

Bragg addressed the Geology Section on X-rays and crystal structure; I think this was as useful as a joint meeting with Section A would have been.

(2) I very much doubt the assumption commonly made that the application of science to life and industry is what the public want to hear about. It may be good for them to hear about it, but we shall have to gild the pill with more attractive subjects, such as the age of the earth, the excavations at Cnossus, the properties of prime numbers, or Einstein. The public that we are trying to reach may be interested in the application of X-rays to atomic structure, but a paper on the latest X-ray apparatus in the hospitals would be hopelessly dull. May we not draw a moral from the fact that the best-attended Section at Cardiff seems to have been that which devoted its whole programme to pure science and scarcely touched on any industrial applications? To lay stress on the valuable material *results* of science may be the best way of touching the pockets of commercial magnates, but the British Association has also the missionary task of encouraging interest in the *methods* of science and of spreading the true scientific spirit.

The question remains: Can anything be done to set forth in a more popular way the methods of science in the towns we visit? I think anything that is done must be outside our Sectional proceedings. To popularise them would merely result in the majority of professional scientific workers staying away, leaving only those interested in scientific propaganda. Although some of our ablest men of science have the gift of being able to deliver attractive popular lectures, the majority have no special aptitude or inclination for this, and there is no reason whatever why they should. If they have trained themselves to be able to explain their work lucidly to those who have been educated to understand and criticise, they have done their part, and may leave to others the work of propaganda. We must avoid the painful spectacle of a brilliant investigator placed in an unfamiliar position before a popular audience and trying to talk down to them—a task performed much better by a man with a tenth of his knowledge, but who has practised the art of popular lecturing. Moreover, the public wants his very latest conclusions, stated without the conditions and reservations which they do not understand; and when next year he alters his opinion in the light of further advances, they will deride him and men of science generally for advertising sensationally themselves and their half-baked conclusions. It is right that we should try to make some more direct return to the public in the towns the hospitality of which we enjoy; but the difficulties and dangers are so obvious that it is desirable to proceed very cautiously.

References to the good old days of the Association, when Kelvin, Maxwell, and others would argue by the blackboard and the audience could watch new discoveries emerging, produce in my mind an effect opposite to that apparently intended. It makes me realise how greatly the Association has advanced since then. In these days, too, we have a big X, Y, Z whose views on any subject under discussion would have delighted the audience, and their presence and happy way of saying the right thing or putting an encouraging question when it was needed cannot be too highly valued. But more often X shook his head, and a whisper from the Recorder reminded me that X (a name scarcely known to the majority present) had made a life-study of the particular problem, and it was he who enlightened us. The great democracy of scientific workers is a product of the newer age, and nowhere does one feel that sense of equality and fraternity so convincingly as at the British Association.

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WITH reference to the views expressed by correspondents in NATURE as to the future of the British Association, based, it would seem, in large measure on the rather disappointing attendance at the recent meeting at Cardiff, it appears to me there were reasons for this irrespective of any decadence of the Association. May not the date being so near the height of the holiday season—viz. the end of August rather than the beginning of September, as on so many previous occasions—be accountable for the absence of some members? In these times there are more counter-attractions than formerly for scientific workers and others interested in scientific or professional subjects in connection with their own special annual gatherings. Having yielded to the claims of these, they cannot afford the time or expense of attending the British Association meeting in addition. For example, a friend of mine residing in South Wales, whom I hoped to meet at Cardiff, expressed his regret at not being able to be present, as he had to expend all his spare time during the first two weeks in August at the national Eisteddfod of Wales at Barry and the annual meeting of the Welsh Bibliographical Society also held there, and at the Cambrian Archæological Association meeting in Gower. In some instances the increased railway fares (and no reduction as formerly) and hotel and other expenses acted as deterrents, and not any falling off of interest in the Association that kept many away. The bulk of the usual attenders at the British Association belong to the class who have been most severely hit by the present hard times.

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Carmino, Falmouth, October 5.

#### Recapitulation and Descent.

THE passage entitled "Recapitulation as Proof of Descent" in Dr. Bather's "Fossils and Life" (see NATURE for September 30, p. 162) calls for critical comment, inasmuch as it is representative of inconsequent reasoning current in several text-books commonly in use among students.

If experimental breeding justified the inference that a mutant form should recapitulate the characters of its ancestral stock, the observed fact that developmental stages in the life of an organism frequently resemble adult forms which are antecedent to it in the time process would constitute a cogent consideration for regarding these antecedent forms as ancestral to such an organism. But genetic investigation does not at present lead to such a prediction, and hence it is perfectly evident that recapitulatory phenomena do not provide direct evidence for evolution. Hitherto experiment has not thrown any light on the genetic significance of recapitulation, except so far as to suggest that factorial elimination rather than any "perennial desire of youth to attain a semblance of maturity" (whatever this may mean) is the key to "the omission of some steps in the orderly process."

As Sedgwick many years ago emphasised, for the purpose of the general theory of evolution recapitulatory phenomena are of interest only as extending the law of unity of type; while the value of embryological data for phylogenetic speculations resides logically in the fact that the embryologist studies the entire sequence of structural arrangements which characterise a living organism, whereas the comparative anatomist of adult life pays attention to only one of them.

It is easy to appreciate that in a generation which was obsessed with the "immutability of species" recapitulatory phenomena would greatly influence the minds of persons otherwise slow to recognise the varying degree of similarity and dissimilarity in the