

NATURE

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SWORDS INTO PLOUGHSHARES

THE British Association was holding its annual meeting in Dundee in 1939 when war was declared. Appropriately enough, the Association is now holding its first full-time post-war meeting in the same city. It was therefore a wise decision on the part of the Council of the Association to arrange that the general theme at the meeting should so far as possible be "Swords into Ploughshares" The contribution of science to human progress is mainly positive and constructive, no matter whether it be fundamental or specifically applied; most men of science would wish that it were completely so. But in warfare of this modern age men of science have their part to play, distasteful though it may prove to be. Yet scientific research carried out as part of the strategy of war almost invariably yields results which, despite the fact that they might be destructive in war-time application, present much useful material and data for the positive pursuits of peace-time. This is well brought out in the addresses of the presidents of the various sections of the Association, but nowhere more so than in Sir Henry Dale's general presidential address entitled "Science in War and Peace" (p. 280).

In facing realities we must agree that the world is not yet at peace, neither is it free from the threat of further conflagration, perhaps even on a world-wide scale. It follows that though every effort towards world peace must be made, it would be foolish during present troublesome times to fall into a state of lethargy and unpreparedness. So some scientific research, especially that dealing with certain aspects of atomic energy, must even now, and perhaps for some time to come, be carried on under the ban of official secrecy. Feeling is high these days, and concern is often expressed that military secrecy might take the place of former industrial interests in slowing up the free flow of ideas which are essential to the smooth progress of scientific endeavour. But at present men of science must face the fact that some secrecy is inevitable, and this makes it all the more imperative, therefore, that they themselves should strive to bring before each other and above all before the general non-scientific public the many beneficent aspects of science. It is doubtful if even men of science themselves fully appreciate the general trend of public opinion concerning science, especially since the advent of the atom bomb. Public opinion, even in high places, if sometimes not well informed, is nevertheless expressed and sometimes acted upon. Some fear that science might become more and more a tool for enforcing one or another political credo and for use in diplomatic intrigue. It is for men of science to prevent this so far as they possibly can. Science must play an important part in international relations; but, at any rate during times of peace, let that be a constructive one. We already have it in the United Nations Food and Agriculture Organisation and it is developing in the United Nations Educational, Scientific and Cultural Organisation.

Yet with all this, opinion is still divided, and even among some scholars and students there are powerful

'anti-science' groups; men who should know better have been heard to express alarm at the march of science and demand the fettering of science and scientific workers. This must not be ignored, and it is therefore best countered by men of science themselves telling the world (so far as they are allowed) of their work, stressing especially the value of their discoveries to man and the profound importance of the impact of science on a modern human society.

Sir Henry Dale, in his presidential address, reiterated the aims of the Association in providing a forum for discussing the interests of science, and its proper place in the life of the community, of the nation and of the world. The word 'proper' is more significant to-day than it has ever been, for there is still much misunderstanding among non-scientific people, even up to the political level, about things scientific. This must be rectified, and it is mainly through such agencies as the British Association and by means of well-documented and written general scientific publications that this can be done.

As Sir Henry said, the concern of science with war was abnormal. Critics tend to forget the conditions under which men of science, like all other members of this and other nations, were working during the War. Most men of science then had a very definite and immediate aim; and all other things were made subservient to that. Working on those projects which aimed at destruction, they were well aware of what they were doing. Sometimes it must have demanded greater courage to carry on research in such circumstances than to abandon it on the grounds of conscience. Those same men of science in days of peace will be able to present their findings to humanity for the good of all; but that depends on national and international goodwill and above all on a true estimate and appreciation of science by the non-scientist. War-time discoveries may be applied, or will certainly lead, to other discoveries which will be for the good of man, finding himself as he does in social conditions becoming more and more affected by scientific achievement.

A week of meetings of the British Association is naturally more than an exposition of recent scientific achievement, though, even if it were narrowed down to this, since such achievement has now to be transferred from war-time use to peace-time applications, there is much work ahead—enough to change the entire pattern of social life, as the examples chosen by Sir Henry Dale serve to show. All listeners to, or readers of, this erudite summary of achievement will be grateful to Sir Henry for a choice wisely made; for no one but the most biased can, after digesting such fare, ignore the inestimable benefits that even war-time science must ultimately bestow on mankind, given the necessary atmosphere of peace and goodwill.

But Sir Henry also issues very pertinent and timely warnings to research workers themselves. For example, the distinction between war-time scientific research (the concentration of nearly all one's thoughts and efforts on practical problems the rapid solution of which was the sole objective) and peace-time research which demands taking a long-range view with the first care of extending fundamental know-

ledge unconstrained by aim at any practical objective, must be taken to heart by all scientific research workers, especially those of the younger generation who have had their first experience of research work in war-time laboratories.

Older research workers, also, should take to heart Sir Henry's plea that they should not be too ready to assume that their best service to science still lies in planning and organising, or in bringing scientific affairs to bear upon policy. Though in a world of planning men of science must have their say, and in international deliberations, both political and economic, the voice of science must be heard; in other words, though, as *Nature* has frequently demanded, men of science should be consulted and if desirable put into control where matters scientific are concerned, yet a sense of proportion must be brought to bear on this peace-time problem of transition so that it may be realized that the main work of the majority of our men and women of science must be carried out in the laboratories of fundamental research. The main aim must be the advancement of pure knowledge, the search for and exposition of the truth so far as scientific method can elucidate it. The material betterment of man's lot will, in the main, follow from this; in any event it is an ancillary aspect of a very noble calling.

AN ENCYCLOPÆDIA OF HUMAN GENETICS

Human Genetics

By Prof. Reginald Ruggles Gates. Vol. 1. Pp. xvi + 742. Vol. 2. Pp. vi + 743-1,518. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1946.) 2 vols., £3 15s. net.

THE role of the gene in the etiology of human defect and derangement is now widely recognized. In the medical curriculum a place for a course of instruction in genetics has been found. The dramatic discovery of the genetic nature of congenital hemolytic disease has aroused among practitioners of medicine a keen desire to know more about this science, and they are asking for books which will give them the information and the guidance which they seek.

There are elementary text-books of high quality which adequately display and sufficiently illustrate genetic principles. There are monographs which deal with a particular organ, system or clinical entity and include references to most, if not all, instances of relevant genetic abnormality or abnormalities. Twenty-four years ago there appeared the very ambitious treatise of Baur-Fischer-Lenz, which attempted to include between the same covers all instances of genetic defect and derangement affecting each and every system of the human subject; and in 1929 what may be regarded as the forerunner of the book now under review, "Heredity and Man" by Prof. Ruggles Gates, dealing with the whole subject of the special genetics of man. These two did much to attract an interest in genetical science on the part of the anthropologist and the physician.

But developments in medical science and the more recent work on human genetics, together with the exceedingly rapid progress in genetical science generally, have outmoded all books written a decade