

INTRODUCTION.

OUR knowledge of the material world is obtained through the senses. The organs of sense are the eye, the ear, the nose, the tongue and palate, and the nerves of touch located in the skin. The special nerves of these organs are acted on by things external to the body; the effect is conveyed to the brain; and mental impressions or ideas are the result. Thus a red colour acting on the retina, the sound from a whistle acting on the auditory nerves, or the smell of an onion on the olfactory nerves produces a definite mental impression. The five sensory organs, then, are so many doors and windows by which knowledge enters the mind.

There is, however, another source of knowledge of material bodies. In this case the mental impressions are derived from within the body, and are due to muscular exertion. It is by muscular feeling that we estimate the amount of force required to overcome resistance. Thus we get ideas of elasticity and weight from the amount of active energy put forth by the muscles to overcome inertia in the one case and gravitation in the other. If a weight is placed in the hand we are conscious of a certain amount of force expended to keep it from falling; if the weight is increased we are conscious of an increased expenditure of muscular energy.

. The mental impressions, formed by and through the senses, including muscular feeling, are called *sensations*.

By the organs of sense we are said to *perceive*, or to make mental notes of external bodies, and these mental notes we

call *perceptions*. Perception is the first step in knowledge: attentive perception leads to *observation*; observation is the forerunner of *comparison*; while comparison is the basis of *classification*; and these together constitute the foundation of all knowledge.

The primary purpose of lessons on common objects and natural phenomena is to cultivate the senses, to train to habits of attention, intelligent observation, and accurate comparison, and so to lead up to the higher processes of the mind—reason and judgment. Of course the acquisition of information is an important aim; but the object lesson is designed to assist and guide the child to discover properties of things, and thus acquire knowledge for himself, rather than to pour information into his mind like wheat into a sack.

Mental impressions are formed at a very early period of childhood. A bright light or a shining object attracts attention before the child has acquired the power of taking hold with its hands; and a certain amount of discrimination, enabling it, for instance, to distinguish the face of its mother from that of a stranger, quickly follows. The power of recognising resemblances and differences rapidly increases, new ideas are as rapidly acquired; and when the child enters school, he enters it with his perceptive faculties, to a certain extent, cultivated, and with his mind a treasury of simple ideas.

The natural course for the teacher would seem to be to gather up into something like order, and to perfect, that which has been so far imperfectly accomplished; and then, starting from this as a basis, to evolve a systematic course of training, proceeding step by step in a natural order, each step being a logical sequence of the preceding. Further, the teacher who would best succeed must take childhood's method of imbibing knowledge and adapt it to her own use. Restless activity, insatiable curiosity, and love of imitation

characterize childhood. What the child sees he wants to know about, to handle, and examine, and, if possible, to take to pieces, or otherwise experiment upon; what he sees done he wants to do, and if opportunity be not found for the indulgence of his natural activity, he will find the opportunity for himself. An object lesson, then, besides fulfilling some definite purpose in training the perceptive faculties, should provide something for the children to *do* to satisfy their innate activity, something to *examine* and *discover* to arouse their curiosity, and something to *copy* to gratify their desire for imitation. Herein lies the secret of securing attention, of begetting a state of vigorous mental activity, and of associating pleasure with instruction.

The selection of lessons, and their adaptation to the capacities of the scholars, or to their different stages of advancement, is another point of fundamental importance. A child of four years of age is a different being, intellectually, from a child of seven; and a lesson suited to the capacity of the one must be totally unsuited to the mental condition of the other. The mental faculties of a child are strengthened and invigorated by proper exercise, but are weakened and depressed by being exercised on subjects beyond his powers of comprehension. To graduate the lessons to the mental condition and previous training of the scholars necessitates a complete system. It is not sufficient to select a lesson at random, no matter how skilfully it may be handled. Each lesson, whilst fulfilling its own special purpose, must form a link in the chain, a unit in the whole.

Nor is the *method* of giving the individual lessons of less importance than their selection and adaptation. Occasional information given about things of every-day life does not serve the distinctive aim of object lessons. To be a passive recipient of information gives no pleasure to a child. To hold an object before it, and enumerate its general properties—what it is composed of, or where or how it is made—and