting up laboratories for chemical, metallurgical, physical, fuel and food research, etc., stimulating the growth of private research institutes and laboratories and encouraging the American fellowship plan for this purpose; and to apportion research schemes to its own and private and university laboratories. It should also control, supervise and co-ordinate scientific research activities and technical education, thus ensuring proper collaboration between Government, industry and science; as well as distribute grants to research institutes and individual workers when necessary. It should formulate and submit its general recommendations annually to the parent Council for approval.

As at present, the Board should operate through a number of research committees, each committee being responsible for research in a particular branch of science, with a director of that branch as secretary. The Industrial Research Utilization Committee should be an industrial committee with much wider functions, co-operating with the Board on one hand in formulating a national research programme, for which it would provide the industrial basis, and on the other operating through a chain of industrial committees covering the different groups of industries. This Committee should also devise methods for the utilization of researches completed by the Board, and formulate rules regarding the taking out of patents and the collection and distribution of royalties. The Board of Scientific and Industrial Research should make its own laboratory facilities available to duly qualified workers, and allow industries to conduct research on specific problems with their own research workers in these laboratories on the lines of the American research associate plan.

Mr. Ghandy also suggested a supreme academy of sciences representative of private research associations and academies and eminent scientific men from the universities to collaborate with the Board in the general planning and direction of scientific research. The Board should provide the universities with financial assistance both for the extension of staff and laboratory facilities and for scholarships for post-graduate research, while the universities should give facilities for industrial fellowships for the investigation of specific industrial problems. The Government scientific services require strengthening, and while they should be given the fullest possible measure of autonomy, they should co-operate with the Department of Scientific and Industrial Research in the enunciation of policy. A scientific news agency and greater attention to publicity and the dissemination of scientific knowledge are also advocated.

TRUTH IN ANTHROPOLOGY

MR. VERRIER ELWIN has made notable contributions to anthropology in India. In his remarkable monograph on the Baiga, he has shown that he can get deeper into the life of a primitive tribe than any of his predecessors in that field, while his second monograph, on the Agaria, has shown that he is as well able to present the life of a primitive craftsman and iron-smelter as that of the primitive hunter, agriculturist and poet which makes a Baiga. It must be confessed, however, that his presidential address to the Section of Anthropology and Archæology at the Indian Science Congress at Delhi last January is far from being the happiest of his efforts. He calls it "Truth in Anthropology"; but the matter that follows the title puts one in mind at once of jesting Pilate, for it fairly bristles with controversial opinions stated dogmatically as truths. Worse than that, to allege, for example, that Frazer, Westermarck and Briffault have been influenced in any way *by the political bias of their sources of information* is a very improper and unjust imputation on the scientific integrity of three great men, of whom two at any rate are no longer alive to defend their reputations. To suggest of Briffault, of all people, that his "only standard of judgment appears to be political respectability", shows an ignorance of his work so profound as to make Mr. Elwin's strictures as worthless as they are deplorable. Let him take and read "Reasons for Anger" before he talks further of Briffault and political respectability. To decry the value of Frazer's work is, of course, rather the fashion, and those who do so rarely seem to have read what he wrote or to realize that, had he not written, it is doubtful whether they would ever have written either. Mr. Elwin adds nothing to his stature by swelling their numbers.

It is difficult after this to attach a great deal of importance to Mr. Elwin's attack on the Indian Census for classifying the primitive tribes of that peninsula as other than Hindu. It may be indeed, as he says, that Hinduism is an animistic religion, but even if all Hindus be animists, that does not make all animists Hindus. It is true that Hinduism is a receptive creed; that many of the most orthodox Hindus hold that all other creeds are mere back-

slidings from their truths. At the same time, he would be a bold man who would therefore label Christians, fireworshippers, Manichæans or Mormons, let alone Muslims, as Hindus. It may well be admitted *that it would* have saved a great deal of trouble to Census authorities if aboriginal tribes had all been included as Hindus; it must indeed be admitted that a nice discrimination of the point at which they become Hindu is difficult in many tribes which have sophisticated sections of their population entirely Hinduized while other sections remain primitive in belief and practice.

Yet the distinction which Mr. Elwin would apparently like to make between aboriginals and non-aboriginals is no easier to draw on racial or on cultural lines, and in the pursuit of truth in any event difficulty of attainment is neither here nor there. Mr. Elwin himself might just as fairly be suspected of a political or communal motive in advocating the return of aboriginal tribes as Hindus, as the Census officers are so suspected by him for trying to distinguish them from Hindus. It may be admitted that an entirely satisfactory criterion of Hinduism has not yet been found, but persons who do not observe caste, who disregard the religious authority of Brahmans, who do not hold the doctrine of *karma* can with difficulty be regarded as Hindus at all. One writer at the recent census of India—Mr. Webb, Census superintendent of Rajputana and author of "These Ten Years"—goes so far as to make untouchability actually the test of Hinduism in the case of tribes doubtfully within its pale. The Chamar, he says, is untouchable because he deals in cowhide and the flaying of cows, in pursuits, that is, defiling to a Hindu; the Bhil follows practices just as repugnant to a good Hindu, but he is not untouchable; this can only be because it is recognized that since he is not a Hindu, those practices do not put him beyond the pale of decent society. The contention has some force, even though many Bhils are undoubtedly Hindus.

The amazing statement, again, that the creation of Excluded and Partially Excluded Areas "was largely the work of a distinguished anthropologist at the Round Table Conference", even if it contains any portion of the truth, which may well be doubted, is very far indeed from being the whole truth. The areas referred to were administered under special regulations long before the Round Table Conference was even conceived of, and their so-called "creation" was a natural and, as administration officers saw it, an almost inevitable development in the process of applying the reforms to Indian political life. Anyone interested in pursuing the point might refer to Chapter 7 of Part ii of Vol. 1 of the Indian Statutory Commission's Report of 1930, and to Chapter 2 of Part iii in Vol. 2.

There are other very questionable statements of a similar kind. In one case a writer is quoted as expressing an opinion, and then taken to task for giving information. But what he gave was a statement not of fact but of an opinion derived, perhaps quite legitimately, from such information as he did succeed in obtaining. The adjective "Tylorian" is used as a derogatory epithet—and so forth. All of which is a great pity, for Mr. Elwin has something to say, and we agree with him entirely in his statement that "truth in anthropology demands a scrupulous adherence to the highest rules and standards in field-work". No doubt presidential addresses are not fieldwork, but that is no ground for any relaxation in them of the high rules and standards of a scientific approach, nor for the imputing of disingenuous motives to workers whose outlook and views prove unpalatable to the temporary occupant of the chair.

J. H. HUTTON.

PARASITIC DISEASES OF MAN IN RELATION TO THE WAR

FIVE addresses given to a conference on parasitic diseases held by the New York Academy of Sciences in March 1943 have been published (*Ann. New York Acad. Sci.*, **44**, Art. 3, 189–262; 1943). In his introductory address, Prof. H. W. Stunkard points out that the study of animal parasites is no longer an academic one, because the diseases they cause constitute one of the most pressing problems of to-day and to-morrow. The gravity of the problem is increased by the dispersal of American (and, we would add, other) troops to all parts of the world, where they are acquiring parasitic diseases. These troops may, both now and after the War, bring back to their home countries parasites not normally prevalent there. Not all these parasites will be able to spread in these home countries, either because the local climatic and other conditions are not favourable to them or because the intermediate hosts necessary for the completion of their life-histories do not exist. But it is known that some parasites have been able to acquire new intermediate and definitive hosts in countries to which they have been transported. Prof. Stunkard gives as an example of this the sheep liver fluke, and he considers the possibility that the human schistosomes may, for example, acquire the ability to develop in some snail in America. The risk of the introduction of new parasites into the home countries is real enough to require energetic action. We in Great Britain, with much colonial and tropical experience to guide us, have been always aware of it; and it is evident that the United States' authorities have also taken the problem in hand.

Already during this War parasites have done appreciable harm to both Allied and Axis troops. Trichiniasis has put out of action at least one battalion of German troops in Norway (*Bull. War Med.*, **3**, 236; 1942), and German commando and other troops have suffered from this disease on their Eastern front. We know also something of the precautions taken by the Germans to protect their Afrika Korps from disease in Egypt and the tropics. Their problems would seem to be now solved for them by the removal by the Allies of all possibility of the entry of Axis troops into the tropics.

For the Allies, however, these problems increase as their victories extend. Prof. Stunkard states that it has been reported that the United States' defeat at Bataan was due as much to the malarial parasite as to other causes. He estimates that a million or more United States troops may acquire parasites and that their fighting efficiency may be proportionately reduced. Dr. Coggeshall, dealing with current and post-war problems associated with human Protozoan diseases, says that United States troops are already acquiring Protozoan infections from native reservoirs at an alarming rate. Amœbic dysentery and malaria are the chief dangers in this field, although other parasites (for example, the trypanosomes) must not be forgotten. Malaria, which is one of the major enemies of both sides in war, can persist in man for