

by chemical manufacturers and by horticulturalists. There are now a number of solutions readily available on the market in many countries.

Thus it is seen that investigations, primarily of botanical interest, dealing with fundamental problems

of plant development, have quickly led to results of much interest and value to the practical man; showing once more the relationship of science and its discoveries to everyday life, to industry and to recreational pursuits.

## The Teaching of Geology in Schools

JUST over two years ago, at the Norwich meeting of the British Association, Section C (Geology) appointed a committee to report on questions affecting the teaching of geology in schools. A short report was presented at the 1936 meeting of the Association, and, at the suggestion of members of Section L (Education), an extended report giving detailed proposals was prepared for the Nottingham meeting. These reports were discussed in a joint meeting of Sections C and L, at which Mr. H. G. Wells presided, on September 7.

The views of the geologists were explained by Prof. A. E. Trueman, who opened the discussion, Prof. G. Hickling, Prof. W. W. Watts, Prof. L. J. Wills, Sir Lewis Fermor and Prof. P. G. H. Boswell. It was pointed out that, while geology has never figured very prominently in school curricula, many pupils were formerly introduced to it, for example, on field excursions, by teachers who had received some training in the subject, but that few intending teachers at present are encouraged to include it in their university or college courses. While appreciating something of the difficulties of the overcrowded curriculum, it was felt that geology should be more widely included in school courses. The Committee did not press its claims in competition with any other subject; in general, while it wished to secure the inclusion of some outlines of geological knowledge in all science courses in secondary schools (for example, as a part of schemes of 'general science'), it only asked, in addition, that geology should be included as an optional subject at more advanced stages. The inclusion of some geology in the scheme of informative education outlined by Mr. Wells in his address to the Education Section was noted with keen satisfaction.

Both the cultural and utilitarian aspects of geology were emphasized. It is one of the richest of cultures, stimulating a broader interest in the outside world and increasing the appreciation of scenery. On the other hand, it is an eminently useful science with numerous and obvious applications in mining, engineering and agriculture. It was suggested that geology should form an essential part of the school curriculum in mining and industrial areas, partly on account of its economic importance, partly for the wider interest it would give to later life.

The syllabuses proposed by the Committee are intended only as suggestions, and great elasticity of treatment appears to be desirable in the case of geology even more than in other sciences, the bias and the arrangement of the various topics depending largely on the location of the school.

In the senior elementary schools there is more opportunity for variety of treatment, and a rather practical bias is suggested. Dr. W. K. Spencer described some of the work carried out in such schools.

The lack of any courses in geology in most schools was held responsible for the present dearth of trained

geologists; Prof. Hickling and Prof. Watts pointed out that while the supply is thus restricted the demand for geologists is increasing. It was emphasized that there are attractive careers in this field for a number of men of ability and good physique.

Two teachers who took part in the discussion expressed rather different points of view. First, Mr. James Davies, one of the few teachers who are actually teaching geology in secondary schools, indicated the nature of his courses. In pleading for a wider adoption of geology he spoke of the attractiveness of the subject and said that there is nothing more inspiring than leading a party of young people over hill and dale (his school is in South Wales). As an example of the chance of a beginner in geology making new discoveries, he mentioned the first recognition of a marine band in the Coal Measures by one of his pupils. In his school, both geology and geography appear in the curriculum. On the other hand, Mr. V. C. Spary, speaking as a teacher of geography, expressed fears that the introduction of geology into the time-table could only mean the displacement of geography. He agreed, however, that a well-balanced course of geography must include many lessons of a geological nature, for "geography teachers must borrow a great deal", and he thought it a great advantage for teachers of that subject to have some geological training.

Mr. Wells agreed with Mr. Spary that the teaching of geology as a specific subject is not highly desirable until an advanced stage in education is reached, but thought that reference would nevertheless be made at earlier stages to the geological record when teaching biology, and to physiography in teaching geography. He went on to inquire what constitutes geological training when the biological and physiological sides are taken away. In reply to these questions it was insisted that palaeontology and physiography are branches of geology, and while it may be convenient to treat them in relation to other subjects in the curriculum, it is desirable that the pupils should know that they are then learning geology. Anxious as they are to see their subject taught in schools, geologists would much prefer to have it taught under its own name.

In the course of the discussion, there was no real criticism of the view that geology should be taught in schools; there was, however, this difference of opinion as to whether it should appear as a separate subject except at more advanced stages (for example, at the Higher School Certificate stage). The inclusion of the subject as a part of a course in 'general science' would possibly be the most satisfactory solution in many schools, up to the stage of the School Certificate, as the Committee had recommended.

In connexion with the discussion, Prof. H. H. Swinnerton arranged an interesting exhibit to show a course of simple experimental work in geology suitable for schools.