

analysis point by point; by skilful questioning he guides the mind of the pupil in discriminating, *i.e.*, in working analytically; he guides it in identifying, *i.e.*, in working synthetically; he continues this method of instruction until an analytic (and synthetic) habit of mind is formed, and the pupil no longer needs the preparatory analysis and synthesis which it is the business of the teacher to supply.

In perception, the stage of intellectual development nearest to sensation, the child is to be guided in the formation of clear and adequate perceptions of the objects presented; the presentation, and, therefore, the representation, becomes clearer with each repetition, and the dim and vague mental outline with which the child started, grows into clear and definite idea. So, if a pupil has been led to apprehend the relation of certain facts, and to think this relation again and again, the process fixes the thought in the mind, and gives increased power to deal with all similar relations. Similarly with all forms of reasoning, or discourse. A pupil has difficulty with an abstract argument, say the solution of a problem; he is aided by judicious questioning to comprehend the logical connection of the several propositions; he repeats the reasoning for himself, re-thinks the relations—and at last, not only is the reasoned truth permanently retained, but there is also the beginning of a habit of logical reasoning.

*Illustrations.*—By means of objects, a child forms a first intuition of the number *five*; one presentation will not suffice, even if the objects are so arranged as to facilitate the mental act. Herein, it may be observed, lies the source of many a sad mistake. A teacher knows that there must be “objective teaching” in giving first lessons in numbers, but falls into the common error of assuming that because there are concrete things before

the child, there is concrete knowledge in the child's mind. He forgets that the first idea is vague, indefinite; that the mind must act on the material, and frequently repeat the act; that the child must be made to think from the vague to the well-defined—the “concrete”; and, that the mental processes ought to be aided by proper presentation of objects. For example, in teaching the number five, we do not begin with five dissimilar and unarranged objects; this would be to commit two blunders. We begin with similar objects, symmetrically arranged, thus:—

But even with this symmetrical number-form, one presentation is not enough. On the basis of the several familiar forms which the child has already learned, he must be questioned through clear perceptions into clear conceptions. Every presentation becomes clearer until there results a definite idea of the number five through a conscious recognition of its relations to the lower numbers. Thus, in the foregoing number-form, the relations  $5 = 4 + 1$ ,  $5 - 1 = 4$ , *i.e.*, by questioning,  $5 = 4 + ?$ ,  $5 - 1 = ?$  can be presented in five different (though related) ways. It seems plain that if the child is led by clear intuitions to think the relations as presented in these number-forms, the “mental experiences” will blend into a lasting conception of the number. Similarly, from the same number-form can be presented various intuitions of the relations  $5 = 3 + 2$ ,  $5 - 3 = 2$ , *i.e.*, by questioning  $5 = 3 + ?$ ,  $5 - 3 = ?$ ;  $5 = 2 + 3$ ;  $5 = 2 + ?$ , etc., etc.

Again: A boy will not at first clearly apprehend so simple a proposition as “Things which are equal to the same thing are equal to one another,” much less will he always draw the right conclusion and be ready in its application to given cases; as *e.g.*, the line AB is equal to the line