SOILS AND HEALTH

THE effect of soil conditions on plant and animal health forms the topic of Dr. W. G. Ogg's presidential address to Section M (Agriculture). Great advances have been made in this subject during the past quarter of a century. One of the most interesting discoveries is the part played by what are termed the trace elements from the fact that traces only are normally required. Some of these appear to affect plants only; others both plants and animals; and yet others, animals only. Deficiencies or excesses of these substances have been shown to be responsible for a wide range of plant and animal diseases and cause large annual losses to the agricultural industry. Probably the sub-clinical cases are far more numerous than those with obvious symptoms of disease, and are responsible for even greater losses. We do not know very much about the way in which the trace elements act, but possibly they are catalysts.

Although these trace-element diseases are spectacular and highly important, the major plant foods have a much greater influence on the food supplies and health of the community, and deficiencies of these are much more widespread.

It is obviously of very great importance to agriculture to have as much information as possible about the natural distribution and availability of both major plant foods and trace elements. Much of our knowledge on this subject is due to the geochemical studies of the late V. M. Goldschmidt. He developed improved methods of quantitative spectrography which have been of great value in obtaining the necessary analytical data, and his work on crystal chemistry has thrown much fresh light on the distribution of the trace elements in the earth's crust.

The introduction of fertilizers about a century ago has led to an enormous increase in food production throughout the world. It is not claimed that they have supplanted organic manures. Both have their uses and they should be regarded as complementary. Apart from other considerations, fertilizers are needed if the world's food supply is to be maintained because of the shortage of organic manures.

Violent attacks by some of the enthusiasts for organic manures have been made on the use of fertilizers. It is claimed that they poison the soil and are detrimental to the health of plants, animals and human beings. There is no good evidence in support of these assertions. Far from doing harm, fertilizers, properly used, build up soil fertility. In fact, by enabling larger crops to be grown, they increase the amount of material which can be converted into farmyard manure, and the greater amount of roots and other crop residues also increases the organic matter in the soil. For the same reason they are beneficial rather than detrimental to the soil's population of earthworms and micro organisms. Nor is there sound evidence in support of the assertion that fertilizers increase the liability of crops to insect, fungus or virus attack, or that they have a detrimental effect on the composition and quality of agricultural produce.

Probably more can be done for the improvement of health in the world to-day by providing ample supplies of food than in any other way, and the propagation of unfounded beliefs about the harmful effects of fertilizers is detrimental to the interests of the whole community.

LOCAL SCIENTIFIC SOCIETIES

AS in many other fields, there is a tendency to take stock, and there has been a suggestion, both expressed and implied, that the day of the local society is past. The Council of the British Association has had the matter under consideration and has circularized its corresponding and affiliated societies asking for detailed information on certain points and for suggestions. The replies have been collated, and the president of the Conference of Delegates of Corresponding Societies, Dr. J. Ramsbottom, made them the basis of his address with the intention of promoting discussion.

Local societies had their origin for the same purposes as the so-called learned societies and even as the old universities—the dissemination or communication of knowledge and the furthering of research. Gresham College, 1596, with its endowed lectures, and the foundation of the Royal Society in 1660, show how in the sixteenth and seventeenth centuries these objects were met. With the advance in learning in the eighteenth century and the realization of the benefit of mutual exchange of ideas, many literary and social clubs met in London coffee-houses and taverns, and larger literary and philosophic societies were founded in different large provincial towns—Edinburgh 1731, Manchester 1781, Newcastle 1793, and so on. Specialized societies began to make their appearance with headquarters in London: the Linnean Society 1788, the Geological Society 1807, Zoological Society 1826 and Entomological Society 1833.

The natural history society may be considered a product of the Victorian era. It was essentially an association of people interested in nature study at a period when systematic botany and zoology were generally regarded as the main part of these subjects. Many of our local Floras and Faunas were due to their activities, and much of real value was published on other branches of biology.

At the present time, most local societies carry on much in the way which was so profitable up to fifty years ago. Since then there has been a crop of societies and clubs dealing with special branches of biology; but the *omnium gatherum* local natural history societies continue, though many cannot be said to flourish. Some, under the stimulus of one or more members, have tended to specialize, but undue specialization defeats its own ends; sections acting as local branches of the larger societies dealing with these subjects would be more profitable. The federation of local societies into regional unions, beginning with the Yorkshire Naturalists' Union, 1877, has proved advantageous and stimulating; but there is need for some collaboration between the unions themselves.

Most natural history societies lament their small membership, particularly the absence of young members. Their enrolment is a task of national importance, for the country will need an increasing number of trained biologists, and it is beyond question that field work is the most profitable method of approaching many fundamental problems as well as inspiring a true interest in biology.

The compilation of records has always been carried on by local societies, and with the possibility of the increase in the number of nature reserves there is opportunity for detailed studies on a broad ecological or biological basis. Indeed, the local natural history societies might play a large part in protecting these areas and in noting others that are worthy of local or national preservation.