

those he loved and would fain have protected. Yet it is here, it is in what regards their social life (and under social I include domestic and political), that too many men seem to be unable to observe aright or to make any use of such observations as they may have correctly made. When their course is not taken at utter random, too often it is guided by blind empiricism, or else is only a prolonged game of "follow your leader." The boy was not trained to observe and to think for himself when the subjects he had to examine and to think about were comparatively simple, and now the grown man will not or can not do it, or, if he does actually try, he is as likely to go astray as to go right, for he now must begin on what is extremely complex.

If, then, our school instruction aims at preparing pupils for the duties of after-life, however important we may deem those forms of hearing and speaking which we call reading and writing, even more important ought we to consider observation and inference and reasoning therefrom. That man is best equipped for the mental work which is more or less the business of every one from the cradle to the grave, who is able to use all his senses aright, who best knows all the precautions that must be taken to guard against misinterpreting the evidence of those senses, and against wrong reasoning from that evidence; who best knows how to trace thought backward to the grounds of belief and forward to discovery and verification. That is the best education that fosters the mother of freedom—independence of thought.

I have spoken of the insufficiency of reading and writing as a means of education, because there are still among us some who declare that these arts, with a little knowledge of ciphering, are all that should be taught in our public schools, are all the educa-

tion that should be given to the children of the people; all the training for the battle of life, for the "struggle for existence," that should be provided for those who will have to bear the brunt of that battle, who will have to wage the fiercest contests in that strife. By all means, teach the children to read, teach them to write, teach them to cipher, but also train them in those mental processes which all men have to employ somehow or other every hour of their waking life, in every transaction of their daily business. Train them to do well and to know that they are doing well what they must do if they are to live at all.

But how is a child to be trained in these mental processes? In exactly the same way that he is trained in any art, in any handicraft. A man learns to play on the violin by playing on the violin, and no amount of directions without actual practice will make him proficient. So a child must be taught to observe by observing, to draw inferences by inferring, and to reason correctly by reasoning correctly; but if he is to do these things well he must practise them at first under the guidance of a master in these arts, and must have before him models of perfection in them. Now, Science presents us with the very best examples of accurate and discriminative observation, and of inference therefrom; it begins with the study of the very simplest phenomena, and advances its investigations step by step to a complete and exhaustive analysis of the most complicated actions and relations. It is pre-eminently the study in which one is trained in the *whole* art of thinking, and in which one is taught to be conscious of each step he takes in the onward march of his investigations, and to know that the course he is following, and that course alone, will lead him to the truth, the arriving at which is the ultimate object of all his labours.