

ON TRAINING A PUPIL TO COMPARE.

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Comparison is at once a promoter and a test, of accuracy of observation.

The artist in drawing a sketch of a ruined cathedral acquires a minute knowledge of its structure, because he is constantly obliged to compare his sketch with the original. If we set ourselves to compare an oak with an elm, we observe more carefully the appearance both of the oak and of the elm; and the desire to compare is a great incentive to minute examination. The lobster is compared with the crayfish and anatomical peculiarities are marked which would probably not be noticed were either of them studied separately. Instances might be multiplied indefinitely to illustrate this point. Moreover, if two objects of the same kind have been examined separately, our knowledge is submitted to a crucial test by an attempt to compare them, and accuracy in observation, or its opposite, is made manifest.

It is wonderful how few of the pupils in schools, or even of students in universities, really understand the meaning of the word "compare." I lately examined more than a thousand papers in botany written by pupils from a large number of schools, and, in answer to the question, "Compare the parts of the flower, and the fruit, of the buttercup and the strawberry." I was astonished to find how little was known about either the buttercup or the strawberry, on the one hand, and how little was known about comparison on the other. And yet, a study of the buttercup and of the strawberry had been prescribed, and if the pupils in the schools had been taught to compare, they would

surely have shown a better acquaintance with the plants in question. There was a lack of definiteness in description and usually there was no attempt at comparison strictly speaking. A habit of careless observation was even shown by the fact that very many of the examinees did not confine their description to the parts of the flower and to the fruit, but described root, stem and leaves. Surely there must have been careless observation. The only alternative is that the candidates were so foolish as to suppose that a science examiner would ask one question and be satisfied with the answer to another. Any such candidate should have written, "Please, I can't compare the parts of the two flowers, but I can tell you the shape of the strawberry leaf."

Where the examinee did not make this error he frequently lost sight of the word "compare" and apparently substituted the word "describe," contenting himself with telling what he knew, or thought he knew, about one flower, and then what he knew, or he thought he knew, about the other, but without any consideration as to whether the points mentioned in regard to one flower were similar to those mentioned in regard to the other.

The following answer will illustrate: "The buttercup has five sepals, five petals, many stamens and many pistils; the strawberry is a white flower on a stalk two or three inches high and flowers in May; The fruit is juicy and good to eat." Hundreds of answers were like this in principle, though few had the characteristics in so exaggerated a form.