

clearly be to the advantage of both science and labour if the Congress were represented upon research boards and research associations concerned with industrial developments. The human factor in industrial progress has often been neglected in the past, and by bringing representatives of labour into close association with scientific and inventive work, the degrading results of some of their past applications to industry may be avoided.

Racial Doctrine

A NEW periodical publication with the title *Races et Racisme* is devoted to the record of current development in the application of theories of race to the doctrine of nationalism, with special reference to Germany (office of publication, 47 rue de Miromesnil, Paris VIIIe, price 1 fr.). Its main object is to keep the French people abreast of the progress of a movement of supreme importance in the world of to-day, upon which, it is thought, they are not sufficiently well informed. It should also prove valuable to those who desire first-hand and trustworthy information in readily accessible form of the increasing restrictions and penalties which are being imposed on freedom of thought and scientific and intellectual development in the nationalist-socialistic State. The utility of such a publication must clearly depend upon its freedom from the taint of the selective activity of the propagandist. The names which appear on the lists of the Comité de Patronage and the Comité Directeur are a guarantee that an objective impartiality will be exercised in the selection of material for publication. The lists include such well-known names as M. Gabriel Hanotaux, Prof. Lucien Lévy-Bruhl, Prof. Paul Pelliot, Prof. G. Bouglé, P. Maurice Leenardt, le Comte Jean de Pange, and Prof. Paul Rivet, with Prof. E. Vermeil as one of two secretaries. *Races et Racisme*, of which numbers will appear at two-monthly intervals, will represent the trend of German thought in racial doctrine by verbatim reports, or full abstracts, of official documents, new laws and regulations, official pronouncements, articles and speeches of authority, as well as by analyses of books and a record of relevant events—all, as a rule, without comment, except when further explanation is considered necessary.

AN example of the commentary which the editorial body considers appropriate is afforded by the opening article, which runs through the two numbers before us and is still in progress. This is an exposition of the development of racial ideas in Germany by M. Edmond Vermeil. It begins with Leibniz and Herder and the concepts of the eighteenth century, and shows how the Germanic idea has progressed from the universalism of the philosopher to the Pan-Germanism upon which the doctrine of 'race' and 'blood' has been engrafted to implement Hitlerian nationalism. M. Vermeil, who takes a broad and philosophic view of his subject, will, in his later instalments, demonstrate how and why what appears to be no more than a political manoeuvre, when judged by its objective, must necessarily permeate and transform

activities, apparently remote from the political arena when functioning freely, to produce 'German' art, a 'German' science and a 'German' religion. It is to be noted, however, that the sweeping official claims for purity of race and the coincidence of Nordic and Aryan are so far abandoned that Prof. Oswald Kron of Tübingen is permitted to say that there are five or six races among the German people, while he claims for them a psychological unity.

Native Lands in South Africa: A "New Deal"

CONSIDERABLE progress has been made in the provision of additional reserves for the native population of South Africa since the passing of the Native Lands Act, which was promulgated in August, 1936. Up to July last, according to a dispatch from the Cape Town correspondent of *The Times*, which appears in the issue of September 3, £800,000 has already been spent on the purchase of farms from Europeans. The farms which have been bought up to the present are mostly situated in the Transvaal, where the need for native land is greatest, as this is the principal area of native location on European farms, a practice which will not be permitted in future. The land is being allotted to the natives and settlement will proceed as the present European holders vacate. They have been permitted to remain in possession until after their harvest, and land is being provided for them elsewhere. Under the provisions of the Native Trust and Land Act, 1936, the South African Native Trust, representing the Government, is authorized to acquire 7,250,000 morgen (about 15,000,000 acres) of lands for native use. It is anticipated that the work of settling the native on these lands, which will now go on steadily, will occupy a period of several years. It is clear, however, that if the situation is not taken in hand drastically, and the conditions which prevail on native lands, not only in South Africa, but also in territories to the north, are allowed to continue unchecked, a situation similar to that for which the present measures are intended to be a remedy will again arise before many years have passed, and probably then be more difficult to meet.

THE present deplorable condition of the existing native reserves and the agitation and discontent to which the shortage of native lands has given rise is not entirely due to overpressure of population, though this has been an important factor. Traditional methods of native agriculture and grazing, of which the ill effects were negligible when a practically unlimited area allowed freedom of movement and gave exhausted soil an opportunity to recover, have led, under the system of European restriction of boundaries and suppression of tribal raids, to a general impoverishment of the land, which has further deteriorated through the erosion consequent on the overstocking which follows from the Bantu regard for cattle as a sole and almost sacrosanct form of wealth. Since the passing of the Act, the Native Affairs Commission has been busily engaged in framing a policy which is intended to remedy these

adverse conditions. Regulations and remedial measures are to be applied to the existing reserves, such as fencing, irrigation, parcelling out the land for occupational and agricultural use, as well as for rotational cropping and the like, by which it is hoped to introduce into native tribal custom a more economical use of the land. On the new reserves agricultural officers will be appointed to instruct and, if necessary, discipline the natives in modern methods of cultivation. The educational process is bound to be slow; and its success, as previous experiments have shown, will depend very largely upon the discretion with which new methods are welded into traditional custom.

Physics and Society

In an address before the American Physical Society, Washington, on April 30, on Science and Society (*J. Applied Phys.*, 8, 373; 1937), D. Sarnoff, president of the Radio Corporation of America, referred to the relation of the physicist to the far-reaching social changes which follow his discoveries. The radio industry had its origin in the purely theoretical reasoning of Clerk Maxwell when in 1865 he advanced reasons for the existence of electromagnetic waves, although it was only in 1895 that Marconi gave the world a practical system of wireless telegraphy. Already 150 social effects have been traced directly to radio, and the end is not yet in sight. The major obstacles to the public introduction of television no longer lie in the field of research and engineering. The creation of a new art form has demanded new techniques of writing, direction and studio control. Here as elsewhere a scientific approach to the solution of human problems is required, and it is essential that mankind should learn how to use the assets which are the product of the scientific mind. Civilization depends for its advance upon our expanding knowledge of the social as well as of the physical sciences, for no society can solve its problems by intuition or rule of thumb. The advance of social science no less than that of physical science, calls for the creative imagination of a Newton and a Maxwell, an Edison and a Marconi. Obsolescence is a factor in social as well as in industrial machines.

THE social investigator must approach the problems of society in the clear light of an unbiased mind. He must collect and analyse facts, seek to fathom causes and establish principles, which he must always be willing to reconsider in the light of results. The permanent advance of society depends on our following procedure similar to that of the experienced surgeon. We must not be afraid to operate but must know when a less spectacular and safer treatment will be adequate. Social and economic facts must be investigated, verified and analysed, and the analysis and conclusions disseminated widely by popular education and debate. Industry is continually entering new realms of knowledge, and close understanding and co-operation are required between its leaders and the investigators in the universities.

Industry which has not learnt to employ scientific workers is doomed. Moreover, the problems created by technical science can only be solved by increasing and applying our knowledge of social science, and Mr. Sarnoff urged that the immediate goal of social science should be to achieve economic justice, peace and prosperity in a free democracy. Because that involves collective effort, it does not mean the suppression of individual liberty. Freedom of the individual is essential to the full expression of his creative faculties. Science and society depend upon each other, and when the basic lesson of science, that knowledge of the truth without fear or prejudice is indispensable to progress, is rejected, science—and society with it—goes backward instead of forward.

Education and Training for the Oil Industry

THE days when a liberal education and an effective personality were sufficient qualifications for entry into the petroleum industry are now over. As Prof. A. W. Nash pointed out in a paper presented to the Chemical Engineering Congress, World Power Conference, 1936 (*J. Inst. Pet. Tech.*, 22; 1936), specialized vocational training is the only adequate background for technical men seeking employment in the industry. Moreover, this specialized training should be directed towards one particular branch of the industry, for example, geology, production, or refining, for in each of these branches different sciences are involved and correspondingly different technical knowledge is necessary for the solution of such problems as may be encountered. Before proceeding to specialize, however, the student must acquire a sound knowledge of the fundamental principles of physics, mathematics and chemistry, together with a working understanding of engineering and chemical engineering. Finally, having mastered these fundamentals and specialized in a particular branch of the industry, the technician should familiarize himself at least with the basic principles underlying the remaining branches of the industry, for in this way alone will he acquire a clear conception of any problem which may present itself from the point of view of the industry as a whole. Universities and other institutions which provide such training for the industry, are fully alive to the fact that, apart from the actual acquisition of knowledge, the student is there primarily to learn how to apply such knowledge, to interpret it and make use of it in the solution of new problems, and their curricula are adjusted accordingly. For the man who has made full use of any such training, there are openings in the industry unrivalled in any other from the points of view of scope and advancement.

The Spread of the Sahara

THERE is abundant evidence that early in the Quaternary age the Sahara was inhabited by man and that desiccation has since been proceeding. In so far as this process is one of climatic change, it is beyond the control of man; but there is also much evidence that the increase of desert conditions in both north and south is largely due to human interference.