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GEOLOGY AND THE COMMUNITY

A GENERATION ago geology was among the sciences which attracted a wide public interest ; at the present time not only has public interest greatly declined, but also there are many workers in other sciences who are almost completely unaware of the content of geology. Yet at no time in the past century have geologists been engaged in pressing forward research in so wide a variety of subjects or engaged in so many investigations of fundamental economic importance. Nevertheless, the nature of their work is but vaguely understood by the general public, and they are not always consulted on problems in which they could give useful assistance, because those concerned are unaware that such matters fall within the competence of geologists.

This decline of interest in geology was used by Prof. P. G. H. Boswell to justify his departure from the traditional practice in presidential addresses to the Geological Society of London, of confining the address to a review of the progress of knowledge in a particular branch of geology ; in the first part of his address, delivered on March 12, which he entitled "The Status of Geology", he reviewed the present conditions and suggested ways in which interest in geology may be revived.

Until a quarter of a century ago, the Science and Art Department of the Board of Education encouraged the formation of classes in a large number of sciences, and such subjects as geology, astronomy and physiology were then highly popular. While the work was elementary and the courses were open to criticism from several points of view, it must be admitted that they introduced a large number of citizens to the marvels and

potentialities of science, and gave them a proper perspective of the history and activities of man. These courses exerted a cultural influence which was very widespread, and teachers whose outlook had been enlarged in such classes further assisted in the spreading of scientific knowledge. At least, the general public became aware of the existence of some of these sciences.

It is, of course, true that science teaching in schools has made much progress since those days, but to a great extent school science has come to mean physics and chemistry, with biology sometimes added ; geology has only rarely been included. With the growth of specialist teaching in these sciences, honours graduates in physics and chemistry were in great demand : such graduates had rarely included geology in their curriculum, and thus were generally unable to continue the tradition of informal teaching which had previously served to keep alive an interest in geology. Therefore, in their impressionable years, while many pupils were left in ignorance of the elements of biology, nearly all were unaware of the very existence of geology. Consequently it is not a matter for surprise that the public should now be indifferent to geology.

The seriousness of this position has been recognized by geologists for some time, and efforts have been made to direct the attention of educationists to the problem. The dearth of geology graduates and the difficulty lately experienced in filling posts (especially in the petroleum industry) laid further emphasis on the need for action, particularly in relation to Empire needs, at a time when in the U.S.S.R., Germany and the United States large numbers of geologists were being trained. In 1935 the position

was so grave that Section C (Geology) of the British Association pressed for the appointment of a committee to consider and report on questions affecting the teaching of geology in schools. Reports were published in 1936 and again in 1937: they directed attention to the claims of geology as a school subject, to its cultural value, to the advantage of its outdoor work, and to the demand for trained geologists, while they also made constructive proposals for the inclusion of geology in the School Certificate examinations, both as a separate subject and as a part of a general elementary science course.

It is as yet too early to estimate the prospects of a revival of interest in the subject through school activities. The Science Masters' Association, though composed mainly of teachers without special knowledge of or interest in geology, has readily recognized the importance of the subject by including it in its revised suggestions for a general science course ("The Teaching of General Science, Part II. Science Masters' Association, 1938). Since the War began, the evacuation of city schools to buildings with inadequate laboratory facilities, in rural areas which are often ideal for field work, has done something to stimulate an interest in the subject. But any further progress must depend on the supply of trained teachers, and here the position of the universities is involved.

The number of university students taking advanced courses in geology (apart from those designed for engineering and mining students) has diminished greatly in recent years. While there are several reasons for this decline, there is no doubt that it is due mainly to the growth of the Higher School Certificate examination in England and Wales, and to the granting of exemption from the first year of study in many universities to the holders of such certificates. Although this scheme may have worked well in the training of specialists in chemistry and physics, in existing conditions it has worked towards the elimination of those subjects which are not taught in schools. The choice of a student's university course was frequently made on the basis of the 'Higher' subjects taught in his school: he was 'no good at science' if he had not marked aptitude at physics and chemistry. Possibly this state of affairs would be changed if students were normally required to take a wider range of subjects at the university and to include at least one science which they had not previously taken at school; it is significant that in some Scottish universities, where an honours student in

one science may be required to take courses in three or four other subjects, the numbers of geology students are still considerable.

For the more satisfactory teaching of general science in schools, it is clear that graduates having some acquaintance with four or more sciences (and a somewhat more special knowledge of one or two) are likely to be most successful. The growth in awareness of geology, if many students of other sciences learn something of its scope and methods, will be of great value both in education and in applied science.

It is probably owing to the lack of public awareness of geology that so few geologists have been given opportunities to assist in the war effort. Yet, Prof. Boswell emphasized, we hear of deplorable wastage of money and labour (and therefore of all-important time) which geological knowledge would have prevented if it had been applied; he thought that on every Divisional Intelligence Staff in the Army there should be at least one officer in whose training geology had found a place. When the organization of regional commissioners was set up, a geologist was attached as adviser to each commissioner, but apart from occasional inquiries little regular use has been made of geological knowledge. Yet during this time there has been great activity in establishing camps, works, shelters, etc.; the work would have been sufficient to occupy the relatively small numbers of geologists available, but for the most part they have remained unused, having to be content with the knowledge that their qualifications were set out on the Central Register; many have undertaken other service in which their special abilities are lost to the country. Meanwhile, it was noted, there are reports of "operations in which geologists have been given no opportunity to be effective—of works placed in unsuitable locations, camps and reception areas where water is inadequate and drainage unsatisfactory, water-logged trenches and air-raid shelters, and (as though rising in a crescendo of incompetence) the case of an ill-chosen aerodrome site".

The members of the Geological Survey have, of course, been active in a variety of ways, and have done admirable work on many problems which, unfortunately, owing to the exigencies of war-time publication, is not so widely known as it should be. They have been concerned with the investigation of mineral resources (particularly of supplies to replace those normally imported), of water supplies, drainage and other problems. But Prof. Boswell contended that the staff of fifty geologists,

even with occasional collaboration of other geologists, is too small to cope with all the difficulties created by war-time activities. Further, he is of opinion that the total number of geologists (including suitably qualified amateurs) available in Great Britain is scarcely sufficient to deal effectively with the numerous problems and the large area to be surveyed.

Even at this stage in the War, there is no reason why it should not be more widely known that geological assistance is available: what is particularly desirable at the present time is that

consideration be given to the widespread ignorance regarding the scope and content of geology, so that the available information will be utilized freely when plans for post-war reconstruction are being discussed. This can best be assured if geology regains its position in the educational schemes of Great Britain, so that an acquaintance with its achievements and methods is gained by a larger number of educated people, including those who will be engaged in administration as well as those who will themselves work in, or utilize, the materials of the earth's crust.

FEDERATION AND ITS IMPLICATIONS

Federal Tracts

No. 1: Peace by Federation? By Sir William Beveridge. Pp. 34. No. 2: Economic Aspects of Federation. By Prof. Lionel Robbins. Pp. 32. No. 3: The Colonial Problem and the Federal Solution. By Norman Bentwich. Pp. 32. No. 4: What Federal Government Is. By K. C. Wheare. Pp. 24. No. 5: The Philosophy of Federal Union. By C. E. M. Joad. Pp. 40. No. 6: Socialism and Federation. By Barbara Wootton. Pp. 32. No. 7: Federal Union and the Colonies. By Lord Lugard. Pp. 32. (London: Macmillan and Co., Ltd., 1941.) 6d. net. each.

THE wide measure of public attention which the idea of federalism has come to command since the outbreak of the War is already attested by a considerable volume of literature. Several alternatives to the plan proposed in Mr. Clarence Streit's "Union Now" have been closely discussed, and a good deal of attention devoted to problems and difficulties over which Mr. Streit appeared to pass too lightly. If, however, the precise form in which the idea was advocated by Mr. Streit is unlikely to find wide acceptance, the whole trend of events has given fresh urgency and importance to the concept of a union of States.

This urgency derives from two main sources. In the first place, it is realized that if we are to utilize the opportunity which the loosening effect of the War upon our corporate institutions gives us, the mental preparation which must form the basis of any sound plan of world order must be done now, even in the stress of war. Only so can we hope to avoid the mistakes which are bound to be made if we defer the problem until hostilities end and a policy and line of action are demanded

without delay. In the second place, our exposure of the Nazi New Order of tyranny and slavery for the subject races should not lead us to overlook the extent to which some semblance of order is implied in such a domination. It imposes on us the obligation of offering to the dominated peoples, when released from Nazi tyranny, not the old disorder, but a new order of free peoples.

These reasons alone give pertinence to the discussions on world order and reconstruction which have been proceeding with fresh vigour during the past autumn and winter, and to the educational campaign which has been fostered by the New Commonwealth, Federal Union and other organizations. That educational work is indeed fundamental. If opportunities are to be seized by the statesmen of this and other countries when the time comes, they must be assured of the support of an informed public opinion, clearly understanding what is involved in any sacrifices of national sovereignty that may be required.

For this reason alone the admirable series of pamphlets which Federal Union has arranged to publish under the name of "Federal Tracts", with the view of promoting informed discussion of federation, is to be warmly welcomed. These pamphlets, of which the first seven have now appeared, are written by authorities on their subjects and express the personal opinions of the authors. Federal Union as an organization is not committed to the views expressed in any of the tracts, and the writers themselves, while interested in federal problems, will not necessarily be members of the Union.

The first two of these pamphlets are not new. No. 1, "Peace by Federation?" by Sir William