should be made and notebooks and weather records kept, or natural history specimens collected, all of which serve to express the pupil's growing interest and knowledge. The one great aim of the teacher ought to be, how to get the problems of science presented to the children so as to bring them to the proper exercise of their powers of observation and thought. It is the teacher's business to centre the child's observation and thought on one of these problems, and to keep his thoughts moving in the right direction. The life histories of plants and animals supply a teacher with many of the leading units of study and illustrate life processes—machinery embodying practical application of science to life furnishes a series of problems.

If the teacher is enthusiastic, has an adequate practical knowledge of his subject, prepares his lesson thoroughly, he will find that he will establish in his class habits of close and accurate observation: he will have awakened an interest in applied science by constant reference to the application of the principles and processes studied in the laboratory or workshop, and, moreover, he will have promoted clear thinking and independent judgment, have taught his pupils to give exact expression to their reasoning.

Method is needed to secure all this, and in general such method requires a careful and intelligent observation of the facts, a tracing of the casual sequence running through the whole topic, a comparison with other similar phenomena observed in nature, a derivation of the principle illustrated and a broader survey to comprehend the wider application of this law. Whether in the field or laboratory, "First hand investigation by each pupil of definite problems should be the keynote of the work," and at least half the time set aside for the subject should be given to individual work. In general, the heuristic method of teaching might be adopted, but in the science room or laboratory much of the work done must be that of verification rather than of discovery. While the children are encouraged to "find out for themselves," the teacher must guide the work, but all work should be preceded by such discussion and explanation as will serve to make clear to the pupil the exact nature of the problem to be attacked, and the line of attack suggested: the operation should be followed by comparison of the results obtained by the students, by discussion of the divergences, by the drawing of conclusions and inferences, and by the examination of the principles involved in the experiments, and the results obtained by the pupils should be confirmed by suplementary demonstrations given by the teacher. The study of things and phenomena is of paramount importance, and the teacher, not the text-book, should be the pupil's guide—in fact, the teacher ought to be as a fellow-worker with the pupil in the field of investigation, encouraging him to hunt out things worth seeing, not injudiciously telling him what he sees, but dropping a hint here and there to guide his observations.

Throughout the work the teacher should use every opportunity to show the practical application of the scientific principles learned—e.g., the specific gravities of pure, and watered milk, the applications of expansion and contraction caused by heating and cooling metals, convective currents in a system of ventilation, the principles underlying the various methods of preparing food and the mechanical principles involved in ordinary tools and machines should be indicated. To carry out this plan, it is necessary where possible that all the pupils of a class should be investigating at the same time a problem of the same general nature; but in place of having each pupil working at the same experiment, it would be well to vary the particular form of the experiment, and thereby secure a wider basis for subsequent discussion. Individual experiments and independent observations are recommended, so that each pupil is thrown on his own resources, and self-reliance is encouraged.

Under the aids that materially help in the successful imparting of scientific knowledge might be grouped: (a) Experiments individually worked where possible. (b) The object itself—models and apparatus. In all cases simple apparatus constructed by the pupils themselves is a powerful means of arousing interest and developing the children's powers of inventiveness. (c) Specimens especially where children are encouraged to collect specimens for illustration during their lessons. Wherever possible a sufficient number of specimens should be available for distribution to every scholar. (d) Pictures, and better still, diagrams, especially those in colored chalk by the teacher. (e) Nature study excursions into the fields, along the shore, into the bush, is a splendid means of opening up the world to children, and of giving stimulus and purpose to other oportunities for observation in the world about them, but before setting out on such an excursion it is well to have some controlling purpose, to which observation is to be chiefly directed—for example, the study of the habits of one of the native birds. (f) Blackboard summaries of pupil's observations. (g) Oral questioning, revising, the matter taught. (h) Lastly, text-books which will prove a ready means of recapitulation and should be, as it were, a supplement to knowledge already acquired.

In the upper grade, at least, each pupil should keep a notebook in which should be entered a continuous dated record of his laboratory work throughout the year. This book should provide a truthful and clear record of his own individual operations, and observations, entered, preferably, in the science room at the time, and should not be copied from a rough book. The apparatus used should be stated and diagrams given. Every observation made should be entered, and, where possible, the results should be presented in tabular form. A help in the work would be to attach a value to each experiment, and in all examinations, the record-books of the course could be taken into account. In some experiments the quantitative results of the class might be noted on the board, and the mean arrived at, and recorded. The value of this work as a training in the scientific method should be evident, and at the same time it promotes interest, and a healthy rivalry in securing accuracy in the individual work of the pupils.

In a very general paper it is not possible to deal with many important points, but a brief reference must be made to some of the causes of failure in the teaching of science:—(1) No comment is needed on inadequate preparation. (2) Insufficiency of illustration, especially where inner forces in process are not visible—want of forethought in providing necessary apparatus and equipment. (3) Stating facts, which a good question might have elicited, without undue expenditure of time. (4) Performing experiments without making sure that the truths which they illustrate are understood. (5) The use of scientific terms without explaining their meaning, and only bewildering the pupils. Such technical terms should be used sparingly, cautiously, and gradually introduced. Plunging a young learner into a sea of technicalities is to disgust him with what should be a most fascinating and useful study. (6) Insufficient use of the blackboard. The science teacher should be expert in the use of graphic methods of illustration—e.g., sections, working drawing, models and apparatus, arrangement of flowers, seeds, parts of insects, etc.

In the matter of special science teaching, various claims have been put forward prominently of recent years. There seems to have been a great "boom" in "nature study"; but this study seems to have been pursued largely in the elementary schools only, and to have been neglected in the higher schools, though true nature study is one which can be pursued throughout a life-time, for all natural science is nature study, though all "nature study" is not natural science.

It is clear that the school boy cannot be expected to get any real knowledge of the whole range of science, physical and biological, but must confine his attention to one or two subjects, and there is general agreement as to the subjects which are of the greatest importance, viz., chemistry and physics, and it is right therefore that any boy beginning the study of science should be taught the elements of chemistry and physics, and for-