

ration that he has frequently performed already, than does one who has studied and mastered a particular line of argument refer others of the same kind to it, and follow them out in the same way. The great object of education, then, should be to present a sufficient variety of instances to meet any cases that may occur, so that each may be compared with what it most resembles. This view receives further confirmation from the generally-recognised fact, that the order of discovery is the order that ought to be observed in the teaching of a subject. Men made use of language long before rules of grammar were introduced; poems were written before any art of poetry was known; men thought and reasoned before there was any science of logic or dialectic; and so also with agriculture, chemistry, medicine, astronomy, navigation, &c. The art has ever preceded the science, the practice gone before the theory.

Be this, however, as it may, there can be no doubt of the fact that a knowledge of our physical constitution, and of the laws to which it is subject, is of the highest importance to the educator, and that in any science of education, Physiology, at least in so far as it bears upon the subject, must form an important branch. And here we would seek to object to the commonly received division of education, into physical, moral, and intellectual, as being the source of much misunderstanding and error. People have thus been led to confound physical exercise and physical education, mental exercise and mental education, ignorant or heedless of the fact that the body and mind in man so interpenetrate each other, that physical exercise has its mental side, and mental exercise in like manner its physical side. If we look upon physical exercise only as imparting strength and vigour to our physical powers, then it is a small matter comparatively in general education; but when we come to know that it has an important bearing likewise upon our mental constitution, that it imparts strength, and force, and vigour to our mental powers as well as to our physical, then it is seen to be of the very highest importance. The mind is concerned and is at work in every one of our physical actions. The will, for instance, is brought into play; the attention is kept alive; discrimination is at work. Indeed, the best way of training these powers, particularly at first, is by the bodily organs. The will that can direct and control the actions, is in a fair way to control the thoughts; the attention that can be concentrated upon physical movements may soon be brought to concentrate itself upon mental operations. It is by means of the senses, that the mind is first of all awakened to consciousness; and it is to impressions received from without that the mental powers are first of all directed. Physical education, in our view of it, is not mere physical exercise, but it is the rendering of the different organs of the body ready and efficient servants of the mind. In order to this, the two must be educated and trained together, the proper thoughts and feelings being connected and associated with the proper actions. In like manner, mental exercise and mental education are by no means the same. Physical exercise, as we have already shewn, constitutes an important part of mental education, and in the same way mental exercise is not without an important effect upon physical education. The truth is, that body and mind are so intimately connected together, that whatever acts beneficially or injuriously on the one, acts in the same way upon the other.

Moral education on the other hand, is not something distinct and different from physical or intellectual, as this division of the subject would lead us to suppose, but it is in a measure a compound of both. It is action of a certain kind guided by intelligence. Custom and habit is the ruling principle here as well as in physical or mental training. Man is a moral man, because he has been accustomed to think and act in a particular way. It is evident, then, that if we would have a correct, a scientific division of our subject, one that will not mislead but aid us in our work, and throw light upon it, it must be something very different from this.

But if a knowledge of the physical constitution of man be necessary to the educator, much more so ought the knowledge of his mental constitution. Indeed, here he ought to feel himself particularly at home, for this may almost be said to be the science of which education is the art. If mental philosophy is ever to become other than a dry and barren study, it will be by bringing its facts to bear upon the education of the young. From the field of mental science the educator will gather rich and abundant fruits. From it he will learn the nature and character of the different faculties, the order of their development, the laws to which they are subject, and the conditions under which they act, together with the nature and growth of our knowledge, and the order in which it may be best communicated.

There is no power or faculty of the human mind, a thorough understanding of which is of greater importance to the teacher than that of the attention. "It constitutes," says Sir William Hamilton, "the better half of all intellectual power." There is no difficulty the educator is so frequently called upon to contend with, as the want of attention on the part of his scholars. He feels that everything would go right if he could only command their attention; and that he is unable to do so, is usually to be traced to his ignorance of its nature, or to a wrong system of education. Attention is, strictly speaking, not so much a distinct faculty of the human mind, as a property common to all of them. It is simply consciousness concentrated by an act of the will upon some particular object.

There are various laws in accordance with which the will acts in such cases. The time should be taken when the powers are most active and vigorous, and the object ought to be one in which the mind naturally feels an interest. One cannot be expected to attend to a subject which is uninteresting to him, or of which he does not desire to know something. Hence it is first of all necessary to excite an interest in the mind of the scholar, or to excite his curiosity respecting what we wish to teach him. Care must also be taken that this interest does not flag, at least till the faculty has acquired sufficient power to act of itself without these stimulants. Those faculties should also be selected for exercise that have already acquired some degree of strength, for there is always a certain degree of pleasure attending the exercise of any faculty that is strong and vigorous. The objects of sense, the feelings and movements of their own bodies, are those to which the child's attention should first be directed. Then as the intellectual powers come more and more into play, the attention should gradually be directed upon them. Care must also be taken in every exercise to avoid the intrusion of any subject by which the attention may be distracted. By this means desultory habits of thought are produced, and the mind soon loses the inclination, and even the power of concentrating itself upon anything.

The great law of attention, however, is what Sir Wm. Hamilton calls the "Law of Limitation," namely, "that the intension of our knowledge is in the inverse ratio of its extension; in other words, that the fewer objects we consider at once, the clearer and more distinct will be our knowledge of them." "The greater the number of objects among which the attention of the mind is distributed, the feebler and less distinct will be its cognizance of each." "Consciousness will thus be at its maximum of intensity when attention is concentrated on a single object."

Here, then, is a principle of the utmost value in education. Almost every subject—every branch of instruction, is made up of a number of different parts, and hence, in the teaching of any of these our aim ought to be to reduce each to its simplest parts or elements so that by concentrating the attention on each separately, and afterwards connecting them, the whole may be more easily comprehended and mastered.

Two of the principal operations of the human mind are association and comparison, the one forming the basis of memory, the other being concerned in perception, reason, judgment. The two may indeed be said to be parts of the same operation; for we associate things together in order to compare them, and in comparing them together we associate them. The principle of association is, that thoughts, feelings, or emotions, that have been in the mind together, or in close succession, become connected together in such a way as that the one afterwards tends to recall or reproduce the other. The great law of association is contiguity, or the bringing together of two or more ideas or impressions that we wish to recall or reproduce each other. Hence it follows, as a general rule, that the closer these are brought together in the mind, the more strongly will they be associated together, and the greater will be their power of reproducing each other. It is upon this principle that the Hamiltonian system of teaching languages is constructed—that namely of bringing the foreign word and the English equivalent into the nearest possible proximity. Where any appreciable interval takes place between ideas that we wish to associate together, irrelevant ideas are apt to spring up and weaken their adhesive power. The circumstances that have a tendency to increase the adhesive power of ideas are chiefly vividness, repetition, and attention. Ideas that make a vivid impression upon the mind are readily recalled, as are also those to which the attention has been specially directed. The longer or more frequently an idea is before the mind, the more readily is it recalled or remembered. Some ideas are much more easily recalled than others. This is particularly the case with such as come to us through the senses, or are connected with material objects, and it is on this principle that the so-called arts of memory are constructed, namely the associating of what we wish to remember with some familiar material object.

All thought, all perception, as the philosophers tell us, is comparison. I perceive a star in the firmament by comparing its brightness with the dimmer hue of the surrounding sky; I hear a sound because I compare what I hear with the previous stillness; and so with all the other senses. Perception is ever the perception of difference and hence it is, that were a man to be always subjected to the same sensation, he would be as if he were subject to none, because having no change there would be nothing with which to compare his sensations, he could perceive no difference. In the same way, in arranging, classifying, reasoning, and in all the higher mental operations, the mind is ever comparing. A man can only judge of a thing, or even know a thing, by comparing it with something in the mind already. I know that fire burns, or that water quenches thirst, because the mind instinctively refers back to instances in which this has taken place. In fact, a word, or a phrase, or a sentence, is intelligible to one only as he can refer it or compare it with something in the mind already. It is in this way that one comes to acquire the style or modes of thought of another, the mind becoming stored with ideas of a particular kind, with which it compares others of a similar nature that may come before it. The merchant can at once tell the quality or value of a piece of goods, because his mind contains numerous samples of the same thing, and he naturally instantly refers to that which most nearly resembles this. This principle not being understood, the mind is commonly left to chance in the acquirement of its know-

* "Discrimination is a fundamental property of the intellect, and in so far as we can note differences in our sensations, to that extent these may be called intellectual."—*Professor Bain's Senses and Intellect.*