It is not uncommon to relegate memory to a very subordinate place in the study of science. We are told that what is required is that the pupil should understand principles, not remember facts. But the concrete is the best introduction to the abstract and principles are best arrived at through facts, are best illustrated by facts, and are most definitely remembered in connection with facts. It is true that it is more important to train a child to investigate for himself than to give him the result of others' investigation, but the time is too short for him to investigate all he should know. It is in most sciences as it is in geography. The most complete and vivid knowledge of geography is to be got by travel, provided the traveller knows how to observe. But most people have to be content with a knowledge of other countries got at second hand. So in science: in many instances we must rest content with getting our facts second hand; and to get a clear view of the subject and to obtain a firm grasp of the principles, facts must be fixed in the mind. Hence, in an examination paper some questions involving an exercise of memory are not out of place. The examiner should be very careful in setting questions of this kind. The questions asked should not be out of the way ones. They should not in any sense be catch questions, they should be of the kind that any candidate in that grade of examination should know. For instance, in chemistry any pupil ought to learn how hydrogen is prepared, or carbon dioxide, or hydrochloric acid, and the properties of these substances; and a question on matters similar to these is well suited to an elementary paper.

The case of carbon dioxide illustrates what I said above about taking some facts in science second hand. It would not be easy for the pupil to perform an experiment to show that for a given amount of carbon, carbon dioxide contains twice as much oxygen as carbon monoxide; but he should know the fact. Unfortunately when he does learn the fact he does not realize that the fact has primarily been learned by experiment; but he is liable to talk about atoms and molecules in such a way as to indicate that he considers carbon monoxide and dioxide as specially created by a kind Providence to illustrate the law of multiple proportions. Examinations have a very important function in stimulating the examinee to fix in his mind a number of facts. The student goes over and over his work with the view of making sure that he can tell a straightforward tale to the examiner, and in doing so finds that the facts gain a definiteness in his own mind which they formerly did not possess.

An examination should not consist entirely of questions of fact. It should be such as to test the examinee's knowledge of underlying principles, and the relation that facts bear to each other. It would be well if some facts that the examinee is not likely to have met could be given and an explanation of them required, care being, of course, taken that the explanation depends upon principles that should be known.

Any little turn of a question that will put the matter in a different light from the ordinary, is useful, and the examinee should try to get such a grasp of the fundamental ideas that he will not be caught unawares. There should not be too many questions of this character, for the examinee should not meet too much that is strange, but on the other hand the examinee should not have acquired so superficial knowledge of the subject as to be nonplussed by a change in form of question. There are not a few examinees in chemistry who could tell how carbon dioxide and chlorine are made but would think they were asked something out of the way if requested to give the action of hydrochloric acid on marble and on manganese dioxide.

The science student should endeavor to cultivate accuracy of observation, exactness in the knowledge of facts, a clear insight into the relationship between kindred facts, and an appreciation of the principles involved; the examination should be of such a kind as to determine whether the candidate has made this endeavor and how far he has been successful, and should stimulate the examinee to strive in the best manner for the attainment of a thorough understanding of the work gone over, and for such a mental training as will be of permanent value in future life.

Three Good Rules.

1. Do not spend most of your time upon the best scholars. They do not need it.

2. Do not spend most of your time upon the dull ones. You cannot afford it, and it is not right.

3. Give *some* special attention to the dull ones, and *some* to the bright ones, but devote most of your time to the average scholars. The reason of this is because they outnumber the others, and you are working for the greatest good of the greatest number.