

Science in Modern Life*

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SOCIAL RESPONSIBILITIES OF SCIENCE

OWING to what would seem to be a confusion in thought, the supposed social harms created by science have been vaguely attributed in some not unprejudiced quarters to its own unethical character. General Smuts, on the other hand, holds that among the values gradually recognised by the developing human mind, science ranks with religion and art, and that while to-day religion, art and science are separate values, they may not always remain so. Indeed, he thinks that one of the greatest tasks before the human race will be to link up science with ethical values. It is perhaps not quite easy to follow closely his thought concerning the future extension of the scope of science, but his own assurance that its teaching can be linked up with ethical values is a corrective for some of the accusations from which science is apt to suffer.

Indeed, possible future developments apart, the gap between what science provides for humanity and what are usually spoken of as values in religion, literature and art, has been and is less wide than some assume. History itself shows that it is wrong to deny ethical influence, even if it be indirect, to the scientific spirit. While, for example, the earlier stages of the Renaissance enriched men's minds by restoring to them the literary and philosophical heritage of antiquity, we all know that not until later, when the awakening scientific spirit demanded a courageous inquiry into the actual facts of Nature, did human thought begin its release from the shackles of authority and traditional dogma. This release was surely ethical in its effects. In later times, throughout the years of the Royal Society's existence, the growth of intelligent interest in the material universe was slowly preparing the ground for that last great step in the progress of intellectual freedom which came in the middle years of the last century. The influence of Darwin and Lyell did more, of course, than establish a new outlook for science itself. It re-orientated all thought. It caused heart-searchings where there had been mere complacency in the acceptance of tradition, and its impacts subtly encouraged the growth of that intellectual honesty for which Huxley and others then so nobly fought. The history of those days is familiar enough, but we sometimes forget the debt we owe to them.

It was the influence of science which, more than any other influence, established the idea of progress, replacing as it did a static by an evolving universe, and incidentally a faith that man himself has an inherent capacity for advance. There are not a few to-day who profess to disbelieve in progress; but for the majority it is now a faith ingrained if sometimes only subconsciously held. Evolution, we know, may not at each step tend upwards, but we have reason to believe that in the long run it does, and that in spite of occasional disillusion we may believe in the upward tendencies of mankind. By this faith, hope is fed, human efforts towards betterment are encouraged, and ethical values emerge. The depressing belief that man and the social fabric he has contrived for himself, while so imperfect, are yet incapable of ultimate betterment, was the one excuse for that particular form of 'professed otherworldliness which from time to time has been an essential part of narrow religious ideals, but which was surely evil in its almost contemptuous indifference to social wrongs and to the urgent problems of this world.

The tendency of late, however, has been not so much to reiterate the theme of science's gifts to the powers of destruction, but rather to urge in a more general sense that scientific workers have not shown sufficient interest in the social implications of their work, or in the public responsibilities of their calling. We have only to look closely into this view as usually expressed to realise that, after all, its basis is vague, and, did it involve any charge against the individual worker, unreal. The individual investigator must realise that, *qua* scientist at least, he has little opportunity for effective action. Commonly he concludes that he will be most useful, even to society, by continuing his chosen work in its proper environment.

It is, I think, impossible not to sympathise with this view. The special endowments acquired by the scientific investigator are not those of a politician or of a missionary. Needless to say, it remains his duty to give his skilled services to the public whenever they are legitimately required and invited, and in so giving them he may do much to promote the interests of science itself.

What seems to be really desirable is some method of closing the gap between the mind and outlook of the publicist and those of the trained scientist. It is a just claim that in a civilisation so largely based on science as that of to-day, the scientist

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should have more influence on policy than he has hitherto been allowed. Not long ago the gap in question was wide ; it is now, I think, lessening. Occasionally at least, modern statesmen do seek scientific guidance, and, I think, know better than they did how rightly to obtain it. But it is time, perhaps, that the building of a bridge should begin on the scientific side of the gap. This is a task for organised scientific effort and the pooling of knowledge.

PROBLEMS OF NUTRITION AND A NATIONAL FOOD POLICY

There is a branch of scientific inquiry which can claim to yield knowledge of unqualified benefit to humanity, and one in which investigators, though inspired by the extreme scientific interest of the problems involved, have, I feel, always had the public importance of their solution in view, and have themselves done their best to encourage the practical applications of the knowledge they have won. I refer to the study of the nutritional needs of the body.

The last two decades have seen a quite remarkable activity in research upon nutritional problems, and it is now even increasing. Publications describing original work upon various aspects of these come from almost every country where science is pursued, and have amounted to many hundreds during the course of each single year. In Great Britain much research on nutrition has been generously endowed, organised and encouraged by our Medical Research Council, and it has received financial support from various other sources. We have begun to follow the example of the United States in founding chairs in dietetics, and emphasis is being placed upon the subject in physiological and biochemical teaching in the universities.

A desirable happening at the present moment is the international approach at Geneva for full discussion of the nutritional problems of the world ; for, viewed broadly, the problems are undoubtedly international. On a demand from the representatives of twelve nations including Great Britain and Australia (which has played a leading part in the movement), the health organisations of the League have set machinery in motion for securing full and intimate discussion. Policies concerned respectively with the production, transport, distribution and consumption of foods will all, we may hope, be discussed. They seem to be the very proper business of the League, and if discussion goes deep enough and is frank enough, it may well do no small service to the interests of peace itself.

Many are concerned just now to know the truth concerning the degree and extent of malnutrition as it exists among the less fortunate sections of

the community at the present time. They have seen certain desirable steps taken to mitigate whatever may exist, as, for example, the diversion of surplus milk to the schools ; but they yet ask how far is an extension of such measures an urgent need of the moment. That underfeeding and ill-feeding exist is sure, but to measure their extent is, for reasons to which I will allude, a task of some difficulty.

We have only to read the successive annual reports from numerous medical officers of health to believe that, in the case of children at least, nutrition, inadequate for one reason or another, exists in various districts to an extent which is far indeed from being negligible. Nevertheless, we have to realise that the numerical data supplied from different centres are based upon varying standards, and the opinions expressed depend to no small degree on the temperament and perhaps on the acuity of individual officers. The difficulty before all concerned is that there is no clear definition of the term 'malnutrition', and no satisfactory objective methods for measuring its degrees. Sir George Newman, formerly Chief Medical Officer to the Ministry of Health, always felt justified in taking an optimistic view concerning the available food supply for children in Great Britain, and he was wont to insist upon the circumstance that though under-nourishment may be due in part to an insufficient quantity of food, it depends also on other factors. "The principal cause," he wrote, "is a body unable to assimilate the food supplied to it." In certain cases this must, of course, be true, but we are entitled to ask whether in many such cases the disability of the body when observed has not followed upon malnutrition at an earlier period. What we know to-day justifies this view.

In any event, the essential question is whether food adequate in quantity and quality is within the reach of all. In the annual report for 1934 issued by the present Chief Medical Officer of the Ministry, it is made clear in a section devoted to the effect of unemployment on national health and dealing with evidence based upon a conjoint investigation by officers of the Ministry and the Board of Education into conditions in certain depressed areas in Durham, that the statistics of actual diseases there do not indicate unfavourable effects of present economic conditions. We may conclude from this, and take comfort from the fact, that malnutrition even in such areas has not been at its severest, but it may be highly deleterious in its ultimate effects when not such as to affect the current statistics of disease. Moreover, full normal nutrition was only claimed for some 70-80 per cent of the children, varying between these figures in different areas, and though, as I have

said, criteria for establishing the existence of sub-normal nutrition are not satisfactory, it is difficult to be content with such figures. The Ministry's investigators admit further that in the areas studied the condition of adolescent youths, especially those aged 14-15 years, was found unsatisfactory. These are years when good nutrition is quite especially desirable.

As a measure of the state of health of younger adults at the present time, the results of medical examinations for recruiting are not without importance. The War Office report on the health of the Army for 1933 shows that in that year nearly 38 per cent of the prospective recruits were rejected as unfit. Although, as the report points out, many of these rejections were on account of disabilities which unfitted them for military service in particular, and therefore did not reflect on their general health, yet a glance at the stated reasons for rejection shows that a large proportion of the men suffered from defects which might well be due to faulty nutrition in childhood or adolescence, and a considerable proportion in which it almost certainly contributed to their unfitness.

The current interest in the subject of the national food supply and in right feeding is doubtless largely due to the awakening of the public conscience to this and other kindred social responsibilities; but it has also been stimulated, I think, by the nature of the results which scientific studies during the last twenty years have revealed. They have shown that our nutritional needs are so much more numerous, subtle and specific than was earlier thought, and they have shown how extraordinarily potent and how entirely indispensable material may be, even though consumed in infinitesimal amounts. We know now that a fault in quality may be as deleterious as a failure in quantity. This fact the general public is now rapidly assimilating, though not always to its profit. Indeed, a certain vocal section of the public is (as it has always been) so perverse in its views concerning food that it is almost necessary to remind it that, after all, quantity still counts. We cannot live on vitamins alone! A more intelligent section of the public seems, I notice, to assume with impatience that so much scientific talk about food may lead to individuals being dragooned with respect to what they shall or shall not eat. A self-constituted committee whose propaganda against malnutrition I respect for its wisdom and fairness has appreciated this attitude, and in a recent memorandum made the following wise statement: "certain diet habits must be classed as cultural, and of personal and psychological necessity, and to upset these in the service of protein or vitamin content is to provoke a natural reaction against [the advice that science

can legitimately give]". It is, of course, unthinkable that there should be any such dragooning. The intelligent public will learn to apply the newer knowledge of nutrition without discomfort to itself.

The same memorandum says—again wisely—"to a working class housewife with restricted purchasing power, education in food values alone can only add one further problem to an already insoluble series of anxieties and worries". This of course is true, and so long as we see that foods of the right variety are all within her purchasing power, elementary instruction in terms of the foods themselves and not in technical food values will set the housewife on the right path. I am tempted to add that what the English housewife in the poorer classes needs most to be taught is the art of simple but good cooking! It is not beneath the dignity of nutritional science or of administrative policy to take note of the circumstance that in Great Britain, more than in perhaps any other country, is good food ruined, and its nutritional value impaired, by unintelligent treatment in the home.

One last consideration. Is the time yet ripe for the initiation of a comprehensive national food policy: one that will endeavour to adjust production, in a qualitative as well as a quantitative sense, to right consumption, and at the same time organise all the details of distribution on national lines?

I note that those responsible for the contents of that very impressive book entitled "The Next Five Years", which has appeared under the ægis of many influential names, hold that no administrative action less comprehensive than a national policy of the kind in question could deal adequately with existing problems. They suggest that it should now be taken in hand. Others have urged that, apart from the almost prohibitive magnitude of effort the policy would require, it is one which should await the arrival of more knowledge. The latter suggestion has, I think, but little point. There is doubtless much more scientific knowledge to be gained about nutrition and food production, but we know enough to guide administration on to the right lines.

More to be thought of perhaps is the fact that if we take a long range view, any policy concerned with food production must ultimately, if it is to be ideal, become part of a world policy. At Geneva, Mr. Bennett, speaking of such a world policy, said that its aim would be to "marry agriculture to health". Such a marriage, if ever properly consummated, would greatly profit the world. The interests of both partners must be equally guarded, however, in the marriage contract. In Great Britain, one may venture to say, the first mentioned is at present receiving preferential treatment.