

and accurate observation, and in the comparisons and inferences that flow from it, that is needed to guide the like efforts of their pupils. Their knowledge, moreover, is often too narrow to allow of a recognition of facts and relations of great interest. I have seen, for example, many lessons given on "an insect," but I have never heard any reference made to the remarkable arrangement it shows for supplying oxygen to the tissues. To healthy-minded children this point in the insect's structure would be most interesting, and with the aid of a cheap common lens the "air-openings" on the surface of the body and the "air-vessels" in the wings could be easily demonstrated. The knowledge of plant-physiology is also very defective, though it deals with many points that come within the range of most children's observation. While teachers depend on books for the matter of their object lessons (and one constantly sees them consulting books, which may indeed be helpful in the choice of methods) the teaching must continue to be bookish. A wider culture and, above all, a real living interest in nature in its manifold aspects seem to me indispensable conditions of any marked advance. Unfortunately, in this new country we have very few facilities for diffusing a knowledge of topics such as local natural history and geology, many features of which lend themselves to interesting and illuminating treatment in the elementary school, and teachers must not be too harshly blamed for defective knowledge of them. But the great features of both are the same all the world over; and the works on nature-study, now issuing from the Press in England and the United States, are full of suggestions and of knowledge that will put us on the right lines of observation and inquiry here. The new name of "nature-study" is highly significant, as indicating a notable change in the nature and scope of object teaching.

The teaching of science is mainly by exposition or lecture illustrated by familiar experiences, and by simple experiments where a supply of apparatus is available. The principles of the "method of discovery" or the "heuristic system" admit in such circumstances of very limited application—an application by no means new, viz., in observing and stating the conditions that obtain before the experiment begins, the change or changes that accompany its performance, and the conditions that obtain when it is finished, followed by a discussion of the "why" of the changes observed and of the general arrangements made. As the teacher, aided it may be by some pupils, performs the experiments in front of a large class, many cannot see clearly what has taken place, and this is a great and unavoidable disadvantage of this method of teaching. Still, it is the best we can do under existing circumstances, and we must bear these conditions in mind in judging of our results, which, though much disparaged nowadays, need not be devoid of considerable value.\* If time and means of giving pupils a practical training in the elements of science could be secured, no doubt much more valuable work would be done, and the study would be much more attractive. I do not at present see how such a change can be carried out in the larger schools except by instituting classes at special convenient centres, as the Board is now doing for instruction in cookery and wood-work. The Department might well be approached without delay with a view to providing this accommodation. In the smaller schools arrangements such as have been suggested by the Board's Director of Technical Education might be more easily carried out to some extent. To make the provision of the necessary apparatus possible, all science classes would have to become "school classes" under the Manual and Technical Instruction Act (see section 27 of the regulations thereunder).

Under the present teaching of science a good deal of satisfactory work is being done in the larger schools, and it is fair in many of the smaller ones, in some of which Mr. Mulgan and Mr. Purdie have found it "valuable." Where no apparatus is provided little more than useful theoretical knowledge can have been gained, and we are quite prepared for Mr. Mulgan's estimate that "the net result of much of the teaching in this subject is to foster memory-effort rather than thought-power." I trust, however, that the "memory-effort," which Mr. Mulgan regards with evident distrust, may not be altogether wasted if it has supplied children with some deposit of useful and accurate knowledge of such subjects as the laws of health and the simpler principles of agriculture. It is becoming the fashion to belaud the value of methods in science teaching to a pitch that implies the almost worthless character of the knowledge (or, as some would say, the information) gained. The two are, however, nearly on a level, no knowledge being truly gained that is not assimilated and placed in living relation to what was in the mind before. The exaggeration of the day must not lead us to take distorted views of educational values. Methods count for much, but not for everything.

In connection with additional subjects, I need add nothing to the information contained in the statement of efficiency given above.

During the year the Inspectors have taken much pains to encourage teachers to improve the oral answering of their pupils, and not without success. As I have pointed out before, good oral answering is largely dependent on suitable questioning, and can improve only *pari passu* with the latter. The repetition of a question as part of the answer to it is still a prevalent fault that militates against improvement. Effort to recollect the wording of a question diverts attention from the main point—the statement of what is asked for or about—and takes up time to no useful purpose. In this connection questions of a wide scope that sum up the gist of a previous series of questions are of special importance, and should be frequently used in the course of most lessons.

\* From the preface to an "Elementary Chemistry for Schools of Science" recently written by Mr. Thomas Cartwright, B.A., B.Sc., Lond., &c. (Thos. Nelson and Sons), I extract the following, which seems to me to contain a just view of the case. "An attempt has been made to strike the happy medium between the method of discovery and the method of telling; for the writer believes that the heuristic theorist, who would abolish telling and insist upon the learner being entirely a discoverer, is as much in the wrong as the teacher who puts his faith in the lecture-room rather than in the laboratory. Telling there must be; but it should be judicious and not excessive, it being remembered that the aim of an elementary course should be to train the observing-powers of the students, to accustom them to intelligently interpret simple phenomena, to manipulate and construct simple apparatus, and to give them a clear conception of the meaning of symbols, formulæ, and equations, and the simple laws of chemical theory."